PTC. 468(N)
500

GOVERNMENT OF INDIA

TARIFF COMMISSION

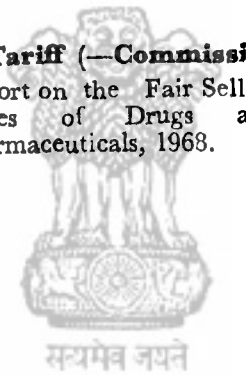
REPORT
ON
THE FAIR SELLING PRICES
OF
DRUGS AND PHARMACEUTICALS

BOMBAY, 1968

Price : (Inland) *Rs.* 78 · 50 (Foreign) 183*s.* 2*d. or* $28 26 *Cents.*

India, Tariff (—Commission)

Report on the Fair Selling Prices of Drugs and Pharmaceuticals, 1968.



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REPORT
ON
THE FAIR SELLING PRICES
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सत्यमेव जयते

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सत्यमेव जयते

ERRATA LIST TO THE COMMISSION'S REPORT ON THE FAIR SELLING PRICES OF DRUGS AND PHARMACEUTICALS (1968)

Page	Para Item/Table	Line	For	Read
1	2	3	4	5
ix	Item 10 . . .	1	Consmetics	Cosmetics
x	Item 16 . . .	2	as a an item	as an item
x	Item 20 . . .	7	which, it	which, if
xi	Item 25 . . .	3	u t should adopt	unit should adopt
xii	Item 30 . . .	3	ensure	ensue,
xvii	Item 6.12 . . .	1	Locating	Location
xxii	Item VIII . . .	1	Sel-consumption	Self-consumption
2	Item (2) (b) . .	1	Expenses	expenses,
6	Para 2.2 . . .	16	dicided	decided
9	Table 2.3, Item IV, Col. 3 against 19.		(Park-Davis)	(Parke-Davis)
11	Table 3.1, Col. 7, Item 1.	..	..	5
16	Para 4.1.5 . . .	7 from bottom	Drus Technical	Drugs Technical

1	2	3	4	5
16	Para 4.1.5 . . .	Last line	Standares	Standards
17	Para 4.1.7 . . .	1	Act.	Act
21	Para 4.2.1. . . .	9	Order 1965	Order 1966
24	Para 4.2.5. (iv) . .	13	g eat deal	great deal
27	Para 4.2.9 (ii) . .	5	wholesalers	wholesaler
28	Para 4.2.13 . . .	2	he sale	the sale
30	Para 4.2.16 (iii) . .	9	di count	discount
30	Para 4.3.1 . . .	5	overnments	Governments
34	Para 5.1.1. . . .	22	was also to recommend	was also recommended
46	Para (vi) . . .	5-6	enpcouragement	encouragement
46	Para (vii) . . .	7	off take is not h gh	off take is not high
51	Para 5.4.7 . . .	14	Ind ian Pharmacopoea Committee	Indian Pharmacopoeia Committee
60	Table 6.3 against Sl. No. 4, Col. 9.	..	60.83	360.83
63	Para 6.1.10 . . .	3	leading manufacturing	leading drug manufacturing
81	Table 6.12, Item 4, Col. 9 against Bombay.	--		9
87	Table 6.13, Total of Col. 17.	..	222.18	22218
90	Table 6.14, Sl. No. 14, Col. 4.	..	5854	54

94	Table 7.2, Item 2 against Synbiotics under Col. 7	..	13.6			13.2		
95	Table 7.2, sub-heading .	..	Licensed/approred			Licensed/approved		
						Installed Capacity		
95	Do.	Please read as	In 1962	In 1963	In 1964	In 1965	In 1966	In 1967
105	Table 7.2, under Col. 17 against total for item (ii).	..	58			5.8		
111	Table 7.3, Col. 4 against item 10(2) Pfizer.	..	15.6 onnes			15.6 Tonnes		
113	First para from the top	Line 8	an applications			an application		
114	Sub-heading 'Penicillin'.	8th line from bottom	in the nstalled			in the installed		
116	7.1.7 Sub-heading 'Chlor-quin'.	Line 2	No. reasons			No reasons		
117	7.1.7	13	a in many			as in many		
118	7.2.2	1	for basies			for basic		
118	7.2.2	7	are simplar			are simpler		
120	Table 7.5, Item 3, Col. 4	..	Tablests			Tablets		
121	Table 7.5, Item 14, Col. 2	..	Hochst			Hoechst		
134	Table 8.1, Item 8(2), Col. 2.	..	Cynamid			Cyanamid		
139	Table 8.1, Item 16 (1), Col. 2.	..	Synthece			Synthetic		
141	8.1.3. Sub-heading I.N.H.	Last line of the page	967			1967		

1	2	3	4	5
144	Sub-heading 'Sulphadizine'	4th line	on acetyl	acetyl
148	Sub-para 'Albert David'	2	2.5	2.4
148	Sub-para 'Atul Products'	2	41.2 tonnes in	41.2 tonns. It
155	Sub-para 'vitamin C'.	10	inabiliy	inability
155	Sub-para 'Tetracyclines'	1-2	installed c city	installed capacity
155	Sub-para 'Tetracyclines'	2	21.5 tonnes	21.5 tonnes but
180	Table 11.4, Sub-heading under Col. 4 to 6.	..	with 1964 as bare	with 1964 as base.
182	12.1.1	10	Rs. 27.51 crores	26.51 crores
187	Table 12.2 . . .	The figures in 3rd row against Sl. No. 2 "Vitamin B-12 and B-12 (b)" are total. Please draw a line after 2nd row.		
190	Table 12.2, Total against Sl. No. 18 under Col. 9.	..	1,262	1,263
207	Table 12.5, Sl. No. iv under Col. 4 against item No. 16.	..	East Inda	East India
221	13.1	20	hree weeks	three weeks
222	13.2	2	Both or basic	both for basic
222	13.2 under 1. 'Salts' .	7	Stabilishers	Stabilisers
223	Under item 10 'Solubility'.	Line 1	d ugs	drugs
229	13.16	9	is a by a	is by a

231	13.19	3	rand names	brand names
233	13.21	17th line from top	there tolerances	the tolerances
238	14.3	1	nedicines were	medicines were
241	Table 14.1 under Col. 5	4th line	p ovision,	provision,
244	Table 14.1, Col. 6 against Italy.	4th line	d fence oi	defence or
245	Table 14.1, Col. 2 against Switzerland.	2nd line	itilizable	utilisable
247	14.7	10 from bottom	drugs and held	drugs are held
247	14.7	10-11 from bottom	Forigners	Foreigners
248	14.7 "The case for patents"	2	to the drung	to the drug
250	14.8	5	47 per cent in	47 per cent, in
252	Table 14.2, sub-heading	..	Extent	Extant
253	Cols. 5, 8, 11.	..		
253	14.11	4	Tolubtamide	Tolbutamide
253	Table 14.2, Col. 13, Item 3.	6-7	Please *delete* "and Abdul Haq, India."	
254	Table 14.2, Col. 13 .	..	Chemi	Chemic
255	Against Item 6 . .			
260	15.7 (4) . . .	3	imported material	imported raw material
261	15.7.1, under 'Amodiaguin'	4	intermediates	intermediate
261	Do. . .	10	*Add* 'if' after 'hand'.	

1	2	3	4	5
261	15.7.1 under 'Amodiaguin'	11	*Delete* 'if' last word of this line.	
261	15.7.1 under 'Chlorpropamide'.	5th line from bottom	given	gives
262	15.7.1	8	and produces,	and produces
263	15.7.2 under 'Streptomycin'.	6	saving or	saving of
264	15.7.3 under 'Penicillin'	3	cuntries	countries
264	15.7.4 . . .	1	Sulphadiaine	Sulphadiazine
264	15.7.4 . . .	7	Sulphadizine	Sulphadiazine
264	15.7.4 . . .	5	Aminodiaine	Aminodiazine
265	16.1	9	of imported	or imported
266	16.3	6	Pharmocopoeia	Pharmacopoeia
266	16.4	7	Standard	Standards
266	16.4	10	An oiological	and biological
266	16.5	1	Durgus	Drugs
267	Table 16.1, Col. 2 .	2	Ildo 'chlor-	Iodo chlor-
267	Table 16.1, Col. 2, Item 6	1	All froms	All forms
270	17.3	6	enforce ment	enforcement
270	17.4.1 . . .	6	licences	licence
271	17.4.2 . . .	11	regulartory	regulatory
273	7. Orissa . . .	1	durgs	drugs

274	17.6.2	10	Durg Laboratory	Drug Laboratory
274	17.6.2	22	testing or	testing of
274	17.6.2	28	as applied	was applied
275	17.8	last line	durg	drug
276	17.8	9	the esting	the testing
278	Under item 8 Glaxo Lab.	8	a adhered	are adhered
279	Item 10 . . .	9	stagel	stage
281	17.9 under 8 . .	4	Distilles	Distilled
286	Table 17.1, Col. 3, under Item 7.	8	19666	1966
297	18.5	3 from the bottom	restored to	restored to to
299	18.7	2	emanage	emanate
302	18.12	1	Lucknows	Lucknow
307	Table 19.2 under 'Remarks' against item 28(27).	5	c nt	cent
307	Table 19.2 against item 28 (28).	..	28(28) (A)	28(28) (b)
307	Table 19.2 under 'Remarks' against item 28(28) (6).	1	rate	rates
308	Table 19.2, Col. 1, Item (ii)	..	Penicillin and its	Penicillin and its products not otherwise specified.
308	Table 19.2, Col. 1 under (iv).	2	execluding	excluding

1	2	3	4	5
312	Table 19.5 . . .	..	'28' should be *read* under Col. 1.	
314	Table 19.5 against item 28 A, Col. 2.	1	Petent	patent
321	Against item 12 Col. 2 .	2	as Sals or	as Salts or
323	Table 19.7, explanation 2, Col. 2.	6	of other	or other
325	Table 19.8 against item 3, Col. 2.	1	Homocopathic	Homoeopathic
327	19.4.2, Item (4) . .	1	lac of	lack of
327	Do. .	13	10 per cents.	10 percent.
328	19.4.4 . . .	2	Manufacturers	Manufacturers'
329	20.1	18	was and overall	was an overall
333	20. 5	Line 2	import	imports
335	20.6 under Insulin .	Line 1	fell-down	fell down
340	21. 5	Line 1	evel	level
343	22.1.1 . . .	8	Man'facturers	Manufacturers
344	Table (b), Item 17 .	..	Zandu Pharmaceu ombay.	Zandu Pharmaceuticals, Bombay
349	Table 22.3, Sl. No. 8(ii)		Cynamid	Cyanamid
353	Table 22.3, Sl. No. 20 .		Hoecht	Hoechst
357	Table 22.5, Sl. No. 7, Col. 2.		Bochringer Knoll	Boehringer Knoll

357	Table 22.5, Sl. No. 6, Col. 6.	..	73	473
358	Table 22.5, Sl. No. 16, Col. 8.		530	4530
360	22.2.4 . . .	10 from bottom	that less amount.	that pass amount
362	23.1.2 under 3.3.1 .	6 from bottom	cond tions	conditions
364	Table 23.1, Sl. No. 21 .	..	Bechniger-knoll	Boehringer Knoll
370	23.2.5 . . .	1	basis. Th	basis. The
370	Table 23.6, Heading Col. 3.	..	Employed	Employed capital
371	Table 23.7, Item 3, Col. 4	..	Bracco Industrial Chemical	Bracco Industrial Chemica
372	Table 23.7, Sl. No. 9, Col.	..	Cynamid	Cyanamid
373	Table 23.7, Sl. No. 15, Col. 2.	..	Hoecnst	Hoechst
374	Table 23.7, Sl. No. 23, Col. 8.	..	2.9% after taxes.	2.97% after taxes
378	23.2.11 . . .	4	Biacco Industrial Chemical	Bracco Industrial Chemica
378	23.2.13 . . .	last line	Suibbs	Squibbs
381	23.3.1	19	The latters	the latter
391	Table 24.2, Sl. No. 16(3), Col. 2.	..	Wgeth labs	Wyeth Labs.
394	Table 24.3, Sl. No. 3, Col. 1.	..	K.	U.K.

1	2	3	4	5
401	Table 24.4, Sl. No. 16, Col. 4.	..	100 ml/vial	100 meg/ml.
405	Table 24.4, Sl. No. 4, Col. 5 against 50 mg.	..	Bottle of 100 tabs.	Bottle of 1000 tabs.
405	Table 24.4, Sl. No. 9, Col. 8	..	15.18	15.78
409	Table 24.4, Col. 8	Last line	5.96	5.95
411	Table 24.4, Sl. No. 10, Col. 7.	..	34.23	347.23
412	Table 24.4, Sl. No. 2, Col. 8.	1	5.05	5.50
416	Table 24.4, Col. 3, Item 2 under 'Chlorpropamide'.	..	DI BINOL	DIABINOL
425	Table 24.4, Col. 5, Item. 16	..	10 × 10 tabs st ip	10 × 10 tabs strip
427	Table 24.5, Item 5, Col. 3.	..	DICRYSTICIN -5 800	DICRYSTICIN-S 800
427	Table 24.5, Item 5, Col. 4	5-6 from bottom	*Delete* 'and' at the end of item (1) *Read* 'and' at the end of item (2)	
428	Table 24.5, Col. 5 against Martin & Harris.	..	100	1000
433	Table 24.6, Sl. No. 7 (1), Col. 8.	..	13/9	13/9 d
434	Table 24.6, Sl. No. (1), Col. 8.	..	40/.sh	40/5 sh
434	Table 24.6, Sl. No. 11 (2), Col. 1.	..	*Delete* 1 × 1 gm.	

434	Table 24.6, Sl. No. 11(1), Col. 7.	..	*Add* '* 9/5 sh.' *against* 'per 10 vials'.	
434	Table 24.6, Sl. No. 11(2), Cols. 6 and 7.	..	***Read*** 'per pack' under Col. 6 and ***delete*** 'per pack' from Col. 7.	
435	Table 24.6, Sl. No. 15(2), Col. 3.	..	Tetracycline	Tetracycline caps s.d.
435	Do. Col. 7 . .	..	10/10 d	10/10
438	Table 24.6, Sl. No. 23(1), Col. 4.	..	Botte of	Bottle of
440	Table 24.6, Sl. No. 32 (3), Col. 8.	..	300 Forints.	330 Forints
441	Table 24.6, Sl. No. 34(1), Col. 7.	..	Sh. 400	Sh. 440
445	Table 24.7 N.B. .	4	deale	dealer
452	Table 24.9, Sl. No. 11, Col. 11.	..	1.17	1.19
454	Table 24.10, Sl. No. 2 .	..	"2. Smith Stanistreet COBASTAN" entries in Cols. 1, 2 and 3 should be brought down and *against* these entries in Cols. 4 to 10 should be *added* as under :	

4	5	6	7	8	9	10
500 mcg/ml	5 ml vial	per vial	3.60	4.45	2.00	55.0

459	Table 24.10, Col. 10 against Burroughs Wellcome.	..	.7	27.7
466	Table 25.1, Sl. No. 26, Col. 11.	..	28.	28.7

1	2	3	4	5
466	Table 25.1, Sl. No. 26, Col. 5.	6 from bottom	100 mg × 100 tabs	100 mg × 1000 tabs.
493	27.3.5 . . .	3 from bottom	engaged only	engaged only in
493	27.3.6 . . .	4	that what	than that
496	27.3.9	last line	outside source	outside sources
496	27.3.10 . . .	3-4	owned concernes	owned concern
496	27.3.10 . . .	4	accending	ascending
501	27.4.5 . . .	8 from bottom	analyses	analysis
503	Table 27.21 Sub-Heading Col. 2.	..	Nos. of Cos.	No. of Cos.
505	28.1. 3 . . .	4	Analyses	Analysis
508	Table 28.1, Sl. No. 4, Col. 2.	2	Hyderaba	Hyderabad
511	Table 28.1, Sl. No. 9, Col. 5, Item 11.	..	A Vitamin	Vitamin A
528	28.1.10 . . .	Line 1	to he extent	to the extent
528	28.1.11 . . .	Last line from bottom	uture estimates also	future estimates also.
529	28.1.14 . . .	2	Sparities	disparities
534	28.1.26 . . .	4 from bottom	exmplyees	employees

535	28.1.27 Bottom . .	11 from bottom	wihch	which
536	28.2.1	1	Glaxo Lbs.	Glaxo Labs.
538	28.3.3	Table	Rs. Gramme	Rs./Gramme
543	28.6.2	7	ins the original	in the original
547	28.7.2.2 . . .	3	Sulhate	Sulphate
547	Do. . . .	5	doubted	doubled
554	28.9.4.3 . . .	7	Butonaol	Butanol
557	28.11.1 . . .	1	immunity	Immunity
558	28.11.5 . . .	6	hand	hands
562	28.12.11 . . .	4	manufacture	manufactures
563	28.13.2 . . .	2	for which Pfizer	of which Pfizer
569	28.16.2 . . .	6	wes contemplating	was contemplating
571	28.16.8 . . .	Last line	addtional	additional
572	28.16.12 . . .	2 from bottom	has been	have been
573	28.17.4 . . .	2	duiring 1965-66	during 1965-66
575	28.17.7 . . .	5	Act vated	Activated
591	Table 29.1, Col. 13 .	1	5.	5.28
591	Do. . . .	2	6.0	6.07
591	Do. . . .	Lastline	16.0	16.10
598	Table 29.1, Col. 8, Item VI Glaxo.	2 from bottom	8.71	9.71
601	Table 29.1, Col. 9, Item (i) Pfizer.	—	5.72	6.72

1	2	3	4	5
609	Table 29.2, Sl. No. 17, Col. 2.	..	Tatanus	Tetanus
613	Table 30.1 sub-heading of Col. 4.	4	gentic name	generic name
615	30.2 under Idochloro-hydroxy quinoline.	9	are slighly	are slightly
617	Table 30.2, Sl. No. 2, Col. 7, Item (4).	..	Martitny & Hroris	Martin & Harris
619	Table 30.2 against Sl. No. 7, Col. 7, Item (1).	..	Alembic Chemiqcal	Alembic Chemical
624	31.3	3rd line from bottom	returnon	return on
625	31.4	line 1	with	With
626	31.5	line 4 from bottom	investments	investment
627	31.7	line 5	regurded	regarded
628	31.9	line 15	namely	namely,
633	Sl. No. (16) . . .	lines 1-2	bye-products	by-products
634	Sl. No. (23) . . .	line 2	Chloropropamide	Chlorpropamide
636	Sl. No. (35) . . .	line 4	analysis mor	analysis more
640	Under (b), Sl. No. 9 .	..	16/1	46/1
640	Under II, Sl. No. 3 .	..	Chemical	Chemical,

640	Do. . . .	..	Bellass is	Bellassis
641	Sl. No. 8 . . .	..	New Pharma	Neo Pharma
641	Sl. No. 10 . . .	..	Ltd., Sovoy	Ltd., Savoy
641	Under (b), Sl. No. 2 .	..	Qunochem	Quinochem
641	Under II, Sl. No. 46 .	..	The Angle-French	The Anglo-French
642	Sl. No. 62 . . .	..	Mission Raw	Mission Row
642	Sl. No. 87 . . .	..	Stddmed	Stadmed
643	Sl. No. 92 . . .	..	Cheebrugh	Chesebrugh
643	Sl. No. 95 . . .	..	Herbertsors Ltd.,	Herbertoons Ltd.,
643	Sl. No. 101 . . .	..	Tiecicen	Tiecicon
643	Sl. No. 102 . . .	..	T.T. Krishnamachai	T.T. Krishnamachari
643	Under (b), Sl. No. 17 .	2	Acichera Laboratries	Acichem Laboratories
643	Sl. No. 20 . . .	2	Phalton Road	Palton Road
647	Sl. No. 132 . . .	2	P. O. Box No. 680	P. O. Box No. 1680
650	Sl. No. 215 . . .	..	Sobhagnmal Building	Sobhagmal Building
650	Sl. No. 234 . . .	..	*Add* @ before Sl. No. 234.	
657	480 . . .	..	Sarta Bose	Sarat Bose
661	Heading GOVERNMENT DEPARTMENTS.	..	VII Govt. Deptts.	IV Govt. Deptts.
661	VII (a) . . .	..	General Govt.	Central Govt.
661	Sl. No. 10 . . .	..	General Excise	Central Excise
664	Sl. No. 40 . . .	..	Ananda Exporum	Ananda Emporium
664	Sl. No. 46 . . .	..	Sayaii Road	Sayaji Road

1	2	3	4	5
665	Sl. No. 65 . . .	..	Kolahpur	Kolhapur
669	Sl. No. 85 . . .	..	Nandea	Nanded
671	Item IX others . .	..	*IX others	IX others
671	Last line . . .	..	Major etc.	*Major etc.
672	Appendix II . .	Heading	Commission	Commission's
673	Appendix III . .	Sl. No. 1	Alembic Chemicals	Alembic Chemical
684	Appendix V-A (1), Sub-para third.	2	antimalrials	antimalerials
684	Appendix V-A, Sub-para fifth.	2	Polling	Pooling
685	(4) Sub-para second .	2	Intermediates then	Intermediates than
685	(5)	3	importance the practice	importance in the practice
686	Sub-para third of the page	3	so adjust	so adjusted
687	(9) Sub-para third .	3	(2) No tessential	(2) not essential
689	Sub-heading self sufficiency	2 from bottom	Occasion	Occasional
691	Appendix V-D 1 (b) .	..	National Formula	National Formulary
701	Sl. No. 7, Col. 3 . .	..	Sulphadizine	Sulphadiazine
712	Sl. No. 3, Col. 3 . .	..	IHN	INH
712	Sl. No. 5, Col. 3 . .	..	Sulphadiazinel	Sulphadiazine
749	Headings . . .	1	Important control	Import Control
752	3	6	Certficate	Certificate

GIPN—S6—7 T.C. Bombay/71—10-4-72—500.

GOVERNMENT OF INDIA

MINISTRY OF PETROLEUM AND CHEMICALS & MINES & METALS

(Department of Petroleum & Chemicals)

New Delhi, the 30th April, 1970.

RESOLUTION

No. 3 (52)/68-CH.III.—The Government requested the Tariff Commission in August, 1966 to examine the cost structure of 18 essential drugs and make recommendations about their prices and some other related matters (*vide* former Ministry of Commerce letter No. 20(3)-Tar./66, dated the 25th August 1966). The Commission conducted the enquiry under Section 12(d) of the Tariff Commission Act, 1951, and submitted its Report in August 1968 (*vide* Tariff Commission's letter No. TC/ID/P-31/68, dated the 28th August, 1968).

2. The terms of reference to the Commission and the Summary of Recommendations and conclusions of the Commission are attached at Annexures I and II.

3. The 43 conclusions and recommendations of the Commission may be conveniently grouped together under the following heads :—

A. Cost structure of drugs and fair selling prices : Nos. 32 to 43.

B. Improvement in price control administration : Nos. 3 and 29.

C. Review and improvement of industrial licensing of drugs : 8, 9, 11, 12, 22 to 27.

D. Standards and quality of drugs and administration of the control law : 4 to 7, 10,19, 20 and 28.

E. Imports and exports of drugs : 14, 15, 30 and 31.

F. General : 1, 2, 13, 16, 17, 18 and 21.

4.0. Government's decisions are as follows:—

A. Cost structure of drugs and fair selling prices

4.1. The prices of the following 17 drugs shall be as follows:—

	Prices to be fixed by Govt.
1. Vitamin A	Rs. 391·00/1000mu
2. Vitamin C	Rs. 72·70/Kg.
3. Sulphadiazine	Rs. 58·89/Kg.
4. Tetracycline HCD	Rs. 850/Kg.
5. Chloroquin Phosphate	Rs. 259·53/Kg.
6. Streptomycin	Rs. 295/Kg.
7. Chloremphenicol	Rs. 357·66/Kg.
8. Amodiaquin	Rs. 106·91/Kg.
9. Chlorpropamide	Rs. 95·60/Kg.
10. Tolbutamide	Rs. 74·16/Kg.
11. Prednisolone	Rs. 11,946·21/Kg.
12. I.N.H.	Rs. 126·16/Kg. (if manufactured through indigenous picolines and Rs. 66·79/Kg. if manufactured through imported cyanopyridines).
13. P.A.S.	Rs. 31·28/Kg.
P.A.S. Acid	Rs. 41·83/Kg.
14. Iodochloro-Hydroxyquinclene	Rs. 65·68/Kg. (for production from basic stage), and Rs. 45·14/Kg. (for others).
15. Penicilln :	
Potassium	Rs. 0·40/MU
Procaine	Rs. 0·50/MU
Sodium	Rs. 0·50/MU
Potassium V	Rs. 0·80/MU
16. Tetanus Anti-toxin	Not to be fixed for the present. Price will be fixed when bulk supplies are made by the producers.
17. Vitamin B12	Rs. 100/gm.
18. Insulin	Rs. 4900/MU

4.2. As regards formulations, the Government have decided to bring the 49 formulations studied by the Commission as well as all other formulations within a system of price control the main features of which are :

(i) the prescription of a formula for price fixation, namely

$$RP=(MC+CC+PC) \times \left(\frac{1+MU}{100}\right)$$

where RP is retail price,

MC is materials cost and includes the cost of the basic drugs and pharmaceuticals acids;

CC is the conversion cost or the cost of formulation;

PC is the packing charges and includes the cost of packing materials and packaging expenses; and

MU is the mark-up and is meant to cover forwarding charges, promotion expenses, after sales services and trade commission right up to the retail level.

(ii) the prescription of norms for determining the individual components of the formula.

(iii) the fixation of mark-up, for arriving at retail prices, at 75% of the manufacturers' cost, in the case of all existing ordinary drugs, a higher mark-up of 100% for a period of three years in respect of new products evolved as a result of special product development work and 150% for a period of not more than five years in the case of new drugs which are products of original research containing new therapeutic ingredients within the meaning of clause 6(B) of Drugs Prices (Display and Control) Order, 1966.

(iv) provision for a higher mark-up in respect of formulations of non-essential bulk drugs (not being products of original research) not exceeding the ceiling of 150% subject to the manufacturing units concerned observing certain procedure such as maintenance of separate accounts, etc., in order to encourage marketing of selected products of importance to the national health and well being, and promote exports, etc., while at the same time keeping the overall margin within the reasonable limit; and

(v) Opportunity to the industry to self-discipline itself in accordance with the above principles subject to Government's supervision and powers of refixation.

4.3. The margins for the trade shall be different for ethical drugs and non-ethical drugs as recommended by the Commission: 12% for the retailer and 8 per cent for others in the case of ethical drugs and 10% for retailers and 5% for others in the case of non-ethical drugs, calculations being made on the basis of retail prices fixed as above.

4.4. A suitable Control Order incorporating the above point will be promulgated soon.

B. Improvement in price control administration

5. It has been decided to strengthen and streamline the machinery dealing with price control administration. For this purpose a suitable Committee will be set up either in the Ministry of Petroleum & Chemicals & Mines & Metals or under the aegis of Bureau of Industrial Costs and Prices.

C. Review and improvement of industrial Licensing of drugs

6. Licensing procedures will be tightened up with a view to remove the anomalies pointed out by the Commission. The circumstances in which excesses over licensed capacities have come into being will be investigated and regularised wherever necessary on condition that a reasonable portion of the benefits of the economies of scale inherent in larger capacities is made available to the society at large either through exports or lower prices.

D. Standards and quality of drugs and administration of the control law

7. An effort is being made to evolve acceptable and convenient generic names.

E. Imports and Exports of drugs

8. The Government agree that some system of pooling is desirable with a view to ensure the availability of raw materials and intermediates at the same rates for different manufacturers and that no unfair advantage accrues to a particular manufacturer or a group of manufacturers. Canalisation of the import of bulk drugs wherever possible is the accepted policy of the Government.

F. General

9.0. Government do not accept the recommendations of the Commission on the banning of the use of capsules.

9.1. Government have noted the general recommendations Nos. 16, 17 and 21 and suitable action will be taken on them wherever possible.

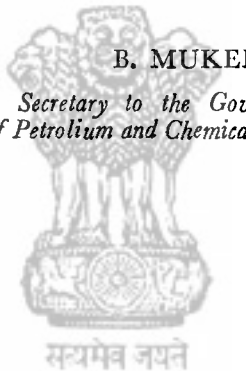
10. In conclusion, Government places on record its appreciation of the work done by the Tariff Commission and the report submitted by it.

ORDER

ORDERED that a copy of the resolution be published in the Gazette of India and a copy thereof communicated to all concerned.

B. MUKERJI,

Secretary to the Government of India,
Ministry of Petrolium and Chemicals and Mines & Metals.

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ANNEXURE I

TERMS OF REFERENCE

(1) To examine the cost structure of eighteen specified drugs and recommend to what extent the prices of the drugs can be lowered taking into consideration among other factors the following :

(a) Capital outlay including plant and machinery in relation to (i) actual production and (ii) potential capacity.

(b) Prices and quantities of raw materials and intermediates.

(c) Operation efficiencies of the processes.

(d) Allocation of direct overheads particularly large sums spent on advertisements, distribution of free samples, employment of highly paid salesman, sales promotion activities and other incentives.

(e) Prices at which similar products can be manufactured by small scale manufacturers who do not come within the purview of Industries (Development and Regulation) Act.

(f) To determine the prices at which the bulk drugs should be made available to other processers.

(2) To examine and recommend to what extent prices of essential formulations of the drugs specified can be reduced taking into account among other factors, the following :

(a) Difference in prices of the formulations when sold under brand names and common names, and prices quoted against Government tenders and to the general public.

(b) Indirect elements such as management expenses, promotional expenses and sampling.

(c) Reasonableness of cost of containers, printing of labels, leaflets and other literature.

(d) Prices at which such formulations are sold by manufacturers to Government *vis-a-vis* to prices at which bulk drugs manufactured by them are sold to other formulators.

(e) To determine the reasonable relationship between ex-factory cost of a finished preparation and its consumer prices.

(f) Other factors mentioned under first terms of reference (1) which are relevant.

(3) To recommend the minimum and maximum margin of profit covering all stages from the producer to the ultimate consumer.

(4) To recommend measures necessary to bring down the level of prices of basic drugs, pharmaceutical chemicals and intermediates and formulations of drugs.

(5) To make any other recommendations which are considered relevant and which may have a bearing to bring about reduction in the cost of production and sale of drugs in India.

ANNEXURE II

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Our conclusions and recommendations are summarised below :—

(1) Though the actual terms of reference relate to price reduction we have interpreted the reference in terms of the provisions of Section 12(d) of the Tariff Commission Act as an inquiry on prices of drugs.

(Paragraph 1·2)

(2) The scope of the inquiry covers (1) the 18 specified drugs sold in bulk; (2) single drug formulations of the specified drugs each containing any one of the specified drugs as its major therapeutic ingredient; and (3) multiple drug formulations of the specified drugs each containing two or more of the specified drugs only without addition of drugs outside the list.

(Paragraph 2·2)

(3) The difficulties mentioned by the Director, Drugs Control Administration, Maharashtra in the implementation of the Drugs Prices (Display and Control) Order, 1966 may be considered and suitable modifications introduced.

(Paragraphs 4.2.9 and 4.2.10)

(4) There ought to be uniformity of standards of administration, testing approval and other matters regulating manufacture of drugs. Policies may be devised and implemented in such a way that the present disparity in these standards is removed.

(Paragraph 4.3.5)

(5) Steps may be taken both by Government and by the drugs and pharmaceuticals industry to arrive at uniform classifications and sub-classifications of the basic drugs. Information may be collected and published for these on uniform lines.

(Paragraph 6.1.4.)

(6) Steps may be taken to ensure that State Drugs Controllers maintain records of the licences issued by them to manufacturers of drugs and these records should be readily available. It is also desirable that the list of such licences is published periodically on a Central basis for the whole country and it should contain the names of the units with location, year of grant of licence, drugs and formulations specified in the licence, installed capacity and annual production in terms of the quantity of formulations and drugs to be manufactured or suitable aggregates of the same.

(Paragraph 6.3.3.)

(7) Even though there are more than 2,000 small scale units and each one functions under a licence, very little information is available in respect of their activities and contribution to the pharmaceutical industry. The State Drugs Controllers should collect information annually in respect of the small scale units on the lines indicated in paragraph 6.3.3.

(Paragraph 6.3.3.)

(3) There are cases where the licensed capacities of units for manufacture of basic drugs are substantially higher than the capacities installed. While it is desirable to recognise the higher installed capacities where these have been established, it would be equally advisable to reduce licensed capacities where these have not been set up within the period stipulated for installation. This would be conducive to more healthy growth of the industry and would lead to more scientific assessment of the requirements of the industry particularly in regard to foreign exchange and the size of other supporting industries producing raw materials.

(Paragraph 7.1.6)

(9) In the drugs and pharmaceuticals industry as in many other industries, on the one hand, quite a number of licences issued for installation and expansion have remained dormant, on the other, there are numerous cases where installed capacity has exceeded the licensed capacity and been permitted to so exceed with *ex-post facto* approval in selected instances on the ground of increased production achieved and refusal in others. There is no uniform or firm policy at work in this regard. It would be opportune to make a thorough review of the working of the Industries (Development and Regulation) Act and the Rules and actual procedures adopted in granting the licences and approval or disapproval of changes in capacity from time to time.

(Paragraph 7.1.7)

(10) Suitable additions may be made to the Drugs and Cosmetics Rules for specifying the capacity of small scale units licensed or approved to manufacture basic drugs.

(Paragraph 7.1.8)

(11) The under-utilisation of capacity for the specified basic drugs does not reveal a healthy picture of the drugs industry. Extensive replanning is needed for achieving greater utilisation of capacities especially in the case of the units manufacturing the specified basic drugs.

(Paragraph 8.2.2.)

(12) Steps need to be taken to ensure that the units licensed to manufacture basic drugs set up capacity within a stipulated period of time or the licence should be revoked. In the case of drugs which have to be imported owing to lack of adequate capacity, this principle should be enforced with greater vigour.

(Paragraph 9·4)

(13) Our estimates of consumption of the specified basic drugs for the years 1968, 1969 and 1970 are given in Table 11.4.

(Paragraph 11.5)

(14) For raw materials of which indigenous supplies are available, imports need to be discouraged, even if the cost of the imported material is lower than that of the indigenous one. Where the indigenous supply needs to be supplemented by partial imports, it would be desirable to ensure that some system of pooling is attempted so that the raw materials are available at the same rates to the different manufacturers and there is no unfair advantage to a particular manufacturer which is not available to the rest.

(Paragraph 12.1.5)

(15) It would be desirable to permit imports at concessional rates of customs duty in respect of specific raw materials and intermediates which are needed by the drugs and pharmaceuticals industry, until such time as indigenous capacities for such raw materials and intermediates are set up.

(Paragraph 12.1.5)

(16) A stage has now been reached when slaughter houses have to be used not only for providing meat as a an item of food but also as sources of some of the important medicinal and biological raw materials. The States must therefore take in hand the regulation of large slaughter houses in such a way that the by-products are not wasted but can be retrieved and utilised for medicinal and therapeutic purposes.

(Paragraph 12.2.8)

(17) The quality of materials like glass containers, rubber stoppers and aluminium strips and the lack of uniformity in size need the close attention not only of the industry but also of Government and its various agencies which control and regulate production and quality in order to ensure that the indigenous industry is not found wanting even in those spheres where self-sufficiency is claimed but has not been achieved owing to lack of quality and conformity to specifications. Attention needs also to be paid very closely to the arrangements for raw materials and intermediates not produced by making their supply certain. Schedules need to be drawn up for this purpose in order to insure that with a certain degree of vigilance of programme planning uncertainties are eliminated.

(Paragraph 12.2.8)

(18) It would be desirable to emulate the example of many advanced countries of Europe, particularly Denmark where no drugs in the form of capsules are marketed and drugs are sold in the form of tablets so that the use of imported Gelatine may be eliminated and foreign exchange saved.

(Paragraph 12.2.8)

(19) The existing legislation in our country recognises both generic names as well as brand names, but it is incumbent on the manufacturer to enter the generic name also prominently on the container. It would be desirable to revise generic names and introduce an abbreviated nomenclature for the purpose of drug manufacture with short, distinctive and easily spelt out names.

(Paragraph 13.25)

(20) Wherever preparations are prescribed in the form of combinations of two or more ingredients it should be incumbent on the manufacturers who market such combinations to present to the Drugs Controller, Government of India, pharmacological and clinical data not only to prove the efficacy but also the superiority of such combinations over the straightforward preparations included in the pharmacopoeia or the National Formulary. When such clinical data are presented the manufacturer should also suggest a generic name for it which, if acceptable, would form a generic name for that product and, if not acceptable, it may be open to the controlling authority to suggest an alternative generic name.

(Paragraph 13.26)

(21) The Patent Law is essentially meant to encourage inventions and in the national interest. Hence, all precautions need to be taken to see that patents which are granted in our country either in respect of indigenous or foreign inventions are not abused, *i.e.*, are not utilised to prevent further development

(Paragraph 14.10)

(22) In the interests of saving of foreign exchange as well as possible economy of costs Parke-Davis, a manufacturer of the basic drug, Amodiaquin, should manufacture 4:7 dichloroquinoline from metachloro aniline, particularly when another unit with lesser facilities can do so and it should not therefore be allowed to import this intermediates. On the other hand, if it is not possible to do so, Bengal Immunity Co. should step up its production of 4:7 dichloro quinoline, so that it can meet the demand of other units also.

(Paragraph 15.7.1)

(23) It would be desirable for the other units producing the basic drug chlorpropamide to utilise the same process as adopted by Bengal Immunity Co. or alternatively a more efficient one or purchase locally produced intermediates.

(Paragraph 15.7.1)

(24) 8-hydroxyquinoline or dichloronitrobenzene needed for the manufacture of Iodo-chlor-hydroxy-quinoline should be produced locally.

(Paragraph 15.7.1)

(25) It is desirable to go into the reasons for the high cost of production of Vitamin-A by Glaxo Laboratories and if they are due to any process deficiencies, the unit should adopt the more efficient process of Roche Products.

(Paragraphs 15.7.2 and 28.2.2.)

(26) Sarabhai Merck should pay serious attention to the reasons for the low yield of Vitamin-C obtained by it.

(Paragraph 15.7.3)

(27) It is relevant to consider whether manufacture of sulphadizine involving a perpetual drain of foreign exchange for importing raw materials should be continued once the manufacture of sulphadimidine from predominantly indigenous raw materials is established.

(Paragraph 15.7.4)

(28) In order to have a more correct picture of the extent to which substandard drugs are being produced in the country it would be desirable to have analysis separately for generic as well as brand name products and also by units in the large scale as well as the samll scale sectors.

(Paragraph 17.13)

(29) The anomalies pointed out by the manufacturers associations in the procedures of Central and State Excise Authorities should be removed.

(Paragraph 19.4.4)

(30) Imports of basic drugs should always be related to the requirements of the country. Indian economy has not yet reached a stage and particularly in the chemical and pharmaceutical industries, where it can be exposed to competition from abroad or expected to establish its own market in the international field and compete at the level of international prices which in many cases are much lower than indigenous prices prevailing in the country of origin. This industry, like other Indian industries, has been enjoying protection in the

form of quantitative restrictions of imports and if such protection is withdrawn all of a sudden and the industry is exposed to foreign competition, disastrous consequences are likely to ensure. These have been amply demonstrated during our inquiry for the 18 drugs, when in the case of not less than six items, the fall in the domestic production and setback to the industry has resulted from unplanned imports based on such estimates of production and demand, which were neither realistic nor helpful to the consolidation and development of the domestic units. Basic manufacture of drugs in the country has been established after considerable efforts and no steps should be taken which may retard the progress already made.

(Paragraph 20.7)

(31) Unless the costs of production of basic drugs are brought down drastically, it is not possible to build up any substantial exports, except at the cost of the internal market and by selling our products at less than half the cost.

(Paragraph 21.7)

(32) Sales promotion may be considered unobjectionable in the case of new drugs provided that no unsubstantiated claims are made but it should not be as relentless as it appears to be at the present moment in the case of already well established drugs and in any case the total expenditure on sales promotion should not exceed ten per cent of the ex-factory cost of the drug.

(Paragraph 22.2.4)

(33) The domestic prices of the selected drugs are generally very much lower in most cases in other countries.

(Paragraph 24.5)

(34) By and large, the prices in the Indian market of formulations compare favourably with the prices of similar formulations in the domestic markets of other countries.

(Paragraph 24.7)

(35) The price disparities of drugs sold under brand names and generic names are not because of these names but because of the units which manufacture them. Price differentials are in the present analysis more a factor of standing and size of the units than of the brand name itself.

(Paragraph 24.12)

(36) A commission of 25 per cent (15 per cent to the retailer and 10 per cent to other intermediaries), may be allowed for ethical drugs. The commission allowed for non-ethical drugs may be 15 per cent, *i.e.*, 10 per cent for the retailer and 5 per cent for other intermediaries.

(Paragraph 26.4)

(37) The sales turnover is roughly equivalent to the capital employed in the case of manufacturers of basic drugs, very much higher in the case of composite units and the highest for formulators only. Manufacture of basic drugs is a capital-intensive activity and the profitability is to be judged from the point of view of the capital employed. On the other hand, formulating activity by itself is not capital-intensive and profitability is related to the sales turnover since capital employed is about half of the amount of sales turnover.

(Paragraph 27.4.8)

(38) The fair ex-works selling prices recommended by us for the specified basic drugs are given in Table 28.2.

(Paragraph 28.20.1)

(39) The fair selling prices recommended by us for the selected essential formulations are given in Tables 29.2 and 29.3. Additional charges for dispensing tablets and capsules in loose form may be allowed but no addition is needed in the case of vials, ampoules and tablet strips dispensed from larger packings.

(Paragraphs 29.9 and 29.10)

(40) The selling prices recommended by us for formulations are generally lower than the prevailing market prices, although in some cases these may appear to be high. Invariably in all such cases the present prices are based on imported materials the prices of which are lower than those of indigenous materials. The prices worked out by us appear therefore to be higher since those are based on indigenous raw materials. If such drugs continue to be formulated by using imported raw materials, the prices recommended by us would need to be revised.

(Paragraph 29.11)

(41) The element of excise duty has not been taken into account in fixing prices of single drug formulations sold under generic names or brand names, although excise duty is payable on formulations sold under brand names. We do not see any reason to distinguish between brand name and generic name formulations and hope that the use of brand names would be discouraged.

(Paragraph 29.12)

(42) Our findings on cost of production of basic drugs by small scale units are given in paragraph 30.2.

(Paragraph 30.2)

(43) Small scale formulating units do not afford any particular economy in comparison with those of the organised sector.

(Paragraph 30.4)

Table–28.2

Fair ex-works selling prices recommended for basic drugs

1.	Vitamin A	Rs. 391·000 per 1000 m.u.
2.	Vitamin B12	Rs. 113·84 per gm.
3.	Vitamin C	Rs. 72·70 per kg.
4.	Sulphadiazine	Rs. 58·89 per kg.
5.	Penicillin Potassium G	Rs. 0·351 per m.u.
6.	Sodium Penicillin G	Rs. 0·399 per m.u.
7.	Procaine Penicillin	Rs. 0·336 per m.u.
8.	Potassium Penicillin V	Rs. 0·357 per m.u.
9.	Streptomycin	Rs. 285·00 per kg.
10.	Chloramphenicol	Rs. 357·66 per kg.

11. Tetracycline	Rs. 709·25 per kg.
12. Amodiaquin	Rs. 106·91 per kg.
13. Chloroquin Phosphate . . .	Rs. 259·53 per kg.
14. Iodo-Chlorophydroxyquinoline .	Rs. 45·14 per kg.
15. Chlorpropamide . . .	Rs. 95·60 per kg.
16. Tolbutamide	Rs. 74·16 per kg.
17. Insulin	Rs. 5136·56 per m.u.
18. I.N.H.	Rs. 91·58 per kg.
19. P.A.S.	Rs. 31·28 per kg.
20. P.A.S. Acid	Rs. 41·83 per kg.
21. Tetanus Anti-toxin . . .	no price fixed
22. Prednisolone	Rs. 11,946·21 per kg.

CONTENTS

APPENDICES

REPORT ON THE FAIR SELLING PRICES OF DRUGS AND PHARMACEUTICALS

CHAPTER 1

ORIGIN OF THE CASE AND REFERENCE TO THE COMMISSION

1.1. Inquiry into the prices of drugs and pharmaceuticals was entrusted to us under Section 12(d) of the Tariff Commission Act, 1951 through the letter of the Government of India, Ministry of Commerce, dated August 25, 1966. In making this reference to us Government observed that prices of drugs and medicines in India were reported to be high as compared to the prices of drugs and medicines prevailing in other countries and suggested that the matter may be enquired into.

The terms of reference are :—

(1) To examine the cost structure of eighteen specified drugs and recommend to what extent the prices of the drugs can be lowered taking into consideration among other factors the following :—

(a) Capital outlay including plant and machinery in relation to (i) actual production and (ii) potential capacity.

(b) Prices and quantities of raw materials and intermediates.

(c) Operational efficiencies of the processes.

(d) Allocation of direct overheads particularly large sums spent on advertisements, distribution of free samples, employment of highly paid salesman, sales promotion activities and other incentives.

(e) Prices at which similar products can be manufactured by small scale manufacturers who do not come within the purview of Industries (Development and Regulation) Act.

(f) To determine the prices at which the bulk drugs should be made available to other processers.

(2) To examine and recommend to what extent prices of essential formulations of the drugs specified can be reduced taking into account among other factors, the following :—

(a) Difference in prices of the formulations when sold under brand names and common names, and prices quoted against Government tenders and to the general public.

(b) Indirect elements such as management expenses promotional expenses and sampling.

(c) Reasonableness of cost of containers, printing of labels, leaflets and other literature.

(d) Prices at which such formulations are sold by manufacturers to Government *vis-a-vis* the prices at which bulk drugs manufactured by them are sold to other formulators.

(e) To determine the reasonable relationship between ex-factory cost of a finished preparation and its consumer prices.

(f) Other factors mentioned under first terms of reference (1) which are relevant.

(3) To recommend the minimum and maximum margins, of profit covering all stages from the producer to the ultimate consumer.

(4) To recommend measures necessary to bring down the level of prices of basic drugs, pharmaceutical chemicals and intermediates and formulations of drugs.

(5) To make any other recommendations which are considered relevant and which may have a bearing to bring about reduction in the cost of production and sale of drugs in India.

1.2. At the very outset a question arose whether the Commission's inquiry would be confined only to the examination of the issues of reduction of prices or was the Commission to adopt the usual procedure for working out the fair prices and making recommendations in respect of them irrespective of the fact whether reduction was occasioned or not. Though the actual terms of reference relate to price reduction we have interpreted

the reference in terms of the provisions of Section 12(d) of the Tariff Commission Act as an inquiry on prices of drugs. The next question that arose therefore at the early stages of the inquiry was whether we were in a position to make our recommendations to the Government if in any particular instance we came to the conclusion that the prices could not be reduced or that they were to be raised. In consideration of the provisions of the Act under which we are empowered to function, we came to the conclusion that we were not precluded from making recommendations with regard to the maintenance of *status quo* or if necessary even raising prices of any of the items to be inquired into by us. We have therefore proceeded to conduct this inquiry in accordance with these principles without any bias or pre-supposition with regard to the merits of the prices prevailing today.

1.3. Item Nos. 1 (a), (b), (d) and (f), 2(b), (c), (e) and (f) constitute elements of cost analysis and have been dealt with in chapters 28 and 29, for each of the items whose fair selling prices have been determined by us. Item 1(e) contemplates the comparison of costs as between the small scale and the large scale manufacturers and the necessary analysis has also been undertaken in chapter 30. Item Nos. 2(a) and (b) are not matters relating to cost analysis but refer to prices as they prevail now and have been dealt with in chapter 24. Item No. 1(c) is to a certain extent related to costing, but it has been dealt with in a separate chapter 15.

CHAPTER 2

SCOPE OF THE INQUIRY

2.1. The eighteen basic drugs referred to us for price investigation have been classified into nine categories namely, vitamins, sulphanamides, antibiotics, anti-malarial drugs, anti-dysentry drugs, anti-diabetic drugs, anti-tubercular drugs, anti-toxins and others. In the case of some of the drugs only the broad basic classification was given which was in consultation with the Ministry of Petroleum and Chemicals further classified in order to include salts and derivatives. A list of the basic drugs as mentioned by Government in their reference grouped by the categories mentioned above together with the salts and other derivatives of the basic drugs is as given in Table 2.1 :—

TABLE 2.1

Specific basic drugs

Category/Name of basic drugs specified by Government	Its salt and derivatives specified by Government
1	2
Vitamins :	
1. Vitamin-A . . .	Vitamin-A
2. Vitamin-B12 . .	(a) Cyano-cobalamin (b) Hydroxo-cobalmin
3. Vitamin-C . . .	Ascorbic Acid
Sulphanamides	
4. Sulphadiazine . .	Sulphadiazine
Antibiotics :	
5. Penicillin . . .	(a) Benzyl Penicillin Potassium (b) Benzyl Penicillin Sodium (c) Procaine Benzyl Penicillin (d) Potassium Phenoxy methyl penicillin

TABLE–2.1—*Contd.*

1	2
6. Streptomycin. . .	(a) Streptomycin Sulphate (b) Di-hydro-streptomycin Sulphate
7. Chloramphenicol . .	Chloramphenicol
8. Tetracycline . . .	(a) Tetracycline Hydrochloride (b) Oxytetracycline Hydrochloride (c) Chlortetracycline Hydrochloride (d) Demethyl Chlortetracycline Hydrochloride.
Anti-Malarial Drugs	
9. Amodiaquin . . .	Amodiaquin Hydrochloride
10. Chloroquin . . .	Chloroquin Phosphate
Anti-Dysentry Drugs	
11. Iodo-chlor-hydroxy-quinoline	(a) Iodo-chlor-hydroxy-quinoline (b) Di-iodo-hydroxy-quinoline.
Anti-Diabetic Drugs	
12. Chlorpropamide .	Chlorpropamide
13. Tolbutamide . .	Tolbutamide
14. Insulin . . .	Insulin Plain
Anti-Tubercular Drugs	
15. I.N.H.	Iso-Nicotonic Acid Hydrazide
16. P.A.S.	(a) Para-amino-salicylic acid (b) Para-amino-salicylic acid sodium salt.
Anti-Toxin :	
17. Tetanus Anti-toxin .	Tetanus Anti-toxin
Others :	
18. Prednisolone . . .	Prednisolone

2.2. Government have asked us to examine and recommend prices of essential formulations of these specified drugs. The number of formulations of the specified drugs being very large, the

Government of India were addressed for clarification with regard to the essential formulations of the specified drugs which they desired to be covered by our inquiry. The Ministry of Petroleum and Chemicals consulted the Directorate General of Technical Development (D. G. T. D.) and forwarded a note from the latter which stated that it would suffice if we considered single drug formulations only, that is, formulations consisting of any one of the specified drugs as a major therapeutic ingredient. The Drugs Controller, Government of India on the other hand expressed the view that in addition to covering single drug formulations the scope of the Commission's inquiry should also cover other formulations containing two or more of the 18 specified drugs. With the help of the discussions held with the representatives of the drugs manufacturers and also two of the Assessors who represented in their individual capacity both the D.G.T.D. as well as the drugs Controller, Government of India, we dicided that the scope of the inquiry should cover (1) the eighteen specified drugs as sold in bulk; (2) single drug formulations of the specified drugs each containing any one of the specified drug as its major therapeutic ingredient; and (3) multiple drug formulations of the specified drugs each containing two or more of the specified drugs only without addition of drugs outside the list. As a result we selected 39 essential single drug formulations of the specified drugs and 30 essential multiple drug formulations. The cost investigations of the Commission were therefore limited to the eighteen specified basic drugs and 69 formulations. The names of the single drug formulations together with basic drugs which constitute their major therapeutic ingredients are as given in Table 2.2. :—

TABLE 2.2.

Single drug formulations Selected by the Commission for cost investigation

Sl. No.	Basic drug specified by Government	Single drug formulations selected by the Commission
1	2	3
1	Vitamin A . . .	(1) Vitamin A Injection (2) Vitamin A Tablets
2	Vitamin B12 . . .	(3) Cyanocobalamin Injection (4) Hydroxocobalmin Injection
3	Vitamin C . . .	(5) Ascorbic Acid Tablets (6) Ascorobic Acid Injection

TABLE 2.2—*Contd.*

1	2	3
4	Sulphadiazine . . .	(7) Sulphadiazine Tablets
5	Pencillin	(8) Sodium Penicillin G Injection
		(9) Procaine Penicillin G Injection
		(10) Penicillin G Procaine fortified with Penicillin G Injection
		(11) Penicillin Tablets
6	Streptomycin . . .	(12) Streptomycin Sulphate Injection
		(13) Dihydrostreptomycin Sulphate Injection
7	Chloramphenicol . .	(14) Chloramphenicol Capsules
8	Tetracycline . . .	(15) Tetracycline Capsules
		(16) Oxytetracycline Capsules
		(17) Chlortetracycline Capsules
		(18) Chlortetracycline Ointment
		(19) Chlortetracycline Spersoid powder
		(20) Demethyl Tetracycline Capsules
9	Amodiaquin . . .	(21) Amodiaquine Hydrochloride Tablets
10	Chloroquin . . .	(22) Chloroquin Phosphate Tablets
		(23) Chloroquin Sulphate Tablets
11	Iodo-chlor-hydroxy-quinoline	(24) Iodo-chlor-hydroxy-quinoline Tablets
		(25) Di-iodo-hydroxy-quinoline Tablets
12	Chlorpropamide . .	(26) Chlorpropamide Tablets
13	Tolbutamide . . .	(27) Tolbutamide Tablets
14	Insulin	(28) Insulin Injection
		(29) Insulin Zinc Suspension Injection
		(30) Insulin Protamin Zinc Injection
		(31) Isophane Insulin Injection
15	I.N.H.	(32) I.N.H. Tablets
16	P.A.S.	(33) P.A.S. Sodium Tablets
		(34) Sodium P.A.S. Granules
		(35) Calcium P.A.S. Tablets
		(36) Calcium P.A.S. Granules
		(37) P.A.S. Acid Granules
17	Tetanus Anti-toxin . .	(38) Tetanus Anti-toxin Injection
18	Prednisolone . . .	(39) Prednisolone Tablets.

2.3. In the case of single drug formulations it is possible to describe them by their generic names adopting basically the name of the specified drug and this has been generally done. In the case of multiple drug formulations it is not possible to identify the formulations by the generic name of the drugs contained therein, for the reason that each formulation contains two or more basic drugs as the major therapeutic ingredients. If we were to adopt a classification as for the single drug formulation, there would be only 10 categories of multiple drug formulations and in each of these there are a number of drugs under brand names. We have therefore classified them by their brand names for the sake of convenience. The number of the multiple drug formulations and their brand names are as given in Table 2.3:—

TABLE 2.3

Multiple-drug formulations Selected by the Commission for cost investigation

Sl. No.	Nature of multiple-drug formulation	Brand name (of producers) selected
1	2	3
I.	Combination of different forms of Penicillin drug (Injections)	(1) PPF-4 Injection (Pfizer) (2) PPF-20 Injection (Pfizer) (3) CRYS-4 Injection (Sarabhai Chemicals) (4) CRYS-8 Injection (Sarabhai Chemicals) (5) CRYS-12 Injection (Sarabhai Chemicals)
II.	Combination of different forms of Streptomycin drug (Injections)	(6) Comycin Injection (Glaxo Labs.) (7) Streptoduocin Injection (Hindustan Antibiotics) (8) Duostrep Injection (Merk Sharp)
III.	Injection of Penicillin and Streptomycin	(9) Streptopenicillin (Hindustan Antibiotics) (10) Mystrepton (Glaxo Labs.) (11) Dupenmycin (Pfizer) (12) Combiotic (Pfizer) (13) Dicrystin-5 (Sarabhai Chemicals)

TABLE 2.3—*Contd.*

1	2	3
		(14) Penmyn Fortis (Sarabhai Chemicals)
		(15) Seclomycetin Forte (Glaxo Labs.)
IV.	Capsules of Chloramphenicol and Streptomycin Sulphate	(16) Chloramphycin S (Boehringer-Knoll)
		(17) Gurcomycetin Strep (Gurco Pharma)
		(18) Chlorostrep Kapseals (Parke-Davis)
		(19) Chlorostrep Suspension (Park-Davis)
V.	Capsules of Chloramphenicol and Tetracyclines	(20) Tetrachlore (Gurco Pharma)
VI.	Injection of Tetracyclines and Vitamin C	(21) Achromycin Intravenous (Lederle-Cyanamid)
VII.	Ointment of Prednisolone and Chloramphenicol	(22) Precin fortified with Opthalmic ointment (Alembic Chemical)
VIII.	Tablets of Iodo-chlor-hydroxy-quinoline, Tetracyclines and Chloroquin Phosphate	(23) Tequinopil (OPIL)
IX.	Tablets of Di-iodo-hydroxy-quinoline and Chloroquin Phosphate	(24) Dinochlor (Bengal Immunity)
		(25) Nivembin (May and Baker)
		(26) Diquinate (Martin and Harris)
X.	Tablets of I.N.H. and P.A.S. .	(27) Isocadipas (Cadila)
		(28) Isocalamisal (Zandu)
		(29) Pasimecin (Alliance Trading)
		(30) L.C.P. (Gujarat Pharmaceuticals).

CHAPTER 3

METHOD OF INQUIRY

3.1. Questionnaires were addressed to the basic drug manufacturers and formulators, hospitals and dealers in drugs and medicines, inviting data and their views on specific issues. Associations of producers as well as associations of trade were supplied with the relevent questionnaires and asked to furnish memoranda to the Commission on various issues concerning the inquiry. The D. G. T. D., the Drugs Controller, Government of India, the Director General of Supplies and Disposals and Government Medical Stores were addressed for information on specific issues connected with their departments. The Indian Embassies/High Commissions in the principal drug manufacturing countries particularly in France, Hungary, Italy, Japan, Switzerland, U. K., U. S. A., U. S. S. R., and West Germany were addressed regarding the local and export prices in these countries for the specified basic drugs and their formulations. A separate questionnaire was issued to State Drugs Control Administrations calling for information with particular reference to the administration of the Drugs and Cosmetics Act, 1940. A press note was issued inviting parties interested in the inquiry to obtain questionnaires and submit their views and suggestions. A list of those to whom questionnaires/letters were issued and those who replied is given in Appendix I. The extent of response from various parties concerned with the inquiry is indicated in Appendix II.

3.2. The representatives of the Organization of the Pharmaceutical Producers of India, Bombay and those of the Indian Drug Manufacturers Association, Bombay met the Commission separately and apprised it of their views.

3.3. Under the provisions of Section 18 of the Tariff Commission Act, Government may appoint as assessors one or more persons possessing special knowledge of any matter relevant to the inquiry to assist the Commission. To assist us Government appointed Shri S. K. Borker, the then Drugs Controller (India), Directorate General of Health Services, Dr. B. Shah, Industrial Adviser (Drugs), Directorate General of Technical Development, Dr. K. Ganapathi, Director, Regional Research Laboratory of the Council of Scientific and Industrial Research, Jammu and

as an alternate of Shri S. K. Borkar, Dr. S. S. Gothoskar, Deputy Drugs Controller, Government of India, Western Region, Bombay.

3.4. The Commission held discussions with the Officers mentioned above on various points of the inquiry on a number of occasions.

3.5. The names of drugs and pharmaceutical units visited and the dates of visit by the Commission and its officers are given in Appendix III.

3.6. A public inquiry was held on the 28th of February 1968. This was followeed by discussions with the representatives of the costed units from the 1st of March to the 9th of March 1968. A list of persons who attended the public inquiry is given in Appendix IV.

3.7. There are 34 large scale and 11 small scale units making a total of 45 which manufacture one or more of the basic drugs. Twentyone of the large scale units and three of the small scale were selected for cost examination of the basic drugs manufactured by them. Care was taken to ensure that where more than one unit manufactured a particular basic drug the cost of at least two units were examined. In the case of formulations 25 units in the large scale sector and four in the small scale sector making a total of 29 manufacturing one or more of the single or multiple drug formulations were taken up for costing. Of these units 19 are common to both basic drug manufacture and formulations. Of the total of 399 units manufacturing formulations who replied to our questionnaire ten were selected for cost examination. The classification of units by manufacturing activity and also the numbers of those selected for cost examination are as given in Table 3.1 :—

TABLE 3.1

Classification of manufacturing units Selected for costing

Particulars	Large scale units		Small scale units		TOTAL	
	Total	No. costed	total	No. costed	total	No. costed
1	2	3	4	5	6	7
1. Units making basic drugs only . .	4	3	7	2	11	-

TABLE 3.1—*Contd.*

1	2	3	4	5	6	7
2. Units making basic drugs and single drug formulations only . . .	15	11	1	Nil	16	11
3. Units manufacturing basic drugs as well as single and multiple drug formulations	15	7	3	1	18	8
4. Units manufacturing only single drug formulations . .	20	2	336	2	356	4
5. Units manufacturing only multiple drug formulations .	..	..	..	..	..	..
6. Units manufacturing single as well as multiple drug formulations . . .	8	5	44	1	52	6
TOTAL	62	28	391	6	453	34

CHAPTER 4

STATE CONTROLS RELATING TO THE INDUSTRY

4.1. Laws relating to the manufacture and sale of drugs:

4.1.1. It is strange that legislation in respect of manufacture and sale of drugs in India was not initiated with a view to regulating indigenous manufacturing activity but was occasioned by complaints of sub-standard and spurious drugs imported from abroad. As a result of these complaints which were voiced vehemently in the later twenties of this century, the Drugs Enquiry Committee was appointed in 1930 which submitted its Report in 1931 and made recommendations for the enactment of a comprehensive all-India legislation for the control of drugs and pharmacy, setting up of adequate machinery for the control, inspection and testing of drugs to ensure uniformity of proper standards and of purity and strength. The Committee also recommended the setting up of a Central Drugs Laboratory as well as laboratories in the States, the constituting of Central Pharmacy Council and State Pharmacy Councils and Registration Tribunals for regulating the education and profession of pharmacy and registration of pharmacists.

4.1.2. In the earlier period, there was only very sporadic and partial regulation of drugs and the earliest enactment in this respect was the *Opium Act of* 1878. The possession, transport, import as well as export and sale of opium were strictly regulated primarily to obtain revenue and secondarily with a vew to its use either as a narcotic or as a drug under restricted conditions. The Act empowers State Governments to make rules for regulating the possession, transport, import or export and sale of opium which is defined by the Act as (i) capsules of poppy, (ii) the spontaneously coagulated juice of such capsules and (iii) any mixture with or without neutral materials, of any of the above forms of opium, but does not include any preparation containing not more than 0·2 per cent of morphine or manufactured drug. The punishment for contravention of the provisions of this Act is imprisonment which may extend to one year or fine upto Rs. 1000 or both. The Act also provides for the confiscation of the opium in respect of which the offence has been committed. Under the Act, an officer of Departments of Excise, Police, Customs, Salt, Opium or Revenue, superior in rank to a peon or constable, has powers

to enter any building or place, sieze opium, detain, search and arrest any perosn whom he has reason to believe to be guilty of an offence under the Act. But if the officer acts without reasonable ground or acts vexatiously or unnecessarily, he is liable to punishment with fine not exceeding Rs. 500/-.

4.1.3. The next is the *Poisons Act of* 1919. The purpose of the Act was to consolidate and amend the law regulating the importation, possession an sale of poisons. Under this Act, the State Government has powers to regulate by rules the possession for sale and the sale, whether wholesale or retail, of any specified poison, to prohibit the importation into the State of any poison except under a licence and to regulate the grant of licences as well as the possession of any specified poison in certain local areas. The penalty for any breach of the rules relating to the possession for sale or the sale of poison and for unlawful importation is imprisonment upto three months or a fine of Rs. 500 or both, on first conviction and six months' imprisonment or a fine of Rs. 1000 or both, on second and subsequent convictions. Further, any poison in respect of which the offence has been committed is liable to confiscation along with the vessels, packages or coverings in which the poison is found. The provisions of this Act do not, however, interfere with anything done in good faith in the exercise of his profession as such by a medical or veterinary practitioner. Besides, the State Government may also declare that all or any of the provisions of this Act will not apply to any article or class of articles or exempt wholly or partially from the operation of the rules under the Act any person or class of persons in respect of any poison.

4.1.4. **The Dangerous Drugs Act, 1930.**—The purpose of this Act was to centralise and vest in the Central Government the control over the operations relating to dangerous drugs and to increase and render uniform penalties for offences relating to such operations. The Act provides that the Central Government may make rules permitting and regulating the cultivation of poppy and the manufacture of opium, the manufacture of manufactured drugs, other than prepared opium, import into and export from the States and the transhipment of dangerous drugs, other than prepared opium. The rules framed under the Act prescribe the form and conditions of licences for cultivation, manufacture, import, export and transhipment of poppy, opium and drugs as the case may be, the authorities by which such licences may be, granted and the fees to be charged. Further, in the case of import, export and transhipment the rules may prescribe the ports or places where any kind of dangerous drug may be imported, exported or transhipped. The State Government has control

over internal traffic in manufactured drugs and coca-leaf and is authorised to make rules permitting (a) the inter-State import and export, the transport, possession and sale of manufactured drugs, other than prepared opium and coca-leaf, and (b) the manufacture of medicinal opium or any preparation containing morphine, diacetylmorphine or cocaine from materials which the maker is legally entitled to possess.*

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*The products "manufactured drugs", "dangerous drugs" coca derivatives' medicinal hemp and opium derivatives referred to above are defined in the Act as under :

(a) The "manufactured drug" includes (i) all coca derivatives, medicinal hemp and opium derivatives and (ii) any other narcotic substance which the Central Government may declare to be "manufactured drug".

(b) The "dangerous drug" includes coca-leaf hemp and opium and all drugs manufactured out of those.

(c) Coca derivative means:

(i) crude cocaine that is, any extract of coca leaf which can used, directly or indirectly for the manufacture of cocaine,

(ii) ecgonine, that is, laevo-ecgonine having the chemical formula $C_9 H_{15} NO_3 H_{20}$ and all the derivatives of laevo-ecgonine from which it can be recovered;

(iii) cocaine that is methyl-benzoyl-laevo-ecgonine having the chemical formula $C_{17}H_{21}NO_4$, and its salts and

(iv) all preparations, officinal and non-officinal, containing more than 0.1 per cent, of cocaine;

(d) Medicinal hemp means any extract or tincture of hemp; and

(e) opium derivative means:

(i) Medicinal opium, that is opium which has undergone the processes necessary to adapt it for medicinal use in accordance with the requirements of the British Pharmacopoeia, whether in powder form or granulated or other-wise mixed with neutral materials;

(ii) Prepared opium, that is any product of opium obtained by any series of preparations designed to tarnsform opium into an extract suitable for smoking, and the dross or other residue remaining after opium is smoked;

(iii) morphine that is, the principal alkaloid of opium having the chemical formula $C_{17}H_{19}NO_3$ and its salts;

(iv) diacetylmorphine, that is the alkaloid, also known as diamorphine or heroin, having the chemical formula $C_{21}H_{23}NO_5$ and its salts; and

(v) all preparations, officinal and non-officinal, containing more than 0·2 per cent of morphine, or containing any diacetylmorphine;

The punishment for contravention of the provisions of the Act is imprisonment which may extend to two years or fine, or both. As in the Opium Act there is a provision in the Dangerous Drugs Act also empowering any officer of the department of Excise, Police, Customs, Salt, Opium or Revenue, superior in rank to a peon or constable to enter into any building or place, seize drugs and all materials used in the manufacture thereof which is liable to confiscation and detain, search and arrest any person whom he has reason to believe to be guilty of an offence under the Act. But, for acting without reasonable grounds or acting vexatiously and unnecessarily the officer is liable to be punished with a fine which may extend to Rs. 500/-.

4.1.5. The Chopra Committee to which reference has been made in detail in Chapter 5 submitted its report in 1930 and the drafting of a bill based on the recommendations of that Committee was started some time later. In the meanwhile as a result of the enactment of the Government of India Act 1935, the subject "drugs" became a provincial responsibility and the Centre was reponsible only for imports. Consequently a Drug Import Bill was placed for consideration before the Central Assembly in 1939. It did not find favour since almost all the States advocated the enactment of a uniform and a comprehensive law and in 1940 the Indian Drugs Bill was introduced in the Central Legislature and it was passed in the same year as the Drugs Act. The implementation of the Act, was however delayed. The main features of the Drugs and Cosmetics Act now amended, so far as State Governments are concerned, are control, manufacture, sale and distribution of drugs by the establishment of an adequate machinery consisting of licensing authorities, inspectors and Government analysts, establishment of State drug control laboratories and the framing of rules in consultation with the Drugs Technical Advisory Committee. So far as the Central Government is concerned, its responsibility is the control of standards of imported drugs and to make rules in consultation with the Drug; Technical Advisory Committee for regulating imports. In addition, the Central Government has to establish adequate machinery for administration as well as to set up a Central Drugs Laboratory. Two statutory bodies, namely the Drus Technical Advisory Body and the Drugs Consultative Committee were also required to be set up. The Drugs Technical Advisory Body was set up in 1942 and the Drugs Consultative Comittee in 1948. The rules under the Drugs Act were framed in 1946 and the Act as well as the rules thereunder were brought into force in 1947. The Act lays down minimum standares to be complied by the

locally manufacturered drugs as well as for imported drugs; their stocking, distribution and sale. While the Drugs Controller, Government of India, assisted by the Assistant Controllers at the ports exercises powers under the Act and Rules with regard to imported drugs, the State Drugs Controllers are given the powers of enforcement with regard to indigenous drugs. Any unit intending to manufacture drugs is required to obtain a manufacturing licence from the Drugs Controller of the State in which the factory is located. Before the licence is issued, the Drug Controller has to satisfy himself after due inspection of the premises under the provisions of the Act regarding hygienic conditions, equipments, qualified personnel and other requisite facilities available to the manufacturer. The State Drugs Controllers have aslo powers for periodical inspection of the premises, and testing of the products with the manufacturers, stockists, wholesalers or retailers to see that they conform to the prescribed minimum standards of quality. Every firm has to provide arragements for testing or analysis either in its own laboratory or in other institutions approved by the licensing authority to carry out such tests on behalf of the firm. The firms are required to test and analyse every batch of every drug or preparation manufactured by them. According to an amendment made in 1960 the Central Govt. assumed concurrent powers to appoint Inspectors, Analysts and to exercise powers of such officers as prescribed under the Act. The inspectors of drugs have to collect samples from the manufacturing premises as well as from the market to make an assessment in respect of quality of the product manufactured. Powers of penal action of prosecution or cancellation or suspension of licenses are vested in the State Drugs Controllers for the purpose.

4.1.6. There are provisions in the Act for proper packing, labelling, printing of manufacturing licence, date of manufacture of batch, date of expiry, date of potency of various medicines on the bottles and cartons etc. Certain specified medicines can be sold by retailers only under proper prescriptions from registered medical practitioners or hospital authorities.

4.1.7. **The Pharmacy Act.** was passed in 1948 to regulate the profession of pharmacy. The Act provides that the Central Government shall constitute the Central Council, a body corporate by the name of the Pharmacy Council of India for regulating the education and training of pharmacists in India. The Central Council is authorised, subject to the approval of the Central Government, to make regulations called the Educational Regulations prescribing the minimum educational qualifications as a pharmacist. The Educational Regulations may prescribe

(a) the nature and period of study and of practical training to be undertaken before admission to an examination ; (b) the equipment and facilities to be provided for students, and (c) subjects and standards of examination. Any authority in a State which conducts a course of study for pharmacists or holds an examination in pharmacy may apply to the Central Council for approval of the course or examination and the Central Council shall give its approval after making such inquiries as it thinks fit.

4.1.8. At the State level, the Act provides that the State Government shall constitute an individual State Pharmacy Council, or two or more State Governments may enter into an agreement to provide (a) for the constitution of a joint State Council for all the participating States, or (b) that the State Council of one State shall serve the needs of the other participating States. After its constitution the State Council has to maintain the Register of Pharmacists which shall include the full name and address of the registered person, the date of his first admission to the Register, his qualifications for registration, his professional address, etc. A person who (a) holds a degree or diploma in pharmacy or pharmaceutical chemistry or a chemist or druggist who (b) holds a degree of an Indian University in a subject other than pharmacy or pharmaceutical chemistry and has been engaged in the compounding of drugs in a hospital or dispensary for a total period of not less than three years, or (c) has passed the recognised examination for compounders and dispensers, or (d) has been engaged in the compounding of drugs in a hospital or dispensary or other place for a total period of not less than five years, is entitled to have his name entered in the first register on payment of the prescribed fee. The name of the registered pharmacist is liable to be removed from the Register, if (i) his name has been entered in the Register by error or on account of mis-representation or supression of a material fact, or (ii) he has been convicted of any offence or has been guilty of any infamous conduct in any professional respect, or (iii) the person employed by him for his business of pharmacy has been convicted of any such offence, or has been found guilty of any such infamous conduct. The penalty for falsely claiming to be a registered pharmacist is a fine extending to Rs. 500/- on first conviction and a term of imprisonment extending to six months or a fine not exceeding Rs. 1000/- or both, on any subsequent convictions.

4.1.9. **The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954.** provides for the control of advertisement of drugs in certain cases, to prohibit the advertisement for certain purpose, of remedies alleged to possess magic qualities

and to provide for matters connected there with. The word 'drug' referred to in the Act includes (i) a medicine for the internal or external use of human beings or animals; (ii) any substance intended for use in the diagnosis, cure, mitigation, treatment or prevention of diseases in human beings or animals; (iii) article, other than food, intended to affect or influence in any way the structure or any organic function of the body of human beings or animals.

4.1.10. The Act prohibits the publication of (i) any advertisement of drugs for the treatment of specified diseases or disorders, (ii) advertisement containing any matter which (a) directly or indirectly gives a false impression regarding the true character of the drug; or (b) makes a false claim for the drug; or (c) is otherwise false or misleading in any material particular, as well as (iii) advertisement of magic remedies for the treatment of specified diseases or disorders. The Act also prohibits the import into and export from India of any document containing prohibited advertisement of the nature mentioned above. The State Government may authorise the seizure and detention of any document, article or thing which contravenes any of the provisions of the Act. The penalty for an offence under the Act is imprisonment upto six months or fine or both, on first conviction, and imprisonment extending to one year or fine or both, on a subsequent conviction.

4.1.11. **The Medicinal and Toilet Preparations (Excise Duties) Act, 1955** designed to regulate the manufacture and sale of drugs is essentially fiscal in character. However since it relates to medicinal and toilet preparations, a brief account of the provisions of this Act is given below :—

The Act provides for the levy and collection of excise duties on medicinal and toilet preparations containing alcohol, opium, Indian hemp and other narcotic drugs or narcotic.

Excise duties are leviable at specified rates on dutiable goods manufactured in India. The Central Government may notify that no person shall engage in the production or manufacture of any dutiable goods or their parts or ingredients or specified containers or labels of such containers except under the authority of a licence granted under the Act. Any person who contravenes any of the provisions of the Act, or evades the payment of excise duty, or fails to supply any information which he is required to supply under the rules or commits or abets the commission of any offence mentioned above is punishable with imprisonment upto six months or with fine upto rupees two thousand, or with both.

Any Excise Officer duly empowered may arrest any person who is accused or is reasonably suspected of committing an offence under the Act, summon any person to give evidence or produce a document or any other thing in an inquiry which the officer is making under the Act. But if the officer exercises his powers without reasonable grounds or vexatiously and unnecessarily he will be punishable with fine which may extend to rupees two thousand.

Every owner or occupier of land as well as his agents, if dutiable goods are manufactured on his land in contravention of the provisions of the Act in question or the rules made thereunder, has to report the manufacture of contraband dutiable goods, to a magistrate or to an officer of Excise, Customs, Police or Land Revenue Department immediately the fact comes to his notice. For wilfully conniving at any offence under this Act, the owner or occupier of the land or his Agent, as the case may be, will be punishable with imprisonment upto six months or with fine upto rupees five hundred or with both. Further, any person wilfully or maliciously giving false information and so causing an arrest or a search to be made will be punishable with imprisonment which may extend to two years or with fine which may extend to rupees two thousand or with both.

4.1.12. One of the terms of reference to the Drugs and Equipment Standards Committee constituted in 1962 was to examine the existing legislation on drugs and to suggest ways and means to bring about consolidation of the legislation and its uniform enforcement.

The Committee recommended the consolidation of the Opium Act and the Dangerous Drugs Act and also that of the Drugs and Magical Remedies (Objectionable Advertisement) Act and Poisons Act of 1919 along with the Drugs and Cosmetics Act. Further details of the recommendations made by this committee are contained in paragraph 5.3.2.

4.2. **Price control order :**

4.2.1. The first control order in respect of prices of durgs was promulgated in 1962 when, after the Chinese aggression, the Government of India issued, under the Defence of India Rules, the Drugs (Display of Prices) Order, 1962 requiring the manufacturers, importers and distributors of drugs to publish price lists of their products and the dealers to display such price lists in their premises. This was followed by the Drugs (Control of Prices)

Order, 1963 which pegged the selling prices of drugs at the levels obtaining on 1st April, 1963. Consequently, the manufacturers, distributors and dealers could not increase the prices of drugs without the prior approval of Government. Subsequently, when Government decided to restrict the application of the Defence of India Act and Rules only to certain specific purposes, the prices of drugs came to be controlled under the provisions of the Essential Commodities Act, and the Drugs Prices (Display and Control) Order, 1965 was issued on 30th January 1966. This consolidated Order went beyond the provisions of the two separate Orders which it replaced. The additional provisions in the new Order were the steps taken to plug loopholes in the earlier Orders. It sought to maintain the existing wholesale prices and required the manufacturers to obtain Government approval in respect of prices of new drugs. The selling prices of drugs sold in loose form came to be regulated. Besides, the manufacturers were required to stamp the retail selling prices on the containers of drugs.

4.2.2. Various representations were made to Government by the industry and trade regarding the stamping of retail prices. After examining them, Government decided to amend the Order and issued an amendment on 19th September, 1966 under which only the words, "Retail Price not to exceed" were required to be stamped on the containers of drugs. The amendment amplified the definition of wholesale price which now included Central excise duties but excluded local taxes. The second amendment which was notified on 2nd January 1967 substituted "inspector" appearing in the old Order by "officer of the Central Government or State Government authorised by that Government in this behalf". The next amendment, the third in the series, was issued on 29th September 1967 which introduced two important changes. The first change related to the prescription of a form for furnishing particulars of cost of production which has to accompany every application for approval of drug prices. The second change was a relaxation of the provisions regarding new drugs which could now be marketed after supplying relevant particulars to the Central Government in the prescribed form. The Government, however, reserved powers to refuse approval of price within a period of four months. It was hoped that these changes might result in expeditious disposal of applications for approval of drug prices and enable the community to derive benefits of new drugs.

4.2.3. At the ninth Drugs Conference convened by the Ministry of Health in August 1965, the manufacturers and the trade severely criticised the price control order which froze the selling

prices of finished drugs. Their main complaint was that there was no such control on the prices of raw materials. They constituted a Drug Advisory Committee with the following terms of reference :—

(i) Determination of the price structure of drugs from the cost of manufacture stage to the point at which drugs are sold to consumers.

(ii) Levels at which the price should be fixed and the margin of profit at each level.

(iii) Procedure to be followed for adjustment of cost of manufacture because of increase in the price of raw materials and for other reasons and to give an interim relief.

(iv) Fair trade practice; statutory or other measures to enforce them.

(v) Examination of the reasonableness or otherwise of the cost of manufacture and recommendation for the set up of a machinery for the same.

4.2.4. The Committee submitted an interim report to the Government of India on 27th April, 1966 making the following recommendations :—

(i) As the pharmaceutical industry has been compelled to hold prices of drugs as were prevailing in April 1963, the authorities should evolve a plan to supply imported and indigenous raw materials, packing materials, etc. to the actual manufacturers in quantities actually required by them and at a price prevailing in April 1963.

Failing which :—

(ii) The Drugs (Control of Prices) Order, 1963 should be repealed immediately. Prices of essential and life-saving drugs may be controlled, if the Government feels so.

(iii) Small scale manufacturers should be granted an immediate interim increase of 10% on the prices of essential and life-saving drugs.

(iv) In case other manufacturers and small-scale manufacturers require price increase on essential drugs (about 10% interim increase) they shall have to make out a case as detailed in the proforma finalised by the Committee and submit the same to the authorities through the Committee.

(v) The decision as to the application for price increase should be communicated to the applicant within three months from the date of receipt of the application by the authorities, with a copy to the convenor of the Committee.

(vi) The authorities should evolve a plan for the import of raw materials and for the distribution of the imported and indigenous raw materials to the actual manufacturers as otherwise the difficulty of availability of the drugs in the market is likely to continue and may ultimately lead to extreme drug shortage, and thereby the ailing public may suffer considerably.

Government subsequently asked the Drugs Advisory Committee that it need not submit any more report as the case had been referred to the Tariff Commission.

4.2.5. The manufacturers of drugs expressed strong views against the price control order both in their memoranda to the Commission as well as at the public inquiry. Their main arguments are briefly as under :—

(i) While there is price control on formulations only, basic drugs and other raw materials, chemicals and intermediates which go into the production of formulations are free of such regulations. Since the prices of these materials have been steadily rising, it is very difficult for the formulators to absorb those increases in the present selling prices of formulations, unless the prices of basic drugs and other raw materials also are pegged by Government. Many life saving drugs are not being manufactured since such operations have been rendered uneconomic. Owing to the price freeze there is reluctance on the part of producer to introduce new drugs. The number of new drugs introduced in 1963-64 was 69 but it fell down to 22 in 1967.

(ii) While the Government insist on the pharmaceutical industry to hold the prices at the level prevailing on 1st April, 1963 this principle has not been enforced on the drugs manufactured and sold by Government owned factories and the example of quinine sulphate has been cited for which the price is said to have gone up from Rs. 89 to Rs. 200 between 1963 and 1966. The index of wholesale prices for the whole country went up from

127.4 in 1963 to 216 in 1967. The drugs and medicines component of this index was 104.2 in 1963. As a result of the increase in prices of quinine sulphate the average index for the year 1967 went up to 124.4. Thus, while the wholesale prices have risen by 70 per cent since 1963 the index for drugs and medicines has gone up by about 20 per cent and this too due to substantial increase by Government in the prices of quinine sulphate. It has also been contended that the prices of finished products cannot be controlled unless prices of services, raw materials and other supplies are controlled too. The control is said to be irrational since it is not based on any scientific study of the costs and price structure of the industry or of the reasonableness or otherwise of the prices prevailing at the time control was introduced.

(iii) No new formulation can be marketed unless its price is approved by Government. In view of the considerable delay in the disposal of applicatons for price approval there is no incentive for the industry to introduce new medicines.

(iv) Although there is provision to consider applications for price increase, there are no norms for deciding what are fair prices nor has any adequate machinery been set up for this purpose. The issues are therefore left to be settled by bargaining and intermittent negotiations. Forms and procedures prescribed for obtaining price approval of new drugs are often changed and at every change the producing units are asked to re-submit their applications which were already pending with Government, unnecessarily delaying the approval of prices. There were instances of applications made in 1962 or 1963 which received approval in 1967. It has been represented that there is a great deal of red tape involved in the matter of drugs prices.

(v) There have been very few price reductions after the introduction of price control, while such reductions were a continuing feature before the advent of the control. The pharmaceutical industry being highly competitive in nature, free interplay of competitive forces is essential for its development but the price control, according to O.P.P.I., only distorts this basic nature of the industry.

(vi) It is meaningless to examine price structure of the particular drugs instead of the entire company. It is a well established prinicple that in the totality of the range of a company's products, certain lines yielding higher profit margins than others. Therefore, well established product groups with a large turn-over should be called upon to bear a part of the lesser profit margins of the new products.

As we have not gone into the question of price control, it is not necessary for us to examine the various arguments put forward by O. P. P. I.

4.2.6. The Federation of Associations of Small Scale Industries in India has represented that large scale units were in a position to sell their products at the prices originally stabilised at the level of April 1963 despite the increase in cost and prices of raw materials etc. Owing to high margins of profit which were already included in their price structure. On the other hand, the small scale units because of the low margin of profit within which they operated were unable to absorb any rise in the cost of raw materials in the price structure of their products. The Federation has also represented that the procedure to obtain increases in selling prices of drugs is very cumbersome. It has therefore suggested that request for price increases should be dealt with expeditiously by the State Drugs Controllers. The Federation has further pleaded that suitable increases should be allowed in the selling prices of small scale units which have been pegged for the last four years.

4.2.7. The industry has represented that in the case of a new drug a licence has to be taken from Drugs Controller which takes not less than three months. After clinical trials have shown satisfactory results, an application has to be made to the Director General of Technical Development for a licence to manfacture the product and to the Drugs Controller for permission to market it. Futher trials are undertaken by the Drugs Controller which may take from six to 24 months. Then only can manufacture start. This sometimes takes anything upto three years. At the public enquiry also complaints were made with regard to the delay in the registration of new drugs. The Drugs Controller of the Government of India explained the reasons for the dealy in the registration of new drugs. He has observed that barring a few countries like the U. S.A. and France, other countries do not have any stringent legislation for screening new drugs, particularly with reference to their safety and efficacy. It will not therefore be advisable to allow the commercial use of such new drugs in

this country simply because they are being marketed in other countries. Although new drugs might have been clinically tried in foreign countries and scientific publications about their clinical efficacy and safety may be available, there is definitely a need for insisting upon their clinical trials in India also for various reasons. First, the physiological norms of the people in this country are different from those of the people in the foreign countries and the dosage of new drugs here may require adjustments depending upon the therapeutic effects of those drugs as evinced during the clinical trials. Secondly, a majority of the people in India being victims of diseases, like malaria and dysentry their liver and spleen are already impaired. Since most of the drugs get metabolised through liver, spleen, etc., care should be taken to ensure that new drugs which may not have produced any undesirable side-effects in the foreign countries do not produce any side reactions in this country also. Thirdly, owing to the low level of nutrition amongst the people in India the impact of potent drugs is likely to be different on patients in this country. Lastly, diet, general habits and even racial strain influence the therapeutic activity of drugs. Even in the same country the same drugs may produce different reactions amongst different groups of people with different dietary and other habits. For these reasons the Drugs Controller considers it essential to insist upon the clinical trials of new drugs in India also before permitting their commercial use.

4.2.8. As regards the time taken for clinical trials the Drugs Controller has stated that it would depend upon the nature of the drugs which are sought to be cleared. The drugs which have to be used on a long term basis, like anti-hypertensive drugs and anti-diabetic drugs will necessarily have to be tried for a long period while those used in the treatment of cancer and anti-infective drugs which are taken by patients for short periods do not require to be tried over long periods. In any case, even though a new drug is under trial in this country and has not been cleared, its use by individual doctors and medical institutions is not precluded as such drugs are allowed to be imported for treatment of patients on the responsibility of the attending physician.

4.2.9. **Difficulties in the implementation of the Control Order.**—The Director, Drugs Control Administration, Maharashtra has brought to our notice the following difficulties in the effective implementation of the new Order :—

(i) In view of the definition of retail price, the manufacturer, distributor or importer, as the case may be, will have to print new price-lists effective from 1st July

1966. These lists when published will have to scrutinised to ensure that the new retail price has been enhanced only on account of the imposition of the excise duty. Due to the large number of manufacturers in the State of Maharashtra and the wide variey of drugs manufactured and marketed by them, the scrutiny of lists would involve tremendous work in the initial stages.

(ii) Sub-clause 2 of Clause 3 makes it obligatory for every dealer to furnish a price-list each time the drug is sold to a retailer. Thus, even if a retailer purchases drugs from different wholesalers at an interval of a month or so, each wholesalers has to supply fresh price lists every time. This would require a large number of price lists to be printed by the manufacturers for distribution. Moreover, the manufacturers are also required to publish fresh price lists whenever there is a change in the excise duty.

(iii) Clause 6 requires that no manufacturer shall introduce for sale or include in his price list any new drug without the prior approval of the Central Government. No guiding principles have been laid down for considering approval of prices of new drugs. The Government of India instructions are that cases for price increases should be routed through State Government. It takes at least 6 months before a manufacturer is able to market a new drug or an old drug with the revised price.

(iv) The importer who imports the drugs which are ready for treatment has to print the retail prices on the labels/ cartons which are normally enclosed in a carbon pack and these are packed inbulk in cardboard boxes. For this purpose the importer has to open the originl pack for printing the retail price and re-dress it. This operation brings the importer within the purview of the Drugs and Cosmetics Act as, in terms of the definition of 'Manufacture' under Section 3(f) of the act, it amounts to packing and finishing for which a manufacturing licence in the prescribed form is necessary. The importer will also have to comply with all the conditions of the licence as well as the provisions of the Drugs and Cosmetics Rules.

(v) Clause 8 of the Order which deals with the sale of drugs in loose requires the dealer to charge pro-rata on the

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basis of the retail prices of the largest packing. While in the city of Bombay and the suburbs the provisions of this order are being somewhat complied with, the inquiries made by the Drugs Controller reveal that in five Districts of the State, it has not been possible for the small dealers in the mofussil areas to comply with the provisions of Clause 8 as they order only small packings and retail the drug only from them. Therefore, the provision of this Clause is causing considerable hardship. The Drugs Controller has suggested that Clause 8 should be suitably amended enabling the dealer to charge pro-rata on the basis of the pack opened without charging any special rate as "dispensing charges".

4.2.10 The Director, Drugs Control Administration, Maharashtra, has also pointed out a loophole in the existing Control Order in that there is no control on the wholesale prices charged by wholesaler to wholesaler or wholesaler to retailer. Under the existing pattern of trade in drugs, mofussil dealers buy from wholesalers in town who in turn obtain their supplies from other wholesalers. We suggest that these matters may be considered and suitable modifications introduced.

4.2.11 **Price Control in Foreign Countries.**—A delegation sponsored by the Development Council for Drugs and Pharmaceuticals consisting of a team of technical experts drawn from the industry and Government visited major drugs manufacturing units and their research laboratories in six important drugs producing countries of the world, *viz.*, Italy, Switzerland, West Germany, U.K., U.S.A. and Japan towards the end of 1963. The delegation studied the development of the drugs industry in those countries and submitted a comprehensive report on the various aspects of the industry in the foreign countries and made certain recommendations for adoption in India.

4.2.12 According to the delegation, there is no official machinery for the control of consumer prices of drugs in Switzerland, West Germany, U.S.A. and Japan. Nevertheless, there exists in effect an efficient price control due to intense internal competition and the application of the universal law of supply and demand. In the other two countries, that is, Italy and U.K. price control systems have been evolved, the salient features of which are outlined below.

4.2.13 **Price control in Italy.**—As a matter of principle, the sale price to the public is to be fixed by the manufacturing

firm according to established rules. The principles of price fixation is based on cost of raw materials *plus* cost of packing materials *plus* manufacturing expenses (direct and indirect). The total cost thus computed is multiplied by 3 (by 3.5 in the case of firms having a research laboratory actually working) to arrive at the selling price to the public. Of this price, the wholesale dealer is granted by law a discount of 35.75 per cent and out of this discount the retail chemist gets 28.80 per cent. Regulation of prices is controlled by the Price Commission.

4.2.14 **Price Control in the U.K.**—There is a system of voluntary price control evolved in the U.K. over a period of years. According to the report of the delegation, the Ministry of Health in U.K. commenced with a meticulous examination of costs of 100 products and ultimately came down to two, the prices of which had to be fixed by negotiation. The voluntary price regulation scheme is stated to have been arrived at after realising the impossibility of such price examination. Besides the voluntary price regulation scheme, there is a legislation in force relating to "re-sale price maintenance". The object of this legislation is to prevent the unhealthy practice of under-cutting of prices of drugs for retail sale.

4.2.15 Most of the products of the Pharmaceutical Industry are sold to the Government for the National Health Services and a state of virtual monopsony prevails in the country since the N.H.S. is the largest single buyer and is in a position to negotiate on favourable terms.

4.2.16 The important facets of the scheme of price fixation are given below. The scheme operates only after the first three years of use of a new drug during which preparations may be priced at the manufacturers' discretion so that some of the research costs may be recouped. When the three years are up, a satisfactory price has to be determined under Part A of the Scheme in accordance with one of the three following criteria :—

(i) *Export price criterion.*—Under this criterion,, if the exports of drugs are adequate (not less than 20 per cent by volume of total sales) the export prices are taken to provide a market price. The price charged to the wholesalers must not exceed the weighted average of prices charged in the six largest export markets.

(ii) *The unbranded Standard equipment criterion.*—This criterion is to be adopted if criterion (i) cannot be applied. It is applicable if the formula of a proprietary preparation

is identical with that of a standard product (*i.e.* one appearing in the B.P., B.P.C. or (B.N.F.). But in practice there are few products of the industry where such equivalents exist. The price to the chemist of the proprietary preparation must not exceed that of the unbranded equivalent.

(iii) *The trade price formula.*—This criterion has to be applied when the first two criteria are inapplicable. Under this criterion, the manufacturer has to declare the formula of the preparation, cost of the ingredients in accordance with the Drug Tariff prices and a schedule of ingredients' prices agreed between the industry and the Ministry, add an agreed allowance for processing and packing according to another schedule, and finally add a provision for the wholesalers' discount. The final price must not exceed the price paid by the chemist.

4.2.17 Part B of the scheme provides that if none of the criteria in Part A is applicable, a satisfactory price is to be negotiated directly with the Ministry at the option of either the manufacturer or the Ministry. The basis of the voluntary price regulation scheme being maintenance of a healthy balance between the interests of the industry and the interests of the consumer, the emphasis is on price fixation by negotiation. For a vast majority of the products the prices are, according to the Delegation, ultimately fixed by negotiation.

4.2.18 **Price maintenance law.**—Prior to 1957 the Proprietary Articles Trade Association of U.K. used to maintain a control over under-cutting of prices by its member firms. This voluntary action seemed to work satisfactorily without any legal sanction from Government. However, the Restrictive Trade Practices Act, 1956 annulled all restrictive trade agreements At the moment, the legal methods of enforcing resale prices are (a) under the common law by commercial contract; (b) through. the relevant provisions of the Restrictive Trade Practices Act; and (c) in the case of patented articles by court action for infringement of patents.

4.3 Drugs Control Administration in India :

4.3.1 The regulation of manufacture, sale and distribution of the drugs is the concern of the State Governments, on the other hand laying down of standards of drugs, control over quality of imported drugs, and coordination of the activities of the State overnments and providing expert advice are the functions of the

Central Government. The organisation at the Centre consists of the Drugs Controller who is assisted by a Deputy Drugs Controller and two Assistant Drug Controllers at the head-quarters. There is an Assistant Drugs Controller in each of the three ports at Bombay, Calcutta and Madras and a Technical Officer at the port of Cochin. These four zonal offices in Bombay, Calcutta, Madras and Ghaziabad assist the State Drugs Control Administration in the uniform enforcement of the Drugs and Cosmetics Act and other connected legislation on an all India basis. The post at Bombay and Calcutta are held by Deputy Drugs Contollers and those at Madras and Ghaziabad by Assistant Drugs Controllers. The main functions of the Central Organisation with the Drugs Controller at the head are (i) sampling of drugs from imported consignments and testing them at the Central Drugs Laboratory, Calcutta or in the Central Research Institute at Kasauli (for biological products). Import is permitted only if the products are found to be of a certain standard quality. Drugs which are found not upto the standard quality are either returned to the country of origin or destroyed at the option of the importer; (ii) in the case of drugs falling under biological and special products which are likely to deteriorate on storage, the Central Drug Control Officers at the ports inspect the premises where such drugs are stored and draw samples for tests. If the test reports indicate that the drug has deteriorated the specific batch numbers are withdrawn from circulation and the State Drug Control authorities are informed of the position ; (iii) issue of licences for the import of small quantities of drugs for personal use and (iv) enforcement of the provisions of the Drugs and Magical Remedies (Objectionable Advertisement) Act in so far as the import and export of drugs through the respective ports are concerned.

4.3.2 One of the statutory functions of the Drugs Controller is to grant licences for import of biological and other special products, detailed under Schedule 'C' and 'C(1)' of the Drugs and Cosmetics Act. It has been estimated that about 200 import licences are issued or renewed every year. References are made to the Assistant Drugs Controller with regard to the availability of adequate storage accommodation for storing drugs proposed to be imported and licences are usually granted only after receipt of these clearances.

4.3.3 Unless approved by the Drugs Controller no new drugs can be imported. The importer has to apply to the Drugs Controller for permission forwarding documentary and other evidence containing particulars of the pharmacological and toxicity studies carried out with the drug, report of the clinical trials

already published and particulrars of tests etc. The information supplied is examined by the Drugs Control Organisation and where necessary expert opinion from bodies such as the Indian Council of Medical Research, New Delhi, All India Institute of Medical Sciences, New Delhi, the School of Tropical Medicine, Calcutta, Tata Cancer Hospital, Bombay, All India Institute of Mental Health, Bangalore, and also Medical Colleges is obtained. In most cases the Drugs Controller requires further clinical trials to be carried out with the new drugs. In some cases expert verification of the data submitted by the applicant is carried out in selected institutions. Under the provisions of the rule 30(A) a continuous watch has to be maintained on the use of new drugs subsequent to the grant of permission in order to discover whether or not in the case of extended use any toxicity or side reactions are observed. The Drugs Controller has to maintain liaison with leading hospitals and medical institutions for elicting information regarding the adverse reaction or any other information that may be useful in the re-assessment of the efficacy of the drug. On an average about 60 applications for import of new drugs are received every year. The Drugs Controller is also the approving authority for the manufacture of new drugs in the country. The procedure for securing approval for manufacture of new drugs is similar to that for the import of new drugs, except that in the case of manufacture of such drugs the application has to be routed through the State Drugs Control authorities. The manufacture of other drugs, however, does not need the approval of the Drugs Controller. With the help of the port organisation the Central Drugs Controller maintains statistics regarding the total value of the drugs imported into the country as well as information about the quantity of imports. Data in respect of the total quantity of narcotic drugs imported together with particulars of the distribution amongst such manufacturers in the country is also maintained by the Central Drugs Control Organisation.

4.3.4 The licensing of the manufacture of drugs in the country and the sale of all drugs whether manufactured in the country or abroad is the responsibility of the State Drugs Controllers. The manufacturing activity in the different States is uneven. For quality control and inspection only a few State Drugs Control Administrations have elaborate and adequate administrative machinery. Other States do not appear to have adequate machinery for inspection, detection of spurious drugs etc. In many States there is no whole-time Drugs Controller but the powers under the Act are vested in an officer as a subsidiary assignment. The organisation is sometimes insufficient to implement the provisions of the Act. As a result of such disparities the

standards of enforcement as well as regulation are bound to differ. Were the drugs manufactured in a particular State to be utilised in that State alone, it could be argued, that the machinery of the State should be depended upon to ensure the safety and protection of those who were going to make use of the drug. But it so happens that the licence granted in one State become automatically valid in so far as the product is concerned for all other States in the country, irrespective of the faet whether or not the product passes the more stringent tests that may be applied in a State other than the State of manufacture. This problem inevitably leads to the consideration as to whether or not there should be uniformity in the standards for testing, facilities for the same, as well in the regulation and enforcement of the provisions of the Act and Rules in so far as they relate to manufacturing activity. As things are, there seems to be a direct relationship between the extent of the manufacturing activity and the nature and degree of control exercised by the State authorities. This should not be so. It was suggested to us at the public inquiry that Government of India should take steps to bring the control of drugs under the Centre by getting the consent of all the States to transfer the subject to the Centre so that there would be proper and healthy enforcement of the provisions of the Drugs Control Act throughout the country. It is also understood that States are generally not inclined to give up their jurisdiction and control in this matter. The alternative is that a uniform policy for enforcement of the Act must be adopted by all the States in this vital matter. The Reports of (1) The Drugs and Equipment Standards Committee (1965), (2) The Mukhopadhyaya Committee (1966), (3) The West Bengal Drugs Enquiry Commission (1965), and (4) The Committee on Drugs Control (1964) have all made valuable suggestions for bringing about uniformity as well as more effective enforcement of the provisions of the Drugs Control Act.

4.3.5 If uniform standards have to be enforced there ought to be centralised control rather than decentralisation of licensing and control as exists today. It is patent that in the case of a number of States Drug Control is a nominal activity and such manufacturing activities may be countenanced as would not pass muster in another State more experienced in these matters and having a better organisation. There ought to be uniformity of standards of administration, testing, approval and other matters regulating manufacture of drugs and we recommend that policies may be devised and implemented in such a way that the present disparity in these standards is removed.

CHAPTER 5

PREVIOUS INQUIRIES

5.1 Pre-Independence period (1927-1947) :

5.1.1. Though the need for legislation to control the quality of drugs sold to the public was expressed as early as 1927 by the Council of States through a Resolution, it was not till 1930 that the Central Government, in response to continuing public opinion on the subject, appointed the Drugs Enquiry Committee under the Chairmanship of Colonel R. N. Chopra. This Committee, known as Chopra Committee, was asked to enquire into the extent to which impure and defective drugs were being imported, manufactured or sold in the country, and to recommend measures to control such imports, manufacture or sale. The Chopra Committee Report was submitted to Government in the same year 1930 and its important recommendations were : (1) Central legislation to control drugs and pharmacy, (2) establishment of test laboratories in all States for the purpose of controlling the quality of indigenous production and of a Central Laboratory to control the quality of imported drugs and also to act as an expert body in disputes between States arising from their analysis of samples, (3) prescription of minimum qualifications and setting up training courses for the pharmacists and (4) compulsory registration of all patent and proprietary medicines of undisclosed formula whether imported or manufactured in the country. It was also to recommend that an advisory Board should be appointed to adivse the Government in respect of the Rules to be framed for the Central Act recommended.

5.1.2 It was 10 years after the Chopra Committee submitted its Report that the Drugs and Cosmetics Act was enacted in 1940 to regulate the import, manufacture, distribution and sale of drugs and pharmaceuticals in the country. The Rules to implement the provisions of the Act took another five years to frame and the Act and the Rules came into force only in 1947. The public demand for quality control on drugs sold first made in 1927, took twenty years to be fulfilled by legislative enactment and its enforcement.

5.1.3 The Drugs and Cosmetics Act, 1940, and Rules, 1945 though based on the Chopra Committee Report, did not meet

that Committee's recommendations regarding pharmacists who handle drugs and formulations. Even before Independence, the Bhore Committee (1943) officially known as the Health Survey and Development Committee, emphasised the need for a thorough overhaul of the profession of pharmacy in the country and recommended measures for registration of pharmacists and for their training and improvement. The recommendations for the improvement of pharmacy in the country, made by the Chopra Committee in 1930 and the Bhore Committee in 1943 were implemented only after Independence when the Government of India passed the Pharmacy Act in 1948.

5.1.4 Before Independence the public demand and the consequent governmental interest were concerned mainly with the control of quality of drugs sold to the public. It was only in 1945, after World War II, that the Government's interest was aroused in regard to domestic production of new drugs and fine chemicals. In 1945, the Government of India in the Department of Planning and Development set up a Panel on Fine Chemicals, Drugs and Pharmaceuticals under the chairmanship of Colonel R. N. Chopra to enquire into and indicate to the Government the drugs to be produced within the next five years and the necessary steps to be taken for the same. This panel recommended the undertaking of domestic manufacture of antibiotics like Penicillin and Streptomycine, anti-malarials, and synthetic and sulpha drugs. The Panel recommended governmental assistance to the indigenous drug industry, especially in setting up pilot plants for the manufacture of new drugs, and also measures for training the technical personnel required to man the industry.

5.2 Post-Independence period (1947-1962) :

5.2.1 After Independence, the Government of India enforced the Drugs and Cosmetics Act (1940) and Drugs and Cosmetics Rules (1945) and the Pharmacy Act, 1948 was enacted. With the enforcement of these Acts and Rules, the control on domestic manufacture of drugs and their sale through qualified personnel became the responsibility of the State Governments, while the Central Government was made responsible for the control on imported drugs. Further, Government had to evince direct interest in the production aspects of the industry as well, and for this purpose set up panels and committees to inquire into the industry at different times.

5.2.2 In 1951, the Government of India set up a panel known as the Panel for Pharmaceutical Industry (a) to review the

industry in the light of the changed conditions brought about by the Partition, Korean war, and other factors, (b) to report, inter alia, on the raw material requirement of the industry and the ways of increasing the production capacity of the industry within a short period and (c) to suggest measures for establishing additional capacity wherever needed. In addition to furnishing to the Government a list of raw materials, the quantities required and their sources, this Panel recommended a change in the import policy of the Government in order to secure expansion of domestic output of drugs. It also recommended State assistance to private sector schemes for manufacturing drugs like P.A.S. and raw materials like Citric Acid.

5.2.3 At the same time, the Planning Commission also examined the pharmaceutical industry while dealing with the chemical industry as a whole. Some of the important recommendations made by the Planning Commission were as follows : (1) the existing as well as the new units should make every effort to manufacture as many pharmaceutical chemicals and drugs as possible using the basic chemicals and or simple intermediates, domestic or imported; and that whenever penultimate drugs and intermediates were used in the first instance to start the industry, efforts should be made to manufacture such products within the country as soon as possible; (2) higher priority should be given to the manufacture of synthetic drugs than to the manufacture of formulations out of imported synthetic drugs; (3) emphasis should be put on quality rather than on volume of production in the case of pharmaceutical industry; (4) steps should be taken to bring down the cost of drugs, and the tendency of the manufacturers to undertake development by associating a number of related companies together, which would only tend to increase the cost of production, should be discouraged.

5.2.4 The domestic pharmaceutical industry was still in a nascent state even after five years of Independence. In 1952, out of the 18 basic drugs specified for the present inquiry only 3 drugs, namely, Tetanus Anti-toxin P.A.S. and I.N.H. were indigenously produced, while capacities were either established or were in the process of establishment for antibiotics like Penicillin, Chloramphenicol and Tetracyclines. In 1953, the Government of India in the Ministry of Commerce and Industry set up the Pharmaceutical Enquiry Committee with Major General S. L. Bhatia as Chairman. The Committee had ten Members drawn from universities and research institutes, State Directorates of Medical Services, industry as well as from the

Ministry of Commerce and Industry and the Ministry of Health. The important terms of reference to the Committee were ;

(a) to study the working of the industry with particular reference to the cost of production, efficiency of the process employed, quality of drugs produced, and the demand for the drugs produced and their essentiality, and whether the drugs produced were made from imported intermediates and penultimate or from the basic raw materials ;

(b) to study the operations of foreign and/or Indian concerns who import drugs and pack them in the country, and the extent of tie-up between wholly or partly owned Indian concerns with foreign companies;

(c) to recommend steps for encouraging the manufacture of important drugs which are currently imported; and

(d) to enquire into the scheme of distribution, profit margins, and the part played in this by purely Indian as well as other concerns.

5.2.5. The Pharmaceutical Enquiry Committee made a comprehensive survey of the existing drug industry as well as practice of pharmacy in the country, and submitted its report in 1954. Its recommendations were many and far reaching and related to various aspects of the domestic drugs industry. The recommendations relating to licensing, foreign collaboration, production, imports and exports, customs duties, sales, selling system, prices and margins, quality, research, patents and royalty, and raw materials are summarised in Appendix V-A.

5.3 After Chinese Aggression in 1962 :

5.3.1. While the various recommendations of the Pharmaceutical Enquiry Committee were being taken into account by Government from time to time, in formulating their schemes for the development of the indigenous pharmaceutical industry the Chinese aggression took place in 1962 highlighting the necessity for removing drug shortages, eliminating spurious and substandard drugs, and reducing the prices of the indigenous pharmaceutical products which compared to those of imported ones were high. The Central Government as well as the State Government devoted attention to these problems and Committees and Commissions were set up to inquire into these different issues relating to the industry.

5.3.2 *Drugs and Equipment Standard Committee.*— In 1962, the Ministry of Health appointed the Drugs and Equipment Standard Committee headed by the Deputy Minister, Health and with specialist Members drawn from the industry, medical profession and Government departments with the following terms of reference :

(a) To assess the extent of spurious and sub-standard drugs in the market;

(b) To suggest minimum standards for drugs and equipment and to examine the possibility of meeting the country's requirements from indigenous sources;

(c) To report on the existing drug control machinery both at the Centre and in the States, the testing facilities available, and adequacy of staff for the control available;

(d) To suggest measures to tighten the provisions of the Drugs and Cosmetics Act, 1940 so as to make its implementation more effective; and

(e) To examine the existing legislations on drugs including related legislations such as the Dangerous Drugs Act, the Poisons Act, the Medicinal and Toilet Preparations (Excise Duties) Act, the Prevention of Food Adulteration Act, and to suggest ways and means to bring about consolidation of the legislation and its uniform enforcement.

The Committee submitted its Report in March 1965 making a number of recommendations on each of the terms of reference. In so far as drugs are concerned its main recommendations are given in Appendix V-B.

5.3.3 **West Bengal Drugs Enquiry Commission.**—In the same year, 1962, under the Commission of Enquiry Act the West Bengal Government appointed a Commission, known as the West Bengal Drugs Enquiry Commission, under the Chairmanship of Shri Biren Mookherji, to inquire into, among other things, adulteration of drugs. This Commission including the Chairman consisted of 10 members, four from medical profession, two office bearers of the Indian Medical Association while the others included the Commissioner of Police and Officers from I.A.S. and I.A. & A.S. Its terms of reference related to (a) the drugs manufacturing companies in West Bengal, procurement of their

raw materials, machinery, etc. adequacy of their financial resources, quality, standards and testing of their products, and the extent to which the existing taxes, duties and fees adversely affected them; (b) the existing law to control the manufacture, testing, storages, distribution and sale of drugs with particular reference to the State Drugs Control Administration and the State Drugs Testing Laboratories; (c) the malpractice in manufacture, storage, distribution and sale of drugs, and whether shortage in supply has in any way encouraged the manufacture of spurious and sub-standard drugs. This Commission submitted its Report in June 1964. Some of its important findings and recommendations are given in Appendix V-C.

5.3.4 **Committee on Drugs Control.**—After the West Bengal Drugs Enquiry Commission's Report was submitted, the Central Health Council which was already concerned at the reported high incidence of sub-standard and spurious drugs in the country, wanted to ascertain what immediate action could be taken to meet the situation as reported by the West Bengal Enquiry Commission. In pursuance of a resolution to this effect passed by Central Health Council at its 11th meeting, the Ministry of Health appointed in October 1964 the Committee on Drugs Control, known as Borkar Committee consisting of the Drugs Controller of India, and the State Drugs Controllers of Maharashtra and Gujarat. The terms of reference of this Committee were : (a) to study the Report of West Bengal Drugs Enquiry Commission and also the conditions of the drugs control administration in different States, and (b) to give recommendations to the Central Health Council on the steps to be taken for the effective enforcement of the provisions of the Drugs and Cosmetic Act. The Committee submitted its Report in May 1966. Some of the important recommendations of this Committee relating to formulations, sale licences, amendments to the Drugs and Cosmetics Act, Drugs control administration, production of pharmaceutical equipment and testing in the Central Drugs Laboratory were as given in Appendix V-D.

5.3.5 **Mukhopadhyay Committee (1966) to study the Recommendations of earlier two Committees.**—In July 1966, the Ministry of Health and Family Planning, appointed a Committee with the Health Minister of West Bengal as Chairman and the Drugs Controller of India as Secretary (a) to go into the recommendations made by the Committee on Drug Control and also by the Drugs and Equipment Standards Committee and (b) to make suitable recommendations to Government. The

Report of this Committee was submitted in December 1966. The Committee fully endorsed many of the recommendations of the earlier two committees. In Appendix V-E are given the earlier Committees' recommendations relating to Testing and Drugs Acts as endorsed by this Committee.

5.3.6 While in the wake of Chinese Aggression the Drugs (Display of Prices) Order, 1962 and the Drugs (Control of Prices) Order, 1963, were issued by Government to stabilise the drug prices, Government felt also the need for examination of the manufacturing cost of basic drugs with a view to bringing down wherever possible their unreasonably high prices and thereby to scale down the prices of formulations as well.

(i) *Technical Sub-Committee of the Developmnet Council for Drugs and Pharmaceuticals* (1962-63).—During 1962-63 a technical sub-committee of the Development Council for Drugs & Pharmaceuticals had in its Report examined the costs of indigenous manufacture of drugs, and also the factors which contributed to the higher costs of production of basic drugs in the country, such as import duty on intermediate chemicals, excise duty on indigenously manufactured raw materials and non-availability of chemicals of high grade purity. Making a rough estimate of the incidence of these factors and based on estimated costs of production in India it found that there was no justification for the selling prices of indigenous basic drugs to exceed the c.i.f. values of equivalent imported drugs (not exported to India at subsidised prices) by more than 60 per cent. It accordingly recommended that wherever the local sale prices exceeded this margin over the c.i.f. values detailed investigation of the cost structure would be necessary to ascertain the factors contributing to higher domestic costs. In a second report dealing with finished products (*i.e.* formulations) the same sub-committee examined also the prices of some essential pharmaceutical preparation and observed that though the cost of production of basic drugs in India were usually higher than those in the developed foreign countries, the cost of production of finished preparations in India were in most cases much less than the domestic prices of similar products in foreign countries and that the differences between the consumers prices and the ex-factory costs of the finished preparations were much less in this country than those in most of the developed foreign countries.

(ii) *Technical Committee of the Ministry of Health and Family Planning* (1963).—In September 1963, the Ministry of Health and Family Planning appointed a Technical Committee with Shri

Gian Prakash, Jt. Secretary of the Ministry as Chairman, and the Drugs Controller of India as Member-Secretary with the following terms of reference : (a) to examine the reasonableness of the prices of nine specified drugs to the consumers, having regard to the minimum cost of production and other aspects and to furnish their findings at the earliest, and (b) to examine in like manner the reasonableness of the prices of such other essential drugs as the Government considered necessary, subsequently. The nine drugs specified under (a) of the terms of reference were :

Vitamin B_{12}. Sulphadiazine, Tetracycline, Chloramphaniccl, I.N.H., P.A.S., Prednisolone, Tolbutamide and Acetyl Salicylic Acid. The Committee had seven members drawn from the Hindustan Antibiotics Ltd., Planning Commission, D.G.T.D., Ministry of Home Affairs, Ministry of Industry and Ministry of Economic and Defence Co-ordination. It submitted its Report to the Government in July 1966. The Report has not yet been published. The Committee explained the practical difficulties in the examination of the cost structure and the several limitations under which it had to work. Though the Committee had the benefit of advice of a Cost Accounts Officer, it was not possible for it to undertake as detailed a scrutiny of the various data as was desirable or as is being done by the Cost Accounting staff of the Tariff Commission.

5.3.7 **Report of the Indian Pharmaceutical Delegation (1964).**—The Development Council for Drugs and Pharmaceuticals felt in 1963 that the industry had not yet reached a stage of maturity where further continued growth could be self-sustaining. Therefore the Development Council sponsored in October, 1963 a 11 member team of Indian experts drawn from the Industry and Government, with the late Dr. H. R. Nanji as leader to visit six pharmaceutically advanced countries with the following terms of reference :—

(a) To make a survey of the latest techniques in the manufacture of basic drugs and fine chemicals (including synthetic drugs, antibiotics, phytochemicals and glandular products) with special reference to those immediate interest to India, by visits to selected pharmaceutical factories in Italy, Switzerland, West Germany, U.K. U.S.A. and Japan.

The survey should also include a study of modern trends in :— (1) Location, design, layout and construction of factories (2) Organisation of basic and applied research. (3) Pilot plants for basic drugs (4) Pharmaceutical product development laboratories and newer methods of sterilization (5) Plant, equipment, utilities and their maintenance; materials handling. (6) Production of basic drugs. (7) Processing and packaging of pharmaceuticals (8) Quality Control.

(b) To study the general situation with regard to manufacture and supply of intermediates and to ascertain to what extent decentralization has been achieved in the supply of intermediates.

(c) To study current opinion in various countries with regard to patent protection for drugs.

(d) To study methods of price regulation, if any, voluntarily or by legislation, adopted by different countries; and to ascertain the prices at which important drugs are sold in the domestic markets of the countries visited.

(e) To submit a report to Government advising on measures to be adopted for the future development of the pharmaceutical industry during the Fourth Five Year Plan period.

The Delegation's Report was published in 1964, and its important recommendations are given in Appendix V-F.

5.3.8. **Drugs Advisory Committee set up at the Ninth Drugs Conference (1965).**—The Ninth Drugs Conference held at Hyderabad in August 1965, set up a broad-based committee representing the interests of manufacturers, wholesalers and medical profession to examine the whole question of price revision and to make suitable recommendations, called the Drugs Advisory Committee, with Dr. Devesh Mookherji of the Indian Medicial Association as convenor and including representatives from Associations representing manufacturers, retailers, Ayurvedic and Unani systems of medicines, etc. This Committee submitted its "Interim Report" to the Government in April 1966. Reference to the recommendations of this Committee has already been made in Chapter 4.

5.3.9. **The Committee on Essential Drugs (1966).**—To advise the Government in regard to the preparation of the list of drugs and medical requisites for manufacture and import

from time to time, the Ministry of Health and Family Planning constituted the Committee on Essential Drugs. The Committee consisted of top medical specialists in the country and was headed by the Director General of Health Services. It has prepared (1) list of 155 essential drugs, manufactured from imported raw materials, or imported into the country and (2) a list of 23 essential drugs manufactured in the country. Its important recommendations made so far are given in Appendix V-G.

5.4.1. The development of the drugs and pharmaceutical industry and also the formulation and implementation of measures for control has taken place for the most part in the post-Independence period. Earlier the only significant event was the enactment of the Drugs Act. We have already given particulars of the various committees that were set up in the post-Independence period together with their terms of reference. The impact that the recommendations of these committees had on the development of the industry and measures of control exercised through governmental agencies is discussed below : These issues have been grouped under the following heads :

1. **Production of drugs**
   - (i) Manufacture of essential drugs
   - (ii) Formulation on loan licences
   - (iii) Small scale units
   - (iv) Basic drugs and formulating firms
   - (v) Raw Materials
   - (vi) Pharmaceutical Equipment
   - (vii) Sales and Selling Commission
   - (viii) Research
   - (ix) Economic Unit
   - (x) Assistance by Government
   - (xi) Other guide lines.

2. **Drugs and balance of payments**
   - (i) Collaboration with foreign firms
   - (ii) Import of finished drugs, and
   - (iii) Exports and export promotion.

3. **Governmental controls**

(i) Grant of manufacturing licences

(ii) Quality Control and testing and

(iii) Administration of Drugs & Cosmetics Act.

(i) *Manufacture of Essential Drugs.*—One of the recommendations of the Committee on Essential Drugs (1966) was that essential drugs which can be produced with the available facilities should be manufactured by the public sector units. We have seen the establishment of IDPL and the HAL, both large units with a comprehensive programme of manufacture. But no categorical decision by the Government with regard to manufacture of essential drugs entirely by these units has been taken.

(ii) *Formulation on loan licences.*—The Pharmaceutical Inquiry Committee (1944) had recommended that firms which do not have their processing departments but get the processing done on the basis of loan licences should be permitted to set up their own processing departments if they can undertake to produce essential drugs from the basic chemicals or intermediates nearer to basic chemicals within a reasonable time. No hindrance is likely to be placed in the way of such entrepreneures. But licences continue to be granted under the Drugs and Cosmetics Rules to units which do not possess their own plants and premises though they are generally advised to take steps as early as possible to set up their own processing plants.

(iii) *Small scale units.*—In line with the advice tendered in other fields of industrial activity it was suggested that small scale units should form co-operatives in order to pool their resources. Much progress, however, does not appear to have been achieved in this direction.

(iv) *Basic drugs and formulating firms.*—A tendency was noticed on the part of certain processing firms to prefer to import from foreign countries, fine chemicals and intermediates instead of purchasing them from indigenous sources. Simultaneously it was also found that certain manufacturers of fine chemicals and intermediates did not desire to sell them to others keeping their production captive. The Pharmaceutical Enquiry Committee (1954) had recommended that imports of intermediates and fine chemicals should not be made where the raw material was available in the country and also that instead of keeping their proudction

captive the manufaturers of raw materials should produce them in quantities sufficient to meet not only their own requirements but also of other processing firms. Government have already decided that imports of items which are available in the country should not be allowed. They have also been encouraging the production of items which were not available in the country. There does not appear to be any deliberate policy on the part of manufacturers of basic drugs to confine their use to their own units. Wherever capacities and production are adequate these are also being made available to others. The Drugs and Equipment Standards Committee (1965) had recommended that a portion of the basic drugs manufactured must compulsorily be sold and handed over to the formulating firm irrespective of the formulation requirement of the producing unit. Since no controls on sales have yet been imposed, these are still voluntary.

(v) *Raw materials.*—The Pharmaceutical Inquiry Committee (1954), The West Bengal Drugs Inquiry Commission (1964) and the Drugs Equipment Standards Committee (1965) had all emphasised on the need to supply raw materials from indigenous sources. Among other things, the establishment of a modern slaughter house in important cities for the purpose of collection and preservation of animal glands, cultivation, storage and marketing of medicinal plants, manufacture of essential coal tar products were some of the suggestions made by the above Committees, the latter two activities to be taken over by the Government. It has since been found that the establishment of a modern slaughter house in big cities is not an economic proposition since the recovery of glands which can be of pharmaceutical use is doubtful. The Central Indian Medicinal Plants Organisation and the Indian Council of Agricultural Research have taken up necessary steps for scientific cultivation of medicinal plants. Hindustan Organic Chemicals will develop the coal tar products. Another recommendation was that the import of raw materials should be allowed freely in the case of items which were not indigenously available. This has to a large extent been done. Remission or rebate of import duties was also suggested; in cases of disparities, action for redress is taken by Government. The Mukhopadhya Committee had suggested that Government may take steps to provide raw materials and packing material at the rates prevailing in 1963 to the drug industry. This is obviously a proposal which could not be enforced even if agreed to. It had suggested that the small manufacturers should be given interim increase of 10 per cent on the price of essential and life saving drugs. This was not agreed to by Government.

(vi) *Pharmaceutical Equipment.*—The manufacture of glass lined and high vacuumised equipment as well as other plant and machinery even with foreign collaboration was recommended by the Committee on Drugs Control (1966) and by the Commission set up by West Bengal Government (1964). Adequate enpcouragement has been given to such ventures, and capacity has already been set up in the country for the manufacture of glass lined vessels.

(vii) *Sales and Selling Commission.*—On the subject of availability of drugs, vaccines and sera made by Government institutions, the Pharmaceutical Inquiry Committee (1964) had suggested that such drugs should be made available to the general public also. Government institutes manufacturing vaccines and sera are now executing supplies of some of their drugs to the general public also through retail channels although such offtake is not high. Supplies made, the Committee observed, to hospitals at concessional rates by the trade found a way into the open market and disrupted normal trade. It recommended that such hospital supplies should be in special packings and not the same for supplies to the trade and that as far as possible even supplies to hospitals should be made through recognised trade channels. This recommendation was accepted and supplies to hospitals are made in hospital packets specially over printed with 'C.G.H.S. supply—not to be sold' where the supplies are made to the Central government health scheme. As regards other hospitals steps are being taken to lay down rules under the Drugs and Cosmetics Act, prohibiting the dealers from stocking such drugs, requesting organisations of manufacturers to evolve a symbol or a special distinguishing mark for such drugs and by requesting Government indenting organisations such as Military Stores and D.G.A.F.M.S. and others to reorganise their internal set up to prevent pilferage. A discount of 25 per cent of the prices at which the goods were sold to trade with an extra one and half to two per cent to cover packing etc. was suggested with the stipulation that the wholesaler should sell at a price which gives him a profit of ten per cent and pass on the balance to the retailer. By and large we find that the same pattern exists in so far as the dealers' commissions are concerned.

(viii) *Research.*—Stress has been laid on the setting up of research laboratories. We have discussed this general issue in chapter-18. There is no disagreement on the point that research is essential and that it must be encouraged.

(ix) *Economic unit.*—The Indian Pharmaceutical Delegation (1964) recommended the installation of multipurpose plants

in order that low volume of production of individual drugs may be compensated by increasing the number of drugs to be produced on the same plant. This recommendation is being acted upon by the industry.

(x) *Assistance by Govt.*—The West Bengal Drugs Enquiry Commission (1964) suggested that Government should improve conditions which cause difficulties to manufacturers, such as varying and inadequate pressure of the City's gas supply, fluctuation of voltage in the electric supply, high maintenance cost of air conditioning, non-availability of refrigeration, transport costs and inclusion of basic raw materials, under item 28 of the Tariff Schedule. These are issues which have otherwise too been pressed by manufacturers. The Indian Pharmaceutical Delegation made quite a few suggestions also with regard to the manufacture of drugs. It laid emphasis on the suitable choice for the sites for chemical plants and said that it should not be for the sake of regional distribution of industries, but by taking into account the essential technical considerations, such as assured and continuous water supply and discharge of effluence, and on close collaboration between Atomic Energy authorities and pharmaceutical industry, and tax reliefs on research work. These recommendations are still under the consideration of Government.

(xi) *Other guide-lines.*—suggested were the maintenance of liberal stocks of spares for replacement of essential items, setting up of pilot plants and encouragement from the Government to consulting organisations so as to enable them to undertake development work on behalf of the industry, liasion between the engineering industries and pharmaceutical manufacturers.

5.4.2. **Balance of payment and the drugs industry.**—The Pharmaceutical Enquiry Committee (1954) had recommended that no foreign organisation should be permitted to set up factories in India unless it undertook to manufacture such products which were not being manufactured already in adequate quantities by other factories in India and further that such manufacture done by starting from basic chemicals or intermediates as nearer to basic chemicals as possible within a reasonable time. Another recommendation was that in exceptional cases such companies can be set up with Indian capital participation and after the manufacturing process is completed with a provision for repatriation of foreign capital from the sixth to fifteenth year thereafter. It also suggested that no royalty should be paid on any product unless it had been included in the list furnished to and certified by the Ministry of Commerce and Industry, that there was no current

production of the items in the country, that the manufacturing operation should be divided into essential and non-essential, royalty rates for essential being 5% and for non-essential being 2%, that excessive rates or royalty for know-how should be reduced. It had also recommended that the foreign capital should not generally exceed 49 per cent, that agreements with foreign firms should be revised every five years, though in special cases, agreement for a longer period may be permitted initially. Clauses which prevent the purchases of machinery, raw materials or packing material from the best available sources and restricting the sale of a product manufactured under royalty to any particular party or its nominee were not to be allowed and it was suggested that suitable provision should be made for the training of Indian personnel. The establishment of foreign firms to compete in fields in which Indian manufacture has already been established is not being encouraged. Restriction on repatriation of foreign capital was not agreed to. Certification of products for payment of royalty was not also accepted. C.S.I.R. is consulted in all cases and collaboration is discouraged where indigenous know-how is available. Government are still considering the suggestion regarding different rates of royalty for essential and non-essential products. Where foreign exchange for the requirement of equipments is requested foreign investment of over 49 per cent has been accepted.

The various Committees and particularly the Pharmaceutical Inquiry Committee (1954) laid emphasis on the reduction of imports and one of the recommendations was the imposition of high customs duty on imported synthetic antimalarials, stoppage of import of vitamin preparations under OGL, bulk imports of vitamins only till such time as the manufacture developes in the country. These recommendations have been kept in view by Government when revising the import trade control policy. On the question of exports and export promotion, the Indian Pharmaceutical Delegation (1964) recommended that foreign firms should be encouraged in setting up plants for the purpose of converting the raw materials into semifinished concentrates and finished basic drugs suitable for export.

Patent Law.—The different committees have suggested suitable amendments to the Patent laws in order to eliminate abuses.

5.4.3. **Government control : Licensing of manufacture.**—That a licence under the Drugs and Cosmetics Act should be a condition precedent to the grant of licence under the Industries Development and Regulation Act was one of recommendations of

the Pharmaceutical Inquiry Committee of 1954. This is being done. The Committee on Essential Drugs (1966) recommended that before deciding on the manufacture of drugs which are being imported, their foreign exchange implications, their position regarding patents as well as data relating to costs of manufacture should not only be studied but also be communicated to the medical profession so that the latter could prescribe substitutes wherever necessary. This recommendation is under the active consideration of the Government of India.

5.4.4. The Committee on Drugs Control (1966) recommended that wholesale and retail trade should be separate and there should only be one licence for both biological and non-biological products, that the licence should be renewed on the lines of radio licence and the entire licensing system should be rationalised and made very rigid. These recommendations have been accepted and action is being taken to amend the Drugs and Cosmetics Act suitably. The same Committee recommended the uniform adoption of the National Formulary and the exclusion of any nomenclature or items not included therein. Government of India have accepted the National Formulary of India for uniform adoption throughout the country and have requested State Governments' Administrative Medical Officers, Employees State Insurance Corporation, Ministry of Railways and others to adopt the Formulary for indenting formulations of drugs used by them. It also said that the manufacture and marketing of irrational formulations should be studied and their stability ensured before allowing them to be marketed, that multiplicity of formulations should be prevented by requiring the prior approval of the formula. Some of the State Governments like Maharashtra and Gujarat have already taken steps to call for the stability data before permitting the manufacture of vitamin preparations. The recommendations for checking and prevention of multiplicity of formulations have been accepted by Government and necessary action is being taken to implement it by suitable amendments in the Drugs and Cosmetics Act. The Pharmaceutical Enquiry Committee (1954), Drugs Equipment Standards Committee (1965) and the Committee on Drugs Control (1966) had all recommended that dealers of raw materials used for drugs and their premises should be licensed. Government find it difficult to do so since no standards for crude drugs had been laid down. A rule however is being introduced in the Drugs and Cosmetics Rules requiring manufacturers to test their raw materials and maintain records of these tests. The Committee on Drugs Control had also recommended cooperative endeavour to set up testing laboratories.

This unfortunately has not been achieved. There are however certain testing laboratories the services of which can be availed of by producers.

5.4.5. Discontinuance of primary testing in the Central Drugs Laboratory was suggested since this denied the manufacturer his right of appeal. Owing to inadequate testing facilities in the States, it has not been possible for Government to accept this recommendation. The Central Indian Pharmacopoeia Laboratory would however be able to take up a portion of the present testing work from the Central Drugs Laboratory, Calcutta. Provision for more testing laboratories has been made in the Fourth Plan and the question of implementing this recommendation would be considered by the Government when these new laboratories start functioning. Each of the three Committees mentioned also recommended the setting up of well equipped independent laboratories in each of the State of group of States with or without central assistance. The position as has been mentioned earlier is that Maharashtra and Gujarat have well equipped testing laboratories. Rajasthan, Orissa and Andhra Pradesh do not have any testing laboratories at all and the remaining States have inadequate testing facilities. With a view to helping the States with inadequate testing facilities, the Central Government have placed at their disposal the facilities available at the Central Drug Laboratory of the Central Government at Calcutta. The Pharmaceutical Enquiry Committee (1954) and the Drugs & Equipment Standards Committee (1965) had recommended the strengthening as well as improving the quality of the staff for drugs control administration. It was suggested that the qualification and duties of the licensing officers should be laid down in the Act itself and these authorities should function directly under the States and not be attached to any departments. These recommendations have been accepted and necessary action is being taken to lay down the qualifications and duties of the licensing officers under the Drugs and Cosmetics Act, after consulting the States. The West Bengal Drugs Inquiry Commission (1964) had recommended that the State Government should create a cadre of scientific personnel and adequate testing facilities to handle the drugs control administration and ensure quality control. Since then facilities have been adequately expanded on the basis of this recommendation. Centralisation of the drugs control administration was recommended by the Pharmaceutical Inquiry Committee (1954) and it was suggested that the control on manufacture, sale and distribution exercised at present by the State Drugs Controllers should be brought under the Drugs Controller of the Government of India. The recommendation was considered

by Government at length but instead of centralising control over manufacture and sale of drugs under the Drugs and Cosmetics Act the Central Government decided to set up zonal offices of the Central Drugs Control Standards Organisation in the four zones of the country at Bombay, Calcutta, Madras and Ghaziabad which assist the State Drugs Control Organisations in maintaining the standards. These zonal offices have been set up and are functioning.

5.4.6. A number of suggestions have been made by various committees on the policy of licensing. Care in licensing to ensure that no monopolies are created is one of the suggestions made.

5.4.7. One of the suggestions made by the Pharmaceutical Enquiry Committee (1954) on the subject of labelling and marking on drugs, was, for instance, that Rule 109 (1) (a) relating to labelling applicable to Schedule C drugs should be made applicable to all drugs and rigidly enforced. As a result of this recommendation the necessary provision for showing the proper names of a drug in a conspicuous manner on the label of the containers on all drugs has been made in the Drugs and Cosmetics Rules and is being enforced. The West Bengal Drugs Enquiry Commission (1964) recommended tamper proof seals with the manufacturers' name and the name of the drugs in the case of capsules and statutory compulsion on the perforation of strips separating individual tablets. Some of these recommendations have already been adopted. The Indian Pharmacopoea Committee is going to take up the question of the mandatory provision for perforation of strips separating individual tablet. The Mukopadhyaya Committee (1966) also suggested that the question of laying down standards for packing and container should be referred to the Indian Pharmacopoea Committee, which has already been done. It had suggested that prescribing form should be standardised. This matter is under the consideration of Government. Another suggestion was that Government should direct manufacturers to indicate in their price lists three categories of prices, *viz.*, the trade price, the wholesale price and the consumers' price, the consumers' price being inclusive of excise duty. Under the latest Drugs Price Display and Control Order (1966) the wholesale and consumers' price has to be shown. Trade price is not shown and this requirement was not considered necessary. It was also suggested that manufacturers could print the consumers price of the drugs on the cartons with the words "local taxes extra". This recommendation has also been incorporated in the latest Price Control Order. The Indian Pharmaceutical Delegation (1964) has suggested that price regulation should be done

by negotiation with the manufacturers on the lines obtaining in U. K. This suggestion has not been found to be feasible.

5.4.8. More specific recommendations with regard to the control of drugs were that no new Schedule C manufacturing unit should be licensed without associating an officer of the Central Drugs Control Organisation in the inspection of such premises (Committee on Drugs Control, 1966). The Zonal Officers are assisting the State Government authority though no statutory provision to require this inspection has been made. Inspection method should be laid down for any Schedule C and C-1 products and there should be only one licence for both biological and non-biological products. This suggestion was considered by the Drugs Technical Advisory Committee and it has been recommended for acceptance. Necessary action is being taken to amend the Drugs and Cosmetics Rules accordingly. It was also suggested that sulpha drugs should be reclassified on the basis of safety margins, Schedules G, H, and L of the Drugs & Chemicals Rules should be re-examined, the definition of the terms 'Drugs' should be enlarged so as to include all drugs. All these suggestions have been accepted and steps are being taken to have the Act and Rules amended.

5.4.9. On the issue of control of quality of drugs, the West Bengal Drugs Enquiry Commission (1964) suggested that full time inspectors should be appointed, zonal organisations of the Central Drugs Control should be set up and joint inspection of Central and State authorities should be made to eliminate manufacturers maintaining incorrect records. Certain States like Rajasthan have *ex-officio* part-time inspectors and they have been asked to appoint whole time inspectors. The Drugs and Equipment Standards Committee (1965) suggested the strengthening of the Drugs Control staff, increase in the number of inspectors, supervision and assistance by Government of India to States, powers to drugs inspectors to enter premises for search and inspection, a special court for trying offences under the Drugs and Cosmetics Act. Most of these suggestions have been accepted or are in the process of acceptance. The West Bengal Drugs Enquiry Commission had suggested that the Act should be further amended to simplify the definition of the term drug and to re-classify it to include misbranded, spurious sub-standard and adulterated in relation to drugs. The Committee on Drug Control did not consider it necessary to re-classify misbranded and adulterated drug. The Mukhopadhyaya Committee had suggested that the Drugs and Cosmetics Act should be enforced in the State of Jammu and Kashmir also. This is being done.

CHAPTER 6

PRESENT POSITION OF THE INDUSTRY

6.1. Present position of the drugs and pharmaceutical industry in India :

6.1.1. Before the beginning of the First Five Year Plan there was very little indigenous manufacture of pharmaceutical chemicals and chemo-therapeutic agents. The industry was mainly engaged on processing activities and it is estimated that the total value of the basic drugs as well as formulations produced in the country in 1948 was about Rs. 10 crores only. Since then substantial growth has taken place creating a wide field of manufacture which includes pharmaceutical chemicals and intermediates also. It has been claimed that as a result of the rapid development of the drugs industry which no doubt includes the availability of newly discovered drugs also, there was substantial fall in death rate and infant mortality and rise in the expectation of life. Some of the figures furnished to us showing the lowering of the death rate as well as infant mortality are as follows :

Disease	per	year	Death rate	year	Death rate
Respiratory	100,000	1945	150	1961	80
Fevers	100,000	1945	130	1961	20
Tuberculosis . . .	400,000	1940	130	1962	60
All cases	1,000	1939	21·6	1964	9·4
Infant mortality . . .	1,000 live births	1939	156	1963	76

6.1.2. In 1952 the total number of units in the industry was 1643 of which the large scale units registered under the Industries (Development & Regulation) Act were only 75. The remaining 1568 were in the small-scale sector. The total capital

invested in the industry was estimated to be Rs. 23.64 crores and the total labour force then employed by the industry was 32.125 out of which technical personnel numbered 3,311. As against this the total number of licensed units in the industry today is 2,249 of which the units registered with the D.G.T.D. under the Industries (Development & Regulation) Act are 118. The number of medium and small-scale units is 2,131 of which only a few are equipped with adequate laboratory and other facilities. The paid up capital invested in the industry in 1965 was estimated to be of the order of Rs. 70 crores of which foreign investments amounted to about Rs. 18 crores. The total employment in the industry in 1965 was 44,000 of which about 4,000 were technical personnel.

6.1.3. The growth of the value of the output in the industry based on the figures furnished to us by the D.G.T.D. is as follows.—

TABLE 6.1

Value of total output of the industry from 1948 *to* 1967

(Rs. in crores)

Year	Total value of basic drugs produced	Total value of formulations produced	Total value of drugs produced
1948	N.A.	N.A.	10
1952	N.A.	N.A.	35
1958	N.A.	N.A.	54
1961	N.A.	N.A.	85
1964	N.A.	N.A.	135
1965	N.A.	N.A.	160
1966	26	149	175
1967	26	164	190

6.1.4. The broad distribution by categories of the value of the drugs produced and imported in 1966 and 1967 is given in Table 6.2

TABLE 6.2

Value of production and imports of basic drugs by categories during the years 1966 *and* 1967

(*Source* : D. G. T. D.)

(Rupees in lakhs)

Sl. No.	Name of the drug	Production (1966)	Imports (1966-67)	Production (1967)	Imports (1967-68) upto December
1	2	3	4	5	6
	I. *Antibiotics*				
1	Penicillin . . .	673	76·78	611	53·14
2	Streptomycin . . .	235	10·06	573	116·71
3	Tetracyclines . . .	217	103·53	206	33·39
4	Chloramphenicol . .	118	88·88	101	36·84
5	Newer antibiotics . .	..	..	..	..
	II. *Sulphas*				
6	Sulpha drugs . . .	274	295·62	168	201·06
	III. *Anti T. B. Drugs*				
7	P.A.S. & salts & esters .	114	31·85	91	9·51
8	I.N.H.	51	7·77	34	1·52
9	Thiacetazone . . .	17	..	20	..
	IV. *Anti Dysentry Drugs*				
10	Halogenated Oxyquinolines . . .	109	..	116	..
11	Emetine	27	..	26	..
12	Dehydroemetine . .	..	1·39	..	1·85

TABLE 6.2—*Contd.*

1	2	3	4	5	6
	V. *Anti-Leprosy Drugs*				
13	D.D.S.	3·8	0·17	2·7	1·77
	VI. *Anti-Diabetics*				
14	Insulin	20·6	1·48	29·7	1·08
15	Tolbutamide . . .	15	0·15	14·8	0·30
16	Chlorpropamide . .	..	0·12	..	0·35
17	Phenformin . . .	0·8	0·40	0·13	0·54
	VII. *Anti-Malarials*				
18	Chloroquin and Amodiaquin	48·6	30·41	36·3	18·89
	VIII. *Anti-Filarials*				
19	Diethylcarbamazine . .	17	0·31	24	0·29
	IX. *Anaesthetics*				
20	Ether (anaesthetic) . .	12·4	..	12·6	..
21	Ethyl chloride . .	12·3	..	16·5	..
22	Procaine Hcl . . .	1·2	5·94	17·2	8·50
23	Xylocaine . . .	5·5	..	8·5	..
	X. *Anaesthetics and Anti-pyretics*				
24	Aspirin	43	0·03	71	..
25	Sodium Salicylate . .	22	..	17	..
26	Phenacetin . . .	..	22·82	..	37·38
27	Paracetamol . . .	0·03	..	4	..
28	Phanylbutazone and other anti-rhoumatics . .	..	11·88	..	5·42
	XI. *Anthelimintics*				
29	Piperazine and derivatives	..	0·12	..	4·97
30	Bephenium Hydroxynaphthoate & other anthelmin-tics . . .	..	..	..	..

TABLE 6.2—*Contd.*

1	2	3	4	5	6
	XII. *Antacids*				
31	Magnesium Trisilicate .	..	..	..	..
32	Aluminium Hydroxide .	..	..	..	..
33	Magnesium Hydroxide .	..	..	..	..
34	Magnesium Carbonate .	..	..	..	..
	XIII. *Barbiturates*				
35	Phenoborbitone .	..	13·43	..	..
36	Other barbiturates .				
	XIV. *Corticosteriods*				
37	Prednisone and Prednisolone	..	0·08	85	0·39
38	Dexamethasare . .	..	8·49		6·82
39	Cortisone and Hydrocortisone	120	1·00		0·96
40	Trianecinolone . .	..	14·83		14·34
	XV. *Drugs of Vegetable Origin*				
41	Atropine	..	..	..	
42	Caffein	10·8	5·23	10·4	3·44
43	Digitalis Glycosides .	..	21·95	..	2·73
44	Ergot alkaloids . .	..	11·19	..	12·10
45	Morphine alkaloids . .	..	..	..	..
46	Codein	..	..	..	..
47	Reserpine	..	..	..	..
48	Scopdhamine	..	..	..	..
49	Strychmine . . .	30·8	..	19·6	..
	XVI. *Enzymes*				
50	Pepsin	..	2·92	..	3·50
51	Pancreatin	..	4·28	..	4·29
52	Papain	(Propuced in the small sector)		..	..
53	Diastase	..	1·15	..	1·07

TABLE 6.2—*Contd.*

1	2	3	4	5	6
	XVII. *Hormones*				
54	Adrenaline . . .	0·2	0·15	..	0·29
55	Pituitary (Postesir lobe) Extract . . .	..	4·32	..	3·49
56	Other hormones . .	(Information	given	under	corticosteroids)
	XVIII. *Muscle Relaxants*				
57	Gallamine Triethidode .	..	..	..	..
58	Tubercurarine . . .	..	..	..	..
59	Suxamethonium chloride .	..	..	..	..
	XIX. *Plasma Substitute*				
60	Dextran Injection . .	..	0·31	..	0·36
	XX. *Vitamins*				
61	Vitamin A . . .	118	..	144	..
62	Vitamin B1 . . .	..	26·28	..	20·97
63	Vitamin B2 . . .	..	23·48	..	7·91
64	Vitamin B6 . . .	5·5	20·28	..	14·86
65	Vitamin B12 . . .	104	1·08	96	13·30
66	Folic acid . . .	..	8·01	..	4·19
67	Nicotinic acid/amide .	37·5	0·14	27	0·06
68	Vitamin C . . .	97	77·04	55	45·42
69	Vitamin D . . .	..	6·81	0·2	5·50
70	Vitamin E . . .	..	9·67	..	9·00
71	Vitamin K . . .	2	1·17	..	0·24
72	Pantothenates and Pantothenol . . .	..	9·87	..	8·24
	XXI. *Other Miscellaneous Drugs*				
73	Amphetamine and its allyl derivatives . .	2·1	..	..	..
74	Antihistamines . .	..	49·1	..	8·39
75	Bismuth salts . . .	Manufacture not permitted			
76 to 78	Calcium salts . . .	23	1·74	22	2·15
79	Glyceryl Trinitrate etc. .	..	..	..	..
80	Ephedrine . . .	0·2	19·25	0·5	12·29
81	Hydrocholorothiazide .	..	0·01	..	0·02

TABLE 6.2—*Concld.*

1	2	3	4	5	6
82	Polythiazide . . .	..	1·2	..	..
83	Analgin	..	26·70	..	27·96
84	Methaquolone Hcl . .	..	..	..	..
85	Nikethamide . . .	6	..	5	..
86	Nitrofurans . . .	..	..	..	..
87	Pethidine . . .	..	1·29	..	0·67
88	Sera	..	16·55	..	6·75
89	Tranquilizers . . .	..	5·26	..	15·85
90	Vaccine	..	..	..	..
91	Polio vaccine . . .	..	..	..	..
	TOTAL .	2594·33	1,083·71	2,439·13	791·04

A word need to be said about the classification of basic drugs. From a perusal of the reports of the various Committees it appears that different classifications were adopted at different times and the classifications in which the data have been made available to us from various sources are also not uniform. Based on the classifications incorporated in the various reports we would suggest that steps may be taken both by the Government and by the industry to arrive at uniform classifications and sub-classifications of the basic drugs and that information may be collected and published for these on uniform lines.

6.1.5. Of the total of about 884 basic drugs in the Indian Pharmacopoeia 60 are being produced in the country. The import of basic drugs is substantial and contributes about 14 per cent of the total value of the production in the country. The formulations contain as raw materials both indigenous as well as the imported basic drugs and their production value therefore covers the value of basic drugs too. The import of formulations was almost insignificant representing only about 0.2 per cent of the total value of formulations produced in the country.

6.1.6. Based on a survey of 77 units in the organised sector the position with regard to the investment as on 1st July 1967 and turnover for the year 1966 of the drugs industry in India, value of raw material consumed, personnel employed and the extent of foreign collaboration was as given in Table 6.3.

TABLE 6.3

Particulars about the large scale units in the drugs and pharmaceuticals industry

(*Source* : D. G. T. D.)

Sl. No.	Classification	Number of units	Subscribed capital (Rs. in lakhs) (1-7-67)	Capital assets (Rs. in lakhs) (1-7-67)	Working capital (Rs. in lakhs) (1-7-67)	Sale value of products in 1966 (Rs. in lakhs)	Value of raw materials consumed in 1966 (Rs. in lakhs)			Personnel			Exports in 1966 (Rs. in lakhs)
							Imported	Indigenous	Total	Technical	Others	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Units with 100 per cent foreign capital.	6	719.00	785.24	650.64	2026.51	158.71	537.86	696.57	898	3923	4821	39.74
2	Units with majority foreign equity participation	15	1632.41	2031.38	2211.41	4410.79	477.28	708.38	1508.08 (A)	1471	6797	8268	46.04
3	Units with 50 per cent foreign equity participation	6	345.10	503.66	649.65	989.85	25.12	59.66	84.78 (B)	361	1197	1758	2.65
4	Units with minority foreign equity participation	12	641.40	1186.35	934.99	1579.00	149.82	360.83	515.75 (C)	875	3883	4756	11.17
5	Units entirely Indian-owned	38	1312.95 (E)	1641.48	1229.08	4417.85	415.57	1135.68	1719.47 (D)	2998	15632	18630	50.08
	TOTAL	77	4650.86	6148.11	5748.77	13424.00	1226.50	2802.41	4924.65	6801	31432	38239	149.68

NOTES (A) Break-up not available for one unit.

(B) Information for four units only.

(C) Information for 11 units only and break-up not available for one unit.

(D) Information for 37 units only, and break-up not available for five units.

(E) Information for 33 units only.

Figures for the public sector units (H.A.L. and I.D.P.L.) have not been included.

It would be observed that a very large portion of the total production of drugs in India is controlled and handled by subsidiaries of foreign based firms or by such firms which have a substantial proportion of capital participation of foreign organisations.

6.1.7. Another factor which is significant is the small ratio which the fixed assests bear to the total turnover. It gives at first sight an impression that the industry is not capital intensive but this needs to be qualified. While heavy investments are not needed for the production of formulations the value of which is approximately 80 per cent of the total value of the drugs produced, substantial investments are needed for the manufacture of basic drugs which constitute only about 1/5 the of the total value of the drugs marketed but form the case for all drugs produced.

6.1.8. The industry is concentrated in a few States. The following table gives the Statewise distribution of the licensed drugs and pharmaceutical manufacturers :

TABLE 6.4

State-wise distribution of units

Sl. No.	Name of the State	Registered with D.G.T.D.	Others	Total
1	2	3	4	5
1	Andhra Pradesh	4	168	172
2	Assam	..	12	12
3	Bihar	1	38	39
4	Delhi	1	80	81
5	Gujarat	11	129	140
6	Goa	..	..	..
7	Haryana	..	..	..
8	Himachal Pradesh	..	9	9

TABLE 6.4—*Contd.*

1	2	3	4	5
9	Jammu & Kashmir	..	5	5
10	Kerala	1	51	52
11	Madhya Pradesh	..	108	108
12	Madras	7	192	199
13	Maharashtra	63	673	736
14	Mysore	2	54	56
15	Orissa	..	24	24
16	Pondicherry	..	2	2
17	Punjab	3	103	106
18	Rajasthan	..	51	51
19	Tripura	..	4	4
20	Uttar Pradesh	2	196	198
21	West Bengal	23	232	255
	TOTAL	118*	2,131	2,249

*This was the number of units in the organised sector in 1967. We are informed that since then, seven units have been registered with the D. G. T. D. and 18 units transferred to the small scale sector making up a total of 107 units only. We have, however, not taken into account the changed position for this Report.

Maharashtra has by far the largest number of units in the organised sector. Next comes West Bengal followed by Gujarat. It is very significant that in each of these three States the number of small scale units are proportionately about 10 times the number of large scale units. In the case of others the proportion is much higher. For example, Uttar Pradesh has only two large scale units but as many as 196 small scale units.

6.1.9. Out of the 118 units in the organised sector only 60 and of the 2131 small scale units only 193 are the manufacturers of basic drugs. The present capacity of the industry for the various bulk drugs as reported by the D.G.T.D. as also additional capacities suggested by the Development Council to reach the Fourth Plan Targets are given in Table 6.5 :

TABLE 6.5

Licensed, installed and targets of capacity for basic drugs

(*Source* : D. G. T. D.)

Sl. No.	Name of the basic drug	Unit of measurement	Capacity licensed/ approved as on 1-4-1968	Capacity installed as on 1-4-1968	Development Council Recommendation of targets for 1970-1971	Revised targets suggested for 1973-1974 by Development Council
1	2	3	4	5	6	7
	I. *Antibiotics*					
1	Penicillin. . . .	MMU	264	167	250	250
2	Streptomycin . . .	Tonnes	215	140	300	300
3	Tetracyclines . . .	Do.	144·5	26	150	150
4	Chloramphenicol . .	Do.	72·4	41	100	100
5	Newer Antibiotics . . (Neomycine, Bactracin, Erythromycin, Polymicin, Hamycin, Kanemycin, Grisofulvin)	Do.	14·0	Nil	30	30
	II. *Sulphas*					
6	Sulpha Drugs . . .	Do.	1000	556	1500	1800
	III. *Anti T. B. Drugs*					
7	P.A.S. Salts & Esters .	Do.	460	402	750	750
8	I.N.H.	Do.	406	71·5	450	250
9	Thiacetazone . . .	Do.	61	15	100	100
	IV. *Anti-Dysentry Drugs*					
10	Halogenated Oxyquinoline	Do.	84·1	84·1	200	150
11	Emetine	Kgs.	590	590	250	250
12	Dihydroemetine . .	Do.	..	..	100	100

TABLE 6.5—*Contd.*

1	2	3	4	5	6	7
	V. *Anti-Leprosy Drugs*					
13	D.D.S.	Tonnes	18·3	18·5	80	80
	VI. *Anti-Diabetics*					
14	Insulin	MU	1500	1500	1000	1000
15	Tolbutamide . . .	Tonnes	43	43	45	105
16	Chlorpropamide . .	Do.	3·2	3·2	45	
17	Phenformin . . .	Do.	1·0	1·0	15	
	VII. *Anti-Malarials*					
18	Amodiaquin, Chloroquin & Pyrimethamine .	Tonnes	63	39	120	120
	VIII. *Anti-Filarial*					
19	Diethylcarbamazine . .	Do.	56	26	50	50
	IX. *Anaesthetics*					
20	Ether (anaesthetic) . .	Do.	350	350	400	400
21	Ethyl Chloride . .	Do.	144	144	150	150
22	Procaine Hcl. . . .	Do.	102	90	100	100
23	Xylocaine . . .	Kgs.	500	500	5000	5000
	X. *Analgestics and Antipyretics*					
24	Aspirin	Tonnes	560	740	1000	1000
25	Sodium Salicylate . .	Do.	405	379	800	800
26	Phenacetin . . .	Do.	152	112	250	260
27	Paraectaneol . . .	Do.	71	30	10	
28	Phenylbutazone . .	Do.	20	10	10	75
	XI. *Anthelmintics*					
29	Piperazine & derivatives .	Do.	51·85	Nil	50	50
30	Bephenium Hydroxynaph	Do.	5	5	5	10

TABLE 6.5—*Contd.*

1	2	3	4	5	6	7
	XII. *Antacids*					
31	Magnesium Trisilicate .	Tonne	Demands are being met from indigenous production		100	100
32	Aluminium Hydroxide .	Do.			100	100
33	Magnesium Hydroxide .	Do.			50	50
34	Magnesium Carbonate .	Do.			150	150
	XIII. *Barbiturates*					
35	Phenobarbitone . .	Do.	10	Nil	20	50
36	Other barbiturates (Amylobarbitone, Pentobarbitone)	Do.	..	Nil	10	
	XIV. *Corticosteroids*					
37	Prednisone & Prednisolone	Kgs.	2723	6720 (including intermediates)	600	1500
38	Dexamethasone . .	Do.			50	
39	Cortisone & Hydrocortisone	Do.	(All Synthetic hormones)		250	
40	Triamicinolone . .				25	
	XV. *Drugs of Vegetable Origin*					
41	Atropine . . .	Kgs.	Capacity to be fixed on the basis of performance		50	50
42	Caffeine	Tonnes	22	22	150	100
43	Digitalis Glycosides . .	Kgs.	(Capacity not fixed)	26·0	100 (25 as Digoxin)	100
44	Ergot alkaloids . .	Kgs.			50	50
45	Morphine alkaloids . .	Do.	2000	2000	250	2000
46	Codein	Kgs.	(Demands being met from indigenous production)		5000	Double the present consumption

TABLE 6.5—*Contd.*

1	2	3	4	5	6	7
47	Reserpine . . .	Kgs.	14	12	50	50
48	Scopolamine . . .	Do.	(Capacity to be fixed on the basis of performance)		50	50
49	Strychnine . . .	Tonnes	36	36	20	(May be stepped up as per demand)
	XVI. *Enzymes*					
50	Pepsin	Tonnes	19·2	Nil	20	20
51	Pancreatin . . .	Do.	72	Nil	36	36
52	Papain	Do.	(Small Industry Sector)		10	10
53	Diastase	Do.	28		15	15
	XVII. *Hormones*					
54	Adrenaline . . .	Kgs.	48	48	20	20
55	Pituitory (Posterior lobe) extract . . .	Do.	Nil	Nil	50	50
56	Other Hormones . .	Do.	(Information given under corticosteroids)		250	250
	XVIII. *Musole Relaxants*					
57	Cellemine Triethiodide .	Kgs.	Nil	Nil	20	20
58	Tubercurarine . . .	Do.	(Capacity to be fixed)		30	30
59	Suxaneethonium Chloride .	Do.	5	Nil	20	20
	XIX. *Plama Substitute*					
60	Dextra Injection . .	Litres	2,70,000	259,200	1 mln.	1 mln.
	XX. *Vitamins*					
61	Vitamin A . . .	MMU	25	25	40	50
62	Vitamin B-1 . . .	Tonnes	30	Nil	75	75
63	Vitamin B-2 . . .	Do.	5	Nil	10	10

TABLE 6.5—*Contd.*

1	2	3	4	5	6	7
64	Vitamin B-6 . . .	Tonnes	1	1	15	15
65	Vitamin B-12 . . .	Kgs.	76·2	44·2	60	150
66	Folic Acid . . .	Tonnes	1	Nil	5	5
67	Nicotinic Acid/Amide .	Do.	134	77	150	150
68	Vitamin C . . .	Do.	245	120	375	375
69	Vitamin D . . .	Do.	1	1	1	1
70	Vitamin E . . .	Tonnes	Nil	Nil	4	4
71	Vitamin K . . .	Kgs.	150	150	1300	1300
72	Pantothenate & Panthenol	Tonnes	Nil	Nil	12	12
	XXI. *Other Miscellaneous Drugs*					
73	Amphetamine & its allyl derivatives . . .	Kgs.	200	200	200	200
74	Anti Histamines . .	Tonnes	5·95	5·95	40	40
75	Bismuth Salts . . .	Do.	103	103	15	..
76	Calcium Lactobionate .	Do.	247·7	247·7	300	300
77	Calcium Gluconate . .					
78	Calcium Lactate . .	Do.	12	12	200	200
79	Glyceryl Trinitrate Erythrytryl, Tetranitrate, P.E.T.N. . . .	Kgs.	..	..	100	100
80	Ephedrine . . .	Tonnes	19·8	1·8	30	30
81	Hydrochlorthiazide . .	Do.	13	10	50	50
82	Polythiazide . . .	Do.	Nil	Nil	10	10
83	Analgin	Do.	10	10	60	150
84	Miethaquolone Hcl. .	Do.	..	..	10	10
85	Nikethamide . . .	Do.	7·1	7·1	20	20
86	Nitrofurous . . . (Nitrofurantoin, Furazolidone, Nitrofurazone)	Do.	20 (letter of intent)	Nil	20	20

TABLE 6.5—*Concld.*

1	2	3	4	5	6	7
87	Pethidine . . .	Kgs.	1230	Nil	800	1000
88	Sera	MU	..	..	30000	..
89	Tranquilizers (chlorpromazine Meeprobamate etc.)	Tonnes	(Information to be collected)	..	40	40
90	Vaccines . . .	Ltrs.	..	..	5000	..
91	Folio Vaccines . .	M. Doses	Nil	Nil	20	20

6.1.10 Comparative figures of the sales value of drugs, number of units, employment and per capita expenditure on medicine in some of the leading manufacturing countries of the world are as follows :

TABLE 6.6

Sales value of drugs and per capita expenditure on medicine in leading drug manufacturing countries

Country	Year	Sales value in crores of Rs.	No. of units	Employment in '000	Per capita expenditure on medicine in Rs.
U.S.A. . . .	1966	2539	1325	127	130
Japan . . .	1963	713	2390	83	74
U.K. . . .	1965	452	320	70	40
West Germany .	1967	844(A)	659	60(B)	54
India . . .	1967	190	2249	44	4

[(A) Value of production. (B) Approximate employment in 1966.]

(*Sources* : U.S.A. PMA FACT Book—U.K. Pharmaceutical Industry Source book issued by ABPI—Rest from other sources)

Between 1950 and 1966 the sale by value of drugs produced in U.S.A. was almost doubled. In the case of U.K. in 1958 the ex-industry sale value in terms of Rupees was 248 crores only.

6.2. Present position of the drugs and pharmaceutical industry manufacturing specified basic drugs.

6.2.1. Of the 18 basic drugs under inquiry, the first to be manufactured was Tetanus Anti-toxin the production of which was taken up in the year 1930 by Bengal Chemical and Pharmaceutical Works, Calcutta. Between 1930 and 1941 no further headway was made, but in the latter year Iodochlor-hydroxy-quinoline was taken up for manufacture by the East India Pharmaceutical works, Calcutta. During the First Five Year Plan (1951-56) three more basic drugs were taken up for manufacture for the first time. These were Sulphadiazine, I.N.H. and P.A.S. The units which commenced production of these and two drugs mentioned earlier as well as the capacities and production set up by them up to end of the first Five Year Plan were as given in Table 6.7 :

TABLE 6.7

Particulars of the specified basic drugs manufactured at the end of the First Plan period

Sl. No.	Name of basic drug	Name of the Unit	Unit of measurement	Capacity at the end of 1955-56	Annual production at the end of 1955-56
1	2	3	4	5	6
1.	Sulphadiazine	1. Atul Products	Tonnes	180	17
		2. May & Baker	,,	60	3
				240	20
2.	Iodo-chlorhydroxy-quinoline.	1. East India Pharmaceutical.	Kg.	12,300	N.A.
		2. Bengal Chemical	,,	600	N.A.
		3. Standard Pharmaceuticals	,,	1,500	684
		4. Hind Chemicals	,,	800	68
				15,200	752

TABLE 6.7—*Contd.*

1	2	3	4	5	6
3.	I.N.H. . . .	1. Bengal Immunity .	Kg.	100	83
		2. Bengal Chemical .	,,	450	75
				550	158
4.	P.A.S. . . .	1. Bio-Chemical and Synthetic	Tonnes	48	4
				48	4
5.	Tetanus Antitoxin .	1. Bengal Chemical .	MU	200	158
		2. Bengal Immunity .	,,	4,000	1,665
		3. Haffkine Institute .	,,	2,000	1,965
				6,200	3,788

(*The names of the units are given in this table and also hereafter in this Report in abbreviated forms. Full names of the units and the abbreviations used are given in Appendix-VI.)

During the Second Five Year Plan seven more of the specified drugs were taken up for manufacture and the particulars of these together with the units which started manufacture as well as the capacities set up by them in 1960-61 are given in Table 6.8:

TABLE 6.8

Particulars of additional drugs manufactured during the Second Plan period

Sl. No.	Name of basic drug	Name of the units	Unit of measurement	Capacity at the end of 1960-61	Annual production at the end of 1960-61
1	2	3	4	5	6
1.	Vitamin-A . .	1. Roche Products .	MMU	10	9·2
		2. Glaxo Labs .	,,	10	4·4
				20	13·6
2.	Vitamin-B12 . .	1. Merck Sharp .	Kg.	25	8
				25	8

TABLE 6.8—*Contd.*

1	2	3	4	5	6
3.	Penicillin . .	1. Hindustan Antibiotics.	MMU	40	40·24
		2. Alembic Chemical	,,	10	0·74
				50	40·98
4.	Amodiaquin . .	1. Parke-Davis . .	Kg.	36,000	3,107
		2. Albert David .	,,	600	264
				36,600	3,371
5.	Chloroquin . .	1. Bengal Immunity	,,	1,080	676
				1,080	676
6.	Tolbutamide . .	1. Albert David .	,,	3,600	366
				3,600	366
7.	Prednisolone . .	1. Merck Sharp .	,,	60	25
		2. Glaxo Labs. . .	,,	120	45
				180	70

During the Third Plan period the remaining six of the specified drugs were taken up for production particulars in respect of them are given in Table 6.9 :

TABLE 6.9

Particulars of the additional specified drugs taken up during the Third Plan period

Sl. No.	Name of the basic drug	Name of the Unit	Unit of measurement	Capacity at the end of 1965-66	Annual production at the end of 1965-66
1	2	3	4	5	6
1.	Vitamin C . .	Sarabhai Merck .	Tonnes	90	102·8
				90	102·8

TABLE 6.9—*Contd.*

1	2	3	4	5	6
2.	Streptomycin .	. 1. Hindustan Antibiotics.	Tonnes	80	67
		2. Synbiotics . .	,,	40	38
				120	105
3.	Chloramphenicol	. 1. Parke-Davis . .	Kg.	10,000	11,594
		2. Boehringerknoll .	,,	12,000	13,400
		3. Mac Labs. . .	,,	1,200	400
				23,200	25,394
4.	Tetracyclines .	. 1. Cyanamid . .	Tonnes	10	5·0
		2. Hindustan Antibiotics.	,,	1·5	0·2
		3. Pfizer . .	,,	10	9·7
		4. Synbiotics . .	,,	4	4·0
				25·5	18·9
5.	Chlorpropamide	. 1. Albert David .	Kg.	3,600	87
		2. Bengal Chemical	,,	600	99
		3. Pfizer . .	,,	5,000*	6,200
				9,200	6,386
6.	Insulin . .	1. Boots . .	MU	1,080	439
				1,080	439

[*Single shift]

6.2.2. **Number of units.**—The total number of units licensed to manufacture one or more of the specified basic drugs is 60. Of these 44 are registered with the D.G.T.D. and the remaining 16 are in the small scale sector. Only 34 units† in the large

†This was the number of units in production of the specified basic drugs as at the end of 1967. Since then, the Antibiotics Plant of Indian Drugs and Pharmaceuticals Ltd., at Rishikesh has established capacities for Penicillin, Streptomycin and Tetracyclines during the period March-June 1968. Bayer (India) Ltd., Bombay has estiblished capacity for chloroquin in February 1968. As we have surveyed the capacity and production of the units in the drgus industry for the past years 1967 only, we have not considered these two units as in production for the purposes of this Report.

scale sector have so far installed their capacities and commenced manufacture of one or more of the specified drugs, while the remaining ten units have yet to set up their capacities. In the small scale sector only 11 units have installed capacities and commenced production. The names of the units licensed to manufacture the specified drugs both in the large scale as well as small scale sector together with the names of the drugs for which licences have been issued and which have also started production are given in Table 6.10 :

TABLE 6.10

Particulars of Units which have commenced manufacture of specified basic drugs

Sl. No.	Name of unit and location of factory	Names of basic drugs licensed/ approved to be manufactured by the unit	Year of commencement of production
1	2	3	4
		I. *Units Registered with D.G.T.D.*	
1	Albert David Ltd., Calcutta	(1) (a) Di-iodo-hydroxy-quinoline	1945
		(b) Iodo-chlor-hydroxy-quinoline.	1951
		(2) I.N.H.	1952
		(3) Tolbutamide	1957
		(4) Amodiaquin	1959
		(5) Chlorpropamide	1961
2	Alembic Chemical Works Co. Ltd., Baroda	(1) Di-iodo-hydroxy-quinoline	1957
		(2) Pencillin	1960
3	Atul Products Ltd., Bulsar	(1) Sulphadiazine	1952
		(2) Iodo-chlor-hydroxy-quinoline	1956

TABLE 6.10—*Contd.*

1	2	3	4
4	Bengal Chemical & Pharmaceutical Works Ltd., Calcutta.	(1) Tetanus Anti-toxin . .	1930
		(2) Iodo-chlor & Di-iodo-hydroxy-quinoline.	1942
		(3) I.N.H.	1954
		(4) Chlorpropamide . . .	1962
5	The Bengal Immunity Co. Ltd., Calcutta.	(1) Tetanus Anti-toxin . .	1933
		(2) I.N.H.	1954
		(3) Di-iodo-hydroxy-quinoline .	1955
		(4) Chloroquin	1956
6	Biological Evans Ltd., Hyderabad.	(1) P.A.S.	1962
		(2) I.N.H.	1963
		(3) Dio-iodo-hydroxy-quinoline .	1966
		(4) Tetanus Anti-toxin . .	1966
7	Bio-Chemical & Synthetic Products Ltd., Hyderabad.	P.A.S.	1955
8	Boehringer-Knoll Ltd., Bombay.	Chloramphenicol . . .	1962
9	Boots Pure Drugs Co., (India) Ltd., Bombay.	Insulin	1965
10	Brahmachari Research Institute Private Ltd., Calcutta.	Iodo-chlor & Di-iodo hydroxy-quinoline	1953
11	Calcutta Chemical Co. Ltd., Calcutta.	I.N.H.	1957
12	Chemo-Pharma Laboratories Ltd., Bombay.	I.N.H.	1966
13	Cyanamid India Ltd., Bulsar.	Tetracyclines	1961

TABLE 6.10—*Contd.*

1	2	3	4
14	Dey's Medical Stores (Mfg.) Co. Private Ltd., Calcutta.	Tetanus Anti-toxin . . .	1966
15	East India Pharmaceutical Works Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline .	1941
16	Glaxo Laboratories (India) Ltd., Bombay.	(1) Prednisolone . . .	1958
		(2) Vitamin A	1958
		(3) Vitamin B 12 (b) . .	1963
17	Haffkine Institute, Bombay	Tetanus Anti-toxin . . .	1941
18	Hind Chemical Ltd., Kanpur	Iodo-chlor-hydroxy-quinoline .	1960
19	Hindustan Antibiotics Ltd., Poona.	(1) Penicillin	1956
		(2) Tetracycines . . .	1961
		(3) Streptomycin . . .	1962
20	Hoechst Pharmaceuticals Ltd., Bombay.	Tolbutamide	1962
21	Mac Laboratories Ltd., Bombay.	Chloramphenicol . . .	1964
22	May & Baker Ltd., Bombay	(1) Sulphadiazine . . .	1955
		(2) Di-iodo-hydroxy-quinoline .	1956
23	Merck Sharp & Dohme of India Ltd., Bombay.	(1) Vitamin B12 . . .	1959
		(2) Vitamin B12(b) . . .	1962
		(3) Prednisolone . . .	1959
24	Oriental Pharmaceutical Industries Ltd., Bombay.	I.N.H.	1959
25	Parke-Davis (India) Ltd., Bombay.	(1) Amodiaquin . . .	1959
		(2) Chloramphenicol . . .	1961

1	2	3	4
26	Pfizer Limited, Bombay and Chandigarh.	(1) I.N.H.	1956
		(2) P.A.S.	1961
		(3) Tetracyclines	1961
		(4) Chlorpropamide	1965
27	Roche Products Ltd., Bombay.	Vitamin A	1959
28	Sarabhai Merck Ltd., Baroda.	Vitamin C	1961
29	Synbiotics Ltd., Baroda	(1) Di-iodo-hydroxy-quinoline	1953
		(2) I.N.H.	1958
		(3) Tetracyclines	1962
		(4) Streptomycin	1964
30	Standard Pharmaceuticals Ltd., Calcutta.	(1) Iodo-chlor & Di-iodo-hydroxy-quinoline.	1959
		(2) Penicillin	1962
31	Themis Pharmaceuticals, Bombay.	Vitamin B12	1967
32	Unichem Laboratories Ltd., Bombay.	Tolbutamide	1960
33	Wander Pharmed Ltd., Bombay.	P.A.S.	1964
34	Wyeth Laboratories Ltd., Bombay.	Prednisolone	1963
	II. Units in the small scale sector		
1	Alliance Trading Corpn. Pvt. Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline	1963
2	British Medicine and Pharmaceutical Co., Calcutta.	Iodo-chlor-hydroxy-quinoline	1965
3	Eagle Laboratory, Calcutta	Iodo-chlor-hydroxy-quinoline	1963
4	G.D.A. Chemicals, Calcutta.	Iodo-chlor-hydroxy-quinoline	1948

1	2	3	4
5	Dr. Karanth's Pharmaceutical & Chemical Industries, Hyderabad.	I.N.H.	1964
6	Navarathna Pharmaceuticals, Cochin-2.	Di-iodo-hydroxy-quinoline . .	1965
7	Neogy Laboratories, Calcutta.	(a) Iodo-chlor-hydroxy-quinoline (b) Di-iodo-hydroxy-quinoline .	1958 1958
8	Sunny Industries, Pvt. Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline .	1965
9	Syno-Chem Laboratories, Calcutta.	Iodo-chlor-hydroxy-quinoline	1963
10	Sunita Laboratories, Indore.	I.N.H.	1967
11	Swiss Chemicals, Hyderabad-20.	(a) Iodo-chlor-hydroxy-quinoline (b) Di-iodo-hydroxy-quinoline .	1965 1965

The Antibiotics Plant of Indian Drugs & Pharmaceuticals Ltd., at Rishikesh commenced production of Pencillin, Streptomycin and Tetracyclines in April-June 1968 and Bayer (India) Ltd., Bombay commenced production of Chloroquin in February 1968. The following units though licensed for the production of one or more of the specified drugs have not yet started production.

TABLE 6.11

Licensed units which have not yet started production of specified basic drugs

Sl. No.	Name of the units with location	Basic drug for which licenced	Year of grant of licence	Expected date for commencement of production and Remarks
1	2	3	4	5
		I. Units registered with D.G.T.D.		
1	Alembic Chemical Works Co. Ltd., Baroda.	Vitamin B12(b)	1966	1969

TABLE 6.10—*Contd.*

1	2	3	4	5
2	Atul Drug House, Bombay.	I.N.H.	1967	End of 1969
3	Chemical, Industrial & Pharmaceutical Laboratories Ltd., Bombay.	I.N.H.	1967	By end of 1968
4	Chowgule Hind Private Ltd., Bombay.	Tetanus-Antitoxin.	1966	No firm date furnished.
5	Chemo-Pharma Laboratories Ltd., Bombay.	P.A.S.	1967	1969
6	Dey's Medical Stores (Mfg) Co. Pvt. Ltd., Calcutta.	Chloramphenicol	1962	1969
7	Hindustan Antibiotics Ltd., Poona.	Vitamin-C	1961	Plant being designed.
8	IDPL, New, Delhi, Hyderabad Plant.	I.N.H.	1962	September 1968
9	Indian Research Institute Private Ltd., Calcutta.	Iodo-chlor-hydroxyquinoline.	1952	End of 1968
10	Kemp & Co., Bombay .	Chlorpropamide	1960	No programme at present.
11	May & Baker Ltd., Bombay.	Chloroquin	1963	Do.
12	Neo Pharma Industries Private Ltd., Bombay.	Chloramphenicol	1960	Patent suit by Parke-Davis is holding up the programme.
13	South India Research Institute, Vijayawada.	(1) I.N.H. (2) P.A.S.	1967 1967	July 1968 No programme at present.

TABLE 6.10—*Contd.*

1	2	3	4	5
14	Synbiotics Ltd., Baroda	Vitamin B-12	1956	Plant installed
15	Themis Pharmaceuticals Ltd., Bombay.	Iodo-chlor-hydroxy-quinoline.	1965	End of 1968
16	Warner Hindustan Ltd., Hyderabad.	I.N.H.	1962	End of 1968
		II. *Small Scale Units*		
1	British Medicine and Pharmaceutical Co., Calcutta.	I.N.H.	..	No firm date furnished.
2	G.D.A. Chemicals, Calcutta.	(1) I.N.H. (2) P.A.S.	.. ..	No firm date furnished.
3	Gujarat Pharmaceuticals, Ahmedabad.	I.N.H.	—	September 1968
4	Quinochem Laboratories, Bombay.	Iodo-Chlor-hydroxy-quinoline	..	No firm date furnished.
5	Tex Dyes Corporation, Bombay.	Do.	—	June 1968
6	Universal Chemicals, Bombay.	Do.	—	October, 1968
7	Usan Laboratories, Bombay.	Do.	—	June 1968

6.2.3. **Location of the Units.**—Units which manufacture specified drugs are located in fourteen places spread over eight States, namely, Andhra Pradesh, Gujarat, Kerala, Maharashtra, Madhya Pradesh, Punjab, Uttar Pradesh and West Bengal. One of the manufacturing units, namely, Pfizer has two plants, one located in Bombay which produces I.N.H. and P.A.S. and the other at Chandigarh which produces Tetracyclines and Chlorpropamide. One of the units, namely, Indian Drugs and Pharmaceuticals Ltd., which is in the public sector has two plants, one at Rishikesh, known as Antibiotics Plant and the other at Hyderabad, known as Synthetic Drugs Plant. Of the 46 factories which have commenced production of one or more of the basic

drugs, 17 are in Bombay, 15 in Calcutta, four in Hyderabad, three in Baroda, two in Bulsar, and one each in Chandigarh, Kanpur, Indore, Poona and Cochin. Most of the units are thus concentrated in Bombay and Calcutta. Of the small scale units, as many as seven out of 11 are concentrated in Calcutta. Of 10 prospective manufacturing units for the specified drugs in the large scale sector and five in the small scale sector, a majority of the former and almost all of the latter will be located in Bombay. Though Government policy favours dispersal as is evidenced by the location of the two public sector units, the Hindustan Antibiotics at Pimpri in Poona, and the Indian Drugs and Pharmaceuticals in Rishikesh and Hyderabad, the private sector units of basic drugs have a tendency to conglomerate in Bombay and Calcutta for reasons of availability of better services and nearness to customers. The geographical distribution of units manufacturing the specified basic drugs as well as of prospective units both in the large as well as small scale sectors is given in Table 6.12 :

TABLE 6.12

Distribution of location of units for the specified basic drugs

State/Town	No. of units licensed/approved			No. of units which commenced production			No. of units which have yet to commence production		
	Large Scale	Small Scale	Total	Large Scale	Small Scale	Total	Large Scale	Small Scale	Total
1 2	3	4		5	6	7	8		9
1. Andhra Pradesh.									
Hyderabad .	4	2	6	2	2	4	2	..	2
Vijayawada	1	..	1	..	..	..	1	..	1
2. Gujarat									
Ahmedabad	..	1	1	..	..	..	..	1	1
Baroda	3	..	3	3	..	3	..	..	..
Bulsar .	2	..	2	2	..	2	..	..	..

TABLE 6.12—*Contd.*

1	2	3	4		5	6	7	8		9
3. Kerala										
	Cochin .	..	1	1	..	1	1	..	..	..
4. Maharashtra										
	Bombay .	22	4	26	17	..	17	5	4	
	Pimpri .	1	..	1	1	..	1	..	..	..
5. Madhya Pradesh.										
	Indore .	..	1	1	..	1	1	..	..	..
6. Punjab										
	Chandigarh .	1	..	1	1	..	1	..	..	..
7. Uttar Pradesh										
	Kanpur .	1	..	1	1	..	1	..	..	..
	Rishikesh .	1	..	1	..	..	..	1	..	1
8. West Bengal .										
	Calcutta .	10	7	17	8	7	15	2	..	2
	TOTAL .	46*	16	62	35@	11	46	11	5	16

NOTE.— *The number of units is 44. But two of them have two factories each, IDPL at Rishikesh and Hyderabad and Pfizer at Bombay and Chandigarh.

@The number of units is 34. But one unit, Pfizer, has two factories.

6.2.4. **No. of specified drugs licensed to units.**—In the large scale sector out of 44 licensed units, 26 are licensed for one drug each, seven for two drugs each, three for three drugs each, five for four drugs each, and three for five drugs each. In the small scale sector the number of specified drugs approved for manufacture is confined only to three items namely, Iodo-Chlorhydroxy-quinoline, I.N.H. and P.A.S. Of the 16 licensed units in the small scale sector 14 are licensed for one drug only, one for two drugs and one for all the three drugs. Brief particulars in respect of each of the units in the large scale sector which have commenced production are given in Table 6.13 :

TABLE

Particulars Regarding Large Scale Units

Sl. No.	Name and Location of the Unit	Year to which data relate	Public Sector or Private Sector	Private Sector			
				Public Limited or Private Limited	Capital		Employed Capital
					Subscribed	Paid-up	
1	2	3	4	5	6	7	8
1	Albert David Ltd., Calcutta	1965-66	Private Sector	Public Std.	14.51	14.51	15
2	Alembic Chemical Works Co. Ltd., Baroda.	1966	Do.	Do.	207.67	207.67	440
3	Atul Products Ltd., Atul	1967	Do.	Do.	200.00	200.00	1370
4	Bengal Chemical & Pharmaceutical Works Ltd., Calcutta.	1966-67	Do.	Do.	79.95	79.95	195
5	Bengal Immunity Co. Ltd., Calcutta.	1965-66	Do.	Do.	25.62	25.62	75
6	Biological Evans Ltd., Hyderabad.	1966	Do.	Do.	27.60	27.60	73
7	Bio-chemical & Synthetic Products Ltd., Hyderabad.	1966	Do.	Do.	7.50	7.50	19
8	Boehringer-Knoll Ltd., Bombay.	1965-66	Do.	Do.	35.00	35.00	114
9	Boots Pure Drugs Co. (India) Ltd., Bombay.	1966	Do.	Do.	50.00	42.00	130

6.13

Manufacturing Specified Basic Drugs

(Amounts in lakh Rs.)

Private Sector		Ownership			Total sales turnover	Sale value of the specified drugs and formulations	Col. (15) as a % of Col. (14)	Number of workers (Technical and Non-Technical)
Assets		Extent of Indian investment in paid-up capital	Extent of foreign investment in paid-up capital	Other activities besides the production of drugs and formulations				
Gross	Net							
9	10	11	12	13	14	15	16	17
30.72	13.34	100%	..	Pharmaceutical specialities, syrups, ointment etc.	60	N.A.	N.A.	N.A.
500.22	261.85	99.95%	0.05%	Calenicals. Yeast Sulphuric Acid, Superphosphate, Ethyl chloride, Ethyl Alcohol etc.	627	292	46	407
362.65	329.99	100%	..	Dyes and Chemicals	728	8	1	1716
91.52	83.31	99.36%	0.64%	Heavy and Fine chemicals, Toilet products, Soaps toilet and medicinal.	296	5	2	1715
74.90	42.06	99.74%	0.26%	Other Basic drugs specialities.	224	N.A.	N.A.	1667
53.43	29.68	82%	18%	Glyceriphesphates, Nax Vamica Alkaloids, Liver extracts specialities.	121	55	46	219
16.25	14.86	100%	..	Liverextracts, Botanical crude Drug extracts, para-Hydroxy Bensoic Acid Easters.	7	N.A.	..	37
81.20	55.07	52%	48%	Chloramphenicol Non-Stearoylglycolate.	155	55	36	145
72.37	48.96	..	100%	Agro-chemicals, Animal health Products.	218	35	16	736

TABLE

1	2	3	4	5	6	7	8
10	Brahmachari Research Institute Private Ltd., Calcutta.	1965-66	Private Sector	Private Limited	3.00	3.00	10
11	Calcutta Chemical Co. Ltd., Calcutta.	1965-66	Do.	Public Limited	20.21	20.21	80
12	Chemo-Pharma Laboratories Ltd., Bombay.	1966	Do.	Do.	20.00	20.00	50
13	Cyanamid India Ltd., Bombay	1965-66	Do.	Do.	70.15	70.15	192
14	Dey's Medical Stores (Mfg.) P. Ltd., Calcutta.	1967	Do.	Private Ltd.	20.00	20.00	119
15	East India Pharmaceutical Works Ltd., Calcutta.	1966	Do.	Public Ltd.	23.72	23.72	49
16	Glaxo Laboratories (India) Pvt. Ltd., Bombay.	1966-67	Do.	Private Ltd.	300.00	300.00	1066
17	Haffkine Institute, Bombay	1965-66	Public Sector	..	..	..	155
18	Hind Chemicals Ltd., Kanpur		Private Sector	Public Ltd.	N.A.	N.A.	N.A.
19	Hindustan Antibiotics Ltd., Poona.	1966-67	Public Sector	Do.	247.26	247.26	730
20	Hoechst Pharmacueticals Ltd., Bombay.	1966	Private Sector	Do.	63.00	63.00	355
21	Mac Laboratories Pvt. Ltd., Bombay.	1965-66	Do.	Private Sector	4.87	34.87	32
22	May & Baker Ltd., Bombay.	1966-67	Do.	Public Ltd.	306.00	306.00	322
23	Merck Sharp & Dohme of India Ltd., Bombay.	1965-66	Do.	Do.	180.00	180.00	245

6.13—*Contd.*

9	10	11	12	13	14	15	16	17
3.01	2.47	100%	..	Nil	26	N.A.	N.A.	199
88.43	45.89	100%	..	Composite industry covering several heads, Drugs & Pharmaceuticals only one of them.	275	7	3	N.A.
38.01	26.37	100%	..	Various fine chemicals like Bismuth compounds. etc.	69	0.4	1	348
169.55	79.24	35%	65%	Animal Feed Supplement.	504	317	63	537
246.78	87.12	100%	..	Other Pharmaceutical Specialities.	450	N.A.	..	580
61.76	37.52	75%	25%	Other drugs and formulations.	263	78	30	1018
700.94	448.83	..	100%	Certiosteroids, Calcium Sennosides, Beta Ionone.	1645	248	15	2438
210.32	181.07	100%	..	Anti-toxins and toxoids Vitamin tablets, Sulpha tablets, Anti-Septic (Penion).	78	11	14	1313
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
657.18	325.30	100%	..	Hemacin Aureofungin.	717	650	91	2082
186.60	136.80	50%	50%	Procaine Hydrochloride Reversion P.M.T.	491	161	33	878
28.27	19.22	97%	3%	Nil	41	30	73	110
183.18	123.36	..	100%	Sulphapyridine, Sulphathiazol, Acitarsol, Antihistamics, Mercuramide etc. and formulations.	383	6	2	807
211.39	147.00	40%	60%	Pharmaceutical Chemicals, corticosteroid preparations, pharmaceuticals specialities.	313	119	38	530

TABLE

1	2	3	4	5	6	7	8
24	Oriental Pharmaceutical Industries Ltd., Calcutta.	1966-67	Private Sector	Public Ltd.	4.67	4.67	28.
25	Parke-Davis India Ltd., Bombay.	1965-66	Do.	Do.	105.00	105.00	249
26	Pfizer Ltd., Bombay . .	1965-66	Do.	Do.	247.52	247.52	537
27	Recho Products Ltd., Bombay	1966	Do.	Do.	100.00	100.00	258
28	Sarabhai Merck Ltd., Baroda	1966-67	Do.	Do.	16.50	16.50	178
29	Synbiotics Ltd., Baroda .	1966-67	Do.	Do.	75.00	75.00	271
30	Themis Pharmaceuticals Ltd., Bombay.	1965-66	Do.	Do.	5.00	5.00	8.
31	Standard Pharmaceuitcals Ltd., Calcutta.	1966-67	Do.	Do.	43.43	43.43	143.
32	Unichem Laboratories Ltd., Bombay.	1965-66	Do.	Do.	45.00	45.00	98
33	Wander Pharmed Ltd., Bombay.	1966	Do.	Do.	9.90	9.90	26
34	Wyeth Laboratories Ltd., Bombay.	1965-66	Do.	Do.	75.00	75.00	152
					2633.08	2526.08	7784

6.3. Present position of units manufacturing formulations of the specified drugs :

6.3.1. In the organised sector there are 34 units which manufacture one or more of specified basic drugs under the inquiry. Of these 30 manufacture formulations also. In addition

6.13—*Concld.*

9	10	11	12	13	14	15	16	17
12.08	7.07	100%	..	Formulations . .	46	N.A.	..	6
157.04	81.29	17%	83%	Diphenhydramine Hydrochloride (U.S.P.)	527	189	36	347
235.37	149.83	19%	81%	..	1270	451	36	1989
224.47	134.41	11%	89%	Vanaspati, Animal food stuffs.	1331	72	22	132
113.71	72.99	65%	35%	Fine Chemicals, Vitamin B-6, Sorbitol.	233	30	13	728
246.74	188.85	52%	48%	Di-iodoquin Saccharin Nicotinamide, Sodium Saccharin.	192	142	74	594
22.75	16.31	100%	..	Other Pharmaceutical preparation.	60	14	23	101
114.12	79.72	99.52%	0.48%	Specialities, Patents, Tinchtures and Injectibles	228	106	47	207
70.18	49.06	100%	..	Pharmaceutical Products Injections, Syrups, Tablets and Ointments.	220	116	53	446
23.61	14.65	45%	55%	Various formulations and basic products.	20	20	100	59
116.43	77.51	26%	74%	..	123	78	63	122
5405.18	3410.00				10945	3299.4	30	222.18

to these, there are 19 units which manufacture single drug formulations of one or more of the specified drugs and nine more units which manufacture multiple drug formulations also. Thus in so for as the scope of the inquiry is concerned, there are 28 more units in the organised sector which come within the purview of our inquiry. The position with regard to the small scale sector is as

follows : Of the 11 small scale units which manufacture basic drugs only four manufacture formulations and the remaing seven confine their activities to the manufacture of basic drugs alone. There are a large number of other small scale manufacturers who manufacture single or multiple drugs formulations from the specified drugs. These are not registered with the D.G.T.D. under the provisions of the Industries (Development and Regulation) Act, 1951. But under the provisions of section 18(C) of the Drugs and Cosmetics Act and rule 69 framed under the Act, they, have to be licensed by the State Drugs Controller before they can manufacture and market any of the drugs or formulations. It could therefore be considered a happy circumstance that in this industry compulsory registration and licensing by Government is essential irrespective of the size or quantum of out put. The law also requires inspection and checking of the conditions and the processes under which the drug is being manufactured.

6.3.2. Certain qualifying remarks are however needed in respect of the investigation into formulations for the reason that while the inquiry is specific and defined in respect of the basic drugs referred to us for investigation, it is not so in respect of formulations. From the information that could be collected it has been gathered that based on 18 drugs under inquiry the total number of formulations in various applications at present manufactured in the country are numerous and the exact number could not be ascertained. In order to limit the scope of the inquiry to a reasonable number, only 39 single and 30 multiple drugs formulations of a repesentative character were adopted for the purpose of our cost analysis. As regards the general survey it is comprehensive and includes all formulations whether single or multiple of the specified basic drugs.

6.3.3. Under the provisions of Sec. 18(C) Drugs and Cosmetics Act, no manufacture of a drug or formulation can be under taken unless the manufacturer takes out a licence in the prescribed form from the State Drugs Controller. The licence specifies the names of each of the drugs separately and also the period for which it is granted. The licencee is also subjected to periodic checks in order to ensure that the requirements of the law and the rules are being complied with by him. It was to be expected that the respective Drugs Controllers would maintain the records of licences issued showing the details of the drugs and formulations permitted to be manufactured by the different licencees, the name and location of the unit licensed, the renewals made at periodic intervals and the results of inspection carried out by

their staff under the provision of the rules and that each Drugs Controller would be in a position to provide to us or to any other bonafide inquiring authority, names and particulars of the units licensed who manufacture or formulate certain items of drugs or formulations and information in respect of the results of inspection of drugs manufactured for the purpose of quality control. It was however after much prodding that we received replies regarding the number of units licensed by the State Drugs Controllers. In the case of the State of Punjab no reply has been received from the Drugs Controller. We suggest that steps may be taken to ensure that Drugs Controllers maintain records of the licences issued by them and that these should be readily available. It is also desirable that the list of such licencees is published periodically on a central basis for the whole country since drugs manufactured in one territory are marketable all over the country and may also be exported. Such lists should contain the names of the units with location, year of grant of licence, drugs and formulations specified in the licence, installed capacity and annual production in terms of the quantity of formulation and drugs to be manufactured or suitable aggregates of the same.

Even though there are more than 2000 small scale units and each one functions under a licence, very little information is available in respect of their activities and contribution to the pharmaceutical industry. It is suggested that all the State Drugs Controllers should also collect information annually in respect of the small scale units under the following heads :

1. Basic drugs manufactured with value and quantity of each product.
2. Formulations manufactured with value and quanity of each product.
3. Data in respect of assets and reserves to ascertain the capital employed and net worth.

Similar particulars may also be obtained in respect of the units which have been licensed to manufacture Unani and Ayurvedic medicines. Such data should as far as possible be published at suitable intervals so that a proper assessment of the development of the pharmaceutical industry may be made.

6.3.4. From the data gathered by us we have arrived at the following picture of the State-wise distribution with regard to the manufacture of drugs and formulations (Tables 6.14 and 6.15).

TABLE

Particulars about total number of Licensed units

Sl. No.	State	Total number of units licensed			Number of units licensed for manufacture of 18 basic drugs		
		Large scale	Small scale	Total	Large scale	Small scale	Total
1	2	3	4	5	6	7	8
1	Andhra Pradesh .	5	168	73	5	2	7
2	Assam . . .	Nil	12	12	Nil	Nil	Nil
3	Bihar . . .	1	38	39	Nil	Nil	Nil
4	Delhi . . .	1	80	81	Nil	Nil	Nil
5	Gujarat . .	11	129	140	5	1	6
6	Goa . . .	Nil	Nil	Nil	Nil	Nil	Nil
7	Haryana . .	Nil	Nil	Nil	—	—	—
8	Himachal Pradesh	Nil	9	9	Nil	Nil	Nil
9	Jammu & Kashmir	Nil	5	5	Nil	Nil	Nil
10	Kerala . .	1	51	52	Nil	1	1
11	Madhya Pradesh .	Nil	108	108	Nil	1	1
12	Madras . .	7	192	199	Nil	Nil	Nil
13	Maharashtra .	63	673	736	23	4	27
14	Mysore . .	2	5854	56	Nil	Nil	Nil
15	Orissa . . .	Nil	24	24	Nil	Nil	Nil
16	Pondicherry .	Nil	2	2	Nil	Nil	Nil
17	Punjab . .	4	103	101	1	Nil	1
18	Rajasthan .	Nil	51	51	Nil	Nil	Nil
19	Uttar Pradesh .	2	196	198	2	Nil	2
20	West Bengal .	23	232	255	10	7	17
21	Tripura . .	Nil	4	4	Nil	Nil	Nil
	TOTAL	120 (A)	2,131	2,251	46 (B)	16	62

NOTE.—(A) Two units have 2 factories each.

(B) One unit has 2 factories.

6.14

for basic drugs and formulations

Number of units licensed to manufacture formulations included in the scope of the inquiry			Units common between columns (6) to (8) & (9) to (11)			Total number of units with in the purview of the inquiry		
Large scale	Small scale	Total	Large scale	Small scale	Total	Large scale	Small scale	Total
9	10	11	12	13	14	15	16	17
2	4	6	2	Nil	2	5	6	11
Nil	2	2	Nil	Nil	Nil	Nil	2	2
Nll	4	4	Nil	Nil	Nil	Nil	4	4
Nil	8	8	Nil	Nil	Nil	Nil	8	8
3	18	21	2	1	3	6	18	24
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
..	..	..	..	..	..	..	..	..
Nil	1	1	Nil	Nil	Nil	Nil	1	1
Nil	5	5	Nil	Nil	Nil	Nil	5	5
Nil	1	1	Nil	1	1	Nil	1	1
Nil	22	22	Nil	Nil	Nil	Nil	23	23
1	13	14	Nil	Nil	Nil	1	13	14
38	180	218	22	Nil	22	39	184	223
Nil	14	14	Nil	Nil	Nil	Nil	14	14
Nil	9	9	Nil	Nil	Nil	Nil	9	9
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
1	Nil	1	1	Nil	1	1	Nil	1
Nil	11	11	Nil	Nil	Nil	Nil	11	11
1	31	32	1	Nil	1	2	31	33
13	61	74	9	2	11	14	66	80
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
59	384	443	36	4	40	68	396	464

(B)

TABLE 6.15

Number of units manufacturing formulations of the specified drugs

Sl. No.	State	Number of units manufacturing single drug formulations of the specified drugs			Number of units manufacturing multiple drug formulations of the specified drugs		
		Large Scale	Small Scale	Total	Large Scale	Small Scale	Total
1	Andhra Pradesh	2	4	6	1	1	2
2	Assam	..	2	2	..	..	..
3	Bihar	..	4	4	..	..	..
4	Delhi	..	8	8	..	1	1
5	Goa	..	..	..	..	..	..
6	Gujarat	2	18	20	2	..	2
7	Haryana	..	..	..	..	..	..
8	Himahcal Pradesh	..	1	1	..	..	..
9	Jammu & Kashmir	..	5	5	..	3	3
10	Kerala	..	1	1	..	1	1
11	Madhya Pradesh	1	22	22	..	..	—
12	Madras	1	13	14	..	6	6
13	Maharashtra	38	180	218	13	6	19
14	Mysore	..	14	14	..	..	—
15	Orissa	—	9	9	—	—	—
16	Pondicherry	..	..	..	..	..	..
17	Punjab	1	..	1	..	—	—
18	Rajasthan	..	11	11	..	3	3
19	Uttar Pradesh	1	31	32	..	..	..
20	West Bengal	13	61	74	7	23	30
21	Tripura	..	..	..	..	..	..
	TOTAL	58	384	442	23	44	67

CHAPTER 7

CAPACITY

7.1. Basic drugs :

7.1.1. In the organised sector there are 44 units which have been licensed with capacities for the manufacture of one or more of the basic drugs under inquiry. In the small-scale sector, as has already been mentioned, there are 16 such units. Particulars of the units licensed for the manufacture of one or more drugs and of those which have already eastablished capacities for the drug licensed are as follows :

TABLE 7.1

Number of units licensed/approved for one or more drugs and the number which have established capacities for all the drugs licensed

No. of specified drugs licensed/approved to a unit	No. of units licensed/approved		No. of units which have established capacities			
			For one or more of the licensed drugs		For all the licensed drugs	
	Large scale	Small scale	Large scale	Small scale	Large scale	Small scale
1 . .	26	14	18	9	17	9
2 . .	7	1	6	1	4	..
3 . .	3	1	3	1	1	..
4 . .	5	..	4	..	3	..
5 . .	3	..	3	..	1	..
TOTAL	44	16	34	11	26	9

7.1.2. Particulars of the drugs for which capacities have been sanctioned together with the names of the units are given in Table 7.2.

TABLE

Licensed and installed capacities for

Sl. No.	Basic Drug and Names of the Units	Licensed/apporved capacity					
		Year of grant of licence	Unit of measure-ment	In the year of grant of licence	In 1962	In 1963	In 1964
1	2	3	4	5	6	7	8
1	*Vitamin A*						
	1. Roche Products	1958	MMU	10	10	10	10
	2. Glaxo Labs.	1957	,,	10	10	10	10
					20	20	20
2	*Vitamin B*-12						
	(a) *Vitamin B*-12						
	1. Merck Sharp .	1958	Kg.	4·0	25	25	25
	2. Synbiotics .	1956	,,	1·2	13·2	13·6	13·2
	3. Themis Pharmaceuticals.	1965	,,	12·0	..	..	..
					38·2	38·2	38·2
	(b) *Vitamin B*-12(*b*)						
	1. Merck Sharp .	1961	Kg.	(Covered under the overall licensed			
	2. Glaxo Labs. .	1964	,,	6	..	..	6
	3. Alembic Chemical.	1966	,,	20	..	..	..
					..	..	6

7·2

each specified basic drug

Licensed/approved capacity				Installed capacity				
In 1965	In 1966	In 1967	In 1962	In 1963	In 1964	In 1965	In 1966	In 1967
9	10	11	12	13	14	15	16	17
15	15	15	20	20	20	20	20	20
10	10	10	20	20	20	20	20	20
25	25	25	40	40	40	40	40	40
25	25	25	25	25	40	40	40	40
13·2	13·2	13·2	—	..	..	..	..	—
12	12	12	..	..	..	..	..	12
50·2	50·2	50·2	25	25	40	40	40	52
capacity for Vitamin B-12).			24	24	24	24	24	24
6	6	6	..	5	5	6	6	6
..	20	20	..	..	..	..	..	..
6	26	26	24	29	29	30	30	30

TABLE

1	2	3	4	5	6	7	8
3	*Vitamin C*						
	1. Sarabhai Merck	1959	Tonnes	60	60	60	60
	2. Hindustan Antibiotics.	1961	,,	50	50	50	50
					110	110	110
4	*Sulphadiazine*						
	1. Atul Products .	1951	Tonnes	83	83	83	83
	2. May & Baker .	1954	,,	19	90	90	90
	3. Cibatul .	1960	,,	(Covered under the overall tonnes for all Sulpha drugs).			
					173	173	173
5	*Penicillin*						
	1. Hindustan Antibiotics.	1956	MMU	10·0	45	84	84
	2. Alembic Chemical.	1954	,,	4·8	20	20	20
	3. Standard Pharmaceuticals.	1954	,,	1·8	10	10	20
	4. IDPL—(Rishikesh).	1962	,,	140·0	140	140	140
					215	254	264
6	*Streptomycin*						
	1. Hindustan Antibiotics.	1956	Tonnes	15·2	90	90	90
	2. Synbiotics .	1960	,,	15·0	15	15	15
	3. IDPL (Rishikesh).	1962	,,	85·0	85	85	85
					190	190	190

7.2—*Contd.*

9	10	11	12	13	14	15	16	17
60	90	120	60	65	84	90	150	180
50	125	125	..	..	..	..	..	..
110	215	245	60	65	84	90	150	180
83	83	83	83	83	83	83	83	83
90	90	90	35	35	35	110	110	110*
capacity of	160	..	..	..	..	..	..	..
173	173	173	118	118	118	193	193	193
84	84	84	45	54	60	75	77	77
20	20	20	10	10	20	28	50	50
20	20	20	10	10	10	20	20	20
140	140	140	..	..	..	..	..	..
264	264	264	65	74	90	123	147	147
90	90	90	..	40	40	80	80	80
15	40	40	..	15	30	40	40	40
85	85	85	..	..	..	..	..	..
190	215	215	..	55	70	120	120	120

*Tentative capacity for sulphadiazine. Total installed capacity for all sulpha drugs is 210 tonnes but effective operational capacity is only 175 tonnes.

TABLE

1	2	3	4	5	6	7	8
7	*Chloramphenicol*						
	1. Parke Davis .	1956	Tonnes	6·4	20·0	20·0	20·0
	2. Boehringer-Knoll	1960	,,	4·2	4·2	4·2	4·2
	3. Mac Labs. .	1956	,,	0·8	0·8	0·8	0·8
	4. Neo Pharma. .	1960	,,	3·6	3·6	3·6	3·6
	5. Dey's Medical .	1962	,,	18·0	18·0	18·0	18·0
					46·6	46·6	46·6
8	*Tetracyclines*						
	1. Pfizer .	1960	Tonnes	5·0	5	5	5
	2. Cyanamid .	1960	,,	10·0	10	10	10
	3. Hindustan Antibiotics.	1959	,,	1·5	1·5	1·5	1·5
	4. Synbiotics .	1960	,,	3·0	3	3	3
	5. I.D.P.L. (Rishikesh).	1962	,,	120·0	120·0	120	120
					139·5	139·5	139·5
9	*Amodiaquin*						
	1. Parke Davis .	1956	Tonnes	36·0	36	36	36
	2. Albert David .	1955	,,	1·0	1	1	1
					37	37	37
10	*Chloroquin*						
	1. Bengal Immunity.	1960	Tonnes	1·0	1	1	1
	2. May & Baker .	1963	,,	12·0	12	12	12
	3. Bayer .	1962	,,	4·0	4	4	4
					17	17	17

7.2—*Contd.*

9	10	11	12	13	14	15	16	17
20·0	20·0	20·0	10	10	10	10	10	10
4·2	30·0	30·0	3	3	12	12	12	12
0·8	0·8	0·8	..	..	1·2	1·2	1·2	1·2
3·6	3·6	3·6	..	..	..	..	..	..
18·0	18·0	18·0	..	..	..	..	..	..
46·6	72·4	72·4	13	13	23·2	23·2	23·2	23·2
10	10	10	5	5	10	10	10	10
10	10	10	10	10	10	10	10	10
1·5	1·5	1·5	1·5	1·5	1·5	1·5	1·5	1·5
3	3	3	1·5	1·5	1·5	4·0	4·0	4·0
120	120	120	..	..	..	..	..	..
144·5	144·5	144·5	18·0	18·0	23·0	25·5	25·5	25·5
36	36	36	36	36	36	36	36	36
1	1	1	0·6	0·6	0·6	0·6	0·6	0·6
37	37	37	36·6	36·6	36·6	36·6	36·6	36·6
10	10	10	1·1	1·1	1·3	3·0	3·0	3·0
12	12	12	..	..	..	..	..	..
4	4	4	..	..	..	..	..	..
26	26	26	1·1	1·1	1·3	3·0	3·0	3·0

TABLE

1	2	3	4	5	6	7	8
11 A.	*Iodo-Chlor-Hydroxy-Quinoline.*						
	(i) *Large-Scale Units*						
	1. East India Pharmaceutical .	1952	Tonnes	6.5	6.5	6·5	6·5
	2. Bengal Chemical	1952	,,	1·1	1·1	1·1	1·1
	3. Brahmachari Research Institute . .	1952	,,	2·0	2·0	2·0	2·0
	4. Albert David .	1952	,,	3·5	3·5	3·5	3·5
	5. Atul Products .	1954	,,	41·0	41·0	41·0	41·0
	6. Alembic Chemical . .	1954	,,	1·0	1·0	1·0	1·0
	7. Standard Pharmaceuticals .	1954	,,	2·5	2·5	2·5	2·5
	8. Hind Chemicals	1952	,,	0·6	0·6	0·6	0·6
	9. Themis Pharmaceuticals .	1952	,,	0·2	0·2	0·2	0·2
	10. Indian Research Institute .	1952	,,	0·2	0·2	0·2	0·2
					58·6	58·6	58·6
	(ii) *Small Scale Units.*						
	1. G.D.A. Chemicals . .		Tonnes	5·4	5·4	5·4	5·4
	2. Neogy Labs. .		,,	10·0	10·0	10·0	10·0
	3. Syno-Chem. .		,,	5·0	..	5·0	5·0
	4. Alliance Trading . .		,,	10·3	..	10·3	10·3
	5. Sunny Industries . .		,,	4·0	..	..	..

7.2—*Contd.*.

9	10	11	12	13	14	15	16	17
6.5	6.5	6.5	36.9	36.9	36.9	36.9	36.9	36.9
1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
2·0	2·0	2·0	2·0	2·0	2·0	2·0	2·0	2·0
3·5	3·5	3·5	3·0	3·0	3·0	3·0	3·0	3·0
41·0	41·0	41·0	40·0	40·0	40·0	40·0	40·0	40·0
1.0	1.0	1.0	4.0	4.0	4.0	4.0	4.0	4.0
2.5	2.5	2.5	6.0	6.0	6.0	6.0	6.0	6.0
0.6	0.6	0.6	0.75	0.75	0.75	0.75	0.75	0.75
0·2	0·2	0·2	..	..	—	—	—	—
0·2	0·2	0·2	..	..	—	..	..	..
58·6	58·6	58·6	93·7	93·7	93·7	93·7	93·7	93·7
5·4	5·4	5·4	2·7	2·7	2·7	2·7	2·7	2·7
10·0	10·0	10·0	10·0	10·0	10·0	10·0	10·0	10·0
5·0	5·0	5·0	..	5·0	5·0	5·0	5·0	5·0
10·3	10·3	10·3	..	10·3	10·3	10·3	10·3	10·3
4·0	4·0	4·0	..	..	..	4·0	4·0	4·0

TABLE

1	2	3	4	5	6	7	8
6.	Swiss Chemicals		Tonnes	15·6	..	..	..
7.	Usan Labs.		,,	12·0	..	..	..
8.	Texdyes		,,	2·0	..	..	..
9.	Quinochem.		,,	6,0	..	..	..
10.	Eagle Lab.		,,	6·0	..	6·0	6·0
11.	British Medicine		,,	3·6	..	..	..
12.	Universal Chemicals	1966	,,	5·0	..	..	..
					15·4	36·7	40·7
B.	*Di-Iodo-Hydroxy-Quinoline.*						
(i)	*Large Scale Sector*						
1.	Bengal Chemical	1952	Tonnes	(Included in the capacity of			
2.	Brahmachari Research Inst.	1952	,,		Do.		
3.	Albert David	1952	,,		Do.		
4.	Synbiotics	1957	,,	5·5	5·5	5·5	5·5
5.	Bengal Immunity	1952	,,	4·5	4·5	4·5	4·5
6.	May & Baker	1955	,,	4·2	4·2	4·2	4·2
7.	Alembic Chemical	1952	,,	(Included in the capacity of			
8.	Standard Pharmaceuticals	1952	,,	——————— Do.			
9.	Biological Evans	1960	,,	2·0	2·0	2·0	2·0
10.	East India Pharmaceutical	1952	,,	(Included in the capacity of			
				16·2	16·2	16·2	16·2

7.2—*Contd.*

9	10	11	12	13	14	15	16	17
15·6	15·6	15·6	..	..	..	15·6	15·6	15·6
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
6·0	6·0	6·0	..	6·0	6·0	6·0	6·0	6·0
3·6	3·6	3·6	..	..	..	3·6	3·6	3·6
..	5·0	5·0	..	..	..	..	..	..
59·9	64·9	64·9	12·7	34·0	34·0	57·2	57·2	57·2
Iodo-Chlor)			0·2	0·2	0·2	0·2	0·2	0·2
			0·6	0·6	0·6	0·6	0·6	0·6
			3·0	3·0	3·0	3·0	3·0	3·0
5·5	5·5	5·5	12·0	12.0	12·0	12·0	12·0	12·0
4·5	4·5	4·5	4·5	4·5	4·5	4·5	4·5	4·5
4·2	4·2	4·2	4·2	4·2	4·2	4·2	4·2	4·2
Iodo-Chlor)			0·6	0·6	0·6	0·6	0·6	0·6
			(Capacity included in that of Iodo-Chlor)					
2·0	2·0	2·0	...	...	..	5·0	6·0	6·0
Iodo-Chlor)			(Capacity included in that of Iodo-Chlor)					
16·2	16·2	16·2	25·1	25·1	25·1	30·1	31·1	31·1

TABLE

1	2	3	4	5	6	7	8
	(ii) *Small Scale Sector.*						
	1. Neogy Labs. .		Tonnes	(Included in the capacity for			
	2. Swiss Chemical		,,		Do.		
	3. Sunny Industries . .		,,		Do.		
	4. Navarathna Pharmaceuticals		,,	0.7	..	..	..
	5. British Medicine		,,	1.8	..	..	..
	6. Eagle Lab. .		,,	(Included in the capacity for			
					..	..	..
12	*Chlorpropamide*						
	1. Albert David .	1960	Tonnes	1·0	1·0	1·0	1·0
	2. Bengal Chemical	1961	,,	0·6	0·6	0·6	0·6
	3. Pfizer . .	1961	,,	1·5	1·5	1·5	1·5
	4. Kemp & Co. .	1962	,,	0·1	0·1	0·1	0·1
					3·2	3·2	3·2
13	*Tolbutamide.*						
	1. Albert David .	1960	Tonnes	3·0	3·0	3·0	3·0
	2. Unichem Labs	1960	,,	3·0	3·0	3·0	3·0
	3. Hoechst Pharmaceuticals .	1959	,,	36·0	36·0	36·0	36·0
					42·0	42·0	42·0
14	*Insulin*						
	1. Boots . .	1960	M.U.	1,500	1,500	1,500	1,500
					1,500	1,500	1,500

7.2—*Contd.*

9	10	11	12	13	14	15	16	17
Iodo-Chlor)			(Included in the capacity for Iodo-Chlor)					
					Do.			
					Do.			
...	0·7	0·7	..	...	...	...	4·06	4·06
1·8	1·8	1·8	..	...	...	1·8	1·8	1·8
Iodo-Chlor)			(Included in the capacity for Iodo-Chlor)					
1·8	2·5	2·5	...	...	...	1·8	5·8	5 8
1·0	1·0	1·0	3·6	3·6	3·6	3·6	3·6	3·6
0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·6	0·6
1·5	1·5	1·5	..	..	..	5·0	5·0	5·0*
0·1	0·1	0·1	..	..	..	..	..	..
3·2	3·2	3·2	4·2	4·2	4·2	9·2	9·2	9·2
3·0	3·0	3·0	3·6	3·6	3·6	3·6	3·6	3·6
3·0	3·0	3·0	3·0	3·0	3·0	3·0	3·0	3·0
36·0	36·0	36·0	36·0	36·0	36·0	36·0	36·0	36·0
42·0	42·0	42·0	42·6	42·6	42·6	42·6	42·6	42·6
1,500	1,500	1,500	..	..	..	1,080	1,080	1,080
1,500	1,500	1,500	..	..	..	1,080	1,080	1,080

[*Single shift]

TABLE

1	2	3	4	5	6	7	8
15	*I.N.H.*						
(a)	*Large Scale Sector.*						
	1. Albert David .	1952	Tonnes	3·6	3·6	3·6	3·6
	2. Bengal Immunity . . .	1954	,,	0·7	5·4	5·4	5·4
	3. Bengal Chemical . . .	1952	,,	2·1	2·1	2·1	2·1
	4. Pfizer . .	1955	,,	6·0	15·6	15·6	15·6
	5. Calcutta Chemical . .	1957	,,	1·8	1·8	1·8	1·8
	6. Synbiotics .	1957	,,	10·8	27·0	27·0	27·0
	7. OPIL . .	1958	,,	1·3	1·3	1·3	1·3
	8. Biological Evans	1962	,,	10·0	10·0	10·0	10·0
	9. Chemo-Pharma	1966	,,	N.A.	..	..	..
	10. IDPL (Hyderabad) . .	1962	,,	20·0	20·0	20·0	20·0
	11. Warner Hindustan.	1962	,,	25·0	25·0	25 0	25·0
	12. CIPLA . .	1967	,,	10·0	..	..	..
	13. South India Res. Inst.	1967	,,	50·0	..	..	..
	14. Atul Drug House.	1967	,,	..	..	..	..
					111·8	111·8	111·8
(B)	*Small Scale Sector.*						
	1. Dr. Karanth's Pharmaceutical		Tonnes	7·2	..	..	7·2
	2. Suneeta Labs .		,,	3·0	..	..	..
	3. Navarathna Pharmaceutical .		,,	6·0	..	..	..
	4. Gujarat Pharmaceuticals		,,	6·0	..	..	..
					..	..	7·2

7.2—*Contd.*

9	10	11	12	13	14	15	16	17
3·6	3·6	3·6	6·0	6·0	6·0	6·0	6·0	6·0
20·0	20·0	20·0	10·0	10·0	10·0	10·0	10·0	10·0
2·1	2·1	2·1	2·1	2·1	2·1	2·1	2·1	2·1
15·6	15·6	15·6	20·0	20·0	20·0	20·0	38·0	38·0
1·8	1·8	1·8	1·1	1·1	1·9	1·9	1·9	1·9
27·0	27·0	27·0	30·0	30·0	30·0	30·0	30·0	30·0
1·3	1·3	1·3	1·3	1·3	1·3	1·3	1·3	1·3
10·0	10·0	10·0	..	..	18·0	18·0	18·0	18·0
..	60·0	60·0	..	..	..	..	60·0	60·0
20·0	20·0	20·0	..	..	..	..	..	..
25·0	25·0	25·0	..	..	..	..	..	..
..	..	10·0	..	..	..	..	..	..
..	..	50·0	..	..	..	..	..	..
..	..	160·0	..	..	..	..	..	..
126·4	186·4	406·4	70·5	70·5	89·3	89·3	167·3	167·3
7·2	8·0	8·0	..	..	7·2	7·2	8·0	8·0
..	..	3·0	..	..	..	..	..	3·0
..	..	6·0	..	..	..	..	..	..
..	..	6·0	..	..	..	..	..	..
7·2	8·0	23·0	..	..	7·2	7·2	8·0	11·0

TABLE

1	2	3	4	5	6	7	8
16	*P.A.S.*						
	1. Biochemical & Synthetic.	1953	Tonnes	24·0	100	100	100
	2. Pfizer	1958	,,	60·0	60	60	60
	3. Biological Evans	1960	,,	36·0	36	36	50
	4. Wander Pharmed	1961	,,	120·0	120	120	120
	5. South India Research Inst.	1967	,,	50·0	..	..	..
	6. Chemo-Pharma	1967	,,	30·0	..	..	..
					316	316	330
17	*Tetanus Anti-toxin**						
	1. Bengal Chemical	1952	M.U.	270	270	270	270
	2. Bengal Immunity	1952	,,	9,500	9,500	9,500	9,500
	3. Haffkine Inst.	1952	,,	3,000	3,000	3,000	3,000
	4. Biological Evans	1961	,,	2,160	2,160	2,160	2,160
	5. Dey's Medical	1965	,,	1,140	..	..	..
	6. Chowgule Hind	1966	,,	7,500	..	..	..
					14,930	14,930	14,930
18	*Prednisolone***						
	1. Glaxo Labs	1957	Kg.	120	120	120	300
	2. Merck Sharp	1958	,,	120	120	120	120
	3. Wyeth Labs	1960	,,	100	100	100	100
					340	340	520

* On an average 1 litre of Tetanus Anti-toxin equals 3 M.U.

**In the case of all units for Prednisolone, the figures for all years are the over-all capacities licensed for all corticosteroids.

7.2—*Concld.*

9	10	11	12	13	14	15	16	17
100	100	100	150	150	150	150	150	150
60	60	110	60	60	60	72	95	60***
50	50	50	72	72	72	72	72	72
120	120	120	..	..	90	90	90	90
..	..	50	..	..	..	..	..	..
..	..	30	..	..	..	..	..	..
330	330	460	282	282	372	384	407	372
270	270	270	36	36	36	36	36	36
9,500	9,500	9,500	6,400	7,600	9,449	9,449	9,449	9,449
3,000	3,000	3,000	2,000	2,000	2,000	2,000	3,000	3,000
2,160	2,160	2,160	..	..	..	1,200	1,200	1,200
1,140	1,140	1,140	..	..	..	..	600	600
..	7,500	7,500	..	..	..	..	..	..
16,070	23,570	23,570	8,436	9,636	11,485	12,685	14,285	14,285
300	300	300	120	120	165	300	300	300
120	120	120	120	120	120	120	120	120
100	100	720	..	600	600	600	600	600
520	520	1,140	240	840	885	1,020	1,020	1,020

***Effective installed capacity reduced because of age of the plant.

7.1.3. There is general lack of correspondence between the capacities licensed and the capacities claimed to be installed as the following Table would show :

TABLE 7.3

Particulars of units having installed capacities higher than the licensed capacities for the specified basic drugs

Sl. No.	Name of the Basic drug	Name of the unit	Licensed capacity	Installed capacity	Remarks
1	2	3	4	5	6
1	Vitamin-A	(1) Roche Products.	15 MMU	20 MMU	..
		(2) Glaxo Labs.	10 MMU	20 MMU	..
2	Vitamin-B12 and B12(b)	Merck Sharp	25 kg.	64 kg.	..
3	Vitamin-C	Sarabhai Merck.	120 Tonnes	180 Tonnes	..
4	Sulphadiazine	May & Baker	90 Tonnes	110 Tonnes	..
5	Penicillin	Alembic Chemical.	20 MMU	50 MMU	..
6	Chloramphenicol.	Mac Laboratories.	0·8 Tonnes	1·2 Tonnes	..
7	Tetracyclines	Synbiotics	3 Tonnes	4 Tonnes	Licensed capacity has been constant irrespective of the increase in installed capacity.
8	(a) Iodo-chlorhydroxy-quinoline.	(1) East India Pharmaceutical.	6·5 Tonnes	36·9 Tonnes	..
		(2) Alembic Chemical	1 Tonne	4 Tonnes	..
		(3) Standard Pharmaceuticals.	2·5 Tonnes	6 Tonnes	..
		(4) Hind Chemicals	0·6 Tonnes	0·75 Tonnes	..

1	2	3	4	5	6
	(b) Di-iodo-hydroxy-quinoline	(1) Synbiotics	5·5 Tonnes	12 Tonnes	..
		(2) Biological Evans.	2·0 Tonnes	6 Tonnes	..
9	Chlorpropamide	(1) Albert David	1·0 Tonne	3·6 Tonnes	..
		(2) Pfizer	1·5 Tonne	5 Tonnes*	..
10	I.N.H. . .	(1) Albert David	3·6 Tonnes	6 Tonnes	..
		(2) Pfizer	15·6 onnes	38 Tonnes	..
		(3) Synbiotics	27·0 Tonnes	30 Tonnes	..
		(4) Biological Evans	10·0 Tonnes	18 Tonnes	..
11	P.A.S. . .	(1) Biochemical & synthetic Products.	100·0 Tonnes	150·0 Tonnes	..
		(2) Biological Evans	50·0 Tonnes	72·00 Tonnes.	..

*[Single Shift]

In the final analysis the range of variations between the licensed and the installed capacity is as follows :

(a) Drugs for which the units claim installed capacity at a figure up to 25 per cent over the licensed capacity—Three.

(b) Drugs for which units claim installed capacity in the range of 25 to 50 per cent above the licensed capacity—Six.

(c) Drugs for which units claim installed capacity in the range of 51 to 100 per cent over the licensed capacity—Four.

(d) Drugs for which units claim installed capacity between 101 to 200 per cent over the licensed capacity—Four.

(e) Drugs for which difference between the installed capacity and the licensed capacity is more than 200 per cent of the installed capacity—Four.

7.1.4. In the case of a large number of units the situation is the opposite of what has been discussed above, *i.e.* the installed capacity claimed is substantially lower than the licensed capacity. Particulars in respect of these are as given in Table 7.4

TABLE 7.4

Particulars of units and drugs for which installed capacities are lower than licensed capacities

Drug	Name of Unit	Unit of computation	Installed capacity in 1967	Licensed capacity in 1967	Percentage 4 as %of5
1	2	3	4	5	6
Penicillin	Hindustan Antibiotics.	MMU	77	84	92
Streptomycin	Do.	Tonnes	80	90	89
Chloramphenicol	Parke-Davis	,,	10	20	50
	Boehringer-Knoll	,,	12	30	40
Amodiaquin	Albert David	,,	0·6	1·0	60
Chloroquin	Bengal Immunity	,,	3	10	30
Iodo-chlorhydroxy-quinoline.	Atul Products	,,	40	41	98
I.N.H.	Bengal Immunity	,,	10	20	50
P.A.S.	Pfizer	,,	60	110	55
	Wander Pharmed	,,	90	120	75
Tetanus Anti-toxin	Bengal Chemical	MU	36	270	13
	Bengal Immunity	,,	9449	9500	99
	Biological Evans	,,	1200	2160	56
	Dey's Medical	,,	600	1140	53
Prednisolone	Wyeth Labs	Kgs.	600	720	83

On the question of the vast disparities between the licensed and the installed capacities, the representative of the D.G.T.D. mentioned at the public enquiry that according to the liberalisation policy of the Government, manufacturers were allowed to increase their capacity by 25 per cent. Formerly this was done on the condition that they would instal the necessary equipment to increase their capacity and then come forward before the Government for regularisation of the capacity through an applications The request was to be judged by their performance for a period of six months and the capacity was then determined. It was also mentioned that there were a number of multi-purpose units which produced a number of items and Government did not go into the question of the individual capacities for each item. On behalf of the Government of India, Ministry of Petroleum and Chemicals it was stated that when licence is granted, capacity is stipulated, but with the liberalisation of Government policy an increase of 25 per cent over and above the capacity is permitted. In certain cases however, it was pointed out that the installed capacity was very much higher—sometimes almost to the extent of 10 times than the licensed capacity. It would be observed from the above figures that in the case of all the 22 items in respect of which higher installed capacities have been claimed there are only three items in regard to which the differential between the licensed and the installed capacity is within the range of 25 per cent. In the case of the remaining 19 items the range is very much higher. The following additional clarifications have in this matter been furnished by the Directorate General of Technical Development :—

Vitamin B-12 and Vitamin B-12(b)

The total licensed capacity is 25 kg. while the installed capacity is 64 kg. in the case of Merck Sharp and Dohme. When the unit approached Government for the regularisation of its increased capacity it was informed that this could be done only if it was prepared to reduce the price. Since the unit was not prepared to reduce the price no regularisation of the capacity was made. As against the licensed capacity of 25 kgs. for both the drugs the unit manufactured 53.6 kgs. in the year 1967. It appears that no restrictions were placed in the way of the unit producing more than its licensed capacity. The refusal to recognise the *fait accompli* was therefore inconsequential so far as production was concerned. Had the unit been subjected to restrictions which would have resulted in its not exceeding the capacity for which it is licensed or at the most 25% over and above the licensed capacity, that is a total of 31.25 kg., it could be considered that

Government's disinclination to increase the capacity owing to the intransigence of the unit in the matter of reduction of price, bore fruit, but in the present case it was not possible to discern any advantage that may have resulted from this approach.

Vitamin C.—The licensed capacity of Sarabhai Merck is 120 tonnes while the installed capacity is 180 tonnes. When this discrepancy was brought to the notice of Government it wa stated that the capacity has been regularised at 120 tonnes per annum. The question therefore remains unanswered and the discrepancy remains.

Penicillin.—Alembic Chemical claimed an installed capacity of 50 MMU as against a licensed capacity of 20 MMU. The D.G.T.D. has mentioned that the production of Penicillin by this unit was well above the licensed capacity and this was helpful in meeting the increasing demand. Notwithstanding this, the party was told that keeping in view the total capacity of the manufacturer and the fact that licences were held both in the public and private sector against requirements by the end of the Fourth Plan period, in regard to the progress of the licensed units, it was not possible to regularise the additional capacity, Government would however have no objection to the additional production over and above the licensed capacity being exported. This presents certain very complicated issues with regard to the licensing of capacities. On the one hand it is recognised that the installed capacity of the unit was higher than that licensed; it is also stated that this no doubt proved to be helpful in meeting the increasing demand. But it has been simultaneously stated that it was not possible to recognise this fact. Yet another facet of the issue is that Government would be willing to recognise the installed capacity if the unit were to export. The provisions of the Industries (Development and Regulation) Act require that as and when with the permission of the Government, a unit increases its capacities, the necessary modification should be made in the licence. It is therefore necessary that prior permission of the licensing authority should be available before any increase in the nstalled capacity is made. If it is done without prior permission there ought to be certain penalties attached which may have the effect of restricting the production of the unit to the limit fixed by the licence. The whole purpose of the licensing of units at certain capacities would be defeated, if these principles were not kept in mind and such variables were introduced into the implementation of the provisions of the Act as,

(a) the recognition of the advantages that accrue as a result of the increase in the capacity,

(b) inability to recognise something which is a *fait accompli* and for which the unit has not been penalised;

(c) offer to recognise if certain other conditions which are extraneous to the provisions of the law were satisfied.

In the case of this unit as against the licensed capacity of 20 MMU the production in 1966 was 51 MMU.

Chlorpropamide.—Pfizer produced 12.21 tonnes of this product in 1966. It claims an installed capacity of 5 tonnes and the licensed capacity is only 1.5 tonnes. The clarification received from Government on this discrepancy was that the proposal of the unit for expansion of its capacity for manufacture was not approved as its output was not up to the licensed capacity, and it was suggested to it that it can submit its proposal for expansion after it had been able to fully utilise the licensed capacity for at least a period of one year. This introduces a new feature in the matter of licensing of capacities. While the D.G.T.D. recognised that the proposal was for expansion of capacity for the same product, it mentioned that such expansion is allowed only if it becomes a *fait accompli* and the performance justified the expansion. This would mean that if the unit is allowed to increase the capacity and show higher production and then is asked to come up to Government for the regularisation of its higher capacity, Government then have the choice to recognise it or to refuse recognition, subject to the diverse criteria adopted by Government in such matters. If the expansion is refused, the unit does not stand to lose anything. It goes on producing at the higher rate and most probably it continues to get the necessary foreign exchange for raw material. Licensing of units for capacities is thus likely to be rendered infructuous. On the other hand, if Government were to deter the unit from increasing its production, the outlay on expansion would be a dead loss.

P.A.S.—Biochemical & Synthetic has a licensed capacity of 100 tonnes and an installed capacity of 150 tonnes. In this case production was well below the licensed capacity and the D.G.T.D. has held that no explanation for recognising of the additional installed capacity was necessary. The same was considered to hold good for Biological Evans even though its production was only 54.3 tonnes in 1967 as against the licensed capacity of 50 tonnes.

7.1.6. In the case of the items for which licensed capacities are substantially higher than the capacities installed, no comments from the D.G.T.D. or the Government are available. It appears that the units have failed to establish the necessary capacities even though the licenses for higher quantities were issued in their favour. An examination of the figures of production also confirms this view since in almost all cases the production has not exceeded the installed capacities. While it would be desirable to recognise the higher installed capacities where these have been established, it would be equally advisable to reduce licensed capacities where these have not been set up within the period stipulated for installation. This would be conducive to a more healthy growth of the industry and would lead to more scientific assessment of the requirements of the industry particularly in regard to foreign exchange and the size of other supporting industries producing raw materials.

7.1.7. In the case of certain units even though capacities have been licensed, plant and machinery has not been installed. Examples are as follows :—

Vitamin C.—Hindustan Antibiotics was licensed for a capacity of 50 tonnes in 1961 and this licence was raised to 125 tonnes in 1966, but no capacity has so far been installed. The unit has informed that it is designing the plant for the process evolved by the National Chemicals Laboratory, Poona. It is a long time since 1961 for the unit to be in the experimental stage and it is not known how long it will continue to be so.

Chloramphenicol.—Neo Pharma and Dey's Medical have been licensed for 3.6 and 18 tonnes in 1960 and 1962 respectively but they have not installed their capacities yet. In the case of Neo Pharma there is patent litigation on account of which production has not been started; Dey's Medical expects to commence production in 1969.

Chlorquin.—May & Baker has been licensed for 12 tonnes in 1963. No. reasons have been furnished by May & Baker for not establishing the capacity.

Chloropropamide.—Kemp and Co. was licensed for 0.1 tonne in 1962 but it has not set up its capacity for production and has stated it has no such programme in the near future.

I.N.H.—Three units have been licensed in 1967 and understandably they have not yet set up their capacities. But in the case of two units, namely IDPL (Hyderabad) and Warner Hindustan both licensed in 1962; production is expected to begin in September 1968 and by the end of 1968 respectively.

P.A.S.—South India Research Institute and Chemo Pharma have been licensed in 1967 for 50 and 30 tonnes respectively and they are taking steps to instal their capacity.

Tetanus Anti-toxin.—Chowgule was licensed in 1966 for 7500 MU. No definite date has been given when the capacity would be set up.

It is apparent from the examples we have given that in the drugs and pharmaceuticals industry a. in many other industries, on the one hand quite a number of licences issued for installation and expansion have remained dormant, on the other, there are numerous cases where installed capacity has exceeded the licensed capacity and been permitted to so exceed with *ex-post-facto* approval in selected instances on the ground of increased production achieved and refusal in others. We are unable to see any uniform or firm policy at work in this regard. The Industries (Development and Regulation), Act has been in operation for a fairly long time and it seems to us that it will be opportune to make a thorough review of the working of the Act and the rules and actual procedures adopted in granting the licenses and approval or disapproval of changes in capactiy from time to time.

7.1.8. *SMALL SCALE SECTOR.*—In the small scale sector there are only three drugs, Iodo-chlor-hydroxy-quinoline/ Di-iodo-hydroxy-quinolone, I.N.H. and P.A.S. for which licences for manufacture have been issued by the respective State Drug Control authorities. The capacities licensed as well as installed have been given by the units. It is not possible to make any verification with regard to capacities actually licensed for the reason that even though the provisions of the Drugs Cosmetics Act and the Rules made thereunder are comprehensive, these do not stipulate capacities when licences are given. Section 18(c) of the Act requires licence to be obtained for the manufacture of drugs; application for licence has to be furnished in forms prescribed under the rules; licences are given in prescribed forms and forms are also prescribed for the renewal of licence. These forms provide for the categories and names of drugs only, but do not mention the

capacity. Under Schedule M there are detailed conditions with regard to the factory premises and the installations to be made therein. But here again no mention is made of the capacity. Rules also provide for special and well qualified laboratory personnel. The capacity for which the manufacture of the drug is allowed has been, it appears, inadvertently omitted. It is therefore not possible to discuss the question of capacity, either licensed or installed, in so far as small scale sector units are concerned. We suggest however that suitable additions may be made to the relevant rules.

7.2. Capacity in respect of formulators :

7.2.1. One of the terms of reference requires the Commission to inquire whether the selling prices can be reduced for the essential formulations of the specified drugs. Formulations both for single as well as multiple drugs are numerous. Since the selection was left to us with the help of the experts appointed to assist us, we selected 39 single drug and 30 multiple drug formulations of the various specified drugs, which are considered as essential formulations. These formulations are manufactured both by the units in the large scale as well as by those in the small scale sector.

7.2.2. While demand for basies drugs is derived from that of formulations, that of formulations depends on the consumer requirements since basic drugs are consumed only through and in the form of formulations. The manufacturing activity of formulators is essentially different from that of basic drugs. Basic drug manufacture follows principles and procedures of fine chemicals while in the case of formulations the processes involved are simplar and consist of tabletting, dilution, mixing and packing. Once we had decided upon the number of formulations to be included in the purview of our inquiry, we proceeded to ascertain the particulars of the licensed manufacturers of formulations. In the case of formulators in the large scale sector the data were readily available from the D. G. T. D. but for the small scale sector the only source of information are the State Drugs Controllers and data were sadly lacking. Of the 118 drug manufacturers registered with the D.G.T.D., 30 are producers cum-formulators, that is, those who produce one or more of the specified basic drugs and also formulate these drugs. Twenty eight units are only formulators of the specified basic drugs. They may or may not be producers of other basic drugs which are outside the purview of our inquiry.

7.2.3. The D.G.T.D. has stated that the formulating activity of the pharmaceutical industry covers a wide range of formulations which can be produced within the overall capacities installed by the formulators for the various preparations, according to their application in the form of injectable ampoules, vials, capsules, tablets, powders, suspension granules and ointments etc., and that the capacities with production statistics of individual formulators are not maintained. It has therefore not found it practicable, to furnish capacity and production statistics for individual, single and multiple drug formulations selected by the Commission. The D.G.T.D. has observed that production, availability and consumption of bulk drugs is a guiding and controlling factor of the output of subsequent formulations and that the capacity for individual formulations is not of much importance. The licensed capacities were therefore not with regard to drugs and their quantities but by forms of preparations. The capacity is thus licensed for these categories and not for drugs.

7.2.4. Under the provisions of Rules 69A, 70A, 74A and 75A of the Drugs and Cosmetics Rules, the licensing authority may issue a loan licence for the manufacture of formulations and an applicant who does not have his own arrangemant for manufacture may avail of the arrangements available with another licencee with an installed capacity for formulations. When a number of formulators are housed in the same premises, some of them may have licensed and installed capacity for formulations while others may depend on the former on the basis of loan licences. Some of the units who do not have their own formulating capacity and manufacture their formulations through loan licensees are Boehringer-Knoll, Neo-Pharma, Indo-French Pharmaceutical Co., Madras, Duggan Laboratories, Bombay and Sarpin Pharmaceutical, Bombay.

7.2.5. For the reasons already stated unitwise licensed or installed capacity for the essential formulations selected by us cannot be given. Again many of the units formulate drugs other than those specified for the purpose of our inquiry and the capacity for capsuling, tabletting etc. that is available to them may not necessarily be restricted to the utilisation for the specified basic drugs which are formulated by them. However on the basis of replies received, the total licenced and installed capacities for different application and preparation of the drugs and formulations are given in Table 7.5 :

TABLE 7.5

Total licensed and installed capacities for various types of preparations of the large scale units which formulate the specified drugs

Sl. No.	Name of the unit	Year of grant of licence	Description of preparation or application	Capacity in 1967			Remarks
				Unit	Licensed	Installed	
1	2	3	4	5	6	7	8
	(A) Manufacturers of basic durgs who are also formulators						
1	Alembic Chemical .	1952	Injection Capsules Ointment	Lac Vials Million Nos. Kgs.	60 600 7200	60 600 7200	Separate for each injection. Common for tablets also.
2	Bengal Immunity .	1960	Injection	Million Vials	36,000	36,000	For insulin only.
3	Biological Evans .	1966	Capsules Tablests Granules	Million lits. Million Nos. Tonnes	0·02 60 120	0·02 60 120	
4	Boehringer-Knoll .	No capacity for formulations.		Formulations are manufactured on loan licence at Rallis India and Capsulation Services.			
5	Boots . . .	1952	Injection Tablets Ointment	1000 lits. Million Nos. In '000 Kg.	480 360 120	480 360 480	Licensed / Installed capacity can be extended 3 times according to demand in market and availability of raw materials.

6	Brahmachari Res. Inst.	1952	—	—	—	—
7	Chemo-Pharma .	1952	Tablets	Million Nos.	90	90
8	Cyanamid . .	—	Capsules	Do.	3·4	45
			Tablets	Do.	—	62
9	East India . .	—	Tablets	Kgs.	12300	12300
10	Glaxo Labs. . .	1952	Injections	Million Vials	—	36
			Tablets	Million Nos.	—	720
11	Haffkine . . .	No capacity for formulations				
12	Hind Chemicals .	—	Tablets	Kgs.	600	750
13	Hindustan Antibiotics	—	—	—	—	—
14	Hoechst Pharmaceuti-cals.	—	Injection	Million Vials	3	7·5
			Capsules	Million Nos.	0·84	12
			Tablets	Do.	3·5	—
			Granules	Million Kgs.	0·04	0·02
15	Mac Labs. : :	—	Capsules	Kgs.	1200	1200
16	May & Baker . .	—	Injection	Million Lits.	0·12	0·12
			Capsules	Million Nos.	2	—
			Tablets	Do.	4644	4644
			Ointment	Kgs.	120	—
17	Merck Sharp		Injection	Million Vials	0·04	0·04

TABLE 7·5—*Contd.*

1	2	3	4	5	6	7	8
18	Parke-Davis		Ointment	Million Kgs.	0·02	0·01	
19	Pfizer . . .	1952	Injection	Lits.	36000	36000	
			Capsules	Million Nos.	30	30	
			Tablets	Do.	540	540	
20	OPIL		Injection	Million Vials	4·95	4·95	
			Capsules	Million Nos.	0·02	0·02	
			Tablets	Million Nos.	165	165	
			Ointment	Kgs.	45·4	45·4	
21	Roche Products		Injection	Lits.	9244	28980	
			Tablets	Million Nos.	178	544	
			Ointment	Kgs.	240	12726	
22	Standard Pharmaceuticals.	1952	Tablets	Million Nos.	36	36	
23	Unichem Labs. . .	1960	Tablets	Kgs.	3000	N.A.	
24	Wander Pharmed .	1961	Tablets	Tons.	90*	90*	*Common for tablets and granules.
25	Wyeth Labs. . .	1960	Tablets	Kgs.	100	600	
26	Dey's Medical . .	1959	Injection	Million Vials	3·1	10	
			Capsules	Million Nos.	18	50	
			Tablets	Millions Nos.	600	800	

27	Calcutta Chemical .	1957	Tablets	Kgs.	1854·5	N.A.	

(B) *Other formulators (Large Scale)*

1	Anglo-French . .	1955	Injection	Lits.	12000	12000	
			Tablets	Million Nos.	158·4	158·4	
			Ointment	Kgs.	12600	12600	
2	Bayer . . .	1962	Tablets	Million Nos.	16	60	For all tablets.
3	British Drug House .	1959	Injection	Lits.	84000	64000	
4	Burroughs Wellcome .	1964	Injection	Lac Vials	7	7	
			Tablets	Million Nos.	186	186	
5	CIPLA . . .	...	Injection	Million Vials	—	7·2	
			Capsules	Million Nos.	—	3·6	
			Tablets	Million Nos.	—	224	
6	CIBA . . .	1952	Tablets	Mil.	396	396	
			Ointment	Tons.	106	—	
7	Cilag-Hind		Tablets	Million Nos.	—	8	
				Tonnes	—	120/144	
8	Crookes Interfran .	1962	Tablets	Million Nos.	192	192	
			Granules	Kgs.	—	1·56	
9	Fairdeal		Injection	Lits.	—	25700	
			Granules	Kgs.	—	25700	
			Capsules	Million Nos.	—	3·9	

TABLE 7·5—*Contd.*

1	2	3	4	5	6	7	8
10	Geoffrey Manners .	1952	Injection	Million Vials	0·3	4·5	Injection for Wyocobin only.
			Capsules	Million Nos.	9·0	11·4	Capsules for Vitamycetin only.
			Tablets	Do.	3·6	648	Tablets for Wyocobin only.
11	Indo-Pharma . .		Injection	Million Vials	8·7	—	
			Tablets	Million Nos.	250	—	
			Granules	Kgs.	1800	—	
			Ointment	Kgs.	10000	—	
12	Indian Health Institute	No licensed capacity	Tablets	Million Nos.	—	1·8	
13	Indian Research Institute.	...	—	—	—	—	
14	Kemp & Co. . .	1952	Injection	Million m.u.	1·3	1·3	
			Tablets	Million Nos.	13·8	13·8	
			Ointment	Kgs.	24000	24000	

15	Khandelwal Labs. .	N.A.	Capsules	Million Nos.	—	3·6	
			Tablets	Do.	—	105	
			Granules	Kgs.	—	18000	
16	Laboratories Grimault	..	Unrestricted Injection	Lits.	—	6000	
17	Martin & Harris .	1961	Tablets	Million Nos.	210	2520	
			Injection	Do.	—	18	
			Ointment	Lbs.	—	18000	
18	Neo Pharma . .	1963	Tablets	Million Nos.	36 18000	—	Manufacturing on loan licence—hence no installed capacity.
19	Rallis India . .	1962	Injection	Lits.	*61·2	**57000	*For Vitamin B12 only. **For all injectibles.
20	Sarabhai Chemicals .		Injection	Million Nos.	62·2	48·6	
			Capsules	Million Nos.	30·8	18	
			Tablets	Million Nos.	340	300	
21	Smith Stanistreet .	..	Injection	Lac lit.	1·08	0·432	
			Tablets	Million Nos.	428	363	
			Powder	Lac Kgs.	4·40	—	
			Ointment	Kgs.	2160	—	

TABLE 7·5—*Contd.*

1	2	3	4	5	6	7	8
22	South India Res. Inst.	1959	Injection	Million ml.	150	—	
			Tablets	Million Nos.	140	—	
23	Spencer & Co. . .	..	N.A.	N.A.	N.A.	N.A.	
24	Standard Pharmaceuticals.	..	Capsules	Lakh Nos.	1·44	1·44	
25	Therapeutic Pharmaceuticals.	1967	Injection	No. of Vials	37500	Lit. 500	
			Tablets	Million Nos.	9	10	
			Granules	Kgs.	750	1000	
26	U. S. Vitamin . .	1957	Injection	Lacs Vials	5·8	6·0	
			Capsules	Million Nos.	6·6	12·0	
			Tablets	Do	5·4	5·0	
27	Zandu	..	Injection	Lacs Vials	..	1·0	
			Tablets	Lac Nos.	..	5·0	
			Powder	Kg.	..	360	
			Ointment	Kg.	..	130	

TABLE 7·5—*Contd.*

Sl. No.	Name of the formulator	Description of preparation application	Unit	Capacity in 1967	
				Licensed	Installed
1	2	3	4	5	6
	(C) Total licensed and installed capacities of small scale formulators				
1	Binichem Labs., Bombay	Capsules	Million Nos.	..	25·8
		Tablets	Do.	—	73·6
2	Cadila Labs., Ahmedabad	Injection	Lits.	..	3000
		Capsules	Lakh Nos.	..	2·5
		Tablets	Million Nos.	..	6·5
		Liquid	Lits.	—	16000
3	Duggan Labs., Bombay	Loan licence basis			
4	Franco-Indian Mfg. Ltd., Bombay	Injection	Lits.	—	6000·0
		Tablets	Million Nos.	—	75
		Granules	Kgs.	—	15000
		Ointment	Million Tubes	—	1·0
5	Flora Pharma, Kanpur	Capsules	Lac Nos.	—	61
6	G.D.A. Chemicals, Calcutta	Injection	Lits.	—	10720
		Tablets	Kgs.	—	10000

TABLE 7·5—*Concld.*

1	2	3	4	5	6
7	Lyovak Labs., Bombay	Capsules	Million. Nos.	6	6
		Ointment	Million Tubes	6	—
8	Lyka Labs., Bombay	Capsules	Lac Nos.	—	1·27
		Tablets	Million Nos.	..	14·0
		Ointment	Million Tubes	—	13·7
9	Navarathna Pharmaceuticals, Cochin . .	Tablets	Kgs.	..	3600/6000
10	Orissa Red Cross Blood Bank, Cuttack . .	Capsules	Lakh Nos.	1	—
11	Pharma-Chem Mfg. Corporation, Bombay .	Tablets	Million Nos.	6·6	6·6
		Liquid	Million bottle	—	500
12	Royal Labs., Hyderabad	No licensed capacity	Do not come under I.D. & R.I.		
		Tablets	Million Nos.	..	66
13	Syntho Pharma, Pvt. Ltd., Delhi . . .	Capsules	Million Nos.	..	2·4
		Tablets	Do.	..	36
		Powder	Kgs.	..	9000
14	Shetty's Pharmaceutical and Biological Ltd., Hyderabad.	Injection	Lits.	—	13200
		Tablets	Million Nos.	—	49.5
		Liquid	Lits.	—	26400 (Orals)
15	Sarpin Pharmaceuticals, Bombay . . .	—	—	—	—

7.2.6. Even though there are 384 units in the small scale sector which manufacture formulations, we received replies to our questionnaire from 281 units only and of these a mere 15 gave particulars of capacity. Since formulating activity in the small scale sector is very limited, the lack of response and data do not detract to any substantial degree the evaluation of the total formulating activity in the country.

7.2.7. In the case of the large scale manufacturers, the units which manufacture one or more of these formulations have been covered by this survey but the position is indefinite in so far as the small scale sector manufacturers of the formulations are concerned, since out of a total of 384 formulators in this sector data were furnished to us by 281 units. The survey of formulators in so far as the small scale sector is concerned is thus limited to these 281 units. Of the 281 units in the small scale sector of which we have names, four are producers cum formulators and the remaining 277 are only formulators of the specified drugs. Appendix VII gives the names of the producers-cum-formulators and formulators in the large as well as small scale sectors together with the particulars of the selected single and multiple drug formulations manufactured by each. The particulars of the formulating units in the large and small scale sector in each State for which we have collected the necessary data are given in Table 7.6 :

TABLE 7.6

(A) *Number of formulating units which manufacture single drug formulations of the specified drugs*

Sl. No.	Name of the specified drug	Number of the formulating units		
		Large Scale	Small Scale	Total
1	2	3	4	5
1	Vitamin A	7	60	67
2	Vitamin B 12	28	112	140
3	Vitamin C	32	91	123
4	Sulphadiazine	14	70	84

TABLE 7·6—*Contd.*

1	2	3	4	5
5	Penicillin	24	9	33
6	Streptomycin	11	6	17
7	Chloramphenicol . . .	11	45	56
8	Tetracyclines	17	41	58
9	Amodiaquin	2	1	3
10	Chloroquine	7	14	21
11	Iodo-chlor-hydroxy-quinoline .	18	48	66
12	Chlorpropamide	4	4	8
13	Tolbutamide	6	5	11
14	Insulin	13	1	14
15	INH	10	42	52
16	PAS	17	22	39
17	Tetanus Anti-toxin . . .	6	2	8
18	Prednisolone	16	25	41

NOTE.—Totals have not been given since many of the drugs are being formulated by the same unit.

(B) *Number of formulating units which manufacture multiple drug formulations of the specified drugs*

Sl. No.	Name of the drugs in the formulation	Number of formulating Units		
		Large Scale	Small Scale	Total
1	2	3	4	5
1	Combinations of different forms of Penicillin	2	..	2
2	Combinations of different forms of streptomycin	5	1	6
3	Penicillin and Streptomycin . .	6	..	6

TABLE 7·6—*Concld.*

1	2	3	4	5
4	Chloramphenicol & Tetracylines .	3	1	4
5	Chloramphenicol & Streptomycin .	6	6	12
6	Iodo-chlor-hydroxy-quinoline and Chloroquin	5	1	6
7	Tetracyclines & Vitamins . .	1	..	1
8	I.N.H. and P.A.S. . . .	16	11	27
9	Combinations of Vitamins . .	4	26	30
10	Iodo-chlor-hydroxy-quinoline and Chloramphenicol . . .	..	1	1
11	I.N.H. and Vitamins . . .	..	3	3
12	P.A.S. and vitamins . . .	..	1	1
13	Vitamin, I.N.H. and P.A.S. . .	..	1	1

CHAPTER 8

PRODUCTION AND UTILISATION OF CAPACITY

8.1. Production of basic drugs :

8.1.1. Production during the last six years for each of the specified basic drugs by the various units, both in the large scale as well as small scale sectors, is given in Table 8.1 :

TABLE 8.1

Unitwise installed capacities and production of each specified basic drug

Sl. No.	Basic Drug and Name of the units	Unit of measurement	Installed capacity							Production					
			In 1962	In 1963	In 1964	In 1965	In 1966	In 1967	Year of commencement of production	In 1962	In 1963	In 1964	In 1965	In 1966	In 1967
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	*Vitamin—A*														
	1. Roche Products .	MMU	20	20	20	20	20	20	1959	12.9	15.2	16.0	15.7	14.3	14.6
	2. Glaxo Labs. .	,,	20	20	20	20	20	20	1958	7.1	4.1	6.7	8.8	7.1	9.2
			40	40	40	40	40	40		20.0	19.3	22.7	24.5	21.4	23.8
2(a)	*Vitamin B*-12														
	(1) Merck Sharp .	Kg.	25	25	40	40	40	40	1959	16.7	25.8	21.3	27.2	41.8	43.4
	(2) Synbiotics .	,,	..	..	..	..	..	..	..	..	..	..	..	..	..

				..	..	..	12	1967	..	..	..	..	..	10.3
	,,	25	25	40	40	40	52		16.7	25.8	21.3	27.2	41.8	53.7
(b) *Vitamin* B-12(b)														
(1) Merck Sharp .	Kg.	24	24	24	24	24	24	1962	3.9	5.3	8.5	7.9	10.3	10.2
(2) Glaxo Labs. .	,,	..	5	5	6	6	6	1963	..	1.3	..	0.5	2.1	1.5
		24	29	29	30	30	30		3.9	6.6	8.5	8.4	12.4	11.7
3 *Vitamin—C*														
Sarabhai Merck	Tonnes	60	65	84	90	150	180	1961	34.0	62.0	78.0	90.0	131.0	77.0
		60	65	84	90	150	180		34.0	62.0	78.0	90.0	131.0	77.0
4 *Sulphadiazine*														
(1) Atul Products .	Tonnes	83	83	83	83	83	83	1952	31.5	54.7	52.5	63.8	12.4	Nil
(2) May & Baker .	,,	35	35	35	110	110	110*	1955	12.7	25.4	24.2	43.9	65.0	43.9
		118	118	118	193	193	193		44.2	80.1	76.7	107.7	77.4	43.9
5 *Penicillin*														
(1) Hindustan Antibiotics . .	MMU	45	54	60	75	77	77	1954	40.6	46.8	50.7	58.4	68.2	59.6
(2) Alembic Chemical . .	,,	10	10	20	28	50	50	1960	6.5	12.1	20.4	28.0	51.0	25.9
(3) Standard Pharmaceuticals .	,,	10	10	10	20	20	20	1962	5.8	13.5	14.0	16.1	26.7	33.1
		65	74	90	123	147	147		52.9	72.4	85.1	102.5	145.9	118.6

*Tentative capacity for Sulphadiazine. Total installed capacity for all drugs is 210 tonnes but effective operational capacity is only 175 tonnes.

TABLE 8·1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
6	*Streptomycin*														
	(1) Hindustan Antibiotics .	Tonnes	—	40	40	80	80	80	1962	—	28.4	32.5	55.2	68.6	64.6
	(2) Synbiotics .	,,	—	15	30	40	40	40	1964	—	—	25.2	36.3	36.8	60.6
			—	55	70	120	120	120			28.4	57.7	91.5	104.4	125.2
7	*Chloramphenicol*														
	(1) Parke-Davis .	Tonnes	10	10	10	10	10	10	1961	5.8	8.9	8.8	11.8	11.1	11.9
	(2) Boehringer-Knoll	,,	3	3	12	12	12	12	1962	0.8	4.1	10.0	13.4	12.9	9.7
	(3) Mac Labs. .	,,	—	—	1.2	1.2	1.2	1.2	1964	—	—	0.9	0.4	0.3	—
			13	13	23.2	23.2	23.2	23.2		6.6	13.0	19.7	25.6	24.3	21.6
8	*Tetracyclines*														
	(1) Pfizer . .	Tonnes	5	5	10	10	10	10	1961	5.6	8.3	8.8	8.5	8.9	8.0
	(2) Cynamid . .	,,	10	10	10	10	10	10	1961	6.0	12.0	8.9	8.6	6.3	5.0
	(3) Hindustan Antibiotics . .	,,	1.5	1.5	1.5	1.5	1.5	1.5	1961	0.2	0.2	0.2	0.1	0.1	0.1
	(4) Synbiotics .	,,	1.5	1.5	1.5	4.0	4.0	4.0	1962	0.1	1.0	1.9	3.4	4.5	2.6
			18.0	18.0	23.0	25.5	25.5	25.5		11.9	21.5	19.8	20.6	19.8	15.7
9	*Amodiaquin*														
	(1) Parke-Davis .	Tonnes	36.0	36.0	36.0	36.0	36.0	36.0	1959	2.9	6.6	9.9	10.7	14.9	11.5
	(2) Albert David .	,,	0.6	0.6	0.6	0.6	0.6	0.6	1959	0.05	0.07	0.07	0.02	0.07	0.1
			36.6	36.6	36.6	36.6	36.6	36.6		3.0	6.7	10.0	10.7	15.0	11.6

10 *Chloroquin*													
Bengal Immunity	Tonnes	1.1	1.1	1.3	3.0	3.0	3.0	1956	1.1	1.1	1.2	2.4	2.8	3.4
		1.1	1.1	1.3	3.0	3.0	3.0		1.1	1.1	1.2	2.4	2.8	3.4
Iodo-Chlor-Hydroxy-Quinoline														
(i) *Large Scale Units*														
(1) Albert David	Tonnes	3.0	3.0	3.0	3.0	3.0	3.0	1951	0.6	0.5	0.2	0.3	0.9	0.7
(2) Alembic Chemical	,,	4.0	4.0	4.0	4.0	4.0	4.0	1957	1.1	2.9	3.7	4.7	1.9	Nil
(3) Atul Products	,,	40.0	40.0	40.0	40.0	40.0	40.0	1956	16.0	28.1	25.9	24.0	41.2	19.2
(4) Bengal Chemical	,,	1.0	1.0	1.0	1.0	1.0	1.0	1942	0.3	0.6	0.9	0.7	0.6	0.3
(5) Brahmachari Research institute	,,	2.0	2.0	2.0	2.0	2.0	2.0	1943	0.4	0.6	0.7	0.3	0.6	0.4
(6) East India Pharmaceutical	,,	36.9	36.9	36.9	36.9	36.9	36.9	1941	14.5	14.7	19.3	21.3	22.1	24.7
(7) Hind Chemicals	,,	0.75	0.75	0.75	0.75	0.75	0.75	1960	0.6	0.3	0.4	0.3	0.4	0.5
(8) Standard Pharmaceutical	,,	6.0	6.0	6.0	6.0	6.0	6.0	1959	0.7	1.4	1.5	1.6	1.1	1.6
		93.7	93.7	93.7	93.7	93.7	93.7		34.2	49.1	52.6	53.2	68.8	47.4
(ii) *Small Scale Units*														
(1) G.D.A. Chemicals	Tonnes	2.7	2.7	2.7	2.7	2.7	2.7	1948	0.2	0.2	0.2	0.2	0.2	0.2
(2) Neogy Labs.	,,	10.0	10.0	10.0	10.0	10.0	10.0	1958	3.2	4.9	5.5	5.8	6.5	8.9
(3) Syno-Chem.	,,	—	5.0	5.0	5.0	5.0	5.0	1963	—	0.3	0.1	1.1	1.6	1.1
(4) Alliance Trading	,,	—	10.3	10.3	10.3	10.3	10.3	1963	—	5.9	5.1	6.2	7.4	10.2
(5) Sunny Industries	,,	—	—	—	4.0	4.0	4.0	1965	—	—	—	1.1	0.4	1.3
(6) Swiss Chemicals	,,	—	—	—	15.6	15.6	15.6	1965	—	—	—	0.3	0.5	0.5
(7) Eagle Labs.	,,	—	6.0	6.0	6.0	6.0	6.0	1965	—	0.2	0.8	0.5	1.9	1.3
(8) British Medicine	,,	—	—	—	3.6	3.6	3.6	1965	—	—	—	0.2	0.7	0.9
		12.7	34.0	34.0	57.2	57.2	57.2		3.4	11.5	11.7	15.4	18.2	24.4

TABLE 8·1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
B.	*Di-Iodo-Hydroxy-Quinolins*														
	(i) *Large Sale Sector*														
	(1) East India Pharmaceutical .	Tonnes	(Capacity included in that of Iodo-Chlor)							0.5	0.5	1.4	1.7	3.0	3.9
	(2) Bengal Chemical	,,	0.2	0.2	0.2	0.2	0.2	0.2	1942	0.04	—	—	—	0.04	0.03
	(3) Brahmachari Research Institute	,,	0.6	0.6	0.6	0.6	0.6	0.6	1943	0.05	0.08	0.04	0.07	0.04	0.02
	(4) Albert David .	,,	3.0	3.0	3.0	3.0	3.0	3.0	1945	1.3	2.0	0.7	1.7	1.5	1.4
	(5) Synbiotics .	,,	12.0	12.0	12.0	12.0	12.0	12.0	1953	3.8	5.5	8.8	9.1	6.4	1.5
	(6) Bengal Immunity	,,	4.5	4.5	4.5	4.5	4.5	4.5	1955	1.7	2.9	3.9	2.2	1.7	3.2
	(7) May & Baker .	,,	4·2	4.2	4.2	4.2	4.2	4.2	1956	2·7	3.3	3.9	4.5	0.4	4.5
	(8) Alembic Chemical	,,	0.6	0.6	0.6	0.6	0.6	0.6	1957		0.3	0.1	0.1	0.5	Nil
	(9) Standard Pharmaceuticals .		(Capacity included in that of Iodo-Chlor)							—	0.4	0.2	Nil	Nil	Nil
	(10) Biological Evans	,,	—	—	—	5.0	6.0	6.0	1966	—	—	—	—	0,6	0.1
			25.1	25.1	25.1	30.1	31.1	31.1		10.1	15.0	19.0	19.4	14.1	14.65
	(ii) *Small Scale Sector*														
	(1) British Medicine	,,	—	—	—	1.8	1.8	1.8	1964	—	—	—	0.1	0.1	0.1
	(2) Eagle Lab. .	,,	(Included in the capacity for Iodo-Chlor)						1963	—	1.7	1.8	1.4	0.8	0.3

(3) Navarathna Pharmaceuticals	,,	—	—	—	—	4 to 6	4 to 6	1964	—	—	—	—	0.1	0.1
(4) Neogy Labs. .	,,	(Included in the capacity for Iodo-chlor)							1.8	1.0	2.5	0.3	0.9	3.6
(5) Swiss Chemicals	,,	Do.							—	—	—	0.4	0.5	0.9
(6) Sunny Industries	,,	Do.						1965	—	—	—	0.4	0.6	0.4
		—	—	—	1.8	5.8	5.8		1.8	2.7	4.3	3.1	3.0	5.4
12 *Chlorpropamide*														
(1) Albert David .	Tonnes	3.6	3.6	3.6	3.6	3.6	3.6	1961	—	0.06	0.02	0.07	0.05	0.1
(2) Bengal Chemical	,,	0.6	0.6	0.6	0.6	0.6	0.6	1963	0.04	0.07	0.05	0.06	0.10	0.1
(3) Pfizer . .	,,	—	—	—	5.0	5.0	5.0*	1965	—	—	—	1.82	12.21	2.2
		4.2	4.2	4.2	9.2	9.2	9.2		0.04	0.13	0.07	1.95	12.36	2.4
13 *Tolbutamide*														
(1) Albert David .	Tonnes	3.6	3.6	3.6	3.6	3.6	3.6	1966	0.1	Nil	Nil	Nil	0.4	Nil
(2) Unichem Labs.	,,	3.0	3.0	3.0	3.0	3.0	3.0	1960	0.2	0.02	0.4	0.03	Nil	Nil
(3) Hoechst . .	,,	36.0	36.0	36.0	36.0	36.0	36.0	1962	2.9	8.1	10.6	16.4	24.5	12.0
		42.6	42.6	42.6	42.6	42.6	42.6		3.2	8.1	11.0	16.5	24.9	12.0
14 *Insulin*														
(1) Boots . .	M.U.	—	—	—	1080	1080	1080	1965	—	—	—	439	458	410
		—	—	—	1080	1080	1080		—	—	—	439	458	410

[*Single shift]

TABLE 8·1—*Concld.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	*I.N.H.*														
	(a) *Large Scale Sector*														
	(1) Albert David .	Tonnes	6.0	6.0	6.0	6.0	6.0	6.0	1952	1.6	1.7	0.8	0.6	1.0	0.2
	(2) Bengal Chemical	,,	2.1	2.1	2.1	2.1	2.1	2.1	1954	0.5	0.5	0.4	0.2	0.1	0.1
	(3) Bengal Immunity	,,	10.0	10.0	10.0	10.0	10.0	10.0	1954	6.0	5.9	5.6	6.1	5.3	4.5
	(4) Biological Evans	,,	—	—	18.0	18.0	18.0	18.0	1963	—	—	7.8	11.2	7.7	2.4
	(5) Calcutta Chemical	,,	1.1	1.1	1.9	1.9	1.9	1.9	1957	0.1	0.1	0.1	0.1	Nil	Nil
	(6) Chemopharma .	,,	—	—	—	—	60.0	60.0	1965	—	—	—	0.1	1.8	6.4
	(7) OPIL . .	,,	1.3	1.3	1.3	1.3	1.3	1.3	1959	0.3	0.3	0.02	Nil	Nil	Nil
	(8) Pfizer . .	,,	20.0	20.0	20.0	20.0	38.0	38.0	1956	17.3	19.0	17.9	21.7	25.9	28.9
	(9) Synbiotics .	,,	30.0	30.0	30.0	30.0	30.0	30.0	1958	22.4	29.0	27.8	17.5	16.2	Nil
			70.5	70.5	89.3	89.3	167.3	167.3		48.2	50.5	60.4	57.5	58.0	42.5
	(b) *Small Scale Sector*														
	(1) Dr. Karanth's Pharmaceuticals	Tonnes	—	—	7.2	7.2	8.0	8.0	1964	—	—	1.6	5.2	4.5	5.8
	(2) Suneeta Lbs.	,,	—	—	—	—	—	3.0	1967	—	—	Nil	Nil	Nil	4.2
			—	—	7.2	7.2	8.0	11.0		—	—	1.6	5.2	4.5	10.0

16 *P. A. S.*

(1) Biochemical & Syntheec .	Tonnes	150	150	150	150	150	150	1955	105.8	106.0	90.5	89.1	74.3	74.4
(2) Pfixzer . .	,,	60	60	60	72	95	***60	1961	39.0	61.0	62.6	75.4	80.8	82.6
(3) Biological Evans	,,	72	72	72	72	72	72	1962	7.7	60.4	68.7	63.7	60.5	54.3
(4) Wander Pharmed	,,	—	—	90	90	90	90	1964	—	—	19.9	102.7	104.0	44.6
		282	282	372	384	407	372		152.5	227.4	241.7	330.9	319.6	255.9

17 *Tetanus Anti-Toxin**

(1) Bengal Chemical	M.U.	36	36	36	36	36	36	1930	8	10	8	12	15	88
(2) Bengal Immunity	,,	6400	7600	9449	9449	9449	9449	1933	4824	6215	6629	3495	2993	3562
(3) Biological Evans	,,	—	—	—	1200	1200	1200	1966	—	—	—	—	526	1128
(4) Dey's Medical .	,,	—	—	—	—	600	600	1966	—	—	—	—	56	240
(5) Haffkine Inst. .	,,	2000	2000	2000	2000	3000	3000	1941	1525	1843	1786	1365	1876	1880
		8436	9636	11485	12685	14285	14285		6357	8068	8423	4872	5466	6898

18 *Prednisolone***

(1) Glaxo Labs. .	Kg.	120	120	165	300	300	300	1958	129	89	100	78	16	2.2
(2) Merck Sharp .	,,	120	120	120	120	120	120	1959	157	142	88	12	8	1.9
(3) Wyeth Labs. .	,,	—	600	600	600	600	600	1963	—	70	111	270	564	480.0
		240	840	885	1020	1020	1020		286	301	299	360	588	484.1

* On an average 1 litre of Tetanus Anti-toxin equals 3 M.U.

** In the case of all units for Prednisolone, the figures for all years are the over-all capacities licensed for all corticosteroids.

*** Effective installed capacity reduced because of age of the plant.

8.1.2. By sale value the position in respect of the specified basic drugs was as follows :—

TABLE 8.2

*Value of sales of basic drugs by large scale manufacturers**

(Rs. in lakhs)

Basic drug	Value of scales during			
	1964	1965	1966	1967
1. Vitamin A . . .	36·12	42·33	54·81	56·40
2. Vitamin B-12 . . .	33·79	40·73	48·27	1·61
3. Vitamin C . . .	60·94	78·43	81·74	30·11
4. Sulphadiazine . . .	..	..	9·12	3·14
5. Penicillin . . .	185·01	412·06	453·87	283·96
6. Streptomycin . . .	46·61	186·33	197·37	264·11
7. Chloramphenicol . .	17·45	31·73	18·63	3·60
8. Tetracyclines . . .	64·87	42·04	45·05	18·10
9. Amodiaquin . . .	..	..	..	..
10. Chloroquin . . .	3·03	6·44	4·09	0·18
11. (a) Iodo-chlor-hydroxy-quinoline.	32·52	36·69	47·33	12·31
(b) Di-iodo-hydroxy-quinoline.	0·06	0·07	3·94	..
12. Chlorpropamide . .	..	..	7·00	..
13. Tolbutamide . . .	0·51	0·36	1·45	1·41
14. Insulin	..	4·26	9·38	7·84
15. I.N.H.	38·67	27·56	38·18	4·76
16. P.A.S.	15·74	35·87	31·86	24·17
17. Tetanus Anti-toxin . .	65·41	40·59	35·02	24·73
18. Prednisolone . . .	36·88	43·40	67·38	53·82
TOTAL .	637·61	1088·89	1156·02	790·65

* based on Table 22·3

8.1.3. In the case of certain drugs significant fall in production over the previous years was observed. These are dealt with as follows :

Vitamin A.—Production in 1965 was 24.5 MMU but in 1967 it was only 23.8 MMU, though it was higher than that of 1966.

Vitamin C.—In 1964 the production was 78 tonnes, in 1965 it was 90 tonnes, in 1966 the figures reached 131 tonnes, but fell down to 77 tonnes in 1967.

Sulphadiazine.—In 1967 it was the lowest ever since 1962 and less than half of the production even of 1965.

Penicillin.—Production in 1966 was 145.9 MMU and fell down to 118.6 MMU in 1967.

Chloramphenicol.—As against the production of 25.6 tonnes in 1965 and 24.3 tonnes in 1966, in 1967 it was only 21.6 tonnes.

Tetracyclines.—Production from 1963 to 1966 was between 21.5 and 19.8 tonnes, but it fell down to 15.7 in 1967.

Amodiaquin.—In 1966 production was 15 tonnes, but it was only 11.6 tonnes in 1967.

Iodo-chlor-hydroxy-quinoline.—In this case also production in 1967 was lower than even that of 1963 and very much lower than that of 1966, for in 1967 it was 71.8 only as against 87.0 tonnes in 1966.

Di-Iodo-hydroxy-quinoline.—Production in 1964 was 23.3 tonnes but fell down to 22.5 tonnes in 1965 and registered a further fall in 1966. But there was a slight rise in production in 1967, though it was lower than that for 1964.

Chlorpropamide.—There has been a very large fall between 1966 and 1967, the figures being 12.36 and 2.4 tonnes respectively.

Tolbutamide.—In this case also production in 1967 was almost half of the production of 1966.

Insulin.—In both 1965 and 1966 production was higher than that of 1967.

I.N.H.—Production in the large scale sector was lower in 967 than that of any year during the previous five years.

P.A.S.—In this case also production in 1967 was lower than that of 1965 and 1966.

Tetanus Anti-toxin.—Production in 1967 was lower than that of 1963 or 1964.

Prednisolone.—Production in 1967 was lower than that of the previous year.

8.1.4. It is a matter of considerable significance that out of the 18 basic drugs, 13 drugs showed fall in sale value in 1967 compared to 1966. The sale value of all the drugs in 1965 was Rs. 10.89 crores, Rs. 11.56 crores in 1966 and Rs. 7.91 crores in 1967. There was thus a fall of 32 per cent in the overall value of the drugs sold in 1967 in the country compared to the year 1966. The only drug in the case of which a continuous rise in sale value was observed was Streptomycin. It would appear that there was a decline in the requirement of the basic drugs and particularly of the 13 basic drugs for which fall in sale value was recorded. The reasons given for this fall are as follows :

In some cases production fell owing to the problems relating to the non-availability of imported raw-materials and in certain others large imports of basic drugs were alleged to be the reasons for reducing or stopping of production. Lack of demand is also mentioned as one of the reasons for substantial reduction in production. The reasons given for under-utilisation of the installed capacities of the various units have been discussed in the next paragraph. It is nevertheless very significant that while it is claimed that the total value of sales of formulations went up from Rs. 150 crores to Rs. 175 crores in 1967, in the case of the specified basic drugs there has been a substantial fall. The value of sales of the specified basic drugs came down by about 32 per cent. The reasons for such a fall in production in 1965, 1966 and 1967 as well as the remedies therefore have been further discussed below.

8.2. **Utilisation of capacity :**

8.2.1. The extent of utilisation of capacity for each of the basic drugs and reasons for under utilisation are discussed below :

Vitamin A—Roche Products : The Installed capacity is said to be 20 M.M.U. but its production in the last three years was between 14.3 and 15.7 MMU. In 1964 it was 16.0 then it

went down to 14.3 in 1966 but showed a slight rise in 1967 and reached 14.6 MMU. The reasons given by the unit for low production are as follows :—

In 1966 sales of pharmaceutical grade of Vitamin A were hampered by the fact that the import licence was restricted and non-availability of imported vitamin resulted in weakening the demand for vitamin A for use in multi-vitamin products. There was subsequent liberalisation of imports. By the time liberlisation had gone far enough to show a marked effect on Vitamin A sales to the pharmaceutical industry, a general recession in the economy served as a check on its sales and production. In the short run of first 6 months of 1967, high production could be achieved but over a longer period, such high level of production would be limited by recession in the economy and bottlenecks arising in intermediate production.

Glaxo Labs. : In this case the production is less than half of the installed capacity. It has reported that the reason for its continued under-utilisation of plant capacities in the years 1962 to 1964 was mainly due to inadequate sales of Vitamin A. In 1965 and early 1966, the non-availability of process materials limited its output and capacity utilisation. It is presumed that the same factors operated to limit production in 1967.

*Vitamin B*12 (*b*).—Glaxo Labs. has a capacity of 6 kilograms, but produced only between 0.5 and 2.1 kgs. during the previous years. It has stated that vitamin B12(b) is made from B-12 which is locally purchased from Merck Sharp and it is not possible for it to produce economically with the indigenous material as its price is much higher than that of imported B12(b) and has, therefore, lost its bulk sales market. It has recently curtailed its production as import of B12(b) by actual users has been permitted.

Vitamin C.—Sarabhai Merck has stated that in 1962 when imports of Vitamin C were freely allowed, it had to restrict its production to the extent of the market demand. Further in 1963 when imports of Vitamin C were restricted it could not only produce upto its licensed capacity but also increased its output to 78 tonnes in 1964 and to 90 tonnes in 1965, and to 131 tonnes in 1966. It could have produced in the normal course upto 150 tonnes in the year 1966 and 180 tonnes in the year 1967, but owing to the large imports of Vitamin C coming into the country under liberalised import licensing policy following devaluation in June 1966 and also under the NDR licences it had not been able to

find a market for its products. The result was that it had to curtail and finally stop production from September 1, 1967. As Vitamin C is a delicate substance and decomposes on storage, and also as the unit was losing large amounts by way of interest on inventory, it decided to close down the plant till such time as the imported stocks were exhausted and indigenous product was in demand.

Sulphadizine.—Atul Products has an installed capacity of 83 tonnes but it produced 12.4 tonnes in 1966 and had no production in 1967. It has informed us that it could not fully utilise its capacity on account of price restriction on acetyl sulphadiazine to be imported by the unit. It had therefore stopped production. This unit produced sulphadiazine from very light level intermediate which it was importing at the rate of Rs. 23.04 per kg. and adding to it the cost of other raw marterials and conversion cost, the cost of production and consequently that of sales went up to Rs. 64·25 per kg. As against this the cost of finished sulphadiazine imported from abroad was only from Rs. 38 to Rs. 41 per kg. It was, therefore, not at all in the interest either of the consumer or the economy of the country to import high level intermediate at high cost and incur loss in order to produce a drug which can be imported on an almost equivalent outlay of foreign exchange.

May & Baker produced 43.9 tonnes in 1967 as against 65.00 tonnes in 1966 while its installed capacity was 110 tonnes. It is stated that it worked up to full capacity in the years 1962 to 1964 when its capacity for all sulpha drugs was only 60 tonnes. But on the expansion of its capacity to 110 tonnes in 1965 it could not produce more due to lack of raw materials. In 1966 under-utilisation was due to commissioning difficulties and extensive engineering works on the new plant as well as inadequate import licences for raw materials. In 1967 it was due to the liberal import licencing policy for the basic drug sulphadiazine and also due to unsatisfactory supply position of Aminodiazine, an important raw material for Sulphadiazine, less than half the capacity was utilised.

Penicillin.—Hindustan Antibiotics is licensed for 84 MMU and its installed capacity is 77 MMU. Its production in the previous three years was between 58.4 and 68.2 MMU. A substantial fall was registered in 1967 as against the figure for 1966. The unit has reported that there was under-utilisation in 1963-64 due to non-availability of Procaine Hydrochloride, an essential raw material required for the manufacture of Procaine Penicillin; in 1964-65 it was due to (i) labour unrest, (ii) stoppage of re-crystallisation operations to instal equipment for substantial expansion, (iii) shortage of imported raw materials, and (iv)

process difficulties. In 1965-66 the fall resulted from heavy stocks of Procaine Penicillin and consequent curtailment of production as well as process difficulties. Lack of demand is the reason given for fall in production in 1967.

Alembic Chemical has a licensed capacity of 20 MMU and an installed capacity of 50 MMU; the production in 1966 was 51 MMU but it fell to 25.9 MMU in 1967. The reasons given for fall in production are said to be liberal imports from July 1966. The actual value of imports during the period from July 1966 to February 1968 was Rs. 75.9 lakhs; for the year 1967 it was 41.4 lakhs only.

Standard Pharmaceuticals has a licensed as well as installed capacity of 20 MMU only but produced 26.7 MMU in 1966 and 33.1 MMU in 1967. We have no information how this unit was enabled to produce 65 per cent over and above its installed capacity.

Streptomycin.—Hindustan Antibiotics is licensed for 90 tonnes but has an installed capacity of only 80 tonnes; it produced 68.6 tonnes in 1966 but 64.6 tonnes only in 1967. The reasons given for low production in 1966 and 1967 are process difficulties, and inadequacy of services like chilled water and compressed air due to failure of equipment and also the inadequate supply of electricity by the Maharashtra State Government.

As against the licensed capacity of 40 tonnes and an installed capacity for the same volume, production of Synbiotics in 1967 was 60.6 tonnes, more than 50 per cent of the licensed as well as the installed capacity.

Chloramphenicol.—Parke-Davis has the licensed capacity of 20 tonnes and an installed capacity of ten tonnes. Its production was 11.9 tonnes in 1967 and almost the same in the previous two years. The installed capacity of 10 tonnes, therefore, appears to be incorrect and needs to be revised.

Boehringer-Knoll.—As against the licensed capacity of 30 tonnes and installed capacity of 12 tonnes its production in 1967 was 9.7 tonnes only. It was ten tonnes in 1964, went up to 13.4 tonnes in 1965, came down to 12.9 tonnes in 1966 and showed a substantial fall in 1967. The reasons given by the unit are, erection of machinery for the expansion of the installed capacity from 12 to 30 tonnes which was in progress and non-availability of some essential raw material.

Mac Labs. licensed for 0.8 tonne has an installed capacity of 1.2 tonnes and production in 1966 was 0.3 tonne. This is only 25 per cent of the installed capacity. There was no production in 1967 and the reason advanced by this unit is non-availability of raw materials.

Tetracyclines .—In the case of Pfizer the installed capacity was 10 tonnes and production of eight tonnes in 1967 was lower than that of 1966 or as a matter of that for any year from 1963. The reasons given are technical difficulties.

Cyanamid has registered fall in production all the way from 1963. From a production level of 12 tonnes in 1963 it fell down to 8.9 tonnes in 1964, to 8.6 tonnes in 1965, declined further to 6.3 tonnes in 1966 and touched the lowest level of five tonnes in 1967. This works out to 50 percent utilisation of capacity. It is stated that under-utilisation in 1964 was due to low demand in 1965, one of its air-compressers broke down affecting production for nearly 8 weeks. Further there was a countrywide shortage of corn due to delay in signing the agreement for import of corn under P.L. 480 which operated as a setback to its production for nearly three to four months. In 1966 though it had 100 per cent utilisation of installed capacity in terms of fermenters it had difficulty in maintaining production due to problems of indigenous raw materials, mainly corn steep liquor. The reasons for low production in 1967 were not available.

Hindustan Antibiotics' licensed as well as installed capacity stands at 1.5 tonnes. It maintained a production of 200 kgs. only, *i.e.* about 13 per cent of its installed capacity in 1962, 1963 and 1964. Production came down to 139 kgs. in 1965, 121 kg . in 1966 and 24 kgs. in 1967. It is reported that the production of oxytetracycline had to be discontinued owing to a legal dispute arising out of alleged patent infringement. Facilities were then diverted to establish manufacture of chlortetracycline Hydrochloride. From 1963 to 1966 its Tetracycline capacity was used for the development and manufacture of newer products. This plant is now being used as a general pilot plant for large scale development of newly discovered antibiotics.

Synbiotics has an installed capacity of four tonnes and while the production was 4.5 tonnes in 1966; it fell down to 2.6 tonnes in 1967. The reasons given are large imports of the product under the import liberalisation policy the import price being very much lower than the fair ex-factory prices in the country.

Amodiaquin.—Parke-Davis has an installed capacity of 36 tonnes; it touched the production level of 14.9 tonnes in 1966 but came down to 11.5 tonnes in 1967. It is stated that its installed capacity for Amodiaquin has been under-utilised because of the falling off in the demand for synthetic antimalarials resulting from success of the prophylatic measures undertaken by the National Malaria Eradication Programme.

Albert David has the installed capacity of 600 kgs. and produced only 70 kgs. in 1963 and 1964 each, 20 kgs. in 1965, 70 kgs. in 1966 and only 100 kgs. in 1967. It has registered an increase in production since 1966, but it is nowhere near the installed capacity which in itself is very very low. The reason given by it is non-receipt of adequate licences for import of raw materials required for production.

Iodo-chlor-hydroxy-quinoline/Di-ido-hydroxy-quinoline.—There are eight units in the large-scale sector which manufacture Iodo-chlor-hydroxy-quinoline and ten units which manufacture di-iodo-hydroxy-quinoline. Of these, six are common; two manufacture only iodo-chlor-hydroxy-quinoline and four others only di-iodo-hydroxy quinoline. The particulars of these units are as follows:—

Units which manufacture both the drugs :

(i) East India Pharmaceutical
(ii) Bengal Chemical
(iii) Brahmachari Research Institute
(iv) Albert David
(v) Alembic Chemical
(vi) Standard Pharmaceutical

(2) Units which manufacture only Iodo-chlor-hydroxy-quinoline

(i) Atul Products
(ii) Hind Chemicals

(3) Units which produce only Di-iodo-hydroxy-quinoline

(i) Synbiotics
(ii) Bengal Immunity
(iii) May & Baker
(iv) Biological Evans

In the case of units producing both iodo-chlor-hydroxy-quinoline as well as di-iodo-hydroxy-quinoline their capacities and production are being discussed jointly.

East India Pharmaceuticals has an installed capacity of 36.9 tonnes and its production for both the drugs was 28.6 tonnes in 1967 as against 25.1 tonnes in the previous year. The under-utilisation in this case is said to be due to lack of demand.

Bengal Chemical's installed capacity for both the items is 1.2 tonnes and the production in 1966 was 640 kgs. and in 1967 only 330 kgs. In addition to lack of demand this unit has also mentioned want of raw material as the reason for under-utilisation.

Brahmachari Research Institute has a combined capacity of five tonnes and its production in 1966 was 640 kgs. which fell down to 420 kgs. in 1967. It has stated that it could not utilise its full installed capacity owing to shortage of raw material.

Albert David has a combined capacity of six tonnes but its production was only 2.5 tonnes in 1966 and 1.4 tonnes in 1967. It has stated that under-utilisation is due to non-receipt of adequate licences for imported raw material.

Alembic Chemical has an installed capacity of 4.6 tonnes against which its production in 1966 was 2.4 tonnes and 'nil' in 1967. The reason given by the unit for low utilisation was meagre demand.

Standard Pharmaceuticals has a capacity of six tonnes and its production in 1967 was 1.6 tonnes. The reasons given for under-utilisation are, that the production was limited to the company's requirements for formulations and for outside sale.

Atul Products has an installed capacity of 40 tonnes for Iodo-chlor-hydroxy-quinoline and produced 41.2 tonnes in in 1966 but its production fell down to 19.2 tonnes in 1967. is stated that the utilisation of capacity was dependent on the off-take by Ciba. Ciba has stated that low off-take resulted from low demand for the product.

Hind Chemicals has an installed capacity of 750 kgs. and its production was 500 kgs. It has stated that under-utilisation was due to frequent shortages of raw material. Imported raw materials were found to be short on landing and entire drums of raw materials were stolen from the Port Trust storehouse and the dock.

Synbiotics has a capacity of 12 tonnes and its production was 9.1 tonnes in 1965, 6.4 tonnes in 1966 but only 1.5 tonnes in 1967. It has stated that its production was determined by sales demand which fluctuated because of the import of the finished product and secondly because of the frequent changes in import policy. This reason does not appear to be wholly convincing in the light of the performance of other units.

Bengal Immunity has an installed capacity of 4.5 tonnes and its production in 1964 was 3.9 tonnes; it felled down to 2.2 tonnes in 1965, to 1.7 tonnes in 1966 and went up to 3.2 tonnes again in 1967.

May & Baker has an installed capacity of 4.2 tonnes and its production in 1967 was 4.5 tonnes.

There are 12 small scale units which have been licensed for Iodo-chlor-hydroxy-quinoline and six for Di-iodo-hydroxy-quinoline. Production figures are available for seven of the former and five of the latter. It is not possible to discuss individually their licensed or installed capacities since these are based mostly on estimates and not on assigned capacity. According to the claims made by the units, the total licensed capacity comes to 67 tonnes and installed capacity to 63 tonnes and production in 1967 to 30 tonnes.

No less than 22 manufacturers have been licensed for Iodo-chlor-hydroxy-quinoline and 16 for Di-iodo-hydroxy-quinoline making a total of 38 of which six are common, which gives a figure of 32 manufacturers in all. The total licensed capacity for all the units for both the drugs is 162 tonnes. The installed capacity is claimed to be 187.8 tonnes and the production in 1967 was 91.3 tonnes, *i.e.* almost 50 per cent of the capacity claimed to be installed. Most of the units have pleaded lack of demand. In the case of this drug the capacity utilised is less than 50 per cent but there are 36 units in the field; of these there are two units which between themselves can provide almost the entire requirement for the whole country. It is a matter for serious consideration if such extensive fragmentation of capacity is justified.

Chlorpropamide.—Albert David has an installed capacity of 3.6 tonnes but manufactured only 100 kgs., *i.e.* about three per cent of its installed capacity. It has stated that there was under-utilisation owing to non-receipt of adequate licences for imported raw materials required for the drug.

Bengal Chemical has an installed capacity of 600 kgs. and produced only 100 kgs. in 1966 and the same quantity in 1967. Reason for under-utilisation furnished by this unit is lack of demand.

Pfizer has an installed capacity of five tonnes but produced 12.21 tonnes in 1966 and only 2.2 tonnes in 1967. It states that it had enough stocks of chlorpropamide at the beginning of the year and had not therefore manufactured a larger quantity in 1967.

Tolbutamide.—Albert David and Unichem Laboratories did not produce this drug in 1967 even though they had installed capacities of 3.6 and 3 tonnes respectively.

Hoechst which has an installed capacity of 36 tonnes produced 12 tonnes in 1967 as against 24.5 tonnes in 1966. It has stated that when the planning was done, Carbutamide and Tolbutamide were the only oral anti-diabetics in the market. But with the introduction of Chlorpropamide a large share of the market to the extent of almost two-thirds has gone to this new drug.

Albert David has stated that its under-utilisation in 1966 was due to non-receipt of adequate licences for imported raw material. Unichem Labs. has informed us that Hoechst filed a suit for patent infringement as a result of which its production of Tolbutamide is held up.

Insuline.—The only unit producing this drug is Boots with an installed capacity of 1080 MU as against the licensed capacity of 1500 MU. Production started in 1965 and registered a figure of 439 MU in that year it went up to 458 MU in 1966 but came down to 410 MU in 1967. The unit has stated that during the period from January to July 1965 its utilisation of capacity was on one shift basis and in the period from August to October 1965 it geared up production on two shifts basis but due to lack of demand from other formulators and imports being permitted against actual users' licences for 1965-66 and under National Defence Remittance Scheme, it had to revert to single shift working. Other factors which contributed to the under-utilisation by this factory were shortage of essential raw materials, lack of pancreas gland, inadequate water supply, refrigeration defects, power failure and processing difficulties owing to the supply of pancreas gland being found fibrous. It is confronted

with problems relating to its boiler, vacuum pumps, concentration units, filteration equipment, mincer etc. which have affected its capacity and production.

I.N.H.—This is again one of the drugs for which no less than 18 units are licensed, 14 in the large scale sector and four in the small scale. Only nine units in the large scale and two in the small scale sector have installed capacities. Of the nine units in the organised sector, only six produced the drug in 1967 but seven in 1966 and eight in 1965. In the small scale sector both the units are in production. One of the largest units for this drug is Pfizer with an installed capacity of 38 tonnes. Its production in 1965 was 21.7 tonnes which went up to 25.9 tonnes in 1966 and to 28.9 tonnes in 1967. It was still very much below the installed capacity and the reason given was shortage of raw material and major machinery breakdowns. Chemo-Pharma is licensed for 60 tonnes and the same is also claimed to be the installed capacity. This capacity includes other nicotinic acids also. It started production in 1965 and produced only 1.8 tonnes in 1966 which was three per cent of its total capacity and only 6.4 tonnes in 1967 which amounted to about nine per cent of its capacity. It has attributed such enormous under-utilisation of its capacity to lack of additional block ceiling for the import of raw materials required for the manufacture of INH. It was asked to meet its requirements of imported raw materials from within the allotted block ceiling which was fully utilised for the import of raw materials required for the manufacture of other items. In 1965 the unit was forced to restrict its manufacture of Bismuth Salts and divert a part of the block ceiling used for the import of virgin bismuth metal for obtaining the raw materials for the manufacture of INH. It had therefore gone into trial production of INH only in 1966. It stepped up the production in 1967 to the extent the indigenous raw materials were made available at reasonable prices.

Synbiotics has a capacity of 30 tonnes but did not produce any INH in 1967. The unit has stated that its stoppage of production resulted first from the import of the finished product and secondly on account of frequent changes in the import policy.

Biological Evans has a capacity of 18 tonnes and produced only 2.4 tonnes in 1967 even though it had produced 11.2 tonnes in 1965 and 7.7 tonnes in 1966. It says that it reached a fairly high utilisation of capacity in 1965 but owing to acute scarcity of acids it was forced to stop production in the first half of 1967 and also owing to availability of imported INH at cheaper prices.

Bengal Chemicals has a capacity of 2.1 tonnes but produced only 100 kgs. in 1967 which works out to less than 5 per cent of the total. The reason given is lack of demand.

Bengal Immunity Co. has a capacity of ten tonnes and the production was 4.5 tonnes in 1967. The reasons given for low production are difficulty in obtaining Picoline and Hydrazine Sulphate the key raw materials which are imported.

Albert David has an installed capacity of six tonnes, achieved 1 tonne i.e. about 16 per cent in 1966 but went down to 200 kgs. in 1967, i.e. about 3 per cent of the total capacity. It says that non-receipt of adequate licences for imported raw materials is the cause for such gross under-utilisation.

Calcutta Chemicals has the capacity for 1.9 tonnes. It has not been in production for the last two years. The reasons given for stoppage of production are increasing cost of raw materials and the price freeze for the finished product.

OPIL has a capacity for 1.3 tonnes. It has not been in production for the last three years. The reasons given are temporary suspension because of high prices of raw materials.

The small scale sector appears to have done very well with a total installed capacity of 11 tonnes and the production of ten tonnes during 1967.

P.A.S.—Biochemical & Synthetic has an installed capacity of 150 tonnes but produced 106 tonnes each in 1962 and 1963; 91 tonnes in 1964. Its production started tapering off from 91 tonnes in 1964, to 89 tonnes in 1965 and 74 tonnes in 1966 and the same volume was maintained in 1967. The reasons given for fall in production are lower indent by its sole selling agents who have mentioned lack of demand as the reason.

Pfizer has a capacity of 60 tonnes and it has produced 82.6 tonnes in 1967.

Biological Evans has a capacity of 72 tonnes and produced 54.3 tonnes in 1967 as against its Higher utilisation of 68.7 tonnes in 1964. It says that fall in demand and non-availability of alcohol were the reasons for the low utilisation of capacity.

Wander Pharmed has the capacity of 90 tonnes but the production was 44.6 tonnes in 1967. The reasons given for under-utilisation are liberalised imports after devaluation.

Though imports were banned in 1967-68 there were heavy imported stocks in the market till August 1967. It applied to Government for increase in price of sodium PAS but Government did not grant it. It had, therefore, to stop production in July, 1967.

Tetanus Anti-toxin.—Bengal Immunity has an installed capacity of 9449 MU and produced 3562 MU in 1967. The reason for under-utilisation was said to be heavy imports.

Haffkine Institute has an installed capacity of 3000 MU and produced 1880 MU in 1967. The reason given is the shortage of stabling space for horses.

Biological Evans has an installed capacity of 1200 MU and its production was almost equivalent to the capacity at 1128 MU.

Dey's Medical has been licensed for 600 MU but have not yet installed its capacity for basic manufacture and is engaged at present in ampouling operations only from imported anti-toxin. Its total production was 240 MU in 1967.

Prednisolone.—Glaxo Labs. has an installed capacity of 300 kgs. and its production in 1962 was 129 kgs. but was only two kgs. in 1967. The production was limited by the lack of availability of process material.

Merck Sharp with an installed capacity of 120 kgs. actually produced 157 kgs. in 1962 but in 1967 it produced only two kgs. against the installed capacity of 120 kgs. It has said that Government banned the import of intermediates and it has, therefore, stopped manufacture of prednisolone.

Wyeth Labs. has an installed capacity of 600 kgs. and produced 480 kgs. in 1967 as against 564 in the previous year. The reason given for decline in production is that the demand did not justify higher utilisation of capacity.

8.2.2. Of 54 drug units (By drug-unit is meant a drug according to the unit which produces it. For example if the same drug is produced by three units, three drug units has been adopted. Consequently if one unit produces more than one drug it has been treated as one unit for each) in 1965, 57 in 1966 and 58 in 1967 analysed, the position with regard to utilisation is as given in Table 8.3:

TABLE 8.3

Number of drug units categorised according to ranges of utilisation of capacity

Utilisation range (%)	Number of drug-units		
	1965	1966	1967
201—250	Nil	1	1
151—200	Nil	Nil	2
126—150	Nil	1	1
101—125	6	7	5
91—100	3	3	1
76—90	10	8	7
51—75	9	10	7
26—50	13	9	16
11—25	1	9	6
6—10	6	2	1
0—5	6	7	13
TOTAL	54	57	58

The above figures of low production do not reveal a healthy picture of the Drugs Industry. When capacities are allowed for the manufacture of a commodity the licences are issued in relation to the requirements of the commodity in the country. It is expected that with greater increase in production not only will imports be lessened or eliminated but also the industry would be able to meet the increase in demand. It was therefore to be expected that as the years pass there would be greater utilisation of capacities rather than progressive under utilisation. This needs extensive replanning in so far as the Drugs Industry and especially the units manufacturing the specified drugs are concerned.

8.2.3. Simultaneously with progressive under-utilisation of capacity on the one hand there have been complaints of excessive import of drugs which are already being produced in the country and lack of raw materials or foreign exchange for the import of the same. An examination of the imports during the previous three years of the specified drugs and the extent of utilisation of capacity during the same period reveals the following facts :

Vitamin B-12.—As against the total capacity of 64 kgs. the production was 53.7 kgs. in 1967 and there was import of 26 kgs.

Vitamin C.—In the case of Vitamin C there is only one unit namely, Sarabhai Merck which makes it. Its capacity was 90, 150 and 180 tonnes respectively in 1965, 1966 and 1967; the production was 90, 131 and 77 tonnes respectively. The imports during these three years were 43, 148 and 268 tonnes respectively. The unit has made the point that the steep rise in imports (which were due to the N.D.R. Scheme and import liberalisation after Devaluation) had affected its production. On the other hand, imports had to be permitted because of the inability of the firm to meet the increasing demand in the country. In any case when the unit was able to utilise its capacity in larger measure, imports were banned by Public Notice on 30th September, 1966. It is learnt that the unit has since recommenced production.

Penicillin.—In the case of Penicillin lack of offtake owing to heavy stock has been mentioned; against the installed capacity of 147 MMU, the production was 146 MMU in 1966 but it fell down to 119 MMU in 1967. It is significant to note that when production in 1964 was 85 MMU the import was 43 MMU making a total availability of 128 MMU; when production went up in 1965 by 17 MMU the import was reduced by 32 MMU. However when production went up to 146 MMU the import instead of being reduced went upto 41 MMU, i.e., at about the same level as that of 1964 even though production in comparison to 1964 had gone up by 61 MMU. The result was adverse for the Indian industry and in 1967 the production fell by 27 MMU compared to that in the previous year. In 1967 the import of Penicillin was 78 MMU as against 41 MMU in 1966 and 11 MMU in 1965.

Tetracyclines.—In the case of Tetracyclines the installed capacity is 25.5 tonnes and production in 1963 was 21.5 tonnes

it fell to 19.8 tonnes in 1966 and to 15.7 tonnes in 1967. For the same years, in 1966 the imports were of the order of 32 tonnes and in 1967, 23.1 tonnes.

8.3. Utilisation of capacity in the case of formulating units :

8.3.1. Since the concept of capacity in respect of specific drugs has not been applied in so far as formulations are concerned, utilisation of capacity can be judged only by the volume of preparations for which the unit was licensed and the extent to which such preparations were or were not manufactured. Utilisation is therefore in terms of tablets, ampoules, bottles etc. produced and not in terms of the quantities for each specified formulation. Nevertheless where the capacities in terms of these preparations to be manufactured by the units have not been utilised for all drugs for which they are licensed and not only for the specific drugs, certain reasons have been given by them for lack of utilisation of capacity. These are as follows :

8.3.2. Hindustan Antibiotics has said that in the case of vialling there was under utilisation of capacity owing to mechanical troubles with one of the automatic lines in 1962-63, in 1963-64 two shifts could not be operated throughout the year due to shortage of operators, in 1964-65 due to labour unrest and inability to work the machines for two shifts and in 1965-66 due to shortage of personnel as well as slowing down resulted owing to process difficulties. In the matter of capsuling it has said that owing to shortage of materials the installed capacity was not fully utilised. Kemp and Co., has complained of lack of demand and shortage of raw materials. Smith Stanistreet says that capsuling was short of licensed capacity owing to the pattern of sales take-off and lack of timely availability of raw material. Geoffrey Manners has complained of difficulties in the procurement of materials and lack of acceptable specifications in the case of indigenous raw materials. Ranbaxy Laboratories was faced with shortage of foreign exchange for the import of essential raw materials. Mac Labs. has mentioned shortage of raw materials as the reason. G.D.A. Chemicals, Calcutta has stated lack of imported raw materials and high prices of indigenous specified drugs. Shetty's Pharmaceuticals and Biological Evans, Hyderabad has mentioned as reasons for under-utilisation of capacity, severe competition and non-availability of raw materials at competitive rates. Pharmakon Labs., Bombay has said that under-utilisation was due to shortage of raw materials and delay in observing formalities under Government controls relating to excise. In general, lack of raw

material imported or indigenous appears to be responsible for under-utilisation of capacity.

8.3.3 Since the demand for drugs is limited by the requirements and the prescriptions written by physicians, it cannot be expected that if greater utilisation was possible the demand would have grown. Drugs are not like any other consumer commodity the demand or consumption of which need to be promoted or fostered. There have been no complaints of any special shortages of drugs in the country except in the case of streptomycin and it has to be assumed that the capacities set up for the manufacture of preparation of various drugs are generally in excess of the existing demand.

CHAPTER 9

FUTURE EXPANSION—BASIC DRUGS

9.1. We have been informed that it is the Government's policy for the drug industry during the Fourth Plan to achieve expansion by and large through expansion of the existing units rather than by the establishment of new ones. The advantage of securing expansion through existing units lies in the achievement of the desired capacity with the minimum investment and less expenditure on foreign exchange. It would also enable the industry to achieve optimum production and thus bring down the cost of production. In the case of seven of the specified drugs the indigenous production is not adequate and imports have therefore been allowed. These drugs are Sulphadiazine, Streptomycin, Tetracycline, Amodiaquin, Chloroquin, Tolbutamide and Tetanus Anti-toxin. Tetanus Anti-toxin, Chloroquin and Sulphadiazine are now being allowed on a restricted basis. It is expected that when the capacities already licensed are established and fully utilised there may be no need for imports. According to the industrial policy, issue of fresh licences for antibiotics such as Penicillin, Streptomycin and Tetracyclines is banned except for purposes of expansion by the existing units. In the case of sulpha drugs even expansion is not proposed to be allowed. Licensing of other essential drugs is done on merits. Of the new units licensed IDPL has established capacities for Penicillin (140 MMU), Streptomycin (85 tonnes) and Tetracyclines (120 Tonnes) in May-June 1967. The units which have not yet installed the expansion licensed to them are as given in Table 9.1 :

TABLE 9.1

Units which have not yet established capacity for drugs licensed

Drug	Unit	Unit of measurement	Capacity licensed	Year of licence
1	2	3	4	5
1. Vitamin B12	Synbiotics	Kg.	13·2	1956
2. Vitamin B12(b)	Alembic Chemicals	,,	20·0	1966

TABLE 9.1—*Contd.*

1	2	3	4	5
3. Vitamin C . .	Hindustan Anti-biotics	Tonnes	125·0	1961
4. Chloramphenicol .	Neo Pharma .	,,	3·6	1960
5. Chloramphenicol .	Dey's Medical .	,,	18·00	1962
6. Chloroquin . .	May & Baker .	,,	12·00	1963
7. Iodo-chlor-hydroxy-quinoline.	Themis Pharma-ceuticals.	,,	0·2	1952
8. Iodo-chlor-hydroxy-quinoline.	Indian Research Institute.	,,	0·2	1952
9. Chlor-propamide .	Kemp & Co. .	,,	0·1	1962
10. I. N. H. . . .	IDPL (Hyderabad)	,,	20·0	1962
11. I. N. H. . . .	Warner . .	,,	25·0	1962
12. I. N. H. . . .	CIPLA . . .	,,	10·0	1967
13. I. N. H. . . .	South India Res. Inst.	,,	50·0	1967
14. I. N. H. . . .	Atul Drug House .	,,	160·0	1967
15. P. A. S. . . .	South India Res. Inst.	,,	50·0	1967
16. P. A. S. . . .	Chemo-Pharma .	,,	30·0	1967
17. Tetanus Anti-toxin .	Chowgule . .	M.U.	7500	1966

9.2. In the case of Iodo-chlor-hydroxy-quinoline, two units with capacities of 200 kgs. each were licensed in 1952 but they have not yet installed their plant and machinery in spite of the passage of 16 years. The total installed capacity for this drug is 151 tonnes and the consumption in the previous three years ranged between 62.8 and 82.8 tonnes. There are already too many licencees for this drug and it is worth considering if

licences for those who have not been able to instal capacity for as long as 16 years should be revoked. Synbiotics was licensed for the manufacture of 13.2 kgs. of Vitamin B12 in 1956 but it has now stated that although the plant has been installed it has not commenced production owing to high cost of indigenous production as against heavy imports, as well as the availability of the drug from smuggled stock, at low price.

9.3. As many as four units were licensed for setting up capacities for various drugs in 1962 but none of these have been set up. The dates by which capacities are likely to be set up in the case of the drugs and units mentioned above are as given in Table 9.2 :

TABLE 9.2

Likely dates of commencement of production by units licensed for basic drugs

Sl. No.	Drug	Unit	Year of licence	Capacity licensed	Date by which capacity is expected to be set up
1.	Vitamin B12 .	Synbiotics	1956	13·2 kgs.	End of 1968
2.	Chloramphenicol .	Dey's Medical	1962	18 Tonnes	1969
3.	Iodo-chlor-hydroxy-quinoline.	Themis Pharmaceuticals.	1952	0·2 Tonnes	End of 1968
4.	I. N. H. . .	Warner	1962	25 Tonnes	End of 1968
5.	I. N. H. . .	IDPL (Hyderabad).	1962	20 Tonnes	Sept. 1968
6.	I. N. H. . .	CIPLA	1967	10 Tonnes	End of 1968
7.	I. N. H. . .	South India Research Institute.	1967	50 Tonnes	July 1968
8.	I. N. H. . .	Atul Drug House.	1967	160* Tonnes	End of 1969

[*No capacity has yet been licensed but the unit has been asked to apply after a year of production.]

9.4. In the case of the following licencees no date for installation of capacity and commencement of production are available :—

TABLE 9.3

Units licensed for basic drugs but unable to give likely dates of commencement of production

Sl. No.	Drug	Unit	Year of licence	Capacity licensed
1.	Vitamin B12(b)	Alembic Chemical.	1966	20·0
2.	Vitamin C	Hindustan Antibiotics.	1961	125 tonnes
3.	Chloramphenicol	Neo Pharma	1960	3·6 tonnes
4.	Chloroquin	May & Baker	1963	12 tonnes
5.	Iodo-chlor-hydroxy-quinoline	Indian Res. Inst.	1952	0·2 tonne
6.	Chlorpropamide	Kemp & Co.	1962	0·1 tonne
7.	P. A. S.	South India Research Institute.	1967	50 tonnes
8.	P. A. S.	Chemo-Pharma	1967	30 tonnes
9.	Tetanus Anti-toxin	Chowgule	1966	7500 M.U.

Steps need to be taken to ensure that the units set up capacity within a stipulated period of time or the licence should be revoked. In the case of drugs which have to be imported owing to lack of adequate capacity this principle should be enforced with greater vigour.

9.5. The particulars of the capacity already established in the country for each of the 18 basic drugs, additional capacities for which licences have been issued but have not yet been established and the total capacities that are likely to be established when the existing licences are implemented are given in Table 9.4. We shall refer to this matter again when we consider future demand and the capacities available for the same.

TABLE 9.4

Expansion of capacity for the specified basic drugs

Sl. No.	Name of the basic drug	Unit of measurement of capacity	Already established	Licensed but not yet established	Total
1	2	3	4	5	6
1.	Vitamin A	MMU	40	..	40
2.	Vitamin B12	Kg.	52	13·2	65·2
3.	Vitamin C	Tonnes	180	125	305
4.	Sulphadiazine (x)	,,	193	..	193
5.	Penicillin	MMU	287	..	287
6.	Streptomycin	Tonnes	205	..	205
7.	Chloramphenicol	Do.	23·2	21·6	44·8
8.	Tetracyclines	Do.	145·5	..	145·5
9.	Amodiaquin	Do.	36·6	..	36·6
10.	Chloroquin	Do.	7	12	19
11.	Iodo-chlor and Di-iodo hydroxy-quinoline.	Do.	187·8	0·6	188·4
12.	Chlorpropamide	Do.	9·2	0·1	9·3
13.	Tolbutamide	Do.	42·6	..	42·6
14.	Insulin	MU	1080	420	1500
15.	I. N. H.	Tonnes	178·3	265	443·3
16.	P. A. S.	,,	372	80	452
17.	Tetanus Anti-toxin	MU (in '000)	14285	7500	21785
18.	Prednisolone (xx)	Kg.	1020	..	1020

(x) In this case capacity is inclusive of other sulpha drugs also.

(xx) In this case capacity is inclusive of other corticosteroids also.

CHAPTER 10

AVAILABILITY AND DOMESTIC CONSUMPTION

10.1. Particulars of the production of drugs during the last four years, the quantities consumed by the unit itself for the manufacture of formulations, sales to other manufacturers, exports and imports of the 18 specified basic drugs are given in Table 10.1 :

TABLE 10.1

Domestic consumption of the specified basic drugs

Sl. No.	Name of the basic drug	Unit of measurement	Year	Production	Self-consumption	Sales	Exports	Imports	Total availability	Index (with 1964=100)
1	2	3	4	5	6	7	8	9	10	11
									(Col. 6+7+9—8)	
1	Vitamin A	MMU	1964	22·7	12·5	5·6	..	..	18·1	100
			1965	24·5	11·5	6·3	..	..	17·8	98
			1966	21·4	11·0	8·2	..	..	19·2	106
			1967	23·8	11·0	8·4	..	..	19·4	107

TABLE 10.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11
2	Vitamin B12	Kgs.	1964	21·3	4·9	17·8	1·2	1·1	22·6	100
			1965	27·2	6·8	22·0	0·6	0·7	28·9	128
			1966	41·8	13·4	28·0	..	0·3	41·7	185
			1967	43·4	21·0	33·0	..	26·0	70·0	310
3	Vitamin C	Tonnes	1964	78	..	71	..	6	77	100
			1965	90	..	102	1·4	43	145	188
			1966	131	..	112	..	148	260	338
			1967	77	..	38	..	268	306	397
4	Sulphadiazine . . .	,,	1964	77	24	58	..	64	146	100
			1965	108	40	62	..	59	161	110
			1966	77	58	15	..	109	182	125
			1967	44	49	5	Nil	122	176	121
5	Penicillin	MMU	1964	85	28	61	..	43	132	100
			1965	103	32	84	..	11	127	96
			1966	146	38	93	0·3	41	172	130
			1967	119	43	54	Nil	78	175	183

6	Streptomycin	Tonnes	1964	58	9	58	..	51	118	100
			1965	92	20	80	1·0	44	143	121
			1966	104	20	84	0·2	2	106	90
			1967	125	36	90	..	62	188	159
7	Chloramphenicol	,,	1964	19·7	12·1	3·5	..	46·1	61·7	100
			1965	25·6	14·1	7·7	1·0	56·6	77·4	125
			1966	24·3	16·7	4·5	3·0	93·9	112·1	182
			1967	21·6	18·3	0·8	2·5	45·5	62·1	101
8	Tetracyclines	,,	1964	19·8	9·0	4·7	..	2·0	15·7	100
			1965	20·6	12·1	6·6	..	3·3	22·0	140
			1966	19·8	13·4	4·7	..	32·0	50·1	319
			1967	15·7	14·1	3·5	..	23·1	40·7	259
9	Amodiaquin	,,	1964	10·0	9·8	..	..	8·0	17·8	100
			1965	10·7	11·6	..	..	..	11·6	65
			1966	15·0	15·0	..	..	..	15·0	84
			1967	11·6	9·8	..	..	..	9·8	55
10	Chloroquin ,, . . .	,,	1964	1·2	1·1	0·2	..	12·5	13·8	100
			1965	2·4	1·0	0·3	1·7	15·5	15·1	109
			1966	2·8	2·8	0·9	..	2·4	6·1	44
			1967	3·4	3·3	0·1	..	18·5	21·9	159

TABLE 10.1—*Concld.*

1	2	3	4	5	6	7	8	9	10	11
11	Iodo-Chlor-hydroxy-quinoline .	Tonnes	1964	63·5	24·7	32·0	..	..	56·7	100
			1965	68·6	27·7	45·6	..	..	73·3	129
			1966	87·0	29·1	53·7	..	..	82·8	146
			1967	71·8	29·4	39·1	..	..	68·5	121
12	Chlorpropamide	,,	1964	0·1	0·1	..	..	2·4	2·5	100
			1965	2·0	0·7	..	..	2·7	3·4	136
			1966	12·4	5·2	..	4·9	0·2	5·4	216
			1967	2·4	4·2	..	..	0·7	4·9	196
13	Tolbutamide	,,	1964	11·0	11·3	0·20	..	1·6	13·1	100
			1965	16·5	12·5	0·03	..	1·2	13·7	105
			1966	24·9	17·4	2·10	..	0·5	20·0	153
			1967	12·0	18·5	0·4	..	1·5	20·4	156
14	Insulin	MU	1964	..	..	..	..	757	757	100
			1965	439	105	89	..	520	714	94
			1966	458	311	199	..	69	579	76
			1967	410	393	166	..	24	583	77

15	I.N.H.	Tonnes	1964	62·0	20·0	25·0	..	11·1	56·1	100
			1965	62·7	29·3	49·4	0·5	21·9	100·1	178
			1966	62·5	35·1	22·4	..	27·5	85·0	151
			1967	52·5	37·4	18·8	..	11·6	67·8	121
16	P.A.S.	,,	1964	242	78	152	3·5	174	404	100
			1965	331	124	218	1·0	14	355	88
			1966	320	92	172	..	136	400	99
			1967	256	91	176	..	95	362	90
17	Tetanus Anti-toxin . .	Thousand MU	1964	8·4	8·4	..	0·04	6·2	14·6	100
			1965	4·9	4·9	..	..	15·0	19·9	136
			1966	5·5	5·5	..	..	4·5	10·0	68
			1967	6·9	6·4	..	..	5·1	11·5	79
18	Prednisolone	Kgs.	1964	299	80	240	..	2	322	100
			1965	360	91	267	..	2	360	112
			1966	588	112	412	..	1	525	163
			1967	484	99	348	75	8	380	118

10.2. It is quite likely that there might have been stocks at the beginning of the year as well as at the end of the year for imports as well as domestic production. But the figures from imports are not available and the stocks have, therefore, not been shown or taken into account for arriving at figures of domestic consumption. In other words, figures of domestic consumption have been taken as total of self-consumption, sales and imports minus exports.

10.3. In the case of Vitamin A, the domestic consumption was 18.1 kgs. in 1964, came down to 17.8 kg.. in 1965 but went up to 19.2 kgs. in 1966 and 19.4 kgs. in 1967.

For Vitamin B12 domestic consumption went up by about six kgs. in 1965 and further by 12 kgs. in 1966 and owing to heavy imports in 1967 the consumption appears to be of the order of 70 kgs. as against 23 kgs. in 1964. But this figure does not appear to represent the correct position, since the figures for consumption and stocks for imports are not available. It is quite likely that all the imports may not have been consumed but part held over for the next year. The likelihood, therefore, is that the consumption was at the same level as in 1966 when imports were low.

Domestic consumption of Vitamin C went up from 77 tonnes in 1964 to 145 tonnes in 1965, 260 tonnes in 1966 and steeply to 306 tonnes in 1967. Here again all the imported goods could not have been consumed.

Domestic consumption of Sulphadiazine went up to 161 in 1965 from 146 tonnes in 1964 and to 182 in 1966 but came down to 176 in 1967.

In the case of Penicillin, domestic consumption came down from 132 MMU in 1964 to 127 MMU in 1965 but went up to 169 MMU in 1966 and 175 MMU in 1967.

For Streptomycin, domestic consumption went up from 118 tonnes in 1964 to 143 tonnes in 1965, came down to 106 tonnes in 1966 but went up again to 188 tonnes in 1967. It is said that there was a shortage in 1966 owing to restrictions on imports.

Domestic consumption of Chloramphenicol went up from 61.7 tonnes in 1964 to 77.4 tonnes in 1965, steeply to 112.1 tonnes in 1966, due to heavy imports in that year, and came down to 62.1 tonnes in 1967.

Domestic consumption of Tetracyclines which was 15.7 tonnes in 1964 rose to 22.0 tonnes in 1965, more rapidly to 50.1 tonnes in 1966, again due to large imports in that year it came down to 40.7 tonnes in 1967.

In the case of Amodiaquin, domestic consumption came down from 17.8 tonnes in 1964 to 11.6 tonnes in 1965, rose to 15.0 tonnes in 1966 but again came down to 9.8 tonnes in 1967. In the case of the other anti-malarial drug, Chloroquin, domestic consumption increased from 13.8 tonnes to 15.1 tonnes in 1965, came down to a low figure of 6.1 tonnes in 1966 but went up to 21.9 tonnes in 1967.

For Iodo-chlor-hydroxy-quinoline, an anti-dysentric drug consumption was 56.7 tonnes in 1964, 73.3 tonnes in 1965 82.8 tonnes in 1966 and 62.8 tonnes in 1967.

The consumption of Chlorpropamide was 2.5 tonnes in 1964, 3.4 tonnes in 1965 and 5.4 tonnes in 1966 which came down to 4.9 tonnes in 1967. In the case of the other oral anti-diabetic drug, Tolbutamide, the consumption was 13.1 tonnes in 1964, 13.7 tonnes in 1965, 20.0 tonnes in 1966 and 20.4 tonnes in 1967.

The consumption of Insulin was 757 MU in 1960, 714 MU in 1965, 579 MU in 1966 and 583 MU in 1967. The consumption in 1966 and 1967 came down owing to availability of alternative and anti-diabetic drugs.

In the case of I.N.H., anti-tubercular drug, the consumption was 56.1 tonnes in 1964, 100.1 tonnes in 1965, 85 tonnes in 1966 and 67.8 tonnes in 1967. In the case of the other anti-tubercular drug, P.A.S., the consumption was 404 tonnes in 1964, 356 tonnes in 1965, 396 tonnes in 1966 and 364 tonnes in 1967.

For Tetanus Anti-toxin, the consumption was 14,600 MU in 1964, 19,900 MU in 1965, 10,000 MU in 1966 and 11,500 MU in 1967. The lower consumption in the later years is due to dwindling imports which were 15000 MU in 1965, 4,500 MU in 1966 and 5,100 MU in 1967.

The consumption of Prednisolone was 322 kgs. in 1964, 360 kgs. in 1965, 525 kgs. in 1966 and 380 kgs. in 1967.

10.4. Unitwise details of self-consumption and sales are given in Appendix VIII.

10.5. Availability and domestic consumption for formulations :

As has been mentioned already, formulations are based on the basic drugs and are manufactured from the specified drugs produced in the country and also those which are imported. The availability and consumption of formulations depend, therefore, entirely on the availability of basic drugs. Since the number of the formulations is very large and their applications and preparations are numerous, no attempt has been made to classify the particulars of formulations of the various drugs or to determine their volume from the point of view of total availability and consumption.

CHAPTER 11

FUTURE DEMAND

11.1. Some of the manufacturing units as well as the Indian Chemical Manufacturers' Association have furnished estimates of demand for the specified basic drugs for the years 1968, 1969 and 1970. The particulars of the estimates furnished by some manufacturers as well as the D.G.T.D. and the Indian Chemical Manufacturers' Association are given in Table 11.1. The figures have recently been revised again by the D.G.T.D. and the estimates furnished for each of the 18 drugs under the inquiry by the D.G.T.D. together with the Development Council's recommendations for 1970-71 are given in Table 11.2.

TABLE No. 11.1

Estimates of Consumption furnished to the Commission

Sl. No.	Name of durg	Units of measure-ment	Year	Estimating agency		Others			
				I.C.M.A.	D.G.T.D.	Name	Esti-mates	Name	Esti-mates
1	2	3	4	5	6	7	8	9	10
1	Vitamin A . . .	MMU	1968	40		Roche Products	9·55		
			1969	40		Do.	9·80		
			1970	40	40	Do.	10·00		
2	Vitamin B12 . . .	Kg.	1968	50		Merck Sharp	62		
			1969	50		Do.	70		
			1970	55	60(A)	Do.	75		

(A) Target is being reconsidered.

TABLE 11.1—*Contd.*

1	2	3	4	5	6	7	8	9	10
3	Vitamin C . . .	Tonne	1968	200		Sarabhai Merck	300		
			1969	250		Do.	170		
			1970	300	375	Do.	190		
4	Sulphadiazine . . .	Tonne	1968	N.A.		May & Baker	150	Atul Products	200
			1969	N.A.		Do.	125	Do.	200
			1970	N.A.	1500(B)	Do.	125	Do.	200
5	Penicillin . . .	MMU	1968	200		Alembic Chemical	180		
			1969	200		Do.	165		
			1970	200	250	Do.	181		
6	Streptomycin . . .	Tonne	1968	200		Synbiotics	250		
			1969	230		Do.	250		
			1970	260	300	Do.	300		
7	Chloramphenicol . .	Tonne	1968	70		Parke-Davis	100		
			1969	70		Do.	70		
			1970	70	100	Do.	80		
8	Tetracyclines . . .	,,	1968	100		Synbiotics	100		
			1969	120		Do.	100		
			1970	120	200	Do.	100		

(B) For all sulpha drugs.

9	Amodiaquin . . .	Tonne	1968	60*		Parke-Davis	10·15
			1969	60*		Do.	20
			1970	60*	120(C)	Do.	20
10	Chloroquin . . .	,,	1968	60*		Bengal Immunity	18
			1969	60*			
			1970	60*	120(C)		
11	Iodo-chlor hydroxy-quino-line.	,,	1968	150**		Atul Products	80
			1969	150**		Do.	80
			1970	150**	200(D)	Do.	80
12	Chlorpropamide . .	,,	1968	N.A.			
			1969	20			
			1970	30	45		
13	Tolbutamide . . .	,,	1968	30		Hoechst	17·5
			1969	45		Do.	20·5
			1970	45	45	Do.	22·5
14	Insulin . . .	MU	1968	1200		Boots	750
			1969	1300		Do.	750
			1970	1500	1000	Do.	800

* For both Amodiaquin and Chloroquin.

** For Iodo-chlor and Di-iodo-hydroxyquinoline

(C) For all synthetic anti malarials

(D) For all halogenated oxyquinolines.

TABLE 11.1—*Concld.*

1	2	3	4	5	6	7	8	9	10
15	I.N.H. . . .	Tonne	1968	150		Synbiotics	100	Bengal Immunity	300
			1969	150		Do.	100		
			1970	150	300	Do.	150		
16	P.A.S.	Tonne	1968	700					
			1969	700					
			1970	750	1000				
17	Tetanus Antitoxin . .	1000MU	1968	N.A.		Bengal Immunity	22		
			1969	N.A.			N.F.		
			1970	N.A.	80 (For all sera)		N.F.		
18	Prednisolone . . .	Kg.	1968	500		Wyeth Labs.	700	Merck Sharp	500
			1969	500		Do.	650		N.F.
			1970	500	900 (inclusive of prednisone)	Do.	600		N F.

NOTE.— (1) ICMA has stated that the requirements of I.N.H. and P.A.S. may be much more in case the Government launches a country wide Anti-tubercular Campaign.

(2) The figures given by D.G.T.D. for 1970 are the Development Council's Targets.

TALLE 11.2

Development Councils estimates of demand for 1970-71 *and revised targets for* 1973-74

Sl. No.	Name of Basic Drug	Unit	Development Council's recommendation for 1970-71	Revised targets suggested by Development Council for 1973-74
1	2	3	4	5
1.	Vitamin A	MMU	40	50
2.	Vitamin B12, B12(b)	Kg.	(A)60	150
3.	Vitamin C	M/T	375	375
4.	Sulphadiazine	M/T	(B)1500	(B)1800
5.	Penicillin	MMU	250	250
6.	Streptomycin	M/T	300	300
7.	Chloramphenicol	M/T	100	100
8.	Tetracyclines	M/T	150	150
9.	Amodiaquin	M/T	(C)120	(C)120
10.	Chloroquin	M/T		
11.	Iodo- chlor & Di-iodo-hydroxy-quinoline.	M/T	(D)200	(D)150
12.	Chlorpropamide	M/T	45	
13.	Tolbutamide	M/T	45	(E)105
14.	Insulin	MU	1000	1000

TABLE 11.2—*Contd.*

1	2	3	4	5
15.	I. N. H.	M/T	450	250
16.	P. A. S.	M/T	750	750
17.	Tetanus Antitoxin . . .	Thousand MU	(F)30	--
18.	Prednisolone	Kg.	(G)600	(H)1500

NOTES.—(A) The target is being reconsidered.

(B) The target is for all Sulpha drugs.

(C) For Amodiaquin, Chloroquin and Dyrmetamine.

(D) The target is for all halogenated oxyquinoline.

(E) For Tolbutamide Chlorpropamide and Phenphormin.

(F) The target is for all sera.

(G) For both Prednisolone and Prednisone.

(H) The target is for Prednisolone, prednisone, Dexamethiasone, Cortisone and Hydrocortisone and Triamcinolone.

11.2 Some of the comments made by the units are as follows :

Vitamin A : Roche Products has stated that certain applications of Vitamin A are in a continuing state of development and the sales of pharmaceutically graded Vitamin A depend upon the availability of other vitamins to be used in the multi-vitamin products.

Vitamin C : Of late consumption of Vitamin C in India has gone up considerably according to Sarabhai Merck because of the following reasons :

1. Vitamin C is being administered in larger dosages than before and upto 500 milligram tablets.

2. It is being prescribed for ailments for which it was not suggested earlier, for example, it is now accepted that Vitamin C is good for dental disorders. It can be dissolved in a glass of water and taken every day.

3. It is being administered, with broad spectrum of antibiotics.

4. So far owing to import restrictions other Vitamins were not freely allowed to be imported and as such multi-vitamin preparations cannot be made freely available to the market. Under the liberalised import licensing scheme other Vitamins are now freely allowed to be imported and as such the consumption in the Country of imported vitamin preparations has gone up considerably resulting in increased requirements of Vitamin C.

5. Soft drink manufacturers have also now started using Vitamin C in their products as for example coco-cola.

6. Wheat treated with Vitamin C gives better yield and some farmers have already started using Vitamin C in small quantities.

Penicillin.—Hindustan Antibiotics has stated that by 1971 the estimated consumption is expected to go up by 250 MMU.

Streptomycin.—Hindustan Antibiotics expects production and estimated consumption by 1971 to go up to 300 tonnes.

Synbiotics considers that the present production of Streptomycin is inadequate for the handling of anti T. B. programme.

Chloramphenicol.—Parke-Davis expects the consumption of Chloramphenicol to be 100 tonnes in 1970-71.

Tetracyclines.—Hindustan Antibiotics places the estimated consumption by 1971 at 150 tonnes and Synbiotics also considers that the consumption will rise steadily in future because the drug is also used in animal feeds.

Amodiaquin.—Parke-Davis considers that there would be a downward trend in the consumption of anti-malarial drugs as a result of the success of the National Malaria Eradication Programme.

Tolbutamide.—With the introduction of Chlorpropamide, a larger share, that is about two-thirds has gone to this new drug according to Hoechst.

Insulin.—Boots, which is the only manufacturer in India has stated that there was a setback in the production of Insulin owing to large quantities of imports against actual user licences and also against N.D.R. and American aid licences and lately even against rupee payment sources through the S.T.C. Taking into consideration the growing uses of oral hypoglycemic drugs on the

one hand and the increasing uses of other anti-diabetics on the other, the demand for Insulin according to this unit is not likely to increase substantially.

I.N.H.—Synbiotics considers that the demand for I.N.H. will increase if the country undertakes to eradicate T.B. and works out a positive programme.

11.3. Compared to the capacity that already exists in the country and the capacities that are likely to be installed on the basis of the licences so far granted there would be certain imbalances as between the consumption and the installed capacity for production in the country which are revealed from the figures given in Table 11.3.

TABLE 11.3

Consumption and future capacity for basic drugs

Sl. No.	Name of the basic drug	Unit	Capacity likely to be available on the basis of licences granted so far	Development Council's target for 1970-71	Development council's revised targets suggested for 1973-74	Col. 5 as percentage of Col. 4	Col. 6 as percentage of col. 4
1	2	3	4	5	6	7	8
1	Vitamin A .	MMU	40	40	50	100	125
2	Vitamin-B12 .	Kgs.	65·2	60	150	92	230
3	Vitamin-C .	Tonnes	305	375	375	123	123
4	Sulphadiazine .	Tonnes	193(A)	1500	1800(B)	..	..
5	Penicillin . .	MMU	287	250	250	87	87
6	Streptomycin .	Tonnes	205	300	300	146	146
7	Chloramphenicol	,,	44·8	100	100	223	223
8	Tetracyclines .	,,	145·5	200	150	137	103
9	Amodiaquin .	Tonnes	366	(G)	(G)	..	..

TABLE 11.3—*Contd.*

1	2	3	4	5	6	7	8
10	Chloroquin .	Tonnes	19	120	120	..	..
11	(a) Iodo-chlor-hydroxy quino-line. b) Di-iodo-hy-droxy-quino-line.	,,	188·4	200(C)	150(C)	..	..
12	Chlorpropamide	,,	9·3	45	105(H)	..	..
13	Tolbutamide .	,,	42·6	45	..	..	..
14	Insulin . .	MMU	1500	1000	1000	67	67
15	I. N. H. . .	Tonnes	443·3	300	250	68	56
16	P. A. S. . .	,,	452	1000	750	205	154
17	Tetanus Anti-toxin.	1000 MU	21·8	80(D)	30(D)	..	..
18	Prednisolone .	Kgs.	1020(E)	900(F)	1500(F)	..	..

(A) Includes some other Sulpha Drugs
(B) For all Sulpha drugs.
(C) For all halogenated oxyquinolines
(D) For all sera.
(E) Includes some other corticosteroids.
(F) For both Prednisolone and Prednisone.
(G) Includes Dyrmethamine also.
(H) Includes Phenphormine.

11.4. In certain cases the figures of consumption as estimated for the future appear to be on the high side. Taking into consideration the rate of consumption during the last four years, the future demand at the end of 1970-71 is likely to be lower in the case of certain drugs than estimated by the Development Council or the D.G.T.D.

11.5. A statement showing increases in domestic consumption from 1965 to 1967 with 1964 as base and our estimates of consumption for 1968, 1969 and 1970 taking into account the average annual imports for the last three years is given in Table 11.4.

TABLE 11.4

Estimated consumption of basic drugs for the three years

Sl. No.	Drug	Unit	Percentage of increase in consumption with 1964 as base			Average annual imports for the last 3 years ('65 to '67)	Estimated rate of increase during			Estimated Consumption		
			1965	1966	1967		1968	1969	1970	1968	1969	1970
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Vitamin A . .	MMU	(—) 2	6	7	..	11	Nil	Nil	30	30	30
2	Vitamin B12 . .	Kgs.	28	85	210	9	(—)10	10	10	60	70	80
3	Vitamin C .	Tonnes	88	238	297	153	(—) 6	15	15	300	315	330
4	Sulphadiazine .	,,	10	25	21	97	4	Nil	Nil	180	180	180
5	Penicillin . .	MMU	(—) 4	28	33	43	5	20	Nil	180	200	200

6	Streptomycin .	Tonnes	21	(—) 10	59	36	12	25	25	200	225	250
7	Chloramphenicol .	,,	25	82	1	65	(—) 2	10	10	60	70	80
8	Tetracyclines .	,,	40	219	159	19	4	10	10	45	55	65
9	Amodiaquine .	,,	(—)35	(—)16	(—)45	..	10	5	5	20	25	30
10	Chloroquin . .	,,	9	(—)56	59	12	(—) 2	3	3	20	23	26
11	Iodo-chlorhydroxy-quinoline . .	,,	29	46	21	..	31	20	20	100	120	140
12	Chlorpropamide .	,,	36	116	96	1·2	2	3	5	7	10	15
13	Tolbutamide	,,	5	53	56	1·0	Nil	5	5	20	25	30
14	Insulin . .	MU	(—) 6	(—)24	(—)23	200	217	50	50	800	850	900
15	I.N.H. . . .	Tonnes	78	51	21	20	32	20	20	100	120	140
16	P.A.S. . . .	,,	(—)12	(—)1	(—)10	62	38	50	50	400	450	500
17	Tetanus Anti-toxin .	MU	36	(—)32	(—)21	8000	500	1000	1000	12000	13000	14000
18	Prednisolone .	Kgs.	12	63	18	3	220	100	200	600	700	900

CHAPTER 12

RAW MATERIALS

12.1. Raw materials needed for basic drugs :

12.1.1. The total value of raw materials imported by the drugs and pharmaceutical industry was Rs. 9.5 crores in 1958 and accounted for 18 percent of the value of the indigenous production of the industry in that year. It came down to Rs. 8.4 crores in 1965 which works out to 6 per cent of the value of production in that year. The total value of import of drugs, intermediates and chemicals required for the manufacture of drugs and medicines amounted to Rs. 13.71 crores in 1962-63, Rs. 13.17 crores in 1963-64, Rs. 13.11 crores in 1964-65, Rs. 14.41 crores in 1965-66, Rs. 22.88 crores in 1966-67 and Rs. 27.51 crores in 1967-68. The drugs and pharmaceutical industry is included in the list of 59 priority industries for supply of raw materials to full requirements. A statement showing the raw materials needed for the 18 basic drugs under inquiry classified into raw materials imported and those which are available indigenously is given in Table 12.1.

TABLE 12.1

List of major raw materials and intermediates and sources of supply as indicated by D. G. T. D.

Sl. No.	Name of the specified basic drug	Raw materials and intermediates needed	
		Indigenous	Imported
1	2	3	4
1	Vitamin A	Beta Ionone Ethyl Bromide Ether Methanol Ammonia	Pyridine Keto Acetal Acetyl chloride Palladium Acetonitrite

TABLE 12·1—*Contd.*

1	2	3	4
		Cal. chloride	Butylhydroxy Anisol
		Butylhydroxy Toluol	Ethyl Palmitate
		Hydrogen	Filter aids
		Acids	Lithium metal
		Acetic anhydride	Palmitoyl Chloride
		Filter aids	
2	Vitamin B-12 . .	Acetone	Beet Molasses
		Acetic Acid	Stearyl Alcohol
		Ammonia	Sod. Nitrate/Cyanide
		Sulphuric Acid	Sod. Molybdate
		Caustic Soda	Filter aids
		Resin	Cobalt nitrate
		Surface active agents	
		Alumina	
3	Vitamin C	Glucose	..
		Methanol	
		Hydrochloric acid	
		Caustic Soda	
		Chlorine	
		Acetone	
		Yeast Extract	
		Carbon	
4	Sulphadiazine	Chlorosulfonic Acid	Aminodiazine Pyridine
		Decolourising agent	
		Acetanilide	
5	Penicillin . . .	Butyl Acetate	Phenyl Acetic Acid/ Sodium Salt.
		Butyl Alcohol	
		Procaine Hcl.	Phenyl Acetamide
		Acetone	Phenoxy Acetic Acid
		Nutrients	Potassium Carbonate
		Acetic acid	Filter media/aids
		Other acids	Nutrients
		Potassium Hydroxide	
		Surface active agents	
		Activated Carbon	
		Solvents	

TABLE 12·1—*Contd.*

1	2	3	4
6	Streptomycin . .	Methanol Nutrients Sod. Hydroxide Sod. Sulphate Cal. Chloride Potassium Hydroxide Surface active agents Solvents Resins	Filter aids/media Nutrients
7	Chloramphenicol .	Acetic Anhydride Sodium Carbonate Methanol Acetic Acid Caustic Soda Methyl Dichloro Acetate. Monochlorobenzene Carbon di-oxide Acids Hydrogen gas Hexamine Bromine Xylene Trichloroethylene Surface Active agents	P-Nitro Acetophenone Benzaldehyde Catalysts Filter aids Benzyol Tartaric acid Ethylene oxide Iso-propyl alcohol
8	Tetracyclines . .	Corn steep Liquor/ starch. Caustic Soda Sugar Butanol Phosphoric Acid Urea Methanol Acids Surface active agents Solvents	Arquad M.I.B.K. Catalysts Filter aids/media Nutrients

TABLE 12·1—*Contd.*

1	2	3	4
9	Amodiaquin . .	Methanol Acetone Caustic Soda Formalin	P-acetyl aminophenol Diethylamine 4-7-dichloro-quinoline
10	Chloroquin . .	Caustic Soda Acetic Acid Phosphoric Acid Phosphorus oxychloride Decolourising agent M-chloro-aniline Ethylene dichloride Phenol	Diphenyl oxide Ethoxy-methylene-Diethyl Malonate Pot. Carbonate Diethylamino-methyl-butyaline
11	Iodo-chlor-hydroxy-quinoline	Chlorine Caustic Soda Glycerine Acids Phenol	8-Hydroxy Quinoline Iodine
12	Chlorpropamide	Chlorosulfonic acid Benzene Caustic Soda Methanol Ammonia Acids Monochloro Benzene	Potassium Cyanate N-Propylamine
13	Tolbutamide . .	Acetic Acid Alcohol Carbon disulphide Hydrogen peroxide P-Toly₁-Sulfonyl-methyl-urethane P-Toluene Sulphonamide	Butyalmine
14	Insulin . . .	Phosphoric Acid Solvents Acids Acetone	Pancrease gland Filter aids

TABLE 12·1—*Concld.*

1	2	3	4
15	I. N. H. . . .	Caustic Soda	Gamma Picoline
		Soda Ash	Parafomaldehyde
		Sulphuric Acid	
		Nitric Acid	
		Pot. Permanganate	
		Ethyl alcohol	
		Hydrazine Hydrate/ Sulphate	
		Trichloroethylene	
16	P. A. S. . . .	Acetic Acid	M-Aminophenol
		Caustic Soda	Pot. Carbonate
		Carbon dioxide	M.I.B.K.
		Surface active agents	
17	Tetanus Anti-toxin .	Toxoids	Proteolytic enzymes.
18	Prednisolone .	Dioscorea roots	Catalysts
		Soda Ash	Filter aids
		Solvents	Nutrients
		Methanol	
		Acetic Anhydride	
		Methylene chloride	
		Bromine	
		Acids	
		Ethylene Dichloride	
		Hydrogen Bromide	
		Chloroform	

12.1.2. It was mainly as a result of the increase in the availability of raw material from indigenous sources that today the value of imported raw materials constitutes about 47 per cent of the total value of raw materials used in 1967 for the specified drugs under our inquiry.

12.1.3. The value of imported raw material as against the value of the total raw material used in 1964, 1965, 1966 and 1967 for each of the basic drugs by the different units is as given in Table 12.2.

TABLE 12.2

Value of imported raw materials as compared with those of total raw materials used

(Rs. in thousands)

Sl. No.	Name of the basic drug	Name of the Manufacturing unit	Total value of all raw materials				Total value of imported raw materials				Value of imported raw materials as percentage of total			
			1964	1965	1966	1967	1964	1965	1966	1967	1964	1965	1966	1967
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Vitamin A	(i) Glaxo Labs. (for Vitamin A Acetate)	24	13	973	1,318	13	8	553	798	54	60	58	61
		(ii) Glaxo Labs. (for Vitamin A Palmitate)	654	857			347	514			53	60		
		(iii) Roche Products	686	828	663	1,063	294	302	352	449	43	36	53	42
			1,364	1,698	1,636	2,381	654	824	905	1,247	48	48	55	52
2	Vitamin B-12 and B-12(b)	(i) Glaxo Labs.	..	149	407	284	..	0.6	1	1	..	..	0.2	0.4
		(ii) Merck Sharp	858	698	846	782	662	565	643	633	77	81	78	81
			858	847	1,253	1,066	662	565.6	644	634	77	67	51	59
3	Vitamin C	Sarabhai Merck	2,317	2,596	3,905	2,454	170	313	772	607	7	12	20	25
			2,317	2,596	3,905	2,454	170	313	772	607	7	12	20	25
4	Sulphadizine	(i) Atul Products	2,053	2,485	482	..	2,009	2,434	473	..	98	98	98	..
		(ii) May & Baker	1,595	2,494	1,916	1,218	1,456	2,136	1,744	1,106	91	86	91	91
			3,648	4,979	2,398	1,218	3,465	4,570	2,217	1,106	95	92	92	91

TABLE 12.2—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
5	Penicillin	(i) Alembic Chemical	2,732	5,263	7,334	4,704	1,526	1,439	1,781	1,506	56	27	24	32
		(ii) Hindustan Antibiotics	5,494	6,549	8,593	7,881	1,526	1,430	2,164	2,248	28	22	25	29
		(iii) Standard Pharmaceuticals	1,005	1,137	1,865	2,619	383	481	956	683	38	42	51	26
			9,231	12,949	17,792	15,204	3,435	3,350	4,901	4,437	37	26	28	29
6	Streptomycin	(i) Hindustan Antibiotics	3,362	6,612	8,516	9,605	2,741	5,814	2,317	3,358	81	88	27	35
		(ii) Synbiotics	2,147	2,727	3,517	6,211	857	876	1,091	2,112	40	32	31	34
			5,509	9,339	12,033	15,816	3,598	6,690	3,408	5,470	65	72	28	35
7	Chloramphenicol	(i) Boehringer-Knoll	945	1,241	1,729	1,259	884	596	1,074	870	94	48	62	69
		(ii) Parke-Davis	1,334	1,737	1,829	2,756	1,219	1,612	1,131	1,824	91	93	62	66
			2,279	2,978	3,558	4,015	2,103	2,208	2,205	2,694	92	74	62	67
8	Tetracyclines	(i) Cyanamid	1,317	1,022	1,365	1,932	161	175	659	1,058	12	17	48	55
		(ii) Hindustan Antibiotics	80	47	38	78	22	29	2	12	73	62	5	15
		(iii) Synbiotics	491	1,118	1,583	846	303	656	844	497	62	59	53	59
		(iv) Pfizer	1,279	1,160	1,009	1,595	589	577	469	955	46	50	46	60
			3,117	3,347	3,995	4,451	1,075	1,437	1,974	2,522	35	43	49	57
9	Amodiaquin	Parke-Davis	706	884	1,180	1,522	702	879	998	1,278	99	99	85	84
			706	884	1,180	1,522	702	879	998	1,278	99	99	85	84

10 Chloroquin	Bengal Immunity	180	240	222	154	117	163	112	73	65	68	50	47
		180	240	222	154	117	163	112	73	65	68	50	47
11 Iodo-chlor-hydro-xy-quinoline	(i) Atul Products	666	788	1,226	578	435	562	947	450	65	71	76	78
	(ii) Bengal Chemical	22	17	14	6	19	15	12	6	86	88	86	92
	(iii) East India Pharmaceutical	544	603	746	974	162	179	299	440	30	29	40	45
		1232	1408	1986	1558	616	756	1258	896	51	54	63	57
12 Chlorpropamide	(i) Bengal Chemical	3	3	4	4	1.0	1.0	2	2	23	23	50	50
	(ii) Pfizer	..	74	613	119	..	63	539	106	..	85	88	89
		3	77	617	123	1.0	64	541	108	23	89	88	88
13 Tolbutamide	(i) Hoechst	354	689	1664	860	350	684	1657	857	99	99	99	100
	(ii) Haffkine	10	19	20	N.A.	2.0	5	3	N.A.	18	27	13	N.A.
		364	708	1684	860	352	689	1660	857	97	97	99	100
14 Insulin	Boots	..	881	753	1082	..	754	667	985	..	86	89	91
		..	881	753	1,082	..	754	667	985	..	86	89	91
15 I.N.H.	(i) Bengal Chemical	57	29	9	3	35	17	8	3	61	59	88	82
	(ii) Bengal Immunity	342	401	336	178	98	116	105	59	29	29	31	33
	(iii) Biological Evans	288	427	349	118	180	262	180	64	63	61	52	54
	(iv) Pfizer	841	1,097	1,640	1,649	181	224	301	339	22	20	18	21
	(v) Synbiotics	1,141	656	340	292	624	565	301	135	55	86	89	46
		2,669	2,610	2,674	2,240	1,118	1,184	895	600	42	45	33	27

TABLE 12.2—*Concld.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	P.A.S.	(i) Biochemical & Synthetics	1,444	1,323	1,496	164	1,231	1,108	1,284	1,376	85	84	84	83
		(ii) Biological Evans	920	939	976	1,165	782	773	795	979	85	82	80	84
		(iii) Pfizer	1,195	1,436	1,707	1,974	1,044	1,341	1,508	1,760	87	93	88	89
			3,559	3,698	4,089	4,788	3,057	3,222	3,487	4,115	86	87	85	135
17	Tetanus Antitoxin	(i) Bengal Chemical	11	15	27	29	4	5	2	3	36	33	6	10
		(ii) Bengal Immunity	2,049	1,760	107	*36	54	43	44	*18	3	2	41	50
		(iii) Haffkine	17	15	18	N.A.	5	..	3	N.A.	28	27	17	N.A
			2,077	1,790	152	65	63	52	49	21	3	3	32	32
18	Prednisolone	(i) Glaxo Labs.	623	418	..	N.A.	448	306	*29	..	72	72	..	..
		(ii) Merck-Sharp	918	105	59	..	890	102	*57	..	97	97	96	..
		(iii) Wyeth Labs.	1,992	2,458	2,720	2,540	775	855	1,276	1,336	39	35	47	53
			3,533	2,981	2,779	2,540	2,113	1,262	1,362	1,336	60	42	49	53
		GRAND TOTAL	42,646	54,010	62,706	61,656	23,300	28,983	28,054	29,986	55	54	45	47

*Relates to only six months.

12.1.4. The synthetic drugs plant of I.D.P.L., Hyderabad, the Hindustan Organic Chemicals Ltd., Panvel, the National Organic Chemicals Industries Ltd., Bombay, the Atul Drug House, Bombay and Herdillia Chemicals Ltd., Bombay, will in course of time be producing intermediates and chemicals needed for the pharmaceutical industry in the current and future years. The demand for raw materials in the country is likely to be met by these units as shown in Table 12.3.

TABLE No. 12.3

Future availability of raw materials and intermediates at present imported

Sl. No.	Name of the raw material	Name of the drug/intermediate for which used		Name of the units licensed	Capacity licensed (In tonnes)	Likely dates of commencement of production (where available)
		Drug/intermediate	Demand for each in 1970/71			
1	2	3	4	5	6	7
1	Acetanilide . . .	Sulphadrugs .	2000	Hindustan Organic Chemicals (HOC).	2,000	1969/70
2	Acetone . . .	Vitamin A . .	40	Herdillia Chemicals .	17,000	July-Sept., 1967
		Vitamin C . .	1125	National Organic Chemicals (NOCIL)	11,000	End of 1968
		Amodiaquin . .	18			
		Ephedrine . .	27			
			1210			
3	P-Acetylaminophenol (or Paracetanol)	Amodiaquin . .	20	Burroughs Wellcome .	3	In production
				Chemo-Pharma . .	48	In production
				Themis Pharmaceuticals .	10	1968
4	Acetyl Chloride . .	Vitamin A . .	4.4			

TABLE 12·3—*Contd.*

1	2	3	4	5	6	7
5	Aluminium Chloride	Chloramphenicol	3.5	H.O.C.	3,000	1969/70
		D.D.S.	80.0			
			83.5			
6	O-Aminophenol	Iodo-chlor & Di-Iodo-hydroxy-quinoline	78	Chemo-Pharma	77	
7	M-Aminophenol	P.A.S.	700	H.O.C.	750	1969-70
8	2-Aminopyridine	Sulphadiazine	250			
9	Arquad 16(c)	Tetracyclines	516			
10	Beet Molasses	Vitamin B12	400			
11	Benzaldehyde	Chloramphenicol	187	Aniline Dyestuff & Pharma	60	..
		Ephedrine	75	Ashok Investment	360 (Letter of Intent)	
			262			
				Dikshit Chem & Eng. Co.	40 (Letter of Intent)	
					460	
12	N-Butylamine	Tolbutamide	22.5			
13	Capryl Alcohol	Vitamin B12	1.6			
14	Cellosolve (Ethyl cellosolve)	Tetracylines	606	N.A.	2500 (Letter of Intent)	1969-70

15	P-Chlorobenzene Sulphonamide	Chlorpropamide .	45				
16	Citric Acid . . .	Tetracyclines . .	51	Citric India Ltd. . .	1500		
17	Cobalt Nitrate . .	Vitamin B12 . .	0.8	Techmico Enterprise, Calcutta	0.8		..
18	4-7-Dichloro-quinoline .	Amodiaquin . .	20				
19	Diethylamine . .	Amodiaquin . .	13.0	IDPL	25.5	(Available for sale 18.4 tonnes)	1968
		Diethylcarbamazine .	11.0				
		Xylocaine . .	2.4				
		Niketharnide . .	13.0				
		Diethylaminoethanol .	75.0				
			114.4				
20	4-Diethylamino1-methyl butylamine.	Chloroquin . .	30				
21	Diethyl ethoxy methylene Melcnec ester . .	Chloroquin . .	66				
		Amodiaquin . .	44				
			110				
22	Diphenyl-oxide . .	Chloroquin . .	100	(Only as a bye-product from the phenol plant of Durgapur Chemicals)			
		Amodiaquin . .	66				
			166				

TABLE 12·3—*Contd.*

1	2	3	4	5	6	7
23	Ethylene Dichloride	Chloramphenicol	180	Excel	1500	300 Tonnes in operation.
		I.N.H.	135	NOCIL	3000	1968
		Di-ethylcarbamazine	38	Mettur Chemical	540	1968
		Bephenium hydroxy Naphthoate	4			
		Chloroquine	90			
		Amodiaquine	60		5040	
			507			
24	Ethylene Oxide	Chloramphenicol	160	NOCIL	12000	1968
		4-Diethyl amino-I-methyl Butylamine	12	Dai Ichi Karkoria Pvt. Ltd.	300	End of 1968
			172		12300	
25	Ethyl Palmitate	Vitamin A	8			
26	Formaldehyde 30%	Streptomycin	300	Allied Resin & Chem. Ltd.	6000	In production
					6000 (Ex.)	1968
		Chloromphenical	30	Atul Drug	7200	In production
		Amodiaquin	13	Rattan Chand Harjas Rai	6000	1968/69
		Tetracycline	48	HOC	15000 (Approved)	1969
		I.N.H.	1000	Reichhold Chem. (Letter of intent)	9000	1969
			1391		34200/49200	

27	Formic Acid	P.A.S. & Esters	45	Dr. Paul Lohman P. Ltd.	600	1969
		Diethulcarbamazine	2.5			
		Vitamin B-1	250	Aspinull & Co.	990 (Regd.)	1968
		Hydrochlorthiazide	50			
			347.5		1590	
28	Hemamethylene tetramine	Chloramphenicol	67	Atul Drug	300	In production
				Allied Resin & Chem.	600	1968
29	Hydrazine Hydrate	I.N.H.	225	(IDPL)	20.5*	1968
		Thiacetazone	45	(*Available for sale 18.2 tonnes)	620.5	
			270			
30	Iodine	Iodo-Chlor and Di-Iodo-Hydroxy quiloline	100			
31	Isopropyl Alcohol	Chloramphenicol	386	NOCIL	1500	End 1967
		Tetracyclines	150			
			536			
32	Keto Acetol	Vitamin A	8.8			
33	Lithium Metal	Vitamin A	0.8			
34	Magnesiam Metal	Vitamin A	2.5			

TABLE 12·3—*Contd.*

1	2	3	4	5	6	7
35	Methyl Isobutyl-Ketone (M.I.B.K.)	Tetracyclines . .	375	NOCIL	3700	End 1967
		P.A.S. & Esters . .	45			
		Tolbutamide . .	45			
		Chlorpropamide .	45			
			510			
36	P-Nitroacetophenone .	Chloramphenicol .	69			
37	O-Nitrophenol . . .	Iodo-chlor & Di-Iodo-hydroxy quinoline.	50	Chemo-Pharma . .	77 (C-amino/nitro Phenol)	
		D-Aminophenol .	127			
			177			
38	Palladium Catalyst . .	Tetrayclines . .	15			
39	Palladium Chloride .	Chloramphenicol .	0.4			
40	Palmitoyl Chloride . .	Vitamin A . .	9.1			
41	Pancreas . . .	Insulin . . .	400			
42	Paraformaldehyde . .	Vitamin A . .	10	Atul Drug . . .	450	1968
43	Phenol	Chloroquin . .	24	Herdillia Chemicals .	10,000 to 15,000	April-June 1968
		Iodo-chlor and Di-Iodo-hydroxy-quinolines.	160	Durgapur Chemicals .	6,600	End 1967
				Neyveli Lignite Corpn. .	1,340	In operation
		Salicylic Acid . .	1500			
		Bephenium Hydro-Oxynaphthoate.	2.6		17,940 to 22,940	
			1686.6			

44	Phenoxy Acetic Acid	Penicillin		Dikshit Chem. & Engg. Co.	94		No Progress
45	Phenylacetamide	,,	53	Aniline Dyestuff	78	226	,,
46	Phenyl acetic acid	,,		Hyderabad Chemicals	54		End 1969
47	Beta-Picoline	I.N.H.	565	Warner	127		Can produce more
48	Potassium Carbonate	P.A.S. & Esters	700				
		Penicillin	135				
			835				
49	Potassium Cyanate	Tolbutamide	45				
		Chlorpropamide	23				
			68				
50	Potassium Borohydride	Vitamin A	1				
51	Potassium Phenylacetate	Penicillin	500				
51	Procaine Hcl	Penicillin	158	Hoechst	40-60		
				Sarabhai	50		
53	n-propylamin	Chlorpropamide	15				
54	Pyridine	Sulpha Drugs	150	Warner	72.5		
55	Sod. Benzoate	Vitamin A	8	Aniline Dyestuff	60		No progress
				Hyderabad Chemicals	96		End 1968
					156		

TABLE 12·3—*Concld.*

1	2	3	4	5	6	7
56	Sodium Cyanide	Vitamin B12	1			
		Phenobarbiton	14			
			15			
57	Sodium Nitrate	Vitamin B12	18			
58	Trichloroethelene	Chloramphenicol	40	Dhrangadhra Chemical	5400	1969
		Emetine	16	Ahmedabad Mfg. and Calico.	3000	1967
		Bephenium	5		8400	
		Hydroxy Naphthoate	6			
		Phenylbutazone	67			
59	p-Toluensulphonamide	Tolbutamide	45			
60	Thionyl Chloride	Procaine Hcl (For Penicillin).	85			
		Pethidine	5			
		Hydrochlorethazide 4-Diethylamino-1	110			
		Metyl butylamine (For chloroquine).	30			
			230			

12.1.5. For raw materials of which indigenous supplies are available, imports need to be discouraged, even if the cost of the imported material is lower than that of the indigenous chemicals. Where the indigenous supply needs to be supplemented by partial imports, it would be desirable to ensure that some system of polling is attempted so that the raw material is available at the same rate to the different manufacturers and there is no unfair advantage to a particular manufacturer which is not available to the rest. In so far as those materials are concernrd, the capacity for the production of which is not likely to be set up in the near future, we consider that concessional rates of duty should be introduced so that the indigenous cost of production is not unnecessarily loaded with the burden of high import duty. Even if considerations of revenue supervene it would be desirable to impose the levy in the form of an excise duty rather than as import duty. The following chemicals and intermediates mentioned in Table 12.4 may therefore be allowed to be imported at concessional rates of duty until such time as indigenous capacity has been set up. It would be desirable to permit import at concessional rates only in respect of specific raw materials and intermediates which are needed by the pharmaceutical industry.

TABLE 12.4

List of chemicals and intermediates for which capacity may not be established in the near future

Sl. No.	Name of the raw material	Name of the drug/ Intermediate for which used	Demand expected in 1970-71
1	2	3	4
1	Acetyl Chloride . .	Vitamin A	4·4 tonnes
2	Arquad 16(c) . . .	Tetracyclines	516 tonnes
3	Beet molasses . . .	Vitamin B12	400 tonnes
4	n-Butylamine . . .	Tolbutamide	22·5 tonnes
5	4-Diethylamino 1- methyl butylamine	Chloroquin	30 tonnes
6	Di-ethyl-ethoxy methylene meloc esters	Chloroquin Amodiaquin	66 tonnes 44 tonnes
			110

TABLE 12·4—*Contd.*

1	2	3	4
7	Iodine	Iodochloro and Di-iodo-hydroxy-quinoline	100 tonnes
8	P-Nitro-acetophenone .	Chloramphenicol	60 tonnes
9	Palladium Catalyst .	Tetracyclines	15 tonnes
10	Palladium chloride .	Chloramphenicol	0·4 tonne
11	Pancreas . . .	Insulin	400 tonnes
12	Potassium cyanate .	Chlopropamide	23 tonnes
		Tolbutamide	45 tonnes
			68
13	Potassium Borohydride .	Vitamin A	1 tonne
14	Potassium Phenylacetate .	Penicillin	500 tonnes
15	Sodium Cyanide . .	Vitamin B12	1 tonne
		Phenobabitone	14 tonnes
			15 tonnes
16	Sodium Nitrate . .	Vitamin B12	18 tonnes
17	Thinoyl chloride . .	Procaine Hcl (For Penicillin)	85 tonnes
		Pethidine	5 tonnes
		Hydrochloro-thiazide	110 tonnes
		4. Diethylamino-1-methyl butylamine for chloroquin	30 tonnes
			230 tonnes

12.1.6. In the course of the examination of the prices of raw materials for the future estimates it was discovered that there was considerable disparity between one unit and another. Particulars given in Table 12.5 would show the prices suggested for

inclusion in the estimates by the different units. It was therefore decided to adopt generally the minimum prices wherever these were verified and found correct. In the light of these significant disparities which we discovered and which are also likely to have existed in the case of the costs for the actual period we suggest that the manufacturing unit may exercise greater care in obtaining raw materials at the most economical rates. One of the reasons for disparity and sometimes of high cost of imports of raw materials and intermediates was the conditions under which imports were effected. Actual users licences allowed are of three categories, *viz.*, (i) tied loans, (2) rupee payment areas and (3) general currency areas. In all the three areas Government normally specify a price ceiling up to which imports can be effected. Sometimes it is possible to obtain raw materials more cheaply from a source other than the source specified for a particular unit or industry. Transfer of the licence can be made if a surplus is available under the category to which transfer is desired. But since there is usual saturation in categories which are cheaper sources of raw material, there is no choice but to purchase from the allotted area, even if higher price has to be paid.

TABLE 12.5

Latest rates of materials for common items adopted for estimating fair selling prices of basic drugs

Sl. No.	Name of raw materials/intermediate	Unit of computation	Name of the manufacturer	Price paid (Rs.)
1	2	3	4	5
A. *Imported materials*				
1	Acetic Anhydride .	Kg.	(i) Parke-Davis	4·51 (For Technical grade)
			(ii) Wyeth Labs.	3·52
2	Acetone . . .	Lit.	(i) Roche Products	5·00
			(ii) Sarabhai Merck	3·29
			(iii) Merck Sharp	2·43
			(iv) Wyeth Labs.	2·19

TABLE 12·5—*Contd.*

1	2	3	4	5
3	Acetanol . . .	Kg.	(i) Synbiotics	13·29
			(ii) Pfizer	8·18
4	Activated Carbon .	Kg.	(i) Sarabhai Merck	19·32 7·38
			(ii) Hindustan Antibiotics	17·97 7·88
			(iii) Pfizer	14·26
			(iv) Wyeth Labs.	5·57
			(v) May & Baker	3·68
5	Arquad . . .	Kg.	(i) Pfizer	8·43
			(ii) Cyanamid	7·90
6	Benzaldehyde .	Kg.	(i) Boehringer-Knoll	8·01
			(ii) Parke-Davis	5·36 (For Technical grade)
7	Dicalite . . .	Kg.	(i) Alembic Chemical	2·28
			(ii) Boots	1·99
			(iii) Synbiotics	1·94
8	Ethylene Dichloride .	Kg.	(i) Bengal Immunity	3·58
			(ii) Wyeth Labs.	3·24
9	Gamma Picoline .	Kg.	(i) Pfizer	9·20
			(ii) Biological Evans	8·90
10	Hydrazine Hydrate .	Kg.	(i) Biological Evans	14·25
			(ii) Suneeta Labs.	13·30
11	Hyflo Supercel .	Kg.	(i) Roche Products	4·52
			(ii) Biological Evans	2·13
			(iii) Cyanamid	1·99
			(iv) Alembic Chemical	1·91
			(v) Parke-Davis	1·88
			(vi) Synbiotics	1·84
			(vii) Pfizer	1·79 1·61 1·58
			(viii) Hindustan Antibiotics	1·19

TABLE 12·5—*Contd.*

1	2	3	4	5
12	Iodine . . .	Kg.	(i) Neogy Labs.	28·26
			(ii) East India Pharmaceutical	25·63
13	Isopropyl Alcohol .	Lit.	(i) Pfizer	3·24
			(ii) Wyeth Labs.	2·65
			(iii) Parke-Davis	2·50
14	Lard Oil . . .	Lit.	(i) Pfizer	6·55
			(ii) Cyanamid	5·94
			(iii) Wyeth Labs.	4·59
15	Meta Amino Phenol .	Kg.	(i) Wander	18·58
			(ii) Biological Evans	17·51
			(iii) Biochemical & Synthetic	17·20
			(iv) Pfizer	16·15
16	Methanol . . .	Kg.	(i) Roche Products	4·20
			(ii) Sarabhai Merck	3·08
17	Methyline . .	Kg.	(i) Wyeth Labs.	3·95
			(ii) Roche Products	3·55
18	M. I. B. K. . .	Kg.	(i) Biological Evans	4·96
			(ii) Cyanamid	4·67
			(iii) Suneeta Labs.	4·64
19	Phenyl Acetic Acid .	Kg.	(i) Hindustan Antibiotics	18·14
			(ii) Alembic Chemical	12·92
20	Potassium Carbonate .	Kg.	(i) Hindustan Antibiotics	3·11
			(ii) Wander	3·07
			(iii) Biochemical & Synthetics	2·86
			(iv) Pfizer	2·66
			(v) Biological Evans	1·59
21	Pyridine Pure . .	Kg.	(i) May & Baker	15·68
			(ii) Wyeth Labs.	14·96
22	Resin IRC 50 . .	Kg.	(i) Merck Sharp	45·89
			(ii) Synbiotics	39·50
			(iii) Hindustan Antibiotics	38·95

TABLE 12:5—*Contd.*

1	2	3	4	5
23	Trichloro Ethylene	Kg.	(i) Pfizer	2·80
			(ii) Biological Evans	2·40
24	Triethylamine	Kg.	(i) Pfizer	11·32
			(ii) Cyanamid	7·28
B. *Indigenous materials*				
1	Acetic Acid	Kg.	(i) Cyanamid	14·61
			(ii) Bengal Immunity	3·35
			(iii) Pfizer	3·07
			(iv) Hoechst	2·88
			(v) Biological Evans	2·61
			(vi) Biochemical & Synthetic	2·60
			(vii) BoehringerKnoll	2·50
			(viii) Sarabhai Merck	2·45
			(ix) Hindustan Antibiotics	1·50
2	Acetic Acid Glacial	Kg.	(i) Bochringer-Knoll	2·85
			(ii) May & Baker	2·84
			(iii) Wyeth	2·50
			(iv) Roche Products	2·45
			(v) Merck Sharp	2·45
3	Acetone	Lit.	(i) Glaxo Labs.	33·47
			(ii) Hindustan Antibiotics	3·25
			(iii) Parke-Davis	2·80
4	Activated Carbon	Kg.	(i) Pfizer	11·79
			(ii) Sarabhai Merck	3·41 11·00 5·41 (Supra)
			(iii) Parke-Davis	4·49
			(iv) Biochemical & Synthetic	3·57
			(v) Boehringer-Knoll	2·50
			(vi) Biological Evans	1·59
			(vii) Hindustan Antibiotics	1·50

TABLE 12.5—*Contd.*

1	2	3	4	5
5	Ammonia . .	Lit.	(i) Biological Evans	5·25
			(ii) Cyanamid	2·83
			(iii) Biochemical & Synthetic	2·67
			(iv) Merck Sharp	1·73
6	Ammonia Chloride .	Kg.	(i) Pfizer	1·35
			(ii) Cyanamid	0·97
			(iii) May & Baker	0·94
7	Ammonia Solution .	Lit.	(i) Cyanamid	14·61
			(ii) Sarabhai Merck	3·80
			(iii) Synbiotics	0·85
			(iv) Hindustan Antibiotics	0·67
8	Ammonia Sulphate .	Kg.	(i) Sarabhai Merck	9·18
			(ii) Cyanamid	3·93
			(iii) Synbiotics	0·85
			(iv) Hindustan Antibiotics	0·67
			(v) Biological Evans	0·50
			(vi) Pfizer	0·43
			(vii) Bengal Immunity	0·35
9	Benzene . . .	Lit.	(i) Cyanamid	1·81
			(ii) Bengal Immunity	1·80
			(iii) Sarabhai Merck	1·18
			(iv) Hindustan Antibiotics	1·18
			(v) Alembic Chemical	0·95
			(vi) Alliance Trading	0·95
			(vii) May & Baker	0·91
10	Butyl Acetate .	Kg.	(i) Alembic Chemical	5·62
			(ii) Hindustan Antibiotics	5·00
11	Butyl Alcohol . .	Kg.	(i) Alembic Chemical	5·71
			(ii) Hindustan Antibiotics	4·85
12	Calcium Carbonate .	Kg.	(i) Cyanamid	1·68 (Heavy) 1·43 (Light)
			(ii) Pfizer	1·15
			(iii) Alembic Chemical	1·09

TABLE 12.5—*Contd.*

1	2	3	4	5
13	Carbon Dioxide	Kg.	(i) Pfizer	1·27
			(ii) Biological Evans	1·03
			(iii) Biochemical & Synthetic	1·00
			(iv) Boehringer-Knoll	0·77
			(v) Wander	0·75
14	(a) Caustic Soda Lye	Kg.	(i) Cyanamid	1·18
			(ii) Synbiotics	1·18
			(iii) Sarabhai Merck	1·15
			(iv) Biological Evans	1·00
			(v) Hindustan Antibiotics	0·95
			(vi) East India Pharmaceutical	0·42
	(b) Caustic Soda Flakes	Kg.	(i) Alliance Trading	1·70
			(ii) Pfizer	1·54 1·43 1·34
			(iii) May & Baker	1·42 (For Technical grade) 0·94
			(iv) Alembic Chemical	1·19
			(v) Cyanamid	1·18
			(vi) Synbiotics	1·18
			(vii) Hindustan Antibiotics	0·95
			(viii) East India Pharmaceutical	0·42
	(c) Caustic Soda Pure	Kg.	(i) Pfizer	5·90
			(ii) Alliance Trading	1·70
			(iii) Wyeth Labs.	1·64
			(iv) Boehringer-Knoll	1·28
			(v) Alembic Chemical	1·19
			(vi) Biochemical & Synthetic	1·10

TABLE 12.5—*Contd.*

1	2	3	4	5
	(d) Caustic Soda Solution	Kg.	(i) Pfizer	0·93 0·48
			(ii) Boehringer-Knoll	0·90
			(iii) Bengal Immunity	0·45
15	Corn Steep liquor .	Kg.	(i) Biochemical & Synthetic	0·88
			(ii) Pfizer	0·88
			(iii) Alembic Chemical	0·87
			(iv) Wyeth Labs.	0·83
			(v) Cyanamid	0·79
			(vi) Synbiotics	0·78
16	Chlorine . . .	Kg.	(i) Neogy Labs.	1·37
			(ii) Alembic Chemical	1·34
			(iii) Alliance Trading	1·34
			(iv) East India Pharmaceutical	1·09
			(v) Synbiotics	0·45
17	Corn Steep Concentrate.	Kg.	(i) Hindustan Antibiotics	0·50
18	Chlorine Gas . .	Kg.	(i) Hindustan Antibiotics	0·49
			(ii) Cyanamid	0·45
			(iii) Merck Sharp	0·41
			(iv) Sarabhai Merck	0·41
19	Denatured Spirit .	Lit.	(i) Pfizer	1·65
			(ii) Merck Sharp	1·31
			(iii) Sarabhai Merck	1·13
			(iv) Biological Evans	1·00
			(v) Wander	0·71
			(vi) Biochemical & Synthetic	0·67
			(vii) Hindustan Antibiotics	0·55
20	Dextrose . . .	Kg.	(i) Alembic Chemical	3·48
			(ii) Synbiotics	3·34
			(iii) Sarabhai Merck	3·34
			(iv) Wyeth Labs.	3·23
			(v) Hindustan Antibiotics	2·41

TABLE 12.5—*Contd.*

1	2	3	4	5
21	Formaldehyde	Kg.	(i) Hindustan Antibitotics	1·36
			(ii) Synbiotics	1·35
22	Ground Nut Meal Powder.	Kg.	(i) May & Baker	0·60
			(ii) Alembic Chemical	0·55
			(iii) Hindustan Antitoitics	0·50
			(iv) Wyeth Labs.	0·20
23	Ground Nut Oil .	Kg.	(i) May & Baker	5·64
			(ii) Cyanamid	5·62
			(iii) Alembic Chemical	3·50
			(iv) Hindustan Antibiotics	3·26
24	Hydrated Lime .	Kg.	(i) May & Baker	0·20
25	Hydrochlorine Acid . .	Kg.	(i) Cyanamid	1·81
			(ii) Pfizer	1·24
			(iii) Parke-Davis	1·23
			(iv) Neogy Labs.	1·17
			(v) Wyeth Labs.	1·06
			(vi) Alembic Chemical	0·95
			(vii) Alliance Trading	0·95
			(viii) Biochemical & Synthetic	0·40
			(ix) Bengal Immunity	0·26
			(x) Biological Evans	0·26
			(xi) Hindustan Antibiotics	0·12
			(xii) Wander	0·10
26	A. Lemon Grass Oil	Kg.	Roche Products	33·66
26	B. Hydrochloric Acid (Comml.)	Kg.	(i) Sarabhai Merck	0·17 (VB6)
			(ii) Parke-Davis	0·12
			(iii) Pfizer	0·12
			(iv) Hindustan Antibiotics	0·12
			(v) Wander	0·10
27	Manganese Sulphate	Kg.	(i) Cyanamid	14·02
			(ii) Pfizer	4·44

TABLE 12.5—*Contd.*

1	2	3	4	5
28	Methanol	Lit.	(i) Pfizer	3·23
			(ii) Cyanamid	3·23
			(iii) Boehringer-Knoll	3·18
			(iv) Suneeta Labs.	2·81
			(v) Hoechst	1·76
			(vi) Hindustan Antibiotics	1·59
			(vii) Wyeth Labs.	1·28
29	Methyl Alcohol	Lit.	(i) Bengal Immunity	3·12
			(ii) Parke-Davis	1·20
30	Nitric Acid	Kg.	(i) Boehringer-Knoll	2·25
			(ii) East Indian Pharmaceutical	1·50
			(iii) Synbiotics	1·31
31	Nitrogen Gas	Cy.	(i) Sarabhai Merck	14·15
		Cy.	(ii) Wyeth Labs.	11·08
		Cm.	(iii) Cyanamid	3·36
		Cm.	(iv) Boehringer-Knoll	1·89
		Cm.	(v) Hindustan Antibiotics	1·33
32	Non-absorbant Cotton	Kg.	(i) Hindustan Antibiotics	4·99
33	Phosphoric Acid	Kg.	(i) Boots	6·92
			(ii) Bengal Immunity	4·36
			(iii) Hoechst	4·00
			(iv) Hindustan Antibiotics	2·54
34	Rectified Spirit	Lit.	(i) Bengal Immunity	0·75
35	Rongalite	Kg.	(i) Biological Evans	8·35
			(ii) Biochemical & Synthetic	7·74
36	Soda Ash	Kg.	(i) Pfizer	0·60
			(ii) Biological Evans	0·56
			(iii) Synbiotics	0·56
			(iv) Hindustan Antibiotics	0·54
			(v) Sarabhai Merck	0·53

TABLE 12.5—*Contd.*

1	2	3	4	5
37	Sodium Carbonate	Kg.	(i) Alliance Trading	16·50
			(ii) Sarabhai Merck	9·11
			(iii) Boehringer-Knoll	0·90
			(iv) Alembic Chemical	0·90
			(v) Neogy Labs.	0·70
38	Sodium Citrate	Kg.	(i) Biological Evans	18·80
			(ii) Bengal Immunity	7·35
39	Sodium Chloride	Kg.	(i) Wyeth Labs.	1·55
			(ii) Synbiotics	1·24
			(iii) Wander	0·97
			(iv) Boots	0·29
			(v) Biochemical & Synthetic	0·20
			(vi) Hindustan Antibiotics	0·13
40	Sodium Chloride Desalt	Kg.	(i) Parke-Davis	0·51
			(ii) Biochemical & Synthetic	0·20
			(iii) Hindustan Antibiotics	0·13
41	Sodium Hydro Sulphate	Kg.	(i) Pfizer	9·20
			(ii) Biochemical & Synthetic	8·50
			(iii) Biological Evans	8·45
			(iv) Wander	7·75
			(v) Boehringer-Knoll	7·62
			(vi) Wyeth	2·50
41	A. Sodium Hydroxide (Commercial)	Kg.	(i) Alliance Trading	16·50
			(ii) Merck Sharp	5·64
			(iii) Synbiotics	1·24
			(iv) Parke-Davis	1·21
			(v) Wander	0·97
			(vi) Hindustan Antibiotics	0·92
42	Sodium Sulphate	Kg.	(i) Wyeth Labs.	1·43
			(ii) Parke-Davis	0·94
			(iii) Alembic Chemical	0·91

TABLE 12.5—*Concld.*

1	2	3	4	5
43	Sugar . . .	Kg.	(i) East India Pharmaceutical	5·65
			(ii) Alembic Chemical	1·67
			(iii) Synbiotics	1·53
			(iv) Hindustan Antibiotics	1·32
44	Sulfurethane . .	Kg.	(i) Hoechst	58·30
45	Sulphuric Acid . .	Kg.	(i) Pfizer	1·42 0·69 0·62
			(ii) Biochemical & Synthetic	1·00
			(iii) Biological Evans	0·79
			(iv) Wyeth Labs.	0·74
			(v) Sarabhai Merck	0·66
			(vi) Cyanamid	0·59
			(vii) East India Pharmaceutical	0·50
			(viii) Synbiotics	0·47
			(ix) May & Baker	0·40
			(x) Hindustan Antibiotics	0·32
46	Sulphuric Acid (Comml.)	Kg.	(i) Merck Sharp	0·39
47	Urea . . .	Kg.	(i) Cyanamid	1·45
			(ii) Pfizer	1·09 0·75
			(iii) Boehringer-Knoll	0·96

12.2. **Problems of manufacturers :**

12.2.1. The Indian Chemical Manufacturers' Association has listed a number of difficulties encountered by manufacturers of drugs in respect of raw materials. It has been stated that imports of intermediates and raw materials have become very difficult because of the scarcity of foreign exchange, particularly after devaluation. Besides this, these chemicals have become expensive resulting in high cost of production of finished drugs. In the case of phyto-chemicals the position is said to be worse than that of drugs which are produced from synthetic materials.

The plant which was expected to be set up in Kerala is not likely to be set up now. The D.G.T.D. has informed us that steps have since been taken to set up farms for scientific cultivation of medicinal plants and to organise proper collection of those which grow wild. From Dioscorea root diosgenin is being extracted by two firms in Bombay and being converted into steroid intermediates and hormones, substantial quantities of which are also being exported. The two State Government factories produce quinine from cinchona grown in organised cinchona plantations. The exports of quinine have also earned sizeable foreign exhange for the country. Farms have been started for Ipecac in Mungpoo, Darjeeling District in West Bengal and Emetine produced from the same is also being exported. New farms have been set up in Mannar in Kerala for digitalis and for podophyllum in the Kashmir valley. In addition, items like caffeine from tea waste and strychnine and brucine from nux vomica seeds, Berberine from barberis bark and sennosides from senna pods are being produced. Many other farms for medicinal plants are also coming up with the assistance of the Central Indian Medicinal Plants Organisation and extraction of active principals being undertaken.

12.2.2. Some of the problems mentioned in connection with the raw materials needed for basic drugs are as follows :

(i) Owing to lack of proper facilities for refrigeration at slaughter houses and lack of the requisite transport equipment, movement of easily perishable glands has become very difficult. The availability of raw materials for glandular products is therefore unsatisfactory. (ii) The manufacture of anti-biotics requires the imports of such items as soyabeans, anti-foam oil, percursors, Diatomous earth and active charcoal. No effort has so far been made to grow soyabean in the country. The quality of carbon made within the country is unsatisfactory for utilisation in the production of antibiotics. The Indian Chemical Manufacturers' Association has also complained that in spite of various efforts of antibiotics' manufacturers the active carbon manufacturers could not be persuaded to produce carbon of the required quality. (iii) Even in the case of indigenously manufactured raw materials the prices have been going up steadily. The cost of dextrose and starch has doubled in the last three years. Even for these products hybrid maize

has to be imported. Elaborate procedures for obtaining permits for movement of sugar also create hindrances in obtaining the materials which are produced indigenously. Actual delivery is made between three to four weeks after the release order and delay upsets the production programme. It has been suggested that release orders may be issued in such a way that some stocks are available and that these are replenished from time to time without facing shortages. (iv) The State Trading Corporation having failed to make timely purchases of sulphur the production and supply of sulphuric acid has received a setback. The price of this item at the end of 1966 was Rs. 258 per tonne. But due to worldwise shortage of sulphur the price had gone up to Rs. 575 per tonne. The Fertiliser Corporation of India was quoting the price of Rs. 650 per tonne.

12.2.3. In a number of cases it is said, material of the desired quality is not available or there are numerous other difficulties which have to be encountered in securing the material even though it is being produced indigenously. Alcohol is a controlled commodity, and the Government of India make allocations of the total country's production to the various States, but the State Governments have their own regulations regarding ingress and egress and numerous formalities are involved in its movement from one State to another. Much time is lost on the procedure to be followed for procuring the right quality of alcohol and the delays involved hamper production of alcoholic products. A suggestion has been made that Government may allow more distilleries to be set up within the States in order that inter-State barriers and obstructions may be overcome or in the alternative the movement of alcohol between States should be made easier.

12.2.4. It has been stated by the Indian Chemical Manufacturers' Association that in the case of the following items the quantity available in the country is inadequate.

Citrates.—A number of citrates such as ferric ammonium citrate, sodium citrate, and potassium citrate are used in the pharmaceutical industry and the shortage of these chemicals is being experienced in the country owing to lack of production of citric acid. It has been suggested that indigenous production of citric acid should be given top priority and in the meanwhile import of citric acid should be liberalised.

Glycerine.—Supplies of glycerine have become extremely difficult and since the pharmaceutical industry requires large quantities of this chemical it has been suggested that production of glycerine should be stepped up and the quantity needed should be made available to the industry.

Corn starch.—The price has gone up from Rs. 52 to Rs. 88 per 50 kilos.

Pyridoxine hydrochloride.—The landed cost of the imported material is Rs. 268 per kilo as against Rs. 800 per kilo of the indigenously manufactured material.

Sodium hydroxide pellets.—The cost of the imported material is Rs. 5.35 per kilo as against Rs. 8.50 per kilo for the indigenous material.

Streptomycin sulphate.—No import of this material is permitted since the Hindustan Antibiotics is the sole distributor. The prices have gone up from Rs. 160 to Rs. 295 per kilogram and the supply is also inadequate since the unit does not produce as much as is needed by the defferent fourmulators of this drug.

Dihydrostreptomycin sulphate.—The product is not manufactured in the country but imports have been stopped. It is therefore not available.

Sulphadiazine.—Only one company is manufacturing this important drug and this unit is also dependent on the import of intermediates. Supplies are extremely irregular and inadequate. The desirability of liberalising imports of this drug has been advocated.

Cocoa powder.—The availability of this material depends upon the import of cocoa beans which are allowed to be imported by actual users and confectionary manufacturers. Users of cocoa powder have difficulties in getting import licences and have therefore to depend for their supplies on confectioners. But as the latter need the entire imports for their own production, they are hardly able to spare any supplies for other industries. It has been suggested that pharmaceutical industries should be allowed to import the product directly at reasonable prices.

12.2.5. It has been stated that in the case of following material the prices have gone up to a very considerable extent, particularly after devaluation.

Material	Unit	Pre-devaluation rate per unit (landed) Rs.	Post-devaluation rate per unit (landed) Rs.	Increase (%)
1	2	3	4	5
Imported				
Sulfadimidine . . .	Kg.	22·10	34·80	57%
Sulfamerazine . . .	Kg.	40·30	58·60	44%
Sulfadiazine . . .	Kg.	33·80	48·00	42%
Mycostatin . . .	BU	371·00	540·00	46%
Triamcinolone . . .	Kg.	71,600·00	99,335·00	39%
Indigenous				
Streptomycin . . .	Kg.	225·00	295·00	31%
Procaine Hcl . . .	Kg.	33·00	47·36	44%
Gelatin Capsule . .	1000	25·50	27·50	8%
Sugar	Kg.	1·42	1·50	6%
Aspirin	Kg.	9·70	12·30	27%
20 mm. Aluminium seals .	1000	7·45	8·25	10%
Aluminium foils . .	Kg.	26·08	28·32	9%
Rubber stoppers . .	1000	23·60	24·93	5%
Buff Board . . .	Gross	69·98	76·84	10%

12.2.6. Individual units have made a number of complaints in addition to stating generally that there is uncertainty owing to periodic changes in import policy. The issue of licences for quantities based on the past consumption makes it difficult to have adequate supplies of raw materials with the result that the requirements have to be supplemented from the local market, on payment of high prices. There has been a steady rise in prices especially after the Indo-Pakistan conflict and rupee-devaluation The other problems mentioned by the industry are as follows

Acetic anhydride technical is not available according to the requisite specifications. The material available has been assessed at only 60 per cent.

Difficulties are experienced in procuring the supplies of raw material like P-acetaminophenol and methyldichloroacetate from indigenous sources.

Prices of dibasic ammonium phosphate are high. The post devaluation landed cost is Rs. 3.09 per kg. whereas the price of the indigenously manufactured cost of the chemical is between Rs. 6.50 and Rs. 8.50 per kg. This intermediate is manufactured from phosphoric acid and its inadequate availability is the cause of high prices of the product. Zinc sulphate and zinc chloride are both manufactured from imported intermediates and adequate supplies are not regularly available.

Oil white technical.—Burmah-Shell used to supply small quantities of oil white technical from Assam but owing to discontinuance of supply the requirements are now met from imports. The landed cost is Rs. 6.40 as compared to Rs. 17.00 per gallon from the local market. The quality of the purchased material also does not conform to the specifications.

For the manufacture of insulin pancreas gland is needed and there is a worldwide shortage. The landed cost has increased from Rs. 5,710 per tonne in 1964-65 to Rs. 8,400 per tonne after devaluation. The imported cost of the Australian pancreas is somewhat lower at Rs. 7,350 per tonne but owing to lower yield it is less economical than the American product. Besides shortage there is also the problem of transport since it has to be transported in frozen containers and the overseas suppliers supply it either in five tonne or ten tonne lots subject to the availability of freezer compartments in cargo ships. Supplies are, therefore, made every four or six weeks. Owing to the poor quality of the Indian pancreas and lack of facilities at slaughter houses in the country no indigenous supply of this product is likely to be available in the near future.

Supplies of pure salt which is needed for the manufacture of insulin are also said to be irregular and this dislocates production.

One of the units Boehringer-Knoll has stated that owing to inadequate supply of hydrogen the company had to establish its own plant at a cost of Rs. 3 lakhs.

Nitric acid.—Weak nitric acid is available from the Fertiliser Corporation of India at Trombay which is taken to the High Explosives Factory at Poona for concentration. The only source

of supply, therefore, is the High Explosives Factory at Kirkee. But in times of emergency priority is given to defence requirements which results in stoppage and irregular supply.

Some difficulties have been experienced also with regard to toluene. Prices of dextrose have gone up from Rs. 1,980 per tonne in 1963 to Rs. 2,675 in 1967 and the cost of manufacture of Streptomycin Sulphate has therefore gone up.

Ammonium sulphate.—Release orders for this material from the Government of India have to pass through the D.G.T.D. and the Food Ministry and this takes time resulting in dislocation of schedules.

Calcium carbonate.—Material of satisfactory quality is not available from indigenous sources and whatever can be supplied is inferior as compared to the imported one. Owing to this handicap the yield of Tetracyline goes down by 20 per cent and it has been suggested that either the quality of the indigenous calcium carbonate should be improved or licences for imports should be granted.

Cotton seed flour.—Even though cotton seed is available in the country in abundance, no indigenous production of flour has yet been established. Synbiotics conducted experiments with the material available from the Regional Research Laboratory at Hyderabad. But the Regional Research Laboratory has not been able to supply the necessary requirements.

The only manufacturer of Prednisolone, Wyeth Laboratories has complained of difficulties in the procurement of dioscorea root, the basic starting material as also in securing the adequate and right quantity of solvents, particularly toluene. In the case of toluene owing to minor legal technicalities the Central Excise has refused to allow draw back on the local purchases with the result that the price paid was out of all proportion to the landed cost of the imported material. Dioscorea is collected from the Northwest Himalayas with the permission of the respective State Governments. Owing to the demand for this root there has been a tendency to raise the prices by those who are connected with root collection. In addition to this the root is being exported which further reduces the supply and tends to raise the price. The unit has represented that instead of exporting the root it would be more desirable to allow to it to be processed here and to export diosgenin which is a higher intermediate for earning more foreign exchange.

12.2.7. In the case of raw materials needed for the manufacture of formulations the following problems have been brought to our notice.

Owing to lack of proper refrigeration facilities at slaughter houses the quality of raw liver is not uniform and does not conform to the specifications relating to vitamin content, anti-histamine content and colour and it has been suggested that Government should ensure refrigeration facilities at slaughter houses.

Yeast produced in the country does not appear to conform to the specifications which are requisite for the pharmaceutical industry. But import licences for yeast have not been granted by the Government and it has therefore been suggested that either yeast of the right quality should be made available within the country or imports of yeast should be liberalised.

Gelatine capsules.—There is at present only one manufacturer in the country who can manufacture capsules on automatic machines. It has been stated that not only are the supplies limited in quantity in view of the technical difficulties encountered by the manufacturer, it is very difficult to obtain capsules of a satisfactory quality. The size and texture is not uniform which results in the frequent arrest of the machines. In this case again it was urged that the imports of empty gelatine capsules of the right quality should be allowed or capsules of the right quality may be manufactured in the country and made available to the manufacturers of pharmaceuticals.

At the public inquiry it was pointed out that in the vials produced indigenously black particles were found, that rubber stoppers were of poor quality as a result of which the quality of the drug deteriorated, that the S.T.C. was previously charging Rs. 180 per tonne for Sulphur, but the rate had now gone upto Rs. 450, that the price of hydride had gone up by 50 per cent in the last eight months and in the case of potassium ferro cyanide the price had gone up from Rs. 900 to Rs. 2,100 per tonne. It was also suggested that Indian Standards Institution should lay down standards for glass tubings and stoppers and that another glass tubing unit may be licensed.

Rubber stoppers.—A number of complaints have been made with regard to rubber stoppers by Hindustan Antibiotics. These are as given below :

The sizes are not always uniform with the result that there are frequent interruptions in vialling operations. In one case it was found that there was a tenacious film of dust on the rubber stopper

and this was traced to the poor quality of water being used in the rubber stopper manufacturing operations. In the case of pink rubber stoppers it was found that the colour reached out causing production handicaps. This was due to certain fugitive indigenous dyes being used in the manufacture. It has not yet been possible to solve this problem and these stoppers have to be treated before these can be used. The limit of reducing agents in rubber stoppers is one milligram but it was found that it was always exceeded. However it was possible to solve this problem to a certain extent by maturing the stoppers and bringing it down to the maximum permissible level.

Vials.—There is lack of uniformity in the sizes of vials in spite of size specifications being available to manufacturers. Sometimes glass vials were found to contain black particles which could not be easily washed out.

Aluminium seals.—Some of these were found to be of poor quality or tarnished and in the case of local strips the metal was too tenacious and the central portion could not be dislodged with the requisite pressure. In addition to poor quality shortages were also experienced by formulators.

The prices of locally produced Insuline crystalline are reported to be much higher than that of the imported variety.

12.2.8. The evidence so far discussed on this issue leads to the following conclusions :

The imported raw materials and intermediates are not only satisfactory in quality and strength but their prices are also low. The only handicap in this respect with which the industry is faced is that there is not enough imported material to go round. There is no complaint of poor quality, lack of conformity with specifications, high prices, irregular or uncertain supply in respect of the imported raw materials and intermediates. On the other hand the indigenous material appears to suffer not only from defects of quality but is also beset with many other problems. The indigenous raw material has invariably in a number of cases been regarded as of poor quality, not conforming to specifications and bearing very high prices. Its availability is also in some cases irregular and uncertain. In the case of alcohol and sugar which are indigenously produced, bottlenecks of a procedural nature have been encountered with regard to the system of allotment, licensing and inter-State traffic. It is a matter of great regret, that our slaughter houses do not make the supply of even an ounce

of the pancreatic gland and we have to depend for it entirely on imports. The supply of liver from slaughter houses is also very unsatisfactory. A stage has now been reached when slaughter houses have to be used not only for providing meat as an item of food but also as sources of some of the important medicinal and biological raw materials and the State must take in hand the regulation of large slaughter houses in such a way that the by-products are not wasted but can be retrieved and utilised for medicinal and therapeutic purposes. Notwithstanding the heavy installation of units manufacturing glassware in the country containers of the requisite quality which do not call for very high standards are not easily available. The same holds good for rubber stoppers as well as aluminium strips. Gelatine is imported and all that is done here is to convert it into capsules but owing to lack of uniformity of size specification, it cannot be used satisfactorily for filling of capsules on automatic machines. All these matters need the close attention not only to the industry but also of Government and its various agencies which control and regulate production and quality in order to ensure that the indigenous industry is not found wanting even in those spheres where self-sufficiency is claimed but has not been achieved owing to lack of quality and conformity to specifications. Attention needs also to be paid very closely the arrangements for raw materials and intermediates not produced by making their supply certain. Schedules need to be drawn up for this purpose in order to ensure that with a certain degree of vigilance of programme planning uncertainties are eliminated. We understand that in many advanced countries of Europe and particularly in Denmark no drugs in the form of capsules are marketed and that the drugs are sold in the form of tablets. It would be desirable to emulate this example and save foreign exchange by the elimination of the use of imported Gelatine.

CHAPTER 13

GENERIC VERSUS BRAND NAMES

13.1. The chemical name of a drug indicates its structural makeup and it can be expressed in a variety of forms. This chemical name is however not employed when naming a pharmaceutical product and instead a nomenclature known as generic is developed and used. This generic name is meant to indentify the drug for the purpose of Pharmacopoeias, Formularies and academic references. When the drug is manufactured by a particular company which may or may not have a patent for it is usually called by a proprietary name which is also known as the brand name. As distinct from the products of other industries therefore, in the case of drugs there are three tiers of nomenclatures used: As soon as invented it is given a chemical name and also a generic name. The generic name is arbitrarily suggested by the organisation which was responsible for making the discovery. In the United States of America where a large number of discoveries have been made in the last few decades the generic name is referred to the Council of Drugs of the American Medical Association by the inventor and the Council transmits it to several agencies including the United States Pharmacopoeia and the World Health Organisation for approval. If no contrary views are expressed within three weeks the name becomes final. From then onwards this particular name is used for the drug in publications in scientific literature on medical, Pharmacological and chemical subjects. It has been contended sometimes that the inventors deliberately select a complicated name which cannot be easily pronounced so that there may be greater room later on to apply the brand name which would be the property of the particular manufacturer. The same practice prevails in other countries too, and if drugs were to be invested in India, the generic name would initially be suggested by the inventor and the same would need to be considered by the Drugs Controller. At present no rules with regard to providing of generic names to drugs exist. It is necessary here to draw a distinction between patents on the one hand and generic name and the brand name on the other. Every basic drug irrespective of the fact, whether or not it is governed by a patent has a generic name. The same however does not apply to brand names. The brand name is mainly likely to be a registered trade mark and invariably applied to formulations. Where the process of manufacture

is also subject to patent it is not open to others to manufacture the particular drug as long as the patent lasts.

13.2. The brand name is usually the property of the particular manufacturer who employs it ; it is used both or basic drugs as well as its formulations. Since the use of the drug by the patient is in the form of formulations, the consideration of brand name is more relevant in so far as formulations are concerned. Broadly speaking, the brand name being the property of the manufacturer it entitles him to charge a distinctive price irrespective of the price of the same drug or formulation as may have been fixed by other manufacturers and formulators. Therefore the industry advocates the necessity for the continuance of brand names and has advanced a number of reasons for perpetuating this distinction. Some of the arguments cited in favour of the perpetuation of the brand name are as follows :

1. *Salts.*—Several salts of the active ingredient are often available and are used and it makes a real and definite difference to the patients which particular salt of a drug he receives. The inherent factors involved are irritancy, patient tolerance and absorption. For salts can differ in percentage content, solubility, dissociation and the less soluble salts which are often used with stabilishers can be toxic.

2. *Vehicle.*—The choice of the vehicle in which the active ingredient is contained varies with different manufacturers. These substances have a bearing on the stability, shelf-life, the rate of release of drugs, absorption and degree of penetration. The right type of vehicle is of special importance in topical preparations for the eye, ear and skin etc. or for parenteral solutions. A wrong vehicle can therefore cause variations in compatibility, irritability, allergenicity, etc. and can change a useful drug into a dangerous one. It has been stated that the same active ingredients in two different vehicles gives a completely dissimilar resultant effect.

3. To achieve similarity of therapeutic effect the hydrogen ion concentration and the amount and type of buffering should be indentical for products of the same chemical composition. In the absence of such correspondences, though generically equivalent, the different drugs may be pharmacologically and clinically dissimilar.

4. *Purity and sterility.*—Insufficient purification may lower efficacy and stability and traces of intermediates or associated

materials can give rise to toxic effects. Sterility and freedom from Pyrogens is essential.

5. *Particle size.*—The finer the particle the quicker and more complete is the absorption. The importance of this had led to micronisation of many preparations.

6. *Stability.*—Failure to ensure that the chemical compound retains its potency over a period of times may make the drug ineffective. On the other hand, any concentration higher than required with a view to conserve potency may result in overdosage.

7. *Compatibility.*—To mark bitter taste or for ensuring bitter absorption, or a smoother manufacturing process the basic chemical has often to be mixed with many additional substances and it needs to be ensured that these additions are compatible and do not remove the therapeutic effect of the drug or render it toxic.

8. *Sustained release medication.*—Too fast a release may mean quick absorption and equivalent elimination ; on the other hand, slow release would result in delay in the onset of effect and in poor response.

9. *Disintegration.*—Disintegration time of tablet or capsule is very important in order to ensure the right amount of absorption at the right location in the alimentary system.

10. *Solubility.*—There is danger of less soluble drugs being kept in solution by addition of substances which may sometimes be toxic.

11. *Availability of the active ingredient in the drug.*—To ensure substained availability of the requisite quantity of the active ingredient overages have to be provided. Since these differ in proportion from drug to drug experimental studies have to be conducted and meticulous calculation and measurement are necessary.

12. *Viscosity.*—The correct viscosity has to be maintained in the case of liquid formulations.

13. *Ease of application and removal.*—The base of lotions, creams and ointments has to be selected with great care and extreme conditions of climate have to be kept in view.

14. *Melting point.*—The melting point of drugs or applications has to be related to the body temperature but it has simultaneously to be ensured that its preparation does not disintegrate or melt under adverse storage conditions.

15. *Flavour.*—Optimum palatability without affecting the thereapeutic value of the active ingredients has to be ensured and much research is needed for this.

16. *Determination of shelf life.*—Reputable manufacturers, it is said, carry out preservation tests while others do not with the result that the drug in storage loses its potency or builds up dangerous bacterial contamination.

17. *Containers.*—The appropriate containers can react with the active ingredient in the drug and lead to its chemical inactivation or degredation which may result in toxic substances being released. Differences in quality of glass, stoppers, filling gas, etc. can effect the efficacy of a drug.

18. *Stabilising agents.*—Preservatives, anti-bacterial stabilising and anti-oxidative agents are important because they can markedly alter the pharmacological effects of the principal ingredients. The fact that an equal quantity of active ingredients has been placed in two products does not mean that there will be equal availability of the active ingredients after a given time.

19. *Packaging.*—In the case of volatile agents, ineffective packaging can result in evaporation of the contents.

20. *Enteric coating.*—In a number of cases enteric coated tablets which physically appear identical to the brand prescribed and even contain and accurate amount of the desired drug do not dissolve at all but pass through the body unchanged.

21. *Allergic manifestations.*—Different manufacturers may use different supposedly inert ingredients necessary for the manufacture of a product, but the patient may be allergic to one and not to the other. It has been stated that the physician knowing the history of his patient alone would be in a position to select a suitable brand to avoid these possible complications.

22. *Toxicity.*—This is one of the several factors influencing the degree of irritation caused by solutions designed for parenteral use and those intended for use in the eyes and nose. It may also reduce ciliary motility, and thus limit the effectiveness of a nasal preparation.

23. *Caloric values.*—In diabetic and obese individuals the caloric contents of liquid preparations play an important part and have therefore to be carefully regulated.

24. *Surface tenston.*—In a number of liquid preparations intended for application to the mucous membrance, surface tension has marked effect both on the rate of absorption and on overall activity.

13.3. It has been claimed that a particular name imposes upon the manufacturer the responsibility for purity, potency and efficacy and that from the receipt of the raw material to the final processing as many as 250 tests are carried out with such techniques as ultraviolet and visible spectrophotometry, potentimetry, polargography, X-ray, crystallography and radioactivity. The product has also to pass other tests relating to clarity, toxicity, stovility, histaminic reactions, PH, freedom from pyrogens, foreign material etc.

13.4. The Indian Chemical Manufacturers' Organisation has observed that the guarantee of the right type of formulations is conveyed by the manufacturers' brand name. It has tried to refute the assumption that the cost of medicines could be greatly reduced if physicians were compelled to prescribe drugs by their generic names or non-proprietary names rather than by the brand names of manufacturers. The organisation has asserted that the drugs under generic names are not identical with those under brand names having the same active ingredients, that they do not have identical therapeutic efficacy, that they are not available in all dosage forms for all conditions and that their cost is not much less than the cost of brand name producers. It has gone on to state that such misconceptions and fallacies exist owing to ignorance of manufacturing technique, chemical testing, quality control and distribution. In its view the brand name is a symbol by which the manufacturer identifies his product from that of others, it imposes upon him the inescapable responsibility for the purity, potency and efficacy of the drug. In short it is the manufacturers personal signature of integrity.

13.5. The Organisation of Pharmaceutical Producers of India says that the official standards are only minimal standards for purity, strength and in some cases, limits for other substances. But the official standards do not take into consideration such other factors as particle size, dissociation rate, stability etc. and have quite often found them to be inadequate and have to be made more stringent. Even these minimal and sometimes in-adequate

standards are barely adhered to, while brand products reflect the care and control used to ensure efficacy, safety and stability and patient acceptability of these products.

13.6. The Organisation apprehends that substitution is likely to take place if the brand name is not written and the pharmacist would tend to dispense any other product available under the same name even though the doctor may have meant the product of a particular manufacturer. It would therefore be unfair to the doctor and prejudical to the health of the patient that the drugs should be prescribed by generic names. It nevertheless admits that because of these considerations the cost of production of these drugs which are marketed by brand name is much higher than those which confirm only to the minimum standards prescribed in the Pharmacopoeia.

13.7. It has been argued also that detailed investigations are made into the onset of active absorption, duration of therapeutic action, effectiveness and peak effects and where possible the relationship of chemical response to blood levels. If these experiments were demanded of generic drug houses many would disappear, since they have neither the resources nor the facilities to carry out the required research. It has been suggested that all the generic houses should be required to submit proof of the performance of their drugs in human patients before they are permitted to market them. The outlay made on research has been cited as a ground for having brand names in order that part of the expenditure so incurred can be recovered.

13.8. Those in favour of generic names have serious doubts with regard to the validity of the arguments put forth in favour of the perpetuation of brand names to the exclusion of the generic name. For historical reasons drugs have come to be designated by a nomenclature of non-functional identification while other commodities do not have such attributes. Manufactured goods are usually known by their common name; distinctions with regard to quality, purity and other factors are identifiable by the association of the product with the name of the maker. There is no other field of human endeavour in which arguments might have been brought with such force to bear on the necessity of having yet another set of non-philological names for a commodity or where special sanctity may be claimed by attributing to the product virtues derived from a mere name.

13.9. The acceptance of the brand name it is said gives an opportunity to the manufacturer to attach to the product

hidden and undisclosed qualities which they do not possess. The determining factor is the degree of publicity and sales promotion that a successful organisation can employ. The sale and administration of drugs becomes then a matter for advertisement rather than the therapeutic properties of the ingredients or the reputation of the house which prepared these. It has been argued that by diverse and relentless methods of sales promotion the prescribing physician is assailed on all sides with the brand names to such a degree as to impair the memoric residue of the terminology in which he was grounded. In his daily practice, he sees brand names on his writing pad even if it is pleasantly inscribed in faint water mark, on the calendar as his desk, on the wall and almost on all the nick-knacks in his surgery. These in course of time replace the names he had learnt. In addition he has a ready supply of these products given to him free and supposed to be distributed gratis by him to his patients. Even if these are not misused, they create a psychological obligation and further assist him to remember the manufacturers of these drugs. Much effort is applied to the selection of catchy short names for brands so that these can be remembered more easily and conveniently. Once this campaign has succeeded the manufacturer has at his command all the market that he needs and the drug sold under the generic name even if equally or more efficacious beats a hasty retreat and is altogether disowned by the physician. However, where Government purchases are effected which constitute only a small proportion of the total sales the story is different.

13.10. Drugs are supplied to Government hospitals against tenders issued under generic names, at prices considerably lower than the selling prices in the market. This has been cited as testimony in favour of the argument that increase in prices is closely linked with brand names. In India certain manufacturers market the same products both in the generic as well as brand names and it has been found that drugs sold under generic names are cheaper than those sold under brand names.

13.11. Many representatives of the medical profession in India as well as abroad have criticised the proliferation of names of pharmaceutical products and the confusion caused by the practice of prescribing by brand names.

13.12. By and large hospitals and Government departments in other countries too make their purchases in terms of generic names. The analysis of such standard drugs here and elsewhere does not reveal any preponderance of drugs sold under generic

names as against those sold under brand names. In an investigation carried out in 1966, the United States Food and Drugs Administration sampled 4,600 drugs from 250 manufacturers. Of these 2,600 were sold by generic names and 2,000 by brand names. Of the generic named drugs 7.8 per cent were not of acceptable quality and of the brand named drugs the percentage was 8.8.

13.13. Indian Drug Manufacturers' Association contends that the therapeutic efficacy of equivalent drug should be the same when drugs are being produced according to laid out standards under an efficient Drugs Control organisation in the country. It has suggested that it would be helpful to the medical profession as well as to the consumer if Government draws up a list of essential drugs and allow them only to be marketed under generic names.

13.14. The Drugs Controller, Government of India, has in his memorandum pointed out that the formulations marked under proprietary or trade names are marketed at higher prices than these under the pharmacopoeial or generic names. In reply to our questionnaire hospitals of State Governments have also indicated their preference for formulations being sold under generic names. One of the reasons stated is that the different brands may be purchased on different occasions and this may cause confusion. The Committee on Essential Drugs of the Ministry of Health has also recommended that co-operation of the medical profession should be fully utilised for prescription of the drugs by generic names instead of through their brand names. It has also recommended that the generic name should be shown more prominently on the labels than the trade names by enacting legislation if necessary, and that medical colleges while imparting knowledge to students should strictly adhere to the generic names of the drugs. At the public inquiry the representative of the Indian Medical Association categorically stated that the Association would prefer to use generic names instead of brand names in drugs and that as far as medical instruction is concerned teaching is imparted through generic names. The Association also offered its cooperation in implementing any decision that may be taken in regard to the use of generic names.

13.15. Closely allied with the question of the utilisation of generic names is that of substitution, that is to what extent pharmacists are authorised to substitute a drug of the same generic name and allied properties when the prescribed drug is not available.

In the United States of America it is legally prohibited to make any substitution notwithstanding the fact that the drug is the same. It is incumbent on the part of the pharmacist that he dispenses the same drug which has been prescribed.

13.16. On January 16, 1968 a notification has been issued by the Ministry of Health, Family Planning and Urban Development seeking to publish the draft amendment to the Drugs and Cosmetics Rules that any drug supplied on demand or against a prescription shall comply with the description of the drug as mentioned in the demand or prescription and accordingly no drug which is not of the nature and substance or composition or quality or which is not manufactured by the manufacturer shall be supplied. The effect of this rule is that if the prescription is a by a brand name, the pharmacist cannot substitute it by another drug of the same property even if the prescription is by generic name provided that the name of the manufacturer is given. He has no choice but to dispense the drug made by the named manufacturer. This approach is inconsistent with the declared policy of the Government to purchase and dispense drugs by generic names, and the views expressed by the many representatives on behalf of Government organisations and it is hoped that before this rule is incorporated its implications will be considered carefully and a modicum of correspondence with the existing professions of policy and practice in this respect achieved.

13.17. Having set forth the arguments for both sides, it would be worth considering the extent to which these are valid.

13.18. The manufacturing requirements and tests of therapeutic efficacy can be classified into the following categories :

(1) Requirements prescribed under pharmacopoeial standards for which no secret knowledge is needed and assay is possible ;

(2) Standards which are not prescribed but which are capable of being complied with varying degrees of efficiency,

(a) the results of which are significant.

(b) the results of which are not significant.

(3) Tests and standards not prescribed under the Pharmacopoeia but requires under the Drugs and Cosmetics Act and Rules.

(4) Attributes not prescribed and which are also not assayable according to the existing recognised standards of assay.

(5) Attributes of doubtful validity in the state of development of the pharmaceutical science today.

These may be taken up seriatum :

1. Requirements laid down under pharmacopoeial standards for which assay also is prescribed :

Selections of salts of active ingredients, pH rate, purity and stability relate primarily to the manufacture of drugs and standards for these are prescribed in the Pharmacopoeia. The vehicle wherever it is significant, particle size, if it is critical stability rate of disintegration, solubility, availability of the requisite potency, viscosity, melting point, enteric coating and density are also prescribed in pharmacopoeial standards and anyone manufacturing formulations in which these factors are of importance would have to adhere to these. It cannot therefore be argued, that in so far as these items, *viz.*, those mentioned at Nos. 1, 2, 3, 4, 5, 6, 9,10, 11, 12, 14, 20 and 22 above are concerned, these are attributes of brand names or are peculiar to the particular manufacturers. In order to be of the appropriate standard a drug or formulation will have to adhere to the standard prescribed in respect of these, irrespective of the fact whether it is marketed under a generic or a brand name. It is also necessary that the drug of the requisite potency must be available at the time when it is being administered and if this requirement is not available the drug is likely to be branded as sub-standard.

2. (a) Tests or standards which are not prescribed, but which are capable of being assayed and which are significant : Compatibility and sustained release medication are tests which are not prescribed but can be assayed. It is in respect of these matters only that a degree of refinement is possible. One manufacturer may claim greater compatibility and sustained release medication than another, but it was not possible to ascertain the name of any formulation either within the scope of our enquiry or outside in which claims with regard to better compatibility than those of others or a particular rate of sustained release medication may have been demonstratably made. It can therefore only be assumed that such standards are more theoretical than real.

2. (b) Tests or standards which are not prescribed and which are capable of being assayed but are not significant :

We have been informed that claims with regard to particle size, ease of a application and removal, flavour and surface tension generally are matters which are not of any particular significance

in so far as the therapeutic efficacy of the drug is concerned. Wherever particle size is significant, it is already prescribed. If the particle size is not prescribed, it has to be assumed that any variation is of little therapeutic significance.

3. Tests and Standards not prescribed under the Pharmacopoeia but required under the Drugs and Cosmetics Act and Rules : We have been informed that life period in respect of certain drugs which lose their potency on keeping have been laid down under Schedule P of the Drug Rules. The use of proper containers as well as packaging in order to ensure that the contents may not evaporate or may otherwise not deteriorate, are also requirement for the purpose of ascertaining whether or not the drug is of standard quality. If these requirements are not complied with the drug would become sub-standard. No merit can therefore be claimed for brand names in so far as these properties are concerned.

4. Attributes which are not prescribed and which are also not assayable :

Much has been made of biological availability of potent ingredients and allergic manifestations, but these are matters of surmise and no standards have yet been evolved for these, nor is it possible to lay down at present any precise methods of determining these. The argument that certain drugs for unknown reasons are less allergic than others is not based on any scientific data, and it is not possible to determine the extent to which classification of such drugs for different individuals can be made. No formulator has ever given the assurance that a particular drug manufactured by him is indicated in certain given conditions or any other drug manufactured by another house is contra-indicated, even though the chemical structure prescribed may be the same.

5. Attributes of doubtful validity :

It has been said that the calorific value of the contents of the given preparation needs to be carefully examined. The critical limits for these are prescribed and it is every unlikely that the tiny quantity of sugar administered along with syrups or used to coat pills may have deleterious effect on an obese or diabetic individual.

13.19. There appears also to be a certain degree of confusion on two issues, namely : (1) It is feared that the elimination of r and names would also mean the obliteration of the name of

the maker and (2) that brand names have something to do with patents. The confusion in respect of these two points needs to be cleared. Almost all the effective standards and tests of quality which have been mentioned by the manufacturers are prescribed by the pharmacopoeia or are required under the rules; in order to be effective and to be of standard quality the formulations should comply with these. If a greater degree of refinement is achieved than is prescribed it is not significant for the treatment of the disease, though it may be of some importance from the point of view of taste or aesthetics. However, if it is feared that the elimination of brand names would open the flood gates of spurious and sub-standard drugs the manufacturers may be reassured that they can still rely on the reputation of their name which would undoubtedly continue to be associated with the products. The guarantee prescribed to the doctor as well as to the patentee in that case would be the reputation of the house, which put it forth as is so eminently the case in respect of all other industries, whether in the form of consumer or producer goods. Much has been made of the necessity for higher price in order to meet the higher costs of ensuring that the drug complied with the standards mentioned. Once it has been demonstrated that these standards are those which are already required, it cannot be argued that it is necessary to spend more than others who are also required to achieve them, merely because of the fact that the former has a brand name and the latter does not have one.

13.20. Formulations in respect of which these virtues have been advocated are usually registered under trade Marks and are not under patents, since basic drugs alone can be the subject of patents. Basic drugs are not sold by brand names but by generic names and even if any one were to market them under brand names it would provide no particular advantage. Such of the basic drugs as are under patent derive the advantages of patent and the inventor is guaranteed elimination of competition so that his returns which may pay for the amount spent on research and development of the drug may be assured. The cost of research cannot therefore be confused with the perpetuation of brand names. If the patents were disallowed and brand names were allowed to continue the manufacture of basic drugs would not afford any particular advantage to the investors. Any expenditure therefore on discoveries of new drugs has therefore to be met from the facilities available through patent laws, or admissible expenditure incurred on research programmes.

13.21. Quality control can certainly be advocated as an issue of importance. But here again quality control is not the function

of the brand name but that of the organisation in which the drug is being produced. It is also a historical fact that drugs are the only products in respect of which the State has usually taken the responsibility for maintaining quality and standards whether manufactured under generic or brand names and these have to be observed in conformity with certain standards prescribed by the Pharmacopoeia or those laid down in the Drugs and Cosmetics Act. A drug whether sold under the generic or the brand name would be deemed to be sub-standard or adulterated if there is any departure from the standards so laid down. The function of the Pharmacopoeia Committee is to make these conditions as specific and definite as possible. Successive revisions of these standards are made with the extension of experience and knowledge. If some one claims that there is a purer drug available than the one prescribed by the Pharmacopoeia it does logically follow that it is likely to be more efficacious. Purification beyond there tolerances permitted by the Standards does not enhance efficacy and its absence would not cause any side effects. Yet if further refinements of these standards in order to eliminate the possibility of any injurious effects are necessary these would doubtless be undertaken. To suggest that the Pharmacopoeial standards are not high enough and that by the adoption of brand names these standards are immediately raised would not be correct. Even if it is assumed that the Pharmacopoeial standards require to be further refined, the proper course would be to improve and lay down standards in the National Pharmacopoeia to improve the therapeutic efficacy of a drug rather than depend on the brand name. Again if any manufacturer advocating the perpetuation of brand names were asked if he could certify that his product was purer than the standards laid down in the Pharmacopoeia and that these purities led to greater therapeutic efficacy, it is doubtful if any affirmative response would be available. It is therefore the manufacturer's name and not the brand name which is the ultimate guarantee of the confidence that the prescribing physician or the patient can place in the drug to be used.

13.22. The ever increasing number of proprietary preparations and the variety of brand names under which indentical preparations are marketed has created a veritable babel in the pharmaceutical field and drugs have come to be known more by proprietary names than by their scientific or pharmacopoeial names. Moreover, brand names tend to inhibit price competition but encourage product competition and extensive sales promotion which leads to increase in prices. With a view to providing the physician with the compendium of essential formulations

that would meet the day-to-day need of the patients the Ministry of Health have published a "National Formulary of India". This Formulary is intended to serve as a guide in prescribing drugs.

13.23. It is suggested by the Federation of the Small Industries of India that the National laboratories should be directed to take part in trying for "new drugs" and their guidance should be made freely available to the prospective manufacturers including the small scale producers.

13.24. Medical colleges have been requested to keep the National Formulary as a guide for teaching. The State Governments and other major consumers of drugs in the country have also been requested to indent for their requirements in terms of preparations covered by the National Formulary. The Ministry of Finance have also exempted drugs included in the National Formulary of India from the Central Excise duty provided the drugs are marketed under the name included in the National Formulary accompanied by the words N.F.I.

13.25. While there can be no ground to advocate the perpetuation of brand names as the basis for prescription of drugs, it may however be said that generic names by themselves without the name of the manufacturer would not be adequate guarantee of the fact that the patient is being dispensed with the drug which the doctor had in view, The existing legislation in our country recognises both the generic names as well as the brand names, but it is incumbent on the manufacturer to enter the generic name also prominently on the container. It is true that some of the existing generic names are complicated. The extent to which complication is deliberate need not be gone into. A method can however be found to ensure that these names are abbreviated so that these can be pronounced and remembered with the same ease as the brand names. In fact it would be much easier for doctors as well as pharmacists to use them. It would be desirable to revise generic names and introduce an abbreviated nomenclature for the purpose of drug manufacture with short, distinctive and easily spelt out names.

13.26. In the case of formulations which are straightforward preparations such as tablets and capsules of a particular drug, it is quite possible to give a generic name. But the difficulty arises in the case of preparations which are prescribed in the form of combinations of two or three ingredients. Such combinatio ns

are not usually included in the Pharmacopoeia or the National Formulary. We therefore recommend that wherever such combinations are sought to be marketed by the manufacturers it should be incumbent on them to present to the Drugs Controller, Government of India, pharmacological and clinical data not only to prove the efficacy but also the superiority of such combinations over the straightforward preparations included in the Pharmacopoeia. When such clinical data is presented the manufacturer should also suggest a generic name for it which if acceptable would form a generic name for that product and if not acceptable it may be open to the controlling authority to suggest an alternative generic name.

CHAPTER 14

PATENTS LAW

14.1. Purpose of patents :

Patents are statutory grants which, in return for the disclosures of an invention, confer on the inventor for a limited time the exclusive privileges of working an invention and selling the invented product. The theory on which the patent system is based is that the opportunity of acquiring exclusive rights in an invention provides an incentive to research and technological progress. Further, it induces the inventor to disclose his discoveries instead of keeping them as a trade secret and offers a reward for the expenses incurred in developing inventions at certain stage at which they are commercially practicable. Lastly, it provides an inducement to invest capital in new lines of proudction. The patents are not created in the interests of the inventor but in the interest of the national economy.

14.2. The first legislation for the protection of inventions in India was made in 1856 designated as Act VI of 1856. A fresh legislation for the purpose of granting exclusive privileges in India to inventors was enacted in 1859. These two Acts afforded protection for inventions only. There was no law for protection of designs. To overcome this defect, the Patterns and Designs Protection Act, 1872 was passed. To amend some provisions which caused hardships, a fresh legislation was undertaken in 1911, in the form of the Patents and Designs Act, 1911, which is still in force. An important feature of this Act was that the duration of Indian Patents was made independent of the duration of foreign patents. The period was 14 years but was modified to 16 years in 1930. A special section (23 CC) was introduced in 1954 in the Patent Act giving special powers to the Controller of Patents and Designs to settle terms of licence so as to secure that food, medicines, insecticides, germicides, fungicides and surgical curative device shall be available to the public at the lowest prices consistent with the patentees deriving a reasonable advantage from their patent rights.

14.3. After the end of the Second World War, due to considerable economic and political changes the need for a comprehensive law so as to ensure that patent rights are not worked to the detriment of the consumer or to the prejudice of the trade or industrial development of the country was felt as early as in

1948 and in that year Government appointed the Patents Enquiry Committee to review the working of the patents law in India. The Committee submitted an interim report in 1949 and the final report in 1950. But it was only in December 1953 that the Patents Bill, based largely on the U.K. Patents Act, 1949 and incorporating some of the recommendations of the Patents Enquiry Committee, was introduced in the Lok Sabha. The Bill, however lapsed with the dissolution of the first Lok Sabha. Instead of bringing the lapsed Bill again before the second Lok Sabha, Government appointed in 1957 Mr. Justice Rajagopal Ayyangar to examine afresh and review the patents law in India and advise Government on the changes deemed necessary. He submitted a comprehensive report in September, 1959 and his recommendations with regard to drugs were as given below :—

"The history of the law in the United Kingdom shows that the degree of patentability of the inventions relating to articles of food and medicine has generally been more restrictive than in regard to patents for chemical inventions in general and never more extensive. The reasons for this state of law are stated to be that the denial of product claims is necessary in order that such important articles of daily use, medicines or food, which are vital to the health of the community should be made available to every one at reasonable prices and that no monopoly should be granted in respect of such articles. It is considered that the refusal of product patents would enlarge the area of the competition and thus result in the production of these articles in sufficient quantity and at the lowest possible cost to the public.

To render even the process unpatentable is I consider not in public interest as the grant of exclusive rights to the process which an inventor has devised would accelerate research in developing other processes by offering an economic inducement to the discovery of alternative processes leading again to a larger volume of manufacture at competitive prices.

The example of the rest of the world is of undoubted value and not to be disregarded without substantial reasons especially as under the patent laws of these countries, whether they are industrially highly developed or still underdeveloped, whether their economy be capitalist or socialist, claims for processes for inventions relating to articles of food or medicines have always been held patentable. The continuance of this system during the long periods of time and varied conditions could only be explained by its being helpful in furthering the countries economic and other progress. The only exceptions are—Italy which changed its law in 1957 by which even process claims for

nedicines were not allowed though articles of food were outside this bar—and Denmark which, while permitting the process claims for medicaments denied the same for articles of food. We have little knowledge of the factors which led to the change of the Law in Italy, and possibly it is too early to evaluate its effects on that country's progress in the pharmaceutical industry. I would therefore, recommend that no patents should be granted for claims for articles of food and medicine as such but that processes for producing them should be patentable.

I consider that to maximise the benefit, inventions relating to articless of food and medicine—and in the last category I would include insecticides, fungicides etc.—should not be patentable as such but as in the case of substances produced by chemical processes claims for the processes for their production should also be patentable if they satisfy the other tests for patentability."

14.4. The Patents Bill, 1965, based mainly on the recommendations contained in the Ayyangar Committee Report (1959) and incorporating a few more changes in the light of further examinations made with particular reference to patents for food, drugs and medicines, was introduced in the Lok Sabha on 21st September, 1965. This Bill was referred on 25th November, 1965 to a Joint Committee of Parliament. The Joint Committee adopted a number of amendments and reported back to the Lok Sabha on 1st November, 1966. The report, however, was not unanimous and contained notes of dissent of some of the M.Ps. who considered that, with the amendments proposed in the majority report, the purpose of the Bill which was to stimulate inventions amongst citizens of India and to encourage development and exploitation of new inventions for industrial progress and the flow of technology from abroad into India was not likely to be achieved. The Patents Bill, as revised by the Joint Committee, was moved in the third Lok Sabha on 5th December, 1966 but could not be proceeded with for want of time and eventually, with the dissolution of the Lok Sabha on 3rd March, 1967, shared the fate of the Bill introduced in 1953. A new Patents Bill was introduced in Parliament on 12th August 1967 to amend and consolidate the law relating to patents. When enacted, it will replace the Indian Patents and Designs Act, 1911, in so far as it relates to Patents. The present Bill contains comprehensive provisions to amend and consolidate the existing law and also the amendments recommended by the Joint Committee of Parliament.

14.5. The Patents Bill, 1967 :

The field of activity most affected by this new Bill is the pharmaceutical industry and, to a certain extent, the chemical industry.

Medicine or drug has been defined to include (i) all medicines for internal or external use of human beings or animals, (ii) all substance intended to be used for or in the diagnosis treatment, mitigation or prevention of diseases in human beings or animals (iii) all subtances intended to be used for or in the maintenances of public health, or the prevention or control of any epidemic disease among human beings or animals and (iv) all chemical substances which are ordinarily used as intermediates in the preparation or manufacture of any of the medicines or substance referred to above, but do not include insecticides, germicide, fungicide or any other substance intended to be used for the protection or preservation of plants. The salient features of the amendments proposed in so far as these attract the drugs industry are as follows :—

Clause 5.—This clause provides that the patent shall be granted only in respect of claims for the method or process of manufacture and in respect of claims for the substances when produced by such methods or process.

Clause 48.—This clause provides that the importation of medicine or drug or medical equipment by Government for its own use or the production of a patented article by Government for its own purpose shall not be regarded as an infringement of patent rights.

Clause 53.—This clause stipulates that for inventions claiming a process for the manufacture of food, medicines and drugs, the term of a patent shall be 10 years and in respect of other clauses of inventions, the term shall be 14 years from the date of the patent.

The existing Act provides that the term of all patents shall be 16 years which can be extended to a further period of 5 years and in exceptional cases even to 10 years if Government is satisfied that the patent has not been sufficiently remunerative.

Clause 87.—According to this clause every patent granted after the commencement of the Act relating to food, medicines or drugs as well as methods or processes for the manufacture or production of chemical substances including alloys, optical glass, semiconductors, inter-metallic compounds, shall be deemed to be endorsed with the words "Licences of right".

There is a discrimination between this clause and clause 86 which stipulates that in the case of patents other than those for food, medicines or drugs as well as methods or processes for the manufacture or production of chemical substances, only after, the expiry of three years from the date of sealing or a patent, the Central Government can make an application to the Controller for endorsement of the patent with the words "Licences of right"

Clause 88.—This clause lays down that where an endorsement "Licences of right" has been made, any person who is interested in working a patented invention shall be entitled to do so on application to the Controller. The Controller is required to grant a licence without taking into consideration the requirements to be fulfilled by the applicant for compulsory licence under clause 84. The clause also provides that the royalty and the other remuneration payable under a licence shall not exceed 4% of the net ex-factory sale price in bulk of the patented article, exclusive of taxes and commissions determined in the prescribed manner.

Under the present Act, royalty is to be determined by the Controller who is directed to secure that food and medicines shall be available to the public at the lowest price cosistent with the patentee's deriving reasonable advantage from the patent rights.

Clause 89.—Seeks to vest a residuary power in the Controller to revoke a patent in the event of the invention not being worked to an adequate extent in the country or not being available to the public at a reasonable price notwithstanding the compulsory licensing provision, etc. The clause also lays down the time limit for the disposal of applications for revocation of patents.

Clause 90.—Seeks to define what is meant by the expression "reasonable requirements of the public have not been satisfied" for the purposes of the preceding clauses in the context of an under developed country like India.

Clause 95.—Seeks to regulate the terms and conditions which may be imposed in respect of compulsory licences. Except where the Central Government has in the public interest otherwise directed, the import of a patented article cannot be permitted under the guise of a compulsory licence. Any authorisation permitting the licencee to import a patented article given by the Controller in pursuance of such direction by the Central Government shall be subject to such conditions as the Central Government may impose in regard to royalty and other remuneration payable to the patented and other matters.

Clause 102.—This clause enables Government to acquire an invention for a public purpose when considered necessary and also provides for payment of compensation.

14.6.1. The main provision of patent laws in other countries giving particulars of patentable subject matter, duration, treatment of foreign nations, requirement for working and cases in which patents are subject to public use are set out in Table 14.1:—

TABLE 14.1

Main provisions of patent laws in other countries

Country	Patentable subject matter	Duration of patent	Treatment of foreign nationals	Requirements for working of patents sanction for non-working	Cases in which patents are subject to public use
1	2	3	4	5	6
United States of America.	Any new and useful process, machine manufacture, composition of matter, or any new and useful improvements thereof. Inventions must not be publicly known or used in the United States, or patented or described in a printed publication in the United States or elsewhere, before the invention was made by the application, and, regardless of the date of invention, the invention must not be in public use or on sale or patented or described in a printed publication more than one year before the date of the application for patent in the United States. *Not patentable.*—inventions contrary to public morals, business methods and scientific principles or discoveries not applied to a useful purpose, atomic weapons.	Seventeen years from date of grant. No extension except by special act of congress.	National treatment. One year foreign filing priority under Paris Convention, Pan-American Convention of Buenos Aires and under any other reciprocal arrangement.	No provisions in patent law. Atomic Energy Act of 1954, contains a temporary provision, expiring in 1964, for the grant of compulsory licences under a patent when there has been a declaration after hearing that invention is of primary importance in atomic energy field and that licensing of the invention is of primary importance in effectuating the policy and purpose of the Atomic Energy Act.	Where violation of the antitrust laws by means of patents is found, the court may provide for the granting of licences on reasonable terms and in some cases, the grant of royalty free licences.

TABLE 14.1—*Contd.*

1	2	3	4	5	6
United Kingdom of Great Britain and Northern Ireland.	Any manner of new manufacture any new method or process of testing applicable to the improvement and control of manufacture. *Not patentable.*—well established natural laws; ingenious ideas or discoveries with no industrial application inventions contrary to law or morality substances of food or medicine which are mixtures of known ingredients plant and animal varieties	Sixteen years from filing of complete specification, with provision for extension by five years, or in exceptional cases ten, on the grounds of inadequate remuneration.	National treatment. Foreign filing priority under Paris Convention.	At any time after the expiration of three years from the sealing of a patent any person interested may apply to the Comptroller General for a licence under the patent or for the endorsement of the patent 'licences of right; if the invention is not being worked commercially in the United Kingdom to the fullest reasonable extent, if demand for patented article is not being met on reasonable terms or is being met to a substantial extent by importation or if by reason of the patentee's licence conditions an export market for the patented article is not being supplied, or the working of some other patent hindered, or the manufacture, use or sale of materials not protected by the patent or the development of commercial or industrial activities is unfairly prejudiced. The Comptroller shall consider nature of invention, time elapsed since grant, and efforts of patentee fully to work, ability of licensee to work invention to public advantage and risks to be undertaken by him. The Comptroller's powers	Any Govt. department and any person authorised by it may use any patented invention for the services of the Crown (including the production or use of atomic energy). Applications for patents relating to defence may be withheld from publications relating to atomic energy uses may similarly be withheld from publication until certified by the Crown as not being required for defence purposes. Provision is made for the payment of compensation by the Crown. The Comptroller-General must grant compulsory licences in respect of patents relating to foods, medicines or surgical or curative devices unless it appears to him that there are good reasons for refusal. An application for such a licence may be made any time after grant and appeal lies to a Judge of the High Court.

					shall be exercised to secure maximum working of inventions, suitable remuneration to patentee and protection for any person working an invention under the protection of a patent. Patent may be revoked after the expiration of two years from an order for a compulsory licence if such licence or an endorsement "licences of right" would not be effective for the purposes set out above. An appeal lies from any orders of the Comptroller made under the above provisions to a Judge of the High Court. No order may be made which is at variance with the Industrial Property Convention.	
Federal Republic of German (West Germany).	Patents and patents of addition are granted for new inventions which permit industrial utilization. Utility models are registered with examination as to novelty. *Not patentable.*—inventions the utilization of which would be contrary to law or public morals, inventions of articles of food and taste, medicines, substances which are produced by chemical processes, in so far as the inventions do not concern a specific process for the preparation thereof.	Eighteen years from date of application. Utility model patents are granted for three years from the date of application, and an extension of three more years may be granted upon application and payment of fees.	National treatment. Foreign filing priority under Paris Convention. Foreign applicants must be represented by a German lawyer or patent attorney.	See column 6.		If working is of public interest, compulsory licence, and possibly revocation. Revocation by Federal Patent Court two years after grant of compulsory licence is possible if the invention is exclusively or mainly exploited outside Germany and if compulsory licence does not sufficiently meet the public interest, Free use of the invention by order of government in the interest of public welfare or security. Appeal to Federal Administrative Court possible.

TABLE 14.1—*Contd.*

1	2	3	4	5	6
France . .	Invention of new industrial products : invention of new methods, or new application of known methods, for obtaining an industrial result or product. Patents of addition are also granted. *Not patentable.*—pharmaceuticals are not patentable under the Act of 5th July 1844, which allows only the processes or means of production to be protected, but they may be the subject of "special patents for medicaments" Financial schemes and combinations, and inventions, and inventions contrary to public order, morality or law, are likewise not patentable.	Twenty years from filing date.	National treatment. Foreign filing priority under Paris Convention and other reciprocal arrangements.	Any patent not effectively utilized for three years may be the subject of an application for compulsory licence. The conditions under which the licence is granted are fixed by the court. Working must not be discontinued for three successive years, in which case it may be subject to compulsory licence.	Special licences may be granted if pharmaceuticals which are protected by special patents for medicaments, or the production processes for which are patented under the 1844 Act, are supplied in insufficient quantities or at exorbitant prices or are deficient in quality. Licences may be granted for the benefit of the State in respect of patents effecting national defence, which are also liable to expropriation against compensation.
Italy . .	Any new invention utilizable in industry. *Not patentable.*—inventions contrary to law and public policy, pharmaceutical products and processes.	Fifteen years from date of application.	National treatment. Foreign filing priority under Paris Convention.	Revocation is provided for if the invention is not worked within three years following the patent grant, or if working the patent grant is discontinued for three years. In neither case, however, is the patent revoked if the failure to work was due to causes, other than lack of funds, beyond the control of the patentee.	Expropriation against compensation in the interests of national defence or for other reasons of public utility.

Japan	Any new invention capable of being used for industrial purposes is patentable. Utility models patents are granted for devices involving technical improvements. *Not patentable.*—articles of food and drink, medicines, substances manufactured by chemical processes, or by a process of nuclear conversion, articles injurious to public order, good morals or public health.	Fifteen years from date of publication, the term of the patent may be extended but in no case the term to exceed twenty years from date of application. Utility model patents are granted for ten years from date of publication of the application in the Utility Models Gazette or fifteen years from the date of filing whichever is shorter.	National treatment and foreign filing priority under Paris Convention. In other cases, national treatment and foreign filing priority is available only on the basis of reciprocity. Foreigners must submit a certificate of nationality to ascertain and to approach a state representative resident in Japan.	If patented invention has not been properly worked within Japan for three consecutive years or more, any person may request a licence to work the patent subject to approval of the Director General of the Patent Office. Failing agreement, applicant may ask the Director-General to order a licence.	The Minister of International Trade and Industry can order a licence for working in the public interest.
Switzerland	New inventions industrially itilizable. The invention must solve a technical problem, be susceptible of industrial application, be new, represent a technical advance and be based on a creative idea. *Not patentable.*—inventions contrary to law, inventions contrary to morality, chemical substances (not applicable to alloys), medicines, foods, animal foodstuffs, beverages even when they are not chemical substances, processes for the manufacture of medicines by other than chemical methods.	Eighteen years from date of application.	National treatment. A domiciled agent in Switzerland is required. Foreign filing priority under the Paris Convention.	On request, compulsory licences, may be granted by the court if the invention was not adequately worked in Switzerland within three years from the date of registration of the patent. The patent may be revoked if after the expiry of two years from the issue of the original licence, the granting of licences is not sufficient to satisfy the needs of the Swiss market. Where the legislation of the foreign country of which the patentee is a national or in which he has an establishment provides for revocation on grounds of failure to work after three years from the date of issue of the patent, revocation may be sought in Switzerland in lieu of a compulsory licence.	Total or partial expropriation in the public interest against compensation to be fixed by the court if necessary.

14.6.2. Though India is not a signatory to the International Union for the protection of industrial property, which was established by the Paris Convention in May 1883, it accords national treatment to foreigners also almost on the same terms as stipulated by the Paris Convention. The Paris Convention aims at securing uniform treatment of patent rights for the signatory country. It is an open agreement and any country may unilaterally accede to the Union. At present there are 64 countries which adhere to it. The main features of the convention are

(1) the principle of national treatment,

(2) priority of patent application and

(3) compulsory working and compulsory licensing.

Under the 'National Treatment Principle', member States confer the same rights on nationals of every member State as they give to their own nationals. The right of priority entitles the national of a member country who has filed a patent application in a country which is a member of the Paris Union, a twelve month priority over any other person for filing an application for the same invention in all other member countries of the Union. In the absence of priority the national law requirement of novelty could not be satisfied in the case of a subsequent application if earlier publication anywhere in the world bars patentability. Sanctions for non-working cannot be imposed unless four years have expired from the date of filing of the application or three years from the grant of the patent, whichever is later.

The British law of patents has its origin in the Act of 1942 under which chemicals and compounds already known cannot be patented if used for therapeutic purposes. British firms therefore pay more attention to the synthesis of chemical agents in order to secure patents. It is sometimes said that as a result of this tendency phytochemical research is neglected, since therapeutic discoveries in this field would not be covered by patent right.

Particulars of the percentage of patents by foreign countries held in some of the developing and developed countries of the world are as follows :

Australia	63
Belgium	86
Brazil	94
Canada	81

Denmark	79
West Germany	37
France	59
India	89
Ireland	97
Israel	69
Italy	63
Japan	34
Netherlands	79
Norway	80
South Africa	88
Sweden	67
Switzerland	65
U. A. R.	93
U. K.	47
U. S. A.	16
Yugoslavia	61

From this analysis it would be observed that there are only four countries, *viz.*, U.S.A., Japan, West Germany and U.K., where foreign nationals are in a minority in the percentage of patents held. In the rest of the countries most of the patents are held by nationals of other countries. India with 89 per cent is not thus an exception.

14.7. *Views and comments.*—Different views and comments have been expressed on the Bill by the Industry which are given below :

The case against patents.—There is a school of thought which advocates that although the patent system has been in existence in India it has failed to provide benefit to the industry and trade and the system has operated generally to the detriment of the country's economy. Since more than 89% of the patents granted and an even larger number in the case of drugs and held by foriginers the country is not the beneficiary. Where the licence has been given on the basis of a patent a duopoly is established and if there are a number of licencees or assignees, it becomes an oligopoly. Even if licences are obtained by the indigenous manufacturers heavy royalties have to be paid by them. It has also been argued that a large number of patents are held with a view to restrict the import of the patented drugs from non-patent countries and that the patentee themselves are not interested in manufacturing the drugs in the country. In support of this argument it

has been stated that the majority of the infringement actions relate to import from non-patent countries rather than to the infringement of pharmaceutical manufacture. Foreign owned patents are not taken out to provide their local utilisation but rather to protect the export market in the country from competition by rival, mostly, foreign manufacturers. In the reply to the questionnaire issued by the United Nations in the course of an enquiry on the role of patents in the transfer of technology to developing countries, it was stated that India had not derived any substantial benefits from patents held by foreign nationals and this was attributed to the reluctance of the patentees to work their inventions in India either by themselves or by granting licences to Indian concerns. It was however admitted that India was not sufficiently technologically advanced to work most of the patented inventions.

The case for patents.—The arguments advanced in favour of grant of patents with particular reference to the drug industry are that patents encourage research and inventions. In the field of medicine innovation is a feature which was introduced since 1935. Before that it was taken for granted that in the matter of nutrients the possibilities of new techniques did not exist. It is today accepted generally that research is based mostly on patent laws and if patents are abrogated, there would be no incentive to undertake research. If there were no patent right discoveries would be shrouded in secrecy and others would instead of making honest efforts to build upon research already undertaken, desire to violate the secret discoveries. This would also be a most retrograde step from the point of view of technology and scientific progress. The odds of success in pharmaceutical research are 3000 to 1, and if the inventor is not to enjoy the benefits of his discovery and if it is to become public to be utilised by those who did not make any contribution to it, there would be no point in his undertaking research at such heavy cost. The example of Italy is cited where no patents exist in respect of drugs and therefore no incentive for research. Whatever is discovered by anyone becomes the common property of all and can be copied by anyone. The drug industry today subsists on invention and most of the drugs in common use today were not known thirty years ago. If the patent system is withdrawn the incentive to innovate would be taken away, since discoveries cannot be made without substantial outlay on research. In the absence of patent protection there will be little or no incentive for the investment of capital in new methods of production, which may otherwise be considered unprofitable.

In India only about 12% of the 800 leading drugs are subject to patent protection, and it has been contended that even if the argument of monopoly and misuse is accepted it would be applicable only to the drugs which are under patent system.

In the absence of patent laws discoveries made elsewhere can be used and it is a great hindrance to the healthy industrial progress of a country. Italy therefore desires to enact patent laws in order to have lawful and approved access to foreign inventions.

There is provision for compulsory licensing in the existing patent law in India, but, almost no applications have been made. In effect, in addition to the knowledge of the patent process the know-how for putting the process into operation is also very necessary, and it is generally not possible to have access to it without the co-operation of the patentee.

It has been sometimes argued that the developing country may abrogate the patent system since it is highly unlikely that it would be a substantial holder of any large number of patents. On the other hand it has also been said that patent licencees are more amenable to government control than unpatented know-how. The know-how agreements involving unpatented formulae, processes and blue-prints trade secrets, etc., are equally, if not, more important than the licensor's patent rights because the patent information is not sufficient to enable a third party to work the invention unless it also has access to the complementary unpatented know-how. If the patent system is revoked in a developing country it will be placed in a very disadvantageous position as it will not be able to secure the necessary know-how. If however it is found that the development has not reached such a stage where, without foreign assistance, patents can be worked, it would be advantageous to maintain a patent system until such time as the country can rely upon inventions made by others. When a stage is reached when it will be in a position to export its products it would need to rely in its own innovations and there would be little or no incentive to undertake research for the purpose of building up new drugs for the home market or for export.

It is also stated that inventions without full patent laws results in sub-standard drugs as has been effectively proved by examination of samples from countries which do not respect patent rights. It has been brought to our notice that in the case of a particular drug Librium which is made in numerous brands in Italy, the original producer Roche has more than 76 per cent of the market in Italy itself, where there are as many as 18 other imitators.

14.7.2. The Organisation of the Pharmaceutical Producers of India has stated that the patents law not only encourages and stimulates inventors to work on and make greater inventions and discoveries but also assures those who invest capital in research and development that any invention which may be made, will be protected for a prescribed period by an exclusive privilege granted to the inventor. It has been represented that withholding the granting of patents from May 1963 under the Defence of India Rules has hampered introduction of new products. Because of this ban over 2000 applications for new patents are stated to be pending with the patent office. The Organisation has further added that out of about 800 drugs in common use in India today, only some 90—100 (*i.e.* about 12 per cent) are covered by valid patents. There is nothing to prevent the unfettered manufacture of the over 700 and odd drugs ; and even in the case of the small number covered by patents, OPPI is of the view that the existing law provides adequate privisions to obtain licences for their production.

14.7.3. The Indian Drugs Manufacturers' Association, on the other hand, has made the following observations :

(i) In the drugs industry, the mere existence of patent protection is not guarantee of invention, nor is its absence much of a barrier. Patent is not necessary to recoup the investment by an inventor.

(ii) High prices and fixation of such prices for drugs by the manufacturers in India are because of the monopolistic features and abuses of protection by patent.

14.8. It has been brought to our notice that in the five years from 1957 to 1961 a total of 20,785 patents were applied for in India. Of these the applications from foreigners were 17,689 or over 85 per cent. The proportion of foreign applications in U.S.A. is 20 per cent. in U.K. 47 per cent in West Germany 32 per cent and in Japan 24 per cent, while in the East European countries the proportion is understandably much lower. The impressively large number of foreign applications for patents in India is said to be misleading since the patents are alleged not to have been taken out in the interest of the economy of the country or with a view to manufacture of the products patented but with the main object of protecting the patentee from competition by rival manufacturers particularly those in other parts of the world. It was also brought to our notice that in the case of certain products the manufacturer had taken out patents for all possible processes of manufacture in order to exclude the possibility of the drug being

manufactured by any other entrepreneur. It has been stated that such comprehensive fortification with patents where only one or two processes are used but the patentee excludes the utilisation of the remaining numerous processes which are technologically accessible to others too constitutes a misuse of the provisions of the Patent Law in as much as the patentee acquires the monopoly for a particular product and all the possible processes which could be applied for its production resulting in the ill effects to which such monopoly is likely to lead. For one the prices of drugs manufactured under such fortified patents in India are said to be very high in comparison with those in the export market or even when compared to those prevailing in other countries for internal sales.

14.9. The main features of the Bill now before the Parliament so far as the pharmaceutical industry is concerned are :

(1) Reduction of the period of patent.

(2) Compulsory licensing with stipulation of the maximum rate of royalty.

(3) Limitation of patents to processes only and

(4) Provision for the opposition of the patent on payment of compensation in public interest.

It has been stated that before a patent can be marketted a number of years have to elapse during which production is set up. It has been variously estimated that the developmental stages take a number of years. The model Patent Law for Developing countries sponsored by the United International Bureau for the protection of the intellectual property has adopted the term of 20 years and in the draft European Convention the period of 20 years has been proposed.

2. In U. K. there is provision for compulsory licensing but it does not limit the amount of rent to be paid. The actual rates are adjudicated by the Controller and vary between 7½ and 10 per cent. The Kefauver Report suggested eight per cent of the gross value of the drug and in this context it has been argued that the maximum rate fixed in the present Patent Bill is low.

3. By limiting the patents to process only the unhealthy tendency to patent all possible processes would grow.

Since the Patent Bill is already before the Parliament we have only mentioned facts as these have been brought to our notice and have not gone into the evaluation of the points mentioned for or against the legislation.

14.10. We would, however, like to observe that Patent Law is essentially meant to encourage inventions and in the national interest. Hence, all precautions need to be taken to see that Patents which are granted in our country either to indigenous or foreign inventions are not abused, *i.e.* are not utilised to prevent further development.

14.11. The patent rights of manufacture and sale as related to the specified basic drugs in this country are as in Table 14.2.

TABLE

Position of patents in respect of the

Sl. No.	Name of the drug	Product plus process patent:			Process patent only			Patent for composition containing product not limited to any process	
		Granted	Expired or ceased	Extent	Granted	Expired or ceased	Extent	Granted	Expired or ceased
1	2	3	4	5	6	7	8	9	10
1	Vitamin A .	9	6	3	6	4	2	..	.
2	Vitamin B12 .	14	10	4	9	8	1	..	..
3	Vitamin C .	4	4	..	..	..	..	..	..
4	Sulphadiazine .	5	5	..	..	..	..	..	..
5	Penicillin .	63	46	17	18	11	7	..	..

It would be observed that out of 18 drugs there are no patents for process or products in respect of eight items. Product as well as process patents are held for eight items, and for two items *viz.*, Streptomycin and Tolubtamide there are no process patents but only product patents, which is a matter of surprise since it is understood that the present law recognises only process patent and by implication product patents also, but not product patents by themselves.

14.2

18 *drugs under inquiry*

Particulars of extent patents

Extent	Whether Patentee or Assignee	Name	Patents held				
			Patent plus process	Patent only	Process only	For composition containing product not limited to any process	Total
11	12	13	14	15	16	17	18
..	Patentee	1. F. Hoffmanne-La Roche & Co., Switzerland.	1	..	..	..	1
		2. N. V. Philips' Gloeilamparfabrieken, Holland.	1	..	2	..	3
		3. Dr. Salimuzzaman Siddiqui, Dr. Syed Mahdihassan, Syed Maqsood Ali Syed and Abdul Haq, India, and Abdul Haq, India.	1	..	..	..	1
..	Patentee	Roussel-Uclaf, France .	3	1	..	..	4
	Assignee	E. R. Squibb & Sons Inc., U.S.A.	1	..	..	..	1
..	..	..	..	..	..	..	..
..	Patentee	1. Biochemic Cresellschaft Mit Beschranteter Haftung, Austria.	1	..	..	..	1

TABLE

1	2	3	4	5	6	7	8	9	10
6	Streptomycin	21	17	4	4	4	..	..	
7	Chloramphenicol	57	43	14	36	31	2	..	
8	Tetracyclines	62	36	26	8	1	6		

14.2—*Contd.*

11	12	13	14	15	16	17	18
		2. Standard Pharmaceutical Works, India.	2	..	..	..	2
		3. Knud Abildgaard, Denmark.	..	2	..	..	2
		4. Alembic Chemical Works Co. Ltd., India.	1	1	..	..	2
		5. CIBA Ltd. . .	1	.	..	..	1
		6. Novo Terapeutisk-Laboratories A/S, Denmark.	..	1	..	..	1
		7. Farbenfabriken Bayer Aktiengesellschaft, Federal Republic of Germany.	3	..	..	..	3
		8. Beecham Research Laboratories Ltd., U.K.	..	1	..	.	1
	Assignee	Beecham Group Ltd., U.K.	9	2	..	.	11
..	Patentee	1. Chemi Gruenthal G.m.b.H., Germany.	2	..	..	.	2
		2. Chas Pfizer & Co., Inc., U.S.A.	1	..	..	..	1
	Assignee	E. R. Squibb & Sons., Inc., U.S.A.	1	..	..	..	1
..	Patentee	1. Parke, Davis & Co., U.S.A.	10	1	..	..	11
		2. Chinoin Gyogyszer Es Vegyexzeti termeuek Gyara R. T., Hungary.	1	..	..	..	1
		3. Carlo Erba S.P.A., Italy.	2	..	..	..	2
	Assignee	Parke, Davis & Co., U.S.A.	1	1	..	..	2
..	Patentee	1. Chas. Pfizer & Co., Inc., U.S.A.	5	1	.	..	6
		2. American Cyanamid Co., U.S.A.	13	4	.	..	17
		3. Bristol Laboratories Inc., U.S.A.	4	1	..	..	5
		4. Koninklirke Nedarlandische Gest & Spontusfubiek N. V., Netherlands.	1	..	.	..	1

TABLE

1	2	3	4	5	6	7	8	9	10
9	Amodiaquin .	2	2	..	..	..	..	..	..
10	Chloroquin .	1	1	..	..	..	..	..	..
11	Iodo-chlor-hydroxy-quinoline.	2	2	..	..	..	..	..	..
12	Chlorpropamide .	5	1	4	4	2	2	1	..
13	Tolbutamide .	6	1	5	1	1	..	..	..
14	Insulin . .	17	10	5	7	4	3	..	..
15	I. N. H. . .	1	1	..	..	..	..	..	..
16	P. A. S. .	7	7	..	3	3	..	..	..
17	Tetanus Anti-toxin	..	..	..	..	..	..	..	..
18	Prednisolone .	3	2	1	4	2	2	..	..

14.2—*Concld.*

11	12	13	14	15	16	17	18
		5. Spofa Sdruzeni Podniku Pro Z dravotinickow Vynbu, Czechoslovakia.	1	..	..	..	1
		6. Horchel Smith, U.K.	1	..	..	..	1
	Assignee	Pfizer Cesporatum, U.S.A.	1	..	..	..	1
..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..
1	Patentee	1. Farowerke Hoechst Akliengsellschaft Vormals Meisten Lucins & Bruning, Germany.	2	.	..	..	2
		2. Merck & Co., Inc., U.S.A.	1	..	..	..	1
		3. Clas Pfizer & Co., Inc., U.S.A.	1	1	..	1	3
		4. Haffkine Institute, India.	1	..	..	..	1
..	Patentee	1. Farbwerke Hoechst Aktiengesellschaft Vormals Meisten Lucins & Bruning, Germany.	3	..	..	..	3
		2. Merck & Co., Inc., U.S.A.	1	..	..	..	1
		3. Haffkine Institute, India.	1	..	..	..	1
..	Patentee	1. Novo Terapentisk Laboratorium A/S., Denmark.	3	1	..	..	4
		2. Henry Marinus Christensan, Denmark.	..	1	..	..	1
	Assignee	Novo Tarapentisk Laboratorium A/S., Denmark.	..	1	..	..	1
..	.	.	..	..	..	..	..
..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..
..	Patentee	1. Glaxo Group Ltd., U.K.	1	..	..	..	1
		2. Merck & Co., Inc., U.S.A.	..	1	..	..	1
	Assignee	E. R. Squibb & Sons, Inc., U.S.A.	..	1	..	..	1

CHAPTER 15

MATERIAL AND OPERATIONAL EFFICIENCIES OF PROCESSES

15.1. One of the terms of reference to us is the consideration of the operational efficiencies of the processes in so far as these are related to the price structure. These could be viewed from more than one standpoint. One of these would be the consideration of the norms of consumption of raw material. A second, the relationship of conversion costs to the total cost of the drug or to that of the cost of the raw materials. The third, the comparison of the fair prices arrived at after cost analysis, with the c.i.f. prices of the equivalent imported drug. A fourth, an investigation into the actual process of manufacture employed and the extent to which the most efficient and the more economical processes have been or can be adopted.

15.2. As to the norms of the consumption of raw material we find that no data of the process obtaining in other countries which are in a more advantageous position with regard to the production of these products or even in the units which are the principals of those operating in India are available. It is therefore not possible to base the analysis on any international standards. We have therefore to fall back upon the data or material available from the indigenous units. In this case too our sample is very limited. We have only a few cases where more than two units manufacturing the same product which has been examined in detail with regard to the materials used and in almost half the cases there is only one unit manufacturing the product or drug. Again, where there are two units manufacturing the same drug it has invariably been discovered that the raw materials used by them are not identical even though the final product is the same. In the case of a single unit manufacturing the drug no standards for judgement can be framed.

15.3. Coming to conversion costs, these vary for each drug and for each unit even for the same drug. We are confronted with a series of disparities which it is not possible either to understand or to reconcile but since these are in the nature of actualities it is not possible to overlook them. It was suggested to us that certain norms of proportion with regard to conversion costs based on material costs may be framed and that assumption with regard to future conversion costs may be made accordingly. We have very

carefully considered this point of view but find that it is not possible to do so far a number of reasons. The capital structure as well as the administrative set up of each unit is different and the conversion costs are to a large extent influenced by these factors. To require that this structure should be modified for the sake of one or two drugs manufactured by the unit into the cost of which we have gone would in our view not be justified. Here again we are faced with actualities in which we can make only marginal adjustments and cannot require a certain pre-determined standard to be adhered to.

15.4. When we compare the c.i.f. prices of imported identical drugs with those of drugs produced within the country we find that there is great disparity. The range of variations between c.i.f. prices on the one hand and the indigenous prices on the other in regard to the 18 basic drugs alone adopting the base for comparison as the latest available prices for imported drugs on the one hand and the future fair prices as worked out by us for the specified drugs is from 19 to 343 per cent higher in the case of the indigenous manufacture. If the range were narrower a certain degree of comparison could have been possible and conclusions could have been drawn where any particular product to show significant deviation. In the present case it is not advisable to rely upon such a comparison for the purpose of determination of the degree to which the indigenous manufacturers could be considered to employ operational efficiencies to the requisite degree.

15.5. There is yet another field of investigation to which one could point and this is the degree of operational efficiencies actually achieved in the processes adopted for the manufacture of the specified drugs. Here we find that it is a highly technical and specialised field on which value judgements can be passed only by those very closely associated with the process of manufacture and those who are not only fully conversant with the manufacturing process but are also in possession of complete data with regard to the installations and the disposition of the installations in the units concerned together with other facilities available to them. We have therefore refrained from offering comments or to suggest improvement on the manner in which units are run or the drugs produced.

15.6. We have nevertheless in the course of the cost examination of the units and their drugs and the discussions thereon tried to make comparisons and also to make suitable marginal adjustments where we have found the cost of the raw materials or conversion to be excessive or not justified in a given set of circumstances. As to the quantities of raw material used it is very difficult

to pass judgement on the basis of theoretical enunciations. The question of conversion charges and their relationship to the total cost of the drug or *inter se* to the material cost has also been discussed in the same context but there are many variations and complex factors involved in the production of drugs which operate as serious limitations to ordering any set of standards and expecting that the different units in the field would be able to adhere to these or even to reach them.

15.7. While we have not been able to make any investigation based on norms or standards we have nevertheless been struck by certain disparities and anomalies which we think should be brought to the notice of Government as well as to that of the unit concerned in order that improvements or substitution can be made. We propose therefore in this chapter to deal only with the following issues and to offer our recommendations in respect of them.

(1) Cases of manufacture from the penultimate or high level imported intermediates in preference to raw materials available indigenously.

(2) Result of the utilisation of two alternative processes available for the production of the same drugs, and the one more advantageous from the point of view of conservation of foreign exchange and cost of production.

(3) Low yields—manifestly poor yields in comparison to those achieved in other countries.

(4) Substitution of one drug by another where the therapeutic efficacy of both is the same, but one can be manufactured only from imported material and the other from indigenous raw materials also.

15.7.1. It is understandable that when a licence is initially granted the unit concerned is not in a position to go into the entire process of manufacture straightaway, and needs therefore some preparatory period for setting up the production from the basic materials. During the intervening time it has to import penultimate intermediates for the manufacture of the finished goods. By gradual stages the manufacturing processes are enlarged with the aim that after a given period the manufacturer would no longer need to import high level intermediates but make use of basic materials available either within the country or imported from abroad. But it has been found that in a number of cases progress in the substitution of penultimate intermediates by imported or indigenously manufactured raw materials has not been as satisfactory or rapid as was expected. Many of the units initially licensed

for the manufacture of a drug in the country continued to import for a long time to come the drug in an almost finished form making only a few mixing operations and after doing these marketted them as manufactured in India.

Vitamin B-12. Themis Pharmaceuticals has been licensed for the manufacture of Vitamin B-12 and it has started manufacture from broth concentrate a penultimate intermediate, but it is hoped that the period during which this will be allowed will not be long and that within a fixed and foreseeabe period the unit would be able to start manufacturing the drug from molasses.

Amodiaquin is manufactured by Parke-Davis from imported 4:7 dichloroquinoline and paracetamol. While paracetamol is indigenously available, 4:7 dichloroquinoline is being imported by this unit. The same intermediates is being manufactured by Bengal Immunity from metachloro aniline which is available indigenously. In the interests of saving of foreign exchange as well as possible economy of costs the unit should manufacture 4:7 dichloroquinoline from metachloro aniline, particularly when another unit with lesser facilities can do so and it should not therefore be allowed to import this intermediate. On the other hand it is not possible to do so, Bengal Immunity should step up its if production of 4:7 dichloroquinoline, so that it can meet the demand of other units also. The same problem exists in the case of Chloroquin which is manufactured by Bayer as well as Bengal Immunity.

Chlorpropamide is manufactured from basic stages by Bengal Chemical starting from monochloro-benzene, while Pfizer manufactures it from a penultimate intermediate para-chlorobenzene sulfonamide which is imported. Mono-chlorobenzene is indigenously available and it should be possible for Pfizer with its extensive facilities to manufacture this intermediate instead of importing it. (1) Benzene is converted in three steps to metachloraniline; this intermediate is produced locally; (2) Condensation of melonic ester (not produced in the country but desirable on account of it being a very important material) with ethylorthoformate (not produced in the country) gives *ethoxymethylenemalonate*; (3) condensation of metachloroniline (step 1) and ethoxymethylene malonate (step 2) gives chlor-hydroxyquinoline which with phosphorcus oxychloride given *Dichloro quinoline;* (4) Starting from ethylacetoacetate, and using other basic intermediates ethyleneoxide and diethylamine, the compound called "novaldiamine" is produced in 4 steps, which is not quite easy. All the three basic intermediates are not at present produced in

the country but would very shortly be in production;(5) condensation of dichloroquinoline (step 3) and "novaldiamine" (step 4) gives chloroquin. This is a comparatively easy step.

Bengal Immunity starts with step 3, purchasing the locally produced metachloraniline (step 1) and importing ethoxymethylene malonate (step 2), and manufactures dichloroquinoline; this is a step involving use of dangerous chemicals and producing fumes. This firm at present imports novaldiamine (step 4) and produces, chloroquin by step 5. It would be desirable for other units producing Chlorpropamide to utilise the same process as adopted by Bengal Chemical or alternatively more efficient one or purchase locally produced intermediates.

Iodo-chlor-hydroxy-quinoline.—This compound is manufactured by two methods: Method 1: 8-Hydroxyquinoline (imported but can be manufactured locally) is treated into iodine (imported) and chlorine to yield the final drug in one step (Bengal Chemical Neogy Lab.). This is an easier method. Method 2: (i) Chloro-hydroxynitrobenzene, an intermediate is prepared by two methods: (a) starting from phenol in 3 steps as by East India Pharmaceutical or (b) treating dichloro-nitrobenzene (at present imported by Atul but can easily be prepared from locally available dichlorobenzene by nitration) with alkali; (ii) chloro-hydroxy-nitrobenzene is reduced to chloro-hydroxyaminobenzene which by a standard reaction gives chloro-hydroxyquinoline; (iii) the last mentioned compound is treated with iodine to get the final product.

Iodine has to be imported in any case since it is not produced in the country. We suggest that 8-hydroxyquinoline or dichloro-nitrobenzene should be produced locally. It is understood that compounds replacing iodine by bromine and chlorin are being developed and these may be used. The cost of the product by method 1 is Rs. 39.37 to Rs. 41.48 while by the laborious second method it is Rs. 60.93 per kg.

Tolbutamide is being manufactured by three units, namely, Haffkine Institute, Unichem labs. and Hoechst. Hoechst is one of the largest manufacturers of chemicals in the world and the Indian organisation which is a subsidiary of the German company, manufactures this drug from a penultimate intermediate toluene-sul-fonylurethane condensing it with Butylamine both of which are imported. The cost of the intermediates is higher than the price of the equivalent finished drug manufactured abroad. On the other hand Haffkine claims to have manufactured this drug from

basic stages and its cost worked out to near about the c.i.f. price. Its rights of licensing this drug had however been contested by Hoechst and the matter is under litigation. Recently Hoechst has purchased its requirements of sulfurethane from Atul Products at Rs. 60/- per kg. which would mean a further rise of Rs. 20/- per kg. in its price.

15.7.2 **Results of the utilisation of two alternative processes**

Vitamin A—The basic raw materials used by both the firms *viz.* Glaxo Labs. and Roche Products are indigenous and the same, but the processes employed by them are different. In the case of one unit the cost of production is substantially lower than that of the other. It would therefore be desirable to go into the reasons for this high cost of production in the case of the other unit and if they are due to any process deficiencies they should be made to adopt the more efficient process.

Streptomycin is being manufactured by Hindustan Antibiotics and Synbiotics The process of extraction of streptomycin from broth in the case of Hindustan Antibiotics involves the formation of a clacium chloride complex, while Synbiotics extracts it directly by use of ion exchange resins. The process used by Synbiotics is more efficient and results in saving or raw material to the extent of almost 30 per cent and a lower cost of production despite the lower capacity of this unit.

Chloramphenicol is being manufactured by Parke-Davis from imported para-nitro acetophenone as the starting raw material while Boehringer Knoll use 'benzaldehyde' and ethylene oxide. The process used by Boehringer-Knoll is more efficient and the total raw material cost is also 23 per cent lower. Since ethylene oxide is now available from local sources, it may not be necessary in future to manufacture Chloramphenicol from the imported raw materials.

I. N. H. Manufacturers using gammapicoline as the starting material adopt either the Nitric Acid oxidation method or the Potassium Permanganate method for the manufacture of I. N. H. Thus Pfizer adopts the Potassium Permanganate method while Biological Evans and Bengal Immunity adopt the Nitric Acid oxidation method. As both nitric acid and potassium permanganate are indigenously avilable both methods are equally suitable so far as indigenous utilisation of raw materials is conerned. However from the point of efficiency the nitric acid oxidation method is considered more efficient.

15.7.3. **Case of poor yields**

Vitamin C is being manufactured only by one unit in the country. The yield of Vitamin C obtained by this unit is said to be 36 per cent as against 60 per cent achieved by manufacturers in other countries. The other unit licensed for the manufacture of Vitamin C has not yet gone into production. The unit needs to pay serious attention to the reasons for the low yields.

Penicillin : The titre of Penicillin in India is only between 8,500 to 9,000 i.u./Kg. This is low as compared to that of other developed countries. which have been able to achieve titres of 20,000 i.u./Kg.

Prednisolone : The efficiency of process in use by Wyeth Labs is low. This unit obtains a yield of Prednisolone of five to six per cent starting from diosgenin while in U. S. A. the same process gives a yield of ten per cent and more.

15.7.4. **Substitution of one drug by another**

Sulphadiaine : May & Baker manufactures this from two imported raw materials acetanilide and 2-amino diazine. While acetanilide may be manufactured by Hindustan Organic Chemicals, there is no proposal to manufacture 2-amino diazine and the c.i.f. cost of aminodia ine for the manufacture of one kilogram of sulphadiziane is Rs. 22.30. Sulphadiamidine which is therapeutically similar to sulphadizine will shortly be manufactured from acetanilide and amino-base both of which would be available indigenously. In these circumstances it is relevant to consider whether the manufacture of sulphadiazine involving a perpetual drain of foreign exchange should be continued once the manufacture of sulphadimidine from predominantly indigenous raw materials is established.

CHAPTER 16

STANDARDS

16.1. Drugs are probably the only commodity for which standards are laid down by law and the enforcement of which is prescribed under a statute. As contradistinct from any other product these standards are not for the minimum but for the optimum. As a result of the recommendations of the Drugs Inquiry Committee and in response to the persistent demand from the public the Drugs Act was enacted in 1940. This Act provides for and recognises certain standards in respect of drugs manufactured in the country of imported and requires the compliance of these standards.

16.2. The British Pharmacopoeia and the British Pharmaceutical Products are the two books on standards which were first prescribed under the Drugs Act. Later on other Pharmacopoeias such as the United States Pharmaceopoeia and National Formulary of the United States were also approved. When the International Pharmacopoeia was published by the World Health Organisation, India was one of the first countries to grant recognition to it under the Drugs Act. The State Pharmacopoeia of the Union of Soviet Socialist Republics was also approved.

16.3. Under the provisions of Section 5 of the Drugs and Cosmetics Act, 1940 a statutory body known as the Drugs Technical Advisory Board was constituted in 1942 to advise the Central and State Governments on technical matters arising out of the administration of the Drugs Act and to carry out other functions assigned to it by the Act. In 1944 the Government of India asked the Board to prepare material for a list of drugs for use in India which were of substantial medicinal value and to recommend standards to secure their usefulness as well as tests to assay their identity and purity. An *ad hoc* Committee was appointed for this purpose and it prepared a list which was approved by the Drugs Technical Advisory Board and the same was published in 1946 as the Indian Pharmacopoeia list. Subsequently, Government constituted a permanent Indian Pharmacopoeia Committee in 1948 and this Committee brought out an independent Pharmacopoeia which was published in 1965. The Indian Pharmacopoeia Committee was reconstituted in 1954. The second edition of

Indian Pharmacopoeia was published in 1966. A number of new monographs have been incorporated in this edition. These are standards for some vegetable products such as Jata manshi, Rasna and Vidang. It functions through several sub-committees which collect and shift material relating to drugs which are proposed to be included in the Pharmacopoeia. The present Pharmocopoeia includes standards for about 900 drugs and their method of analysis. The Drugs Control Organisation serves as the secretariat for the parent committee as well for its sub-committees and the compilation of standards and other information is done by the organisation.

16.4. As regards the drugs included in the Indian Pharmacopoeia Standards of identity, purity and strength specified in the Pharmacopoeia are the standards. For other drugs not included in the Indian Pharmacopoeia and which are included in the Pharmacopoeia of any other country, the standards in such Pharmacopoeia are to be considered mandatory. For patent or proprietary medicines the standard to be complied with are those displayed in the form of a formula or list of ingredients on the label or container. For vaccines, sera, toxin, toxoids, antitoxins and antigents an biological products the standards main tained at the International Laboratory for Biological Standards, Stantans Seruminstitut, Copenhagen supplemented by any other standards that may be laid down are prescribed. For vitamins, hormones and analogous products the standards are thus maintained at the International Laboratory for Biological Standards, National Institute for Medical Research, London supplemened by Indian Standards, if any. Where the same drug is mentioned in more than one of the recognised pharmacopoeias and also the Indian Pharmacopoeia the latter holds the pride of place in so far as drugs mentioned in it are concerned and it is to be considered as the sole book of standards for this purpose.

16.5. *National Standards :* The Central Durgus Laboratory, Calcutta and the Central Research Institute, Kasauli serve as centres for distribution of international standards, of pharmacological and immunocologial substances respectively. These are distributed to analytical laboratories and pharmaceutical laboratories in the country for use in the standardisation of testing of drugs. The Central Drug Laboratory has, in view of the necessity for the preparation of comprehensive National standards, initiated a programme for the formulation of such standards with the help and collaboration of laboratories all over the country both belonging to the Government as well as to the industry.

The National standards for Insulin, digitalis powder, posterir pituitary tetracycline hydrochloride and phenoxy menthyl penicillin have been prepared at the Central Drug Laboratory.

16.6. The National Formulary is a list of essential drugs and their formulations. In the case of formulary also the draft is prepared by the Drugs Control Organisation and placed before the Formulary Committee which consists of experts and others in various branches of medicines and pharmacy. It is published after the Committee has considered and approved of it.

16.7. The Indian Standards Institution is mainly concerned with the standards relating to the raw material and pharmaceutical chemicals. The standards followed by some of the manufacturers of basic drugs and formulators in the country are as given in Table 16.1.

TABLE 16.1

(A) *Standards followed by manufacturers of basic drugs*

Unit's Name	Name of the Drug(s)	Standard(s) followed
1	2	3
1. Alembic Chemical . .	Penicillin	I.P./B.P./U.S.P.
2. Bengal Chemical. . .	I.N.H.	B.P.
	Ildo- chlor-hydroxy-quinoline	U.S.P. B.P.
3. Bengal Immunity . .	I.N.H.	B.P.
	Chloroquin	B.P. & U.S.P.
	Tetanus Anti-toxin	B.P.
4. Biological Evans. . .	I.N.H. & P.A.S.	B.P.
5. Haffkine	I.N.H. Tolbutamide Chloropropamide	I.P. & B.P.
6. Hindustan Antibiotics .	Allfroms of Penicillin	I.P.
	Streptomycin Sulphate	I.P.
	Dihydrostreptomycin Sulphate	I.P.
	Oxytetracycline HCL	I.P.
	Chlortetracycline HCL	I.P.
	Vitamin C	I.P.

TABLE 16.1—*Contd.*

1	2	3	4
7.	Merck Sharp	Cyanocobalamin	U.S.P.
		Prednisolone	U.S.P.
8.	Parke-Davis	Chloramphenicol	U.S.P./I.P.
		Amodiaquin	B.P./I.P.
9.	Pfizer	I.N.H.	I.P.
10.	Roche Products	Vitamin A	I.P. and U.S.P.
11.	Sarabhai Merck	Vitamin C	I.P./B.P./U.S.P.
12.	Synbiotics	Streptomycin Sulphate	U.S.P.
		Tetra cycline HCL	U.S.P.
		Isoniazid	U.S.P.
13.	Wander Pharmed	P.A.S. Sodium	B.P.
14.	Wyeth Labs.	Prednisolone	U.S.P.
	(B) *Standards followed by formulators*		
1.	Bayer	Chloroquin Tabs.	B.P.
2.	Bengal Chemical	I.N.H. Tabs.	U.S.P.
		Diabinol Tabs.	B.P.
		Cyanocobalmin Inj.	B.P.
		Tetanus Anti-toxin	I. P.
3.	Biological Evans.	I.N.H. Tabs.	B.P.
		Sodium P.A.S. Granules	B.P.
		A.T.S. Inj.	
4.	Boehringer Knoll	Chloramphenicol Caps.	B.P.
5.	Parke-Davis	Chloramphenicol Caps.	U.S.P.
		Amodiaquin Tabs.	
6.	Pfizer	Tetracyline Caps Terramycin Caps. Isonex Tabs. Insulin Lente Procaine Penicillin fortified.	I.P.
		Pronapen Diabiness Tabs.	U.S.P.

NOTE :

I.P.—Indian Pharmacopoeia

B.P.—British Pharmacopoeia.

U.S.P.—United States Pharmacopoeia.

16.8. In its report, the Drugs and Equipment Standards Committee (1965) mentioned that in the case of certain tinctures covered by the latest Pharmacopoeia specific tests for assaying active ingredients were not laid down. It also suggested the enhancement of the status of the Indian Pharmacopoeia. The Committee also recommended that Government should make arrangements to streamline the machinery for the compilation and to provide adequate arrangements for laboratory and staff for collection of material for the purpose of maintaining it up-to-date.

CHAPTER 17

QUALITY

17.1 It is a matter for considerable gratification that India is one of the few countries where comprehensive statutory control of standards for drugs exists and there are no loopholes which may enable unscrupulous manufacturers to market sub-standard drugs. Statutory control of the quality of drugs manufactured or marketed in India is comparatively recent and is almost coeval with the era of Independence; for it was only in 1947 that first steps were taken to regulate the import and manufacture of drugs.

17.2 Control over standards of drugs is effected by the system of licensing. Imports, too, of certain classes of products such as biologicals can only be made under a licence. Similarly manufacture and sale of drugs in the country can only be undertaken under a licence. Imported drugs are subject to inspection not only at the time of import but also subsequently before their distribution.

17.3 The Drugs and Cosmetics Act vests with the Central Government powers to control the quality of imported drugs but the responsibility for enforcement of controls over the quality of drugs manufactured or sold in the country rests with the State Governments. While there is statutory division of responsibility between the Central and State Governments for the enforce ment of the provisions of the Act, the Central Goverment in the interests of uniform procedure throughout the country coordinates the action taken by the States and offers expert advice and such other assistance as is necessary for the efficient enforcement of the Act.

17.4 **Imported drugs :**

17.4.1 The import of drugs is allowed only through certain designated ports where officers of the Central Drugs Standard Control Organisation can keep a check on the quality of such drugs by inspecting consignments and sending samples for tests. Regulatory measures on biological and special products are more stringent. These drugs can be imported only against a licences issued under the Drugs Act. While applying for such licence, not only importers but also manufacturers abroad are required to abide by certain

conditions which in addition to permitting inspection of manufacturing premises abroad, provide for the withdrawal of stocks of drugs from the domestic market, should unfavourable reports be received on them subsequent to import. Apart from the check at the time of import, officers of the Central Drugs Standard Control Organisation keep a running check on the quality of biological and special products by testing samples from importers' godowns where the drugs are stored. In case the test reports on these are not favourable, the stocks of the particular batch already issued for sale are withdrawn. One of the conditions of the Import Licence is that the licensee should maintain records of issue to facilitate such withdrawal.

17.4.2 A vital aspect of quality control is the check exercised on the import of "New Drugs", that is, drugs which have not been officially included in any of the approved Pharmacopoeias or have been newly introduced and which though not subjected to any extensive use on human beings, except in a limited number of clinical trials, are considered as safe for use. Such drugs are not allowed to be imported unless they are approved under the Drugs Act. There is also a provision in the Drugs Rules to the effect that no new drug which is not permitted to be used in the country of its origin can be imported into this country. These regulartory measures are necessary to ensure that the people of this country are not used for experiments with new drugs.

17.5.1 For exercising effective control over the quality of drugs manufactured or sold in the country a stringent scheme of licensing has been devised, reference to which has been made in chapter 4. Manufacturing premises are to be inspected also at the time of the renewal of licences. The conditions for licensing for the manufacture of biological and special products are more rigid, and inspection of firms engaged in the manufacture of such drugs is carried out by inspectors who have adequate experience of the manufacture and testing of such drugs. The testing of samples is carried out by the Government Analysts appointed by the State Governments.

17.5.2 The provisions for the grant of licences for sale of drugs enable the Licensing Authority to ensure that the sale premises are adequate, are equipped with proper storage accommodation for preserving the properties of the drugs to which the licence applies and are in charge of a person competent to supervise and control the sale, distribution and preservation of drugs.

17.5.3 The Drugs Control Organisation collaborates with the Narcotics Department and with the Excise authorities in

regulating the import, manufacture and sale of narcotic drugs. This is possible because in each State there exists though not a wide net work, at least a nucleus of technically qualified persons including inspectors, forming the Drugs Control Administration. The latter is well suited for the task of enforcing the manifold restrictions relating to narcotic drugs such as, inspection of manufacturing and sales premises, checking of record prescription, forms of account and issue and scrutiny of applications from firms desirous of having quotas of narcotic drugs. Narcotic drugs can be sold only against medical prescription and manufacturers, chemists and druggists are required to maintain records in forms drawn up on the pattern of those obtaining in some countries where the enforcement of narcotic laws is very stringent.

17.6. **Testing facilities :**

17.6.1 Since quality control of drugs is mainly the function of the State drugs control administrations States have their own drugs control administration and have sometimes their own drugs control rules. Manufacturing units are inspected by the officers of the State Government who visit the premises of manufacture to check the process of fabrication and the facilities available for testing and quality control. For purpose of inspection certain States like Maharashtra have prescribed detailed forms which have to be filled in by the Inspector after each inspection. The Drug Control Rules provide the control of samples at all stages from the manufacturers' factory, depot, distributors' stores or even the retailers' shops. State Governments have powers to confiscate spurious and sub-standard drugs and prosecute manufacturers or stockists. The life period of drugs is mentioned in Schedule P of the Drugs and Cosmetics Act and the manufacturers are under an obligation to imprint the dates of manufacture and the expiry on the bottles and cartons along with batch number and the licence number. The facility which exists in each of the States for testing and the procedure followed by the State Drugs Controllers have been reported to be as follows :

1. Maharashtra : Haffkine Institute in Bombay which is a licensee under the Act undertakes the testing of drugs. Plans are however under way to have a separate testing organisation with independent staff and equipment. Standard procedure as laid down under the Pharmacopoeia involving chemical, biological, microbiological and instrumental analysis is followed for the testing of various drugs. In view however of analytical facilities that exist

at present at the Haffkine Institute a sampling programme is laid down in order to ensure optimum utilisation of the facility and avoid duplication of the work to effect economy in expenditure.

2. West Bengal : The State Government has a Drugs Laboratory in addition to utilising the services of the Central Drugs Laboratory, Calcutta. The Drugs Laboratory of the State Government has recently been shifted to the premises of the combined laboratory building. According to the report of the Committee on Drugs Control 1966 (The Borkar Committee Report) the laboratories have been well furnished and equipped but not properly staffed. The units manufacturing drugs have their own laboratories and in case they do not have such facilities they make arrangements for getting their products tested at any other institution approved by the licensing authority for carrying out such tests.

3. Gujarat: There is a State Drugs Laboratory at Baroda for testing drugs and it has been reported that this laboratory is divided into the following divisions: (1) pharmaceutical chemistry division, (2) pharmacology division, (3) animal house and (4) microbiology division; and (5) pharmacognosy division. The laboratory receives samples from various districts for the purpose of testing.

4. Madras : The Governnent Analyst undertakes testing at the Kings Institute, Guindy of the samples taken by the Drugs Inspectors under Sections 22 and 23 of the Drugs Act, 1940. This Institute undertakes tests of drugs sent by manufacturers and collects requisite fees according to the schedule of rates given in schedule B of the Drugs and Cosmetics Rules. On behalf of the manufacturers who do not have testing facilities for their drugs, Messrs. Italab Pvt. Ltd., Madras undertake testing.

5. Mysore : The State drugs control administr ation has a separate drug testing laboratory. But certain biological and other special products are sent for analysis to the Central Drug Laboratory, Calcutta.

6. Madhya Pradesh : The Government Analyst is supposed to test sample sent to him . But the extent of the laboratory facilities available in the State have not been intimated.

7. Orissa : There is no durgs control laboratory in the State and the samples are therefor sent to the Central Drugs Laboratory, Calcutta. Some of the units have their products tested at Italab Pvt. Ltd. or Smith Stanistreet Co. Ltd., Calcutta.

8. Jammu and Kashmir: This State Government is contemplating setting up of drugs laboratory, but no facilities exist so far.

Other States namely, Andhra Pradesh, Haryana, Assam, Bihar, Delhi, Kerala, Punjab, Rajasthan and Uttar Pradesh did not reply to the question in respect of testing facilities available with them.

17.6.2. The Central Drug Laboratory and the Central Research Institute, Kasauli: The Central Drug Laboratory, Calcutta is a statutory institute set up under the provisions of the Indian Drugs and Cosmetics Act and its function is to analyse samples of imported products sent by the various ports in India for quality control of imported drugs. Where there is a dispute between the manufacturer or the vendor of the product and the State Drugs Control authority, the Central Drugs Laboratory acts as the appellate authority. As most of the States have not yet been able to build full-fledged testing laboratories, the Central Durg Laboratory carry out the function of Government analyst for all the States in India except the States of Madras, Gujarat and Maharashtra. It undertakes the analysis of drugs and samples sent by the Drugs Inspectors of the States concerned under provisions of the Drugs and Cosmetics Act. It does not however accept samples for analysis from manufacturers or other private organisations. Although the laboratory makes a charge to the State Government for analysis of samples sent by the State Drugs Control authority the fees have no relationship directly or indirectly to the price structure of the indigenously manufactured drugs and pharmaceutical preparations. The function of the Central Drug Laboratory for testing or serum, vaccines and sterilised biological sutures has been assigned to the Central Research Institute, Kasauli. The Central Drug Laboratory has also research programmes directed towards the evolution of methods of better analysis and it also provides for facilities for training representatives from States and from the drug industry in analytical techniques. At the public enquiry it was stated that the Drugs control as applied, particularly well, in the State of Maharashtra, but this was not being done in other States to the same extent and that a certain amount of laxity prevailed elsewhere.

17.7 Evidence was tendered at the public enquiry to the effect that in addition to pharmacopoeial standards for quality control, there are certain factors which are known as therapeutic efficacy and biological availability. It was contended on behalf of some representatives of the industry that while the Drugs Controller guarantees the chemical purity of the drug, he was not in a position to do so in respect of the therapeutic efficacy of the drug of similar products of the different manufacturers. But the consumer was concerned only with therapeutic efficacy of the drug

It was stated that this was the main factor in creating greater demand for a drug or formulation produced by a particular manufacturer, in preference to those of others. The implication was that the therapeutic efficacy of such brands was greater than those of others even though all of them conformed to the same given standards. A challenge was also thrown out whether the Drugs Controller could guarantee the therapeutic efficacy of a new drug that was put on the market. It was stated by the Director, Drugs Control Administration, Maharashtra that the determination of the therapeutic efficacy of a drug did not form part of the Drugs Controller's work, but that if the necessary provisions were included and facilities were made available, it would be guarnteed. In the course of the discussion it was asserted that 40 per cent of drugs were purchased for Government and public organisations, such as hospitals and corporations, by issue of tenders. The drugs purchased were under generic names and the lowest quotations were generally accepted. No complaints about the therapeutic efficacy of these drugs had been received once they had been found to conform to the standards prescribed. This leads inevitably to the question whether the standards and procedure for assay prescribed in the Indian Pharmacopoea as well as its foreign equivalents are adequate to ensure the efficacy of the drugs or additional specifications are needed.

17.8 The term "physiological" or "biological availability" connotes the attribute of the dosage of the drug that constitutes a measure of the extent to which the active ingredient is taken up by the body in a useful form. From the practical point of view this attribute is significant only in respect of the dosage forms intended for oral administration. The extent to which the therapeutic constitutent of the pharmacopoeial dosage form intended for oral or topical use is available for absorption is influenced by a variety of factors, such as, the manner of compounding, crystal size, diluents excipients and other compounds and solvents or fluid vehicles in liquid dosage forms. The ideal solution to the determination of the therapeutic efficacy or biological availability with its attendant refinements would be the introduction of in-vivo tests of all products, but it is not practicable. It is also difficult to devise a useful range of tests which could be specified in precise terms as a basis of routine control procedure. The official pharmacopoeas lay down specific tests for ensuring that the drugs taken are properly absorbed and utilised. In certain instances, however, the present monographs in the Pharmacopoeas do not necessarily provide appropriate protection of the product or the patient, and for some time it has been felt that additional methods need to be developed such as durg dissolution time, measurement under

standard conditions, using simulated gastric and intestinal fluids. The maintenance of a high degree of physiological availability requires special attention to the various processes involved in the production of a drug. In any case the Pharmacopoea Commission is, it is understood, actively investigating the possible methods with a view to specify them in the Pharmacopoea. It is understood that in Denmark in addition to the disintegration tests, which are prescribed in the official pharmacopoeas, dissolution test is also routinely adopted for testing of all compressed tablets. While it can be accepted in theory that therapeutic efficacy and biological availability are also factors on which future standards need to be laid down, it is not possible to assume simultaneously that merely owing to the fact that certain refinements in the process of manufacture are being claimed the products of a unit which makes such a claim is necessarily to be considered superior to those of others. Until the requisite standards are laid down and applied to the samples no such presumption can be made. While a particular manufacturer may claim that biological availability is a factor which is important, he cannot make any assertion that such tests were found to be satisfactory in the case of his drugs as compared with those of others in the same field of manufacture of drugs or formulations.

17.9 All the manufacturers have stated that they exercise strict and rigorous quality control on their products starting from the raw materials stage of the formulations. Out of the 34 units mentioned 22 have stated that they carry out regular quality control tests and checks at every stage of production. This is carried out in their independent quality control departments manned by trained staff which tests raw materials and intermediates and analyses and checks the final product according to the Pharmacopoial standards for purity, suitability, sterility etc. Only after the product passes through these tests it is released for sale. Some of the units have stated that they send their products to the laboratories of their collaborators for additional evaluation. A few others have stated that they send their samples to other approved laboratories for testing. Some of the replies that we have received with regard to quality control methods available to and applied by the manufacturing unit are as follows:

A. **Manufacturers of basic drugs**

1. Alembic Chemical :

Quality is controlled at several stages, before the product is released for sale. The finished product has to pass through the

Process Control Laboratory, Antibiotic Certification Laboratory and finally through Control Laboratory.

2. Atul Products :

It has three fully equipped laboratories engaged on the work of Research for Dyes: Chemicals and Pharmaceuticals. These laboratories are under the control of foreign trained technologists. It has got a chain of laboratories each specialising in different types of work such as analysis, control of process and research etc. These are (i) Analytical Lab., (ii) Investigation Lab., (iii) Intermediate Lab., (iv) Development Lab. and (v) Research Laboratory.

3. Biochemical and Synthetic:

The raw materials, indigenous or imported, are subjected to Quality Control to meet the specifications, prior to taking over for manufacture. Intermediate products are also checked and analysed. The end product is also analysed and released for packing only after it complies with specifications.

4. Bengal Immunity :

Tetanus Anti-toxin—The sterility test of the serum from each batch is done as per Drugs and Cosmetics Act 1940 after the bulk batch is divided into a suitable number of batches by sterile filtration. The serum of the batch is then dispensed aseptically in sterile ampoules and sterility test of the serum in the ampoules in the batch is again done as laid down in Drugs and Cosmetics Act.

5. Boehringer-Knoll :

It has a well-equipped control laboratory to control manufacture of its products at different stages. The analyses are made by qualified and experienced staff. For chemical tests and analysis many modern items of phy scal electronic equipment are available. The standards followed are those specified by its German Associates. The control laboratory checks purity of all the batches of the various intermediates before they are released as finished products . It is also sampled and tested by the Control Laboratory A sample batch of every finished product is also sent to the German Associates for their evaluation and each batch is released for sale only after it has been approved by its Associates.

6. Boots :

The quality of crystalline Insulin and its formulations is controlled by (a) Physical, (b) Biological, (c) Chemical and (d) Bacteriological methods. Testing of samples is done on an elaborate scale. It withdraws 100 to 225 samples from a batch depending on the size of the batch and the product. It is required to send to its associates in Britain samples of each batch of all the insulin manufactured by it for overall control of the product and packing materials.

7. Cyanamid :

Its quality control department is divided into the laboratories, namely, (i) Pharmaceutical Testing Lab. (ii) Formulation *Improcess* Testing Lab. and (iii) Insecticide Testing Lab. The pharmaceutical testing lab. consists of four major sections (i) chemical testing, (ii) packing material testing, (iii) biotesting and (iv) microlab. A finished product has to pass all these sections. The quality control lab. is equipped to conduct the majority of tests locally. There are still some tests which are carried out either by its parent organisation in U. S. A. or through some of the commercial analytical labs. in Bombay.

8. Glaxo Lab. :

It has various stages of quality control, from raw material to packing material. Sterility tests on Intermediates (where applicable) are carried out on the bulk before filling. The finished products are sampled by analytical department and subjected to physical and chemical tests. The packed stock is also examined for correct identity of contents and other labelling details. A microbiological survey of the factory area is carried out in order to determine whether aspectic conditions a adhered to or not, in order to track down and eliminate sources of contamination. The new drug is submitted for clinical trials after toxicological evaluation on animals has proved satisfactory.

9. Haffkine :

The tetanus toxin used is prepared in Toxin Section of Immunology Department and is standardised against standard tetanus Anti-toxin. Different dilutions of the anti-toxin are used with constant volume of tetanus toxin and injected sub-cutaneously into two mice of 18-20 gram weight. Standard 'Tetanus Anti-toxin is also titrated each time along with the samples.

10. Hindustan Antibiotics:

Every consignment of each raw material is tested by an independent laboratory for conformity with specifications.

Records are maintained for each step of manufacture. A schedule of in-process sampling is followed and representative samples are drawn at regular intervals during the manufacture. These samples are tested in Control Laboratory according to set procedures. The intermediates are tested and only those which conform to internal standards are taken up for processing in the next stagel. The final products are tested by the Quality Control Laboratory.

11. May & Baker :

(i) Raw materials are tested to rigid specifications before being sent for manufacturing purposes.

(ii) Analytical control measures are adopted at important stages during the manufacturing process.

12. Parke-Davis:

Raw materials prior to release for manufacture are tested by physical or biological order to ensure that they meet official specifications. Analytical data on the basis of every batch of raw material are retained as a permanent record so that the history of the usage of such raw material can be followed through every stage of subsequent processing. Similar analyses are conducted for intermediates

13. Sarabhai Merck:

It has a fully equipped Quality Control Department with the highly qualified and specially trained technical staff for testing the products manufactured by the Company. It also sends its staff from time to time to its collaborators for training in the latest technique in testing. There are many stages of sampling of testing from the raw materials to intermediate products, from finished products to packing. Quality Control Department informs all the departments concerned about the final disposition of the product under testing by sending a copy of the test report to each. This Department keeps one sealed sample of the finished product as a retained sample. The packed containers are stored in an air conditioned room.

14. Standard Pharmaceuticals :

Raw materials and packing materials are sampled by the Quality Control Department and submitted to the Laboratory for testing and approval. The finished product is again sampled by Quality Control for final testing. Quality Control Inspectors of the Company also inspect the various manufacturing and packing operations in order to ensure that standard practices laid down in the operational formulae are being followed.

15. Unichem Labs. :

It has its own analytical laboratory where raw materials as well as finished products are tested before they are relased to market.

16. Wander Pharmed :

All raw materials are tested by M/s Italab. Private Ltd., Bombay and partly by its foreign collaborators. Tests on intermediates are carried out in the factory. Finished goods are again tested by Italab. on regular basis and periodically by its foreign collaborators in Switzerland.

B. **Formulators**

1. Boehringer-Knoll :

Each batch of finished product is analysed and certified by an independent testing laboratory and periodically batches are also sent to foreign collaborators for test. Quality Control of raw material and packing material is undertaken by the testing departments of loan manufacturers.

2. Boots :

Sulphadiazine tabs. and Insulin formulations are organised according to pharmacopoeial methods and in addition the tests as required by the specifications supplied by the English Company are carried out.

3. British Drug House

Constant Quality Control steps are taken in the manufacture of products from the acceptance of raw materials to the certification of finished products. Samples taken during all phases of production are carefully analysed in continuous quality control checks.

4. Burroughs Wellcome :

Insulin:—The bulk Solution Sterilised by filteration is sampled aspectically. Various tests are carried out by their parent Company in U. K. The filled containers are statistically sampled and subjected to tests for sterility, volume filled etc. Antitoxins: These are examined at their source of supply namely Beckenhyam (U.K.) or Zagreb (Yugoslavia) as the case may be. The examination is carried out in respect of potency, sterility, protein content, total solid and pH. Samples of the formulations are tested by its parent Company in U.K. to ensure that the materials conform to their standards.

5. Ciba :

It follows the Standard Pharmacopoeial for testing of raw materials for the manufacture of formulation and for testing finished formulations. The raw materials and finished products are also subjected to many tests ordered and prescribed by their Collaborators, CIBA Ltd., Basle. Finally it sends the samples of active substances and finished formulations to its collaborators from time to time for double check. The specified drug used for the formulations is checked for its contents, purity and suitability. The formulations are assayed for their content of the specified drug.

6. Cilag-Hind :

Every raw material is analysed and taken for processing if it complies with laid down specifications. The quality of semi-finished products at various stages is also checked. The finished product is also tested and analysed.

7. Chemical, industrial and Pharmaceutical Laboratories. (CIPLA). It has a fully equipped (i) chemical control and (ii) biological control laboratories. It has also obtained permission from U. K. Health Ministry for ten of its products to be sold there.

8. Fairdeal Corporation :

Raw materials and auxillary items like ampoules, vials and bottles, are checked by analytical department. The Injectable Department carries out the sterilisation of distilled water and finished products. Distilles water plant is cleaned at every 15 days interval and the water is tested for pyrogen. Toxicity tests are conducted for Liver Extract Preparation. Empty bottles for filling are thoroughly washed on semi-automatic Washing Machine

and are dried at high temperature. Checking of foreign particles is carried out against light before filling. Samples from each batch of formulations are sent to analytical Department for carrying out detailed analysis of active ingredient used in them.

9. Geoffrey Manners :

Raw materials including excipents used in the manufacture of Products are analysed. The intermediate products are also checked, e.g. tabs and granules are checked for active ingredient and liquid for pH. also. The finished products and packing materials are checked.

10. Hindustan Antibiotics :

Formulations are manufactured by taking ingredients which are properly tested both at the raw material and semi-finished stage. Products at all intermediate stages are checked for their potency and properties such as pH, moisture, extinction coefficient etc. and to ensure sterility of the rooms in which the products are manufactured by microbiological methods. Standards prescribed for internal use are very rigorous and fully satisfy the pharmacopoeial standards

11. Hoechst

Raw mterials are thoroughly analysed. An analysis at the intermediate stages is carried out in case of all preparations before they are finally processed. The final preparations are subjected to strict quality control as per the pharmacopoeial and Hoechst Standards. Ampoules, antibiotics, tablets, capsules etc. are inspected individually for the absence of foreign particles on the defective units

12. Kemp & Co. :

All raw materials are analysed and used only if they conform to the required standards. Finished products are analysed and packed into containers after conforming to required standard. During manufacture control is also kept on the disintegrating time of tablets, aseptic condition of the filling room of injections, tablets etc.

13. Mac Labs : :

It follows the recognised Standards or other Standards as advised by the Drugs Controller from time to time.

14. Neo Pharma :

Raw materials prior to employment in the manufacture of formulations are analysed and used only if they are found upto

Standard. Every batch of finished product is checked, controlled and analysed prior to packing and rejected if found defective or not upto Standard. The complaints received after sales are attended to and tests carried out for Quality and Standard. The batch, if any, found not complying with prescribed Standard is withdrawn from the market.

15. Smith Stanistreet :

Raw materials are tested in analytical Laboratories. The raw materials which do not conform to the specified standards of quality are not taken up for manufacture. During manufacture samples are sent from different stages for analysis. These analytical results guide in the processing. The results of analysis are communicated to the respective production units. A few finished packs of every batch of all the preparations are kept in the Quality Control Laboratory for follow up studies.

16. United Pharma :

Raw materials are analysed before they are taken for manufacture. After formulating the finished products are analysed to ensure the quality.

17. U. S. Vitamin :

Every raw material is analysed and taken for processing if it complies with laid down specifications. The quality of semi-finished products at various stages is also checked. The finished product is also tested and analysed. In addition, samples of raw materials and finished products are sent to their principals in U. S. A. for analysis as a double check.

18. Bombay Ideal Products :

It is maintaining a well equipped Laboratory. Standards followed are those which are recognised by the Drugs Authorities.

19. Lyka Labs. :

It has its own Analytical Department and also a small Research Department where it carries out its tests.

20. Medical Products:

Quality Control is maintained through the analytical laboratories approved by the Drugs Controller.

21. Lyovak Labs. :

Raw materials and finished products are tested in Therapeutic Chemical Research Laboratories, Bombay.

22. Pharma Medico :

23. Retort Labs :

24. Binichem :

The quality control of raw materials and formulations for these three units are attended to by Italab Private Ltd., Bombay.

17.10 The Drugs and Equipment Standards Committee appointed by Government in October 1962 made a survey of sub-standard drugs. The survey covered a period of five years from 1959-60 to 1963-64 and in case of the last mentioned years upto September 1963. The State Drugs Control Authorities had reported a total of 25,767 samples which had been analysed out of which 5,264 were found to be sub-standard. Over these years the percentage of sub-standard drugs works out to 20.4 or almost one fifth of the total samples analysed. Figures for the complete year 1963-64 and the years 1964-65, 1965-66, 1966-67 and 1967-68 were also obtained subsequently from the Drugs Controller (India) and these have also been substituted for 1963-64 and added to the figures extracted from the Report of the Drugs and Equipment Standards Committee. The break-down of the categories of drugs analysed, the number of samples and those found sub-standard together with percentages are as given in Table 17.1.

TABLE 17.1

(i) *Details of samples of drugs analysed by the Drugs and Equipment Standards Committee and subsequently furnished by the Drugs Controller*

Sl. No.	Category of drugs	Year	Total samples analysed	Total No. of samples found sub-standard or defective	Percentage
1	2	3	4	5	6
1	Vitamins . . .	1959-60	1121	414	36.9
		1960-61	1188	382	32·2
		1961-62	1004	261	26·0
		1962-63	970	229	23·6
		1963-64*	1210	258	21·3
		1964-65%	1091	209	19·1
		1965-66@	1250	196	15·7
		1966-67£	742	128	17·2
		(9 months) Total	8576	2077	24·2

TABLE 17·1—*Contd.*

1	2	3	4	5	6
2	Hormones . .	1959-60	8	5	62·5
		1960-61	46	4	8·7
		1961-62	47	11	23·4
		1962-63	57	8	14·0
		1963-64*	48	12	25·0
		1964-65%	63	4	6·3
		1965-66@	70	4	5·7
		1966-67£	175	14	8·0
		(9 months) TOTAL	514	62	12·1
3	Antibiotics . .	1959-60	149	24	16·1
		1960-61	136	11	8·1
		1961-62	273	21	7·7
		1962-63	319	28	8·8
		1963-64*	267	22	8·2
		1964-65%	211	15	7·1
		1965-66@	670	38	5·7
		1966-67£	469	25	5·3
		(9 months) TOTAL	2494	184	7·4
4	Insulin . . .	1959-60	3	1	33·3
		1960-61	..	..	..
		1961-62	..	..	..
		1962-63	13	1	7·7
		1963-64*	21	1	6·2
		1964-65%	41	1	2·4
		1965-66@	28	2	7·1
		1966-67£	24	2	8·3
		(9 months) TOTAL	130	8	6·2
5	Biological Products .	1959-60	100	26	26·0
		1960-61	74	20	27·0
		1961-62	95	21	22·1
		1962-63	119	29	24·4
		1963-64*	161	23	14·3
		1964-65%	107	6	5·6
		1965-66@	97	15	15·5
		1966-67£	164	30	18·2
		(9 months) TOTAL	917	170	18·5

TABLE 17·1—*Contd.*

1	2	3	4	5	6
6	Chemotherapeutics .	1959-60	309	48	15·5
		1960-61	369	59	16·0
		1961-62	389	52	13·4
		1962-63	124	24	19·4
		1963-64*	191	28	14·7
		1964-65%	239	34	14·2
		1965-66@	296	36	12·2
		1966-67£	367	38	10·4
		(9 months) TOTAL	2284	319	14·0
7	Galenicals . .	1959-60	1008	176	17·5
		1960-61	1179	128	10·9
		1961-62	921	85	9·2
		1962-63	1134	124	10·9
		1963-64*	1002	81	8·1
		1964-65%	286	56	19·6
		1965-66@	260	49	18·8
		19666-67£	515	39	7·6
		(9 months) TOTAL	6305	738	11·7
8	Other Misc. Drugs .	1959-60	2162	397	18·4
		1960-61	2298	436	19·0
		1961-62	2376	478	20·1
		1962-63	2418	884	36·6
		1963-64*	2640	591	22·4
		1964-65	2184	452	20·7
		1965-66	2332	440	18·9
		1966-67	2438	425	17·4
		(9 months) TOTAL	18848	4103	21·8

* Excluding the States of Kerala and Uttar Pradesh.

% Do Bihar, Punjab and Uttar Pradesh.

@ Do Andhra Pradesh, Bihar, Punjab, Uttar Pradesh, Manipur.

£ Do Haryana, Kerala, Punjab, Rajasthan, Uttar Pradesh, Himachal Pardesh and Manipur.

TABLE 17·1—*Concld.*

(ii) *Summary for the period* 1959-60 *to* 1967-68.

Sl. No.	Category of Drugs	Total samples Analysed	Total samples found sub-standard	Percentage
1	Vitamins	8576	2077	24·2
2	Hormones	514	62	12·1
3	Antibiotics	2494	184	7·4
4	Insulin	130	8	6·2
5	Biological Products	917	170	18·5
6	Chemotherapeutics	2284	319	14·0
7	Galenicals	6305	738	11·7
8	Other Misc. Drugs	18848	4103	21·8
	GRAND TOTAL . .	40068	7661	19·1

17.11. The State-wise break-down of the above data is as follows:—

TABLE 17.2

(i) *State-wise details of drugs analysed and found sub-standard*

Sl. No.	State	Year	Total No. of samples analysed	Total No. of samples found sub-standard	Percentage
1	2	3	4	5	6
1	Andhra Pradesh . .	1959-60	..	..	..
		1960-61	..	..	..
		1961-62	..	..	..
		1962-63	61	27	44·3
		1963-64	34	9	26·7
		1964-65	101	37	36·6
		1965-66	..	..	..
		1966-67	294	52	17·7
		TOTAL . .	490	125	25·5

TABLE 17·2—*Contd.*

1	2	3	4	5	6
2	Assam	1959-60	1	1	100
		1960-61	..	..	..
		1961-62	6	5	83·3
		1962-63	20	7	35·0
		1963-64	27	9	33·3
		1964-65	4	1	25·0
		1965-66	37	11	29·7
		1966-67	46	13	28·3
	TOTAL .		141	47	33·3
3	Bihar	1959-60	120	20	16·7
		1960-61	30	23	76·7
		1961-62	..	..	..
		1962-63	..	..	..
		1963-64	76	17	22·4
		1964-65	..	..	..
		1965-66	..	..	..
		1966-67	..	..	..
	TOTAL .		226	60	26·5
4	Bombay (Maharashtra) .	1959-60	2346	725	30·9
		1960-61	1847	421	22·8
		1961-62	1744	317	18·1
		1962-63	1839	600	32·6
		1963-64	1807	308	17·0
		1964-65	1858	294	15·8
		1965-66	1789	223	12·5
		1966-67	1438	138	9·6
	TOTAL .		14668	3026	20·6
5	Gujarat	1959-60	..	..	..
		1960-61	661	204	30·9
		1961-62	915	237	25·9
		1962-63	847	220	26·0
		1963-64	804	101	22·5
		1964-65	919	157	17·1
		1965-66	1363	229	16·8
		1966-67	1291	221	17·1
	TOTAL .		6800	1449	21·3

TABLE 17·2—*Contd.*

1	2	3	4	5	6
6	Kerala	1959-60	3	2	66·6
		1960-61	7	4	57·1
		1961-62	26	7	26·9
		1962-63	97	19	19·6
		1963-64	..	..	..
		1964-65	168	39	23·2
		1965-66	208	37	17·8
		1966-67	..	..	..
	TOTAL .		509	108	21·2
7	M. P.	1959-60	63	20	31·7
		1960-61	201	72	35·8
		1961-62	190	33	17·3
		1962-63	101	15	14·9
		1963-64	135	44	32·6
		1964-65	98	29	29·6
		1965-66	221	65	29·4
		1966-67	209	59	28·2
	TOTAL .		1218	337	27·8
8	Madras	1959-60	228	65	28·5
		1960-61	169	27	16·0
		1961-62	169	57	33·7
		1962-63	433	126	29·1
		1963-64	293	79	27·0
		1964-65	321	49	15·3
		1965-66	554	44	7·9
		1966-67	460	58	12·6
	TOTAL .		2627	505	19·2
9	Mysore	1959-60	7	2	28·6
		1960-61	87	22	25·3
		1961-62	264	41	15·5
		1962-63	283	86	30·4
		1963-64	278	62	22·3
		1964-65	335	81	24·2
		1965-66	354	75	21·2
		1966-67	701	80	11·4
	TOTAL .		2309	449	19·5

TABLE 17·2—*Contd.*

1	2	3	4	5	6
10	Orissa	1959-60	5	3	60·0
		1960-61	4	2	50·0
		1961-62	7	2	28·6
		1962-63	50	20	40·0
		1963-64	79	32	40·5
		1964-65	51	22	43·1
		1965-66	48	20	41·7
		1966-67	95	45	47·4
	TOTAL .		339	146	43·1
11	Punjab	1959-60	1271	94	7·4
		1960-61	1211	103	8·5
		1961-62	840	63	7·5
		1962-63	1044	74	7.1
		1963-64	1639	206	12·6
		1964-65	..	..	..
		1965-66	..	..	..
		1966-67	..	..	..
	TOTAL .		6005	540	9·0
12	Rajasthan . . .	1959-60	..	..	..
		1960-61	82	3	3·6
		1961-62	65	6	9·2
		1962-63	104	50	48·1
		1963-64	97	14	14·4
		1964-65	50	10	20·0
		1965-66	19	8	42·1
		1966-67	..	..	..
	TOTAL .		417	91	21·8
13	Uttar Pradesh . .	1959-60	453	57	12·6
		1960-61	619	78	12·6
		1961-62	635	87	13·7
		1962-63	..	..	..
		1963-64	..	..	..
		1964-65	..	..	..
		1965-66	..	..	..
		1966-67	..	..	..
	TOTAL .		1707	222	13·0

TABLE 17·2—*Contd.*

1	2	3	4	5	6
14	West Bengal . . .	1959-60	75	26	34·7
		1960-61	80	16	20·0
		1961-62	52	26	50·0
		1962-63	71	10	14·1
		1963-64	91	19	20·9
		1964-65	109	19	17·4
		1965-66	162	15	9·3
		1966-67	258	20	7·8
		TOTAL	898	151	16·8
15	Delhi	1959-60	288	76	26·4
		1960-61	292	65	22·3
		1961-62	192	48	25·0
		1962-63	189	72	38·1
		1963-64	180	36	20·0
		1964-65	206	38	18·4
		1965-66	247	53	21·5
		1966-67	94	12	12·7
		TOTAL	1688	400	23·7
16	H. P.	1959-60	..	..	..
		1960-61	..	..	..
		1961-62	..	..	..
		1962-63	2	Nil	..
		1963-64	...	...	..
		1964-65	...	...	...
		1965-66	...	...	..
		1966-67	...	...	...
		TOTAL	2	Nil	Nil
17	Manipur . . .	1959-60	..	..	..
		1960-61	..	..	..
		1961-62	..	..	..
		1962-63	4	1	25·0
		1963-64	..	...	..
		1964-65	..	..	..
		1965-66	..	..	...
		1966-67	..	..	...
		1967-68	..	...	..
		TOTAL	4	1	25·0

TABLE 17·2—*Contd.*

1	2	3	4	5	6
18	Tripura . . .	1959-60	..	..	..
		1960-61	..	..	..
		1961-62	..	..	..
		1962-63	8	Nil	..
		1963-64	—	..	..
		1964-65	..	—	—
		1965-66	—	—	—
		1966-67	..	..	—
		TOTAL	8	Nil	—
19	Goa	1964-65	2	1	50·0
		1965-66	1	Nil	—
		1966-67	..	..	..
		TOTAL	3	1	33·3
20	Pondicherry . .	1964-65	..	..	..
		1965-66	—	—	—
		1966-67	9	3	33·3
		TOTAL	9	3	33·3

(ii) *Summary for the period* 1959-60 *to* 1966-67

Sl. No.	State	Total No. of samples analysed	Total No. of samples found defective	Percentage
1	2	3	4	5
1	Andhra Pradesh	490	125	25·5
2	Assam	141	47	33·3
3	Bihar	226	60	26·5
4	Maharashtra (Bombay) . .	14,668	3,026	20·6
5	Gujarat	6,800	1,449	21·3
6	Kerala	509	108	21·2
7	Madhya Pradesh	1218	337	27·8
8	Madras	2627	505	19·2

TABLE 17·2—*Concld.*

1	2	3	4	5
9	Mysore	2309	449	19·5
10	Orissa	339	146	43·1
11	Punjab	6005	540	9·0
12	Rajasthan	417	91	21·8
13	West Punjab	1707	222	13·0
14	West Bengal.	898	151	16·8
15	Delhi	1688	400	23·7
16	Himachal Pradesh . . .	2	..	..
17	Manipur	4	1	25·0
18	Tripura	8	..	..
19	Goa . .	3	1	33·3
20	Pondicherry	9	3	33·3
	GRAND TOTAL . .	40068	7661	19·1

17.12. In so far as the data furnished by the Drugs Controller (India) is concerned it is not complete as all the States have not reported. Efforts were made to find out the extent to which the sub-standard drugs were detected in the case of large scale units as compared to those for all the small scale units but no such classification was available. It was also not possible to find out how many of these sub-standard drugs were sold by the generic names and how many by brand names.

17.13. The percentages of sub-standard drugs detected over these years give cause for a certain degree of alarm. The overall percentages during these years work out to 19.1 for sub-standard drugs and for individual years these were as follows:—

1959-60	20·2
1960-61	19·4
1961-62	17·2
1962-63	28·8
1963-64	18·3
1964-65	18·4
1965-66	15·6
1966-67	14·3
1967-68 (9 months)	14·5

The number of samples analysed during these years has been within the range of 4,222 (1964-65) and 5,540 (1963-64). With the increase in the turn-over from about Rs. 70 crores in 1959-60 to Rs. 190 crores in 1967 the number of samples analysed has instead of going up come down. In order to have a more correct picture of the extent to which substandard drugs are being produced in the country it would be desirable to have analyses separately for generic as well as brand name products and also by units in the large scale as well as in the small scale sectors.

CHAPTER 18

RESEARCH AND DEVELOPMENT

18.1. The administration of medicine for the alleviation of human suffering from disease was according to age old practice based on well-tried medicaments which had proved the test of time over centuries. Both Western as well as Eastern systems of medicine until the beginning of the century relied upon the findings of ancient physicians and even if current experiments pointed any path for departure practitioners of medicine were cautious in taking it. Today the position is reversed. No manufacturing unit can hope to survive until it can discover newer and more effective drugs. The progress made during the last 33 years in the field of therapeutic medicine by the discovery of sulphanamides, antibiotics and sedatives has nevertheless touched only the fringe of the total pathology to which the human body is prey. A very broad field for vast discoveries has therefore become open to mankind. For the drug industry has only recently moved from the stage of compounding of herbs, phytochemicals and a few animal products to the harnessing of synthetic chemicals for finding remedies which while being effective in destroying certain organisms which attack the human body do not cause any lasting injury to the host which shelters the disease. But no drug if it is effective in the control of disease can be totally harmless for the tissues in which the disease flourishes. Most of the modern research in drugs is therefore concentrated on the discovery of such drugs which may destroy the harmful organisms and yet have the least deleterious effect on the human bio-chemical mechanism.

18.2. The question is sometimes asked why research is more important for the pharmaceutical industry than for other industries. It has generally been recognised that during the last thirty years or so the span of human life has been significantly increased as a result of the discovery of many life saving drugs; many epidemic and endemic diseases have almost been wiped out and a large number of them have been controlled. In India alone, it is said, the use of the newer drugs has had the effect of doubling the expectation of life of the average citizen. With the furtherance of the continuance of war on disease it is essential to find newer and more potent drugs for which relentless and intensive research is necessary. Such research can be conducted only by organisations which

21—1 T. C. Bom./70

are equipped with the necessary laboratories and animal houses and command the services of a host of research workers. Owing to the involvement of workers from different scientific disciplines and the need for diverse and costly equipment and accommodation heavy outlays are occasioned. None of the leading drugs which are in use to-day existed thirty years ago and those which were in use before 1935 have a minimum medicinal utility to-day. It is not possible therefore to rely only on what has been done in the brief span of 30 or 33 years. We may be on the threshold of great therapeutic discoveries and intensive but wide ranging activity has to be maintained to conserve human life and to combat the myraid varieties of disease that attack the human organism.

18.3.1. The organisms which cause disease in man, may, broadly speaking, be divided into five main groups, namely, viruses, bacteria, fungi, protoza and helminths. In historical times when scientific investigation had not been established, human beings were likely to have been used for the purpose of experimentation on purely selective principles. With the level of social consciousness that exists today it is neither moral nor legal to do so and the basic experiments have therefore to be made over a long period and in countless number of other organisms. Anti-biological activities are studied on exprimentally infected animals. Anti-bacterial, anti-fungal and anti-protozal activities can be detected in chemical laboratory test tubes and with greater certainty on experimentally infected animals. But for certain protozoa such as malarial parasites, even this is not possible. Anti-malarial drugs have therefore to be administered to animals and birds experimentally infected with parasites similar to human malarial parasites. Evolving a new medicine is therefore a highly organised work of a team of scientists who have to follow a specific programme over a number of years. The research team has to consist of persons who are qualified in the fields of chemistry, physical chemistry, bio-chemistry, pharmacology, physiology, pathology, pharmacy, endocrinology, microbiology, bacteriology, virology, parasitology and botany. Any biologically active substance must have toxic properties. Otherwise it would not be effective against pathogens which cause disease. Therefore, with the help of thousands of experiments, it is necessary to discover such compounds which may be effective in the case of a certain disease but may not have any adverse pharmacological action on the host tissue or organism. By and large the majority of the experiments are made on animals but that is not the end. After discovery the drug has to be carefully and in measured doses administered to human beings in order to discover any adverse side effects which it may not have been possible to ascertain in the case of animal tests. In certain cases drugs which

were found effective in animal tests resulted in causing violent headache, nausea and noise in ears when administered to human patients. It is possible that the same reactions may have occurred in the case of the animals too but could not be ascertained owing to lack of communication of such subjective experiences. There are more than fifty known pharmacological actions and many of these are difficult to investigate. At the initial stage the object of screening is to reject useless material as soon as possible. It has been found that sometimes a single drug requires screening of between 3,000 to 4,000 new substances or compounds and the conduct of 30 to 40 thousand biological tests. Of the total number of compounds synthesised, about 30 to 40 may show some promise for further study and after intensive toxicity tests only three to four may be suitable for further clinical trials on humans and of them finally one may or may not prove good enough to be marketed. Screening is therefore a tedious, time consuming and expensive process. There are no other short cuts.

18.3.2. It has been accepted on all sides that research is the main means of survival in the highly competitive business of the manufacture of drugs. It is all the more essential for maintaining any sizeable export market. While research made elsewhere can be purchased for the requirement of the domestic market, existence of substitute competition in this industry makes it necessary to rely on innovation for the success in the export market.

18.4. In other fields of economic endeavour, research is not directly concerned with human life but with artifacts or commodities and no elaborate precautions are required before putting out a product in the market since no risks to human life are involved. But drugs concern human life and its safety, and a great deal of preparation has to be made before launching a new therapeutic agent for combating disease.

18.5. It is said sometime that there is not enough justification for the heavy outlays made by individual drug manufacturing companies on research and that a great deal of the effort results in waste. It is argued that research often undertaken with little therapeutic justification, is exceptionally risky, succeeds only in producing a small proportion of substances tested and these are likely to be superseded even before the research expenditure has been recovered. Research outlays are usually so large that a number of undesirable practices have to be resorted to recover them by such means as brand names, patients and promotion and therefore the industry seeks inordinately heavy profits on the

pretext of having to make up for outlays on research. It is at times said that the industry concentrates its effort on finding a new drug whereas the need is for fundamental biological and bio-chemical research to discover the secrets of nature and of disease, that firms devote much of their time to developing variations with the existing drugs which may have no greater efficacy. With the motive being profit and the promotion of sales of new medicines, companies prematurely launch their discoveries in disregard of the safety or efficacy of the drugs.

18.6. It is suggested that research should more successfully and cheaply be conducted jointly by a number of units in the industry or by academic institutions given adequate funds. This matter has been debated for some time and divergent views have been expressed. As regards joint research the discovery of new drugs is the only sustaining factor for the company and no unit can afford to share its discoveries with others or make common cause of its inventions. It is beyond the limits of possibility to attempt to have joint schemes of applied research to be utilised by individual units.

18.7. As to research being conducted by academic institutions the position today is that academic research is oriented towards increase of the fund of basic knowledge while commercial research has more specific purposes in view such as location of disease areas where there is no effective treatment or there is scope of improving the treatment. In the process of researches for such specific purposes the research team may come upon discoveries which may further fundamental knowledge also. On the other hand it is very unlikely that in the course of research into basic principles effective therapeutic agents may be discovered without conducting elaborate experiments on animals or in the laboratory. Nevertheless academic research is some times the base from which research into therapeutic agents is launched. Screening of chemicals is very expensive and involves a long process and cannot be undertaken unless there is a definite goal orientation for a specific purpose. An academic institution would need a very large staff indeed and very specific goals sometimes almost similar to those of commercial organisations in order to achieve results aimed by drug manufacturers. It has been aruged that even in the case of the largest academic or government financed laboratories it is not possible to harness the resources of men and material which are available to large industrial research laboratories for specific purposes such as screening for large scale pharmacological testing or the syntheses of a vast number of analogues with the aim of improving one or the other of the property of a drug. The academic laboratory is designed to break new ground for a better understanding of the

laws of nature and lays the basis for eventual industrial exploitation of scientific discoveries which emanage from its work. The two fields of research are therefore complementary and not mutually exclusive. But these are not interchangeable.

18.8. It is estimated that all over the world the drug industry spends from Rs. 350 crores to Rs. 400 crores a year on research and development. Some of the leading drug manufacturing countries in the world spent the following amounts in one of the recent years.

Country	Year	Amount (in crores of Rs.)	Percentage on sales turnover.
U.S.A.	1966	267	11
Japan	1965	36	5
U.K.	1965	22	11
Switzerland	1965	36	10

Over the last ten years preceding 1964 research expenditure in U.S.A. increased by 205 per cent while sales went up by 70 per cent only. During the same period every new drug marketed had to carry in its pricing policy about Rupees three crores in research and development. Between the years 1963 and 1965 expenditure rose by about Rupees 8.3 crores in U. K. and registered an increase of 33 per cent.

In the period of 1940-66 the new single chemical entities introduced by the following countries are mentioned against each:

Country of origin	No. of products solely national origin
1	2
United States	505
Switzerland	54
Germany	39
United Kingdom	36

1	2
France	22
Denmark	11
Mexico	9
Holland	9
Sweden	8
Belgium	6
Japan	6
Austria	3
Canada	3
Hungary	2
Czechoslovakia	1
Europe	1
Argentina	1
Australia	1
India	1
Italy	1
TOTAL	719

18.9. In U. S. A. there are three companies with budgets of more than Rs. 18 crores a year on research and five more companies which spend between Rs. 9 and 18 crores a year. In U. K. one company namely, Burroughs Wellcome spends about Rupees five crores a year on research and two others namely Glaxo and Beecham each spend Rs. 2.7 crores annually. It is claimed that a staff of between 800 and 1,000 research employees is about the largest which can be effectively controlled in one establishment.

18.10. A basic research unit must have a certain minimum size below which it is likely to be ineffective. For there are many scientific disciplines which are involved and a minimum complement of representatives from each is necessary. A fairly large capital investment is also required. It has been estimated that no company can have a substantial stake in a particular field of pharmaceutical research with less than about two crores of rupees a year and even on a modest scale Rs. 15 to Rs. 20 lakhs are needed by the smallest of research units. The Indian Chemical Manufacturers' Organisation has stated that the lack of initiative in investing in fundamental research is due to lack of economic incentive afforded to such an activity. In its view pharmaceutical research needs not only a very considerable expenditure over a long period over which

it has to be recovered and unless measures for tax relief are introduced or adequacy of profits is assured there would be disinclination to undertaking research. It has been suggested that Government should provide suitable incentives for investment in research. The Indian Pharmaceutical industry relies mostly on the results of basic research carried out by the major drug companies abroad through collaboration agreements or licensing.

18.11. From the replies received we find that there are only 11 units in India which have made an outlay of more than rupees one lakh annually on research. Particulars of these units together with those of the unit which spends the largest amount on research in the descending order of the outlay made in the year 1966-67 are as follows :

TABLE 18.1

Expenditure on Research and Development

	Name of the Unit	Expendiure on Research (Lakh Rs.)	Total Turnover (Lakh Rs.)	Percentage (%)
1	Ciba	59·58	994	6·0
2	Alembic Chemical	21·67	627	3·5
3	Hindustan Antibiotics	16·85	717	2·4
4	Pfizer	7·10	1270	0·56
5	Glaxo Labs.	4·26	1645	0·26
6	East India Pharmaceutical	3·75	263	1·4
7	Cynamid	3·32	504	0·66
8	Bengal Immunity	3·20	224	1·42
9	Sarabhai Merck	1·83	233	0·79
10	Chemo-Pharma	1·20	69	1·7
11	Bio-chemical and Synthetic	0·24	7	3·4
		123·00	6553	1·9

By Western standards of outlay on research the amounts spent are almost insignificant and there is only one unit which makes a reasonable outlay.

18.12. The Central Drug Research Institute of Lucknows the Regional Research Laboratory, Jammu, The Central Medical Plants Organisation, The National Chemical Laboratory, Poona and the Regional Research Laboratory at Hyderabad are some of the research institutes financed by the Government. The annual outlay of the Central Drug Research Institute was Rs. 45.02 lakhs (actual expenditure) for the year 1967-68 and Rs. 48.73 lakhs (estimated expenditure) for the year 1968-69. Similar figures for the Regional Research Laboratory, Jammu are Rs. 35.90 lakhs and Rs. 35.94 lakhs respectively. Separate figures for research on drugs in respect of the National Chemical Laboratory are not available. But, the overall expenditure for all activities is Rs. 69.2 lakhs for 1967-68 and Rs. 79.9 lakhs (estimated) for 1968-69. Similar data for the other Institutions are not available.

18.13. No significant research activity in the pharmaceutical field by any of the universities or academic institutions could be ascertained. Research activity has been so insignificant in our country that very few drugs have been included in the Pharmacopoeia on the basis of researches conducted exclusively within the country. The Hindustan Antibiotics has produced four new Antibiotics, Hemycin, Dermostatin, Aureofungin and Antiomoebin. The first two are fungicides against human diseases. They have been leased to Sherman Laboratories of U. S. A. for exploitation in U. S. A., Canada, Latin America, South America, Australia and Japan. The third item is useful against plant diseases caused by fungi. It will replace synthetic fungicides based on copper, a scarce metal, and protect grapes, rice, potato and several other cash crops. The last drug is an antibiotic having antiprotozoal and antihelminitic properties and is both for men and animals. It has been leased to another American firm, Upjohn of U. S. A. for exploitation in the world market.

18.14. The final question which arises in this connection is what facilities and allowances need to be given for the conduct of research and in what manner? It has been stated by the OPPI that much of the research is abortive but must nevertheless be paid for. Some products of research have their limited market with a price that would never cover the cost of research of these drugs. Research, in the view of the organisation, can only be financed from the profits and the primary objective must be to earn sufficient profits in the business as a whole each year to sustain a research programme which on a long term basis without being subject to the changing fortunes of the companies' activities. The Organisation has quoted in support of its contention views of

economists expressed elsewhere. It has, for instance, mentioned that according to one view research outlays should be regarded as akin to debenture capital constituting a prior charge on any surplus profit. A research oriented firm depends on its innovational output for its very existence and once a certain level has been reached there is no choice left but to increase the activity. According to another view, research outlay should be considered not as incidental overheads to be written off against revenue but as capital investment in the same way as investment in building and grants.

18.15. On behalf of units which have a major capital participation of foreign based companies, it was argued that part of the profits transmitted to the principals was utilised for financing research activities of these organisations which resulted in the discovery of new drugs. It was therefore argued that while there was no research activity conducted in the subsidiaries within this country, the parent organisations were making large outlays on research which had to be provided for. There was no other means for doing so except by meeting it from profits. They have allocated their rate of return in such a way that part of the outlay on research by the parent organisations could be financed. It would be observed that in seven out of 11 units mentioned in Table 18.1 the expenditure on research is less than 2 per cent of the turnover. It cannot also be assumed that this small outlay is adequate to maintain these units in business. In so far as the units operating in India are concerned, these could be classified into the following categories.

(1) Units making outlay on research

(i) With research based in India,

(ii) With the research based outside the country where the principals make outlay and meet the cost partly from the profits of the subsidiaries, and

(2) Units not making any outlay on research but having collaboration agreements or licences for exploitation of patents held by others.

In so far as units falling under category (2) are concerned, the licence fees or fees paid towards collaboration agreements would be included in the costs. As regards units falling under category (1) (i) are concerned, in this case also the relative expenditure on research would equitably be allocated to the cost of drugs.

In the case of units coming under category (1) (ii) that is, those units which have set up subsidiaries or major capital participation firms in India, there is room for argument as to if and what provision should be for their research activities which are based abroad. It is however not possible for us to determine the quantum of expense if any, which should be allocated to the activity of the firm in India, and the question of any addition to the cost on this account does not arise.

CHAPTER 19

DUTIES AND OTHER GOVERNMENT LEVIES

19.1. **Import duty :**

19.1.1. Drugs and medicines are assessed to Customs duty under the General Item No. 28 of the First Schedule of the Indian Tariff Act, 1934, commonly called, the Indian Customs Tariff Schedule. This item covers chemicals, drugs and medicines of all sorts not otherwise specified. The rates of duty are 60 per cent *ad valorem* standard and 50 per cent *ad valorem* preferential, while under Notification No. 104 Customs dated 6th June, 1966, the effective rates have been reduced to 50 per cent *ad valorem* standard and 40% *ad valorem* preferential. Under separate notifications certain drugs falling under this item are allowed to be imported at concessional rates of duty as indicated in Table 19.1. :—

TABLE 19.1

Concessional rates of duty on drugs

Name of the article	Concessional rates of duty	Number of relevant Notification(Customs) of Govt. of India
1	2	3
Crude Aureomycin . . .	20 per cent *ad-valorem* (Standard) and 10 per cent *ad valorem* (preferential)	81 of 1957 read with 105 of 1966.
Crude Penicillin . . .	Same duty as under Item No. 28(26) for Penicillin in bulk.	35 of 1954.
Mixtures of two or more sulpha drugs and combinations of sulpha drugs and antibiotics, in any form free from other therapeutic ingradients.	27½ per cent *ad valorem* (Standard) and 17½ per cent *ad valorem* (Preferential)	19 of 1964 read with 26 of 1963 and 105 of 1966.

TABLE 19·1—*Contd.*

1	2	3
Mixture of two or more antibiotics in any form free from other therapeutic ingredients.	27½ per cent *ad valorem* (Standard) 17½ per cent *ad-valorem* (Preferential).	168 of 1954 read with 40 of 1957, 26 of 1963 and 105 of 1966.
Crude vitamin B. 12 . . .	20 per cent *ad valorem* (Standard) 10 per cent *ac valorem* (Preferential)	24 of 1960 read with 80 of 1963, 171 of 1963 and 105 of 1966.
Amodiaquin Hydrochloride .	27½ per cent *ad valorem* (Standard) 17½ per cent *ad valorem* (Preferential).	124 of 1965 read with 105, 188 and 204 of 1966.

Patent or proprietary medicines not containing alcohol, opium, Indian hemp or other narcotic drugs are assessed to duty under item No. 28 A of I. C. T. Schedule. The rates of duty are 60 per cent *ad valorem* (Standard) and 50 per cent *ad valorem* (Preferential).

19.1.2. The same rates as for basic drugs apply to drugs and medicines under brand names. These have been referred to as "Patent or Proprietory medicines" and have been defined as "any drug or medicinal preparation, in whatever form, for use in the internal or external treatment of, or for the prevention of ailments in, human being or animals, which bears either on itself or on its container or both, a name which is not specified in a monograph in Pharmacopoeia, Formulary or other publication notified in this behalf by the Central Government in the Official Gazette, or which is a brand name, that is a name or a registered trade mark under the Trade and Merchandise Marks Act, 1958 (43 of 1958), or any other mark such as symbol, monogram, label, signature or invented words or any writing which is used in relation to that medicine for the purpose of indicating or so as to indicate a connection in the course of trade between the medicine and some person having the right either as proprietor or otherwise to use the name or mark with or without any indication indicating of the identity of that persons."

19.1.3. Drugs and medicines falling under other items of Indian Customs Tariff are subject to the rates given in Table 19.2.

TABLE 19.2

Rates of import duty on drugs and medicines falling under items other than 28 (I. C. T.)

Item No.	Drug	Rate of duty	Remarks
28(26)	A Penicillin in bulk	60 per cent *ad valorem* (Standard) 54 per cent *ad valorem* (Preferential)	Concessional rates under Notification No.117-Customs of 1965 are 26 per cent *ad valorem* (Standard) and 20% *ad valorem* (Preferential).
28(26)	A Penicillin and its products not otherwise specified	60 per cent *ad valorem* 54 per cent *ad valorem* (Preferential)	Concessional rates under Notification No. 117 Customs of 1965 are 30 per cent *ad valorem* (Standard) and 24 per cent *ad valorem* (Preferential)
28(27)	Antibiotics, such as Streptomycin, gramicidin, tyrocidine and tyrothricin and preparations which contain only one antibiotic and are free from other therapeutic ingredients but not including penicillin bulk and penicillin and its products specified in Items Nos. 28(26) and 28(26A).	60 per cent *ad valorem* (Standard) and 54 per cent *ad valorem* (Preferential).	Concessional rates under Notification No. 117 Customs of 1965 are 20 per cent *ad valorem* (Standard) and 14 per cent *ad valorem* (Preferential).
28(28)	(a) Sulpha drugs and preparations which contain only one sulpha drug and are free from other therapeutic ingredients.	60 per cent *ad valorem* (Standard) and 54 per cent *ad valorem* (Preferential).	Do.
28(28)	(A) Vitamins and vitamin preparations excluding fish liver oil free from other therapeutic ingredients.	60 per cent *ad valorem* (Standard) 54 per cent *ad valorem* (Preferential)	Concessional rate under Notification No. 98-Customs of 1968 are 20 per cent *ad valorem* (Standard) and 17 per cent *ad valorem* (Preferential).

TABLE 19.2—*Contd.*

1	2
The following are GATT items:	
(i) Penicillin in bulk . . .	[I. C. T. item No. 28(26)]
(ii) Penicillin and its . . .	[I. C. T. item No. 28(26A)]
(iii) Antibiotics such as Streptomycin, gramicidin, tyrocidine and tyrothricin.	[I. C. T. item No. 28(27)]
(iv) Sulpha drugs and vitamin preparations excluding fish liver oil: Vitamin A and E excluding fish-liver oil.	[I.C. T. items 28(28) (a) and 28(28) (b)]
(v) Patent or proprietery medicines as defined in clause (d) Section 3 of the Drugs Act, 1940 not containing spirit.	[I. C. T. item 28A]

19.1.4. The current rates of Customs duty leviable on the specified basic drugs under our investigation and their formulations are as follows:—

TABLE 19.3

The current rates of Customs duty on the specified basic drugs and the formulations

Sl. No.	Drug	I.C.T. Item No.	Rates of Duty Standard %	Customs Duty Preferential %
1	2	3	4	5
1	Vitamin A	28(28)(b)	20	17
2	Vitamin B-12.	28	20	17
3	Vitamin C	28(28)(b)	20	17
4	Sulphadiazine	28(26)(a)	20	14
5	Penicillin	28(26)		
6	Streptomycin	28(27)	26	20

TABLE 19.3—*Contd.*

1	2	3	4	5
7	Chloramphenicol	28(27)	26	20
8	Tetracyclines	28(27)		
9	Amodiaquin	28	27·5	17·5
10	Chloroquin	28	50	44
11	Iodo-chlor-hydroxy-quinoline . .	28		
12	Chlorpropamide	28		
13	Tolbutamide	28		
14	Insulin	28	50	40
15	I. N. H.	28		
16	P. A. S.	28		
17	Tetanus Anti-toxin . . .	28		
18	Prednisolone	28		

Formulations

Preparations of the above basic drugs except Penicillin are also assessed to the same rates as drugs. In addition, the formulations attract the countervailing excise duty at the rates of 7.5% except in the case of I. N. H., P. A. S., Insulin, Iodo-chlor-hydroxy-quinoline, Penicillin and Streptomycin (including Dihydro-streptomycin) in their pure form or as salts or derivatives or in combinations amongst themselves or with any other medicine mentioned above, where the rate of excise duty is 2½ per cent only. There is no Excise duty on Tetanus Anti-toxin. Penicillin if in a prepared form attracts customs duty at 50 per cent *ad valorem* (standard) and 40 per cent *ad valorem* (preferential) plus countervailing duty.

19.1.5. *Import duty on raw materials and intermediates*

Most of the basic chemicals and intermediate products required by the industry fall under the General Item for chemicals, i.e. Indian Customs Tariff Item No. 28. The current rates of Customs duty applicable are 50 per cent *ad valorem* standard and 40 per

40pcent *ad valorem* preferential. Some of the chemicals and intermediates imported under this item are allowed on concessional rates of duty at different rates under notifications issued from time to time by the Ministry of Finance. The rates of import duty on raw materials and intermediates arranged in the descending order of incidence are as given in Table 19.4.

TABLE 19.4

Rates of import duty on raw materials and intermediates

Sl. No.	Name of raw material/intermediates	ICT item No.	*Rate of duty* %	
			Standard	Preferential
1	Blue & Red dyes	30	100	..
2	Filter Paper Folic Acid	44	100	..
3	Gelatin	21(1)	100	..
4	Lemon Yellow Colour	30	100	90
5	Alcohol (Isopropyl and Methyl)	22(4)	50	..
6	Beet Molasses	17(1)	50	..
7	Benzo-Cain	28	50	40
8	Brewers Yeast	87	50	...
9	Calcium Hypophosphite	28	50	40
10	Cetyle Alcohol	28	50	40
11	Cotton Seed Meal	87	50	...
12	Dibonzeyl Tartaric Acid	28(8)	50	...
13	Etharan	28	50	...
14	Gam Acacia	13(4)	50	..
15	Gum Benzoila (siam)	13(4)	50	40
16	Hedroxycobalmin (Vitamin B-12B)	28(28)b	50	40
17	Insulin Crystalline	28	50	40
18	Mono-Pot-Phos	28(8)	50	...

TABLE 19.4—*Contd.*

	1	2	3	4
19	Meta-cresol	28	50	40
20	Methanil	22(4)	50	—
21	Milk Sugar	28(24)	50	44
22	Nepagin M Sodium . . .	28	50	40
23	Nepagin P Sodium . . .	28	50	40
24	Nodiydroghantic Acid . . .	28	50	40
25	Nipasept	28	50	40
26	Pancreas	87	50	..
27	Propylene Glycoe	28	50	40
28	Protamine Sulphate . . .	23	50	40
29	Potassium Dihydrogen Phosphate .	28	50	40
30	Potassium Hydroxide			
31	Potassium Carbonate	28(8)	50	..
32	Prednisolone	28	50	40
33	Picotyte	87	50	..
34	Soyabean meal	23	50	..
35	Sodium Aginate	28	50	40
36	Sodium Lahryl Sulphate . .	28	50	40
37	Stearyl Alcohol	28	50	40
38	Sodium Phosphate . . .	28	50	40
39	Tetanus Anti-toxin . . .	28	50	40
40	Tween-80	28	50	40
41	Yeast extract	15(b)	50	40
42	Spermaceti	15	35	..
43	Iodine	28(23)	30	24
44	Latcose B.P.	28(24)	30	24

TABLE 19.4—*Concld.*

	1	2	3	4
45	Aminodiazine	28	27·5	17·5
46	Chloroquine Phosphate B P . .	28	27·5	..
47	Deobase	27(3)	27·5	..
48	2.5 Dichloro Nitro . . .	28	27·5	17·5
49	Gamma Picoline	28	27·5	17·5
50	Petroleum light	27(3)	27	..
51	Acid Carbolic (Phenol) . .	28(29)	25	..
52	Citric Acid	28 (8)	25	..

19.1.6. There are certain chemicals, intermediates and drugs in respect of which Government have bound themselves under the General Agreement on Tariff and Trade. Particulars in respect of these are given as follows:—

TABLE 19.5

List of drugs, pharmaceuticals, chemicals and intermediates under tariff commitments of GATT (i.e. *items in respect of which India has given tariff bindings to the Contracting Parties of the General Assembly on Tariff and Trade*)

Indian Customs Tariff Item No.	Description of products	Bound rate of duty (*Ad Valorem*)	Country to which bound
1	2	3	4
	PART I.—*Most Favoured Nation Tariff*		
28	Chemicals, Drugs and Medicines all sorts not otherwise specified.	..	FR
NOTE:	The products provided for under the above item shall be exempt from ordinary most favoured nation customs duties which exceed the preferential rate applicable to such products of the United Kingdom or British Colonial origin, by more than 10% *ad valorem*.		

TABLE 19.5—*contd.*

1	2	3	4
28	Chemicals, the following:—		
	1. Para Nitraniline 2. Amino Azo Benzene (hydrochloride) 3. Sulphanilic Acid 4. Benzidine Di-hydrochloride 5. (a) Sodium Napthionate (b) Naphthionic acid 6. Navila and winter's Acid 7. Rhoduline Acid 8. J. Acid Urea 9. Para Amino Acetanilide 10. Dinitro Chlorobenzene 11. Meta Phenylene Diamine 12. Gamma Acid 13. Meta Tolylene Diamine 14. Chicago Acid 15 H. Acid 16. G. Salt 17. Laurent Acid	10%	GY
28	Diatomaceous earth	40 per cent	US
28	Phosphorous Pentoxide	40 per cent	US
28	Sulphur dioxide	40 per cent	US
28	Phosphorous yellow	40 per cent	US
28	Freon type refrigerants	40 per cent	US
28	Sodium borate, powder, excluding anhydros	40 per cent	US
28	Ethyl Acetate	40 per cent	US
28	Diastase of malt and diastase taka . .	40 per cent	US
28	D.D.T.	40 per cent	US
28	Glucose, pure, powder	40 per cent	US
28	Insecticides, Fungicides, disinfectants etc. specified	20 per cent	US

1. 2-4 Dichlorophenoxy acetic acid, and its esters and salts.
2. Disodium ethylene bis-dithiocarbamate.
3. Ethylene dichloride-Carbon tetrachloride mixture (3:1)
4. Methyl chlorophenoxy acetic acid *i.e.* 2-methyl 4-Chlorophenoxy acetic acid its esters and salts.
5. Nicotane and its sulphate including solutions thereof not containing any other pesticidal compounds such as Derris root and Heilebore.

TABLE 19.5—*Contd.*

1	2	3	4
	6. Organo-Phosphatic esticides of the following types; O-Diethyl-O-phitre henyl thiophosphate (commonly known as "Parathion"); Hexa-ethyl tetraphosphate and tetraethyl-pyro hos-bate but excluding "Malathion"		
	7. Sulphur dust passing through 300 mesh.		
	8. Wettable sulphur.		
	9. Zinc ethylene-bis-dithiocargamate.		
	10. 1, 2, 3, 4, 10, 10-hexachlor-6 7, epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4, 5, 8-endo-endo-dimethanona-phchalene.		
	11. 1, 2, 3, 4, 10, 10-hexachlor-1, 4, 5, 8, 8-hexahydro-1, 4, 5, 8 and O-exo-dimethanonaphthalene.		
	12. 1, 2, 3, 4, 5, 6, 7, 8, 8a-octachlor, -2, 3, 3a, 4, 7, 7a-hexahydro-4, 7 methonodene.		
28	Pectin, powder, dried	30%	DEN
28A	Petent or proprietary medicines as denfied in clause (d), Section 3 of the Drugs Act, 1940 (XXIII of 1940) not containing spirit and not otherwise specified.	—	FR
	NOTE : The products provided for under the above items, ex 28, shall be exempt from ordinary most-favoured nation customs duties which exceed the preferential rate applicable to such products of the United Kingdom or British Colonial Origin, by more than 10 per cent *ad valorem*.		
28A	Homoeopathic medicines . .	Rate of duty actually charged at the time for such products of United Kingdom or British Colonial Origin plus 10 per cent *ad valorem* plus 5 per cent of the total value.	GY
28(8)	Citric and tartaric acids, other than synthetic	25 per cent	IT
28(8)	Potassium Chlorate	25 ,,	SW
28(14)	Viscose Sponges	37 ,,	SW
28(21)	Acetyle salicylic acid in tablets or in powder; Atropine Sulphate Cresylic Acid Hyoscine hydrobromide phenobarbital.	30 ,,	ALA
28(22)	Cod liver oil packed in containers not exceeding 4 lbs. in capacity.	30 ,,	NOR

TABLE 19.5—*Concld.*

1	2	3	4
28(23)	Iodine in crude form	30	per cent CHL
28(24)	Lactose (Sugar of milk)	30	,, NZ
28(26)	Penicillin in bulk	30	,, US
28(26A)	Penicillin and its products, not otherwise specified.	30	,, US
28(27)	Antibiotics such as streptomycin, gramicidin, tyrocidine and tyro-thricin.	20	,, US
28(28)	Sulpha drugs and vitamin preparations excluding fish liver oils.	30	,, US
28(28)	Vitamins A and E excluding fish-liver oils	30	,, ALA
28(29)	Acetic acid, boric acid, Borax and Phenol (Carbolic Acid)	25	,, US

PART II—*Preferential Tariff*

28	Chemicals, the following :	
	1. Para Nitraniline	
	2. Amino Azo Benzene Hydrochloride	
	3. Sulphanilic Acid	
	4. Benzidine Di-Hydrolchloide	
	5. (a) Sodium Naphthionate	
	(b) Naphthionic Acid	
	6. Navile and winthers's Acid	
	7. Rhodulane Acid	
	8. J. Acid Urea	
	9. Para Amino Acetanilide	
	10. Dinitro Chlorobenzene	
	11. Meta Phenylene Diamine	
	12. Gamma Acid	
	13. Meta Tolylene Diamine	
	14. Chicago Acid	
	15. H. Acid	
	16. G. Salt	
	17. Saurent Acid	Free
28A	Homoeopathic Medicines	26% plus 5% of the total duty.
28(27)	Antibiotics such as Streptomycin, Gramicidin, tyrocidine and tyrothricin.	14%

NOTE—Preferential rate not bound but shown only for the purpose of establishing the margin of preference.

19.1.7. The industry has made a general plea that the rates of duty on basic chemicals and intermediates are high and should be reduced so that the costs of production of basic drugs and formulations can be brought down.

19.2. Sales Tax :

The Central Sales Tax on drugs is levied at 3 per cent for registered dealers and at 10 per cent on un-registered dealers. The States sales tax varies from State to State as indicated below:

TABLE 19.6

Rates of Sales Tax levied by different States on drugs

STATE	RATE
Andhra Pradesh	4% Single point
Assam	7% ,, ,,
Bihar	4%
Delhi	5%
Gujarat	3%
Madras	2½% Multi point
Madhya Pradesh	2% Single point
Maharashtra	3% ,, ,,
Mysore	3% Multi point
Kerala	3% ,, ,,
Orissa	5% Single point
Punjab	6% ,, ,,
Rajasthan	6% ,, ,,
West Bengal	5% ,, ,,
Uttar Pradesh	2% ,, ,,

19.3. Excise duty :

19.3.1. The Central Excise duty is levied under the provisions of the Central Excise and Salt Act, 1934 and is administered and collected by the Central Excise authorities. Another Excise duty is levied under the Medicinal and Toilet Preparations (Excise Duties) Act, 1955. But this is administered and collected by the State Excise authorities.

19.3.2. *Central Excise Duty* :

There is no Central Excise duty on basic bulk drugs. Formulations of drugs are assessed to Central Excise Duty under item 14E of Central Excise Schedule. The normal rate of duty is 7.5 per cent *ad valorem*. Certain essential preparations are exempted

from duty and certain others are assessed to a lower rate of 2.5 per cent *ad valorem*. The duty is levied only on patent and proprietary medicines sold under brand names and not on preparations sold under generic names and included in the recognised pharmacopoeias. Under Rule 100A of Central Excise Rules, 1944, which came into effect on 29th July 1967, provision has been made for granting refund of excise duty on time expired or defective patents or proprietary medicines which are destroyed under Excise supervision. Rates of Central Excise duty on formulations under 'Brand names' are as given in Table 19.7:

TABLE 19.7

Central Excise duty leviable on drugs and pharmaceuticals

Item No. of Central Excise Schedule	Description of Goods	Rate of duty
1	2	3
14E	Patent or proprietary medicines not containing alcohol, opium, Indian hemp or other narcotic drugs or other narcotics other than those medicines which are exclusively ayurvedic, unani, sidha or homoeopathic. *Explanation I.*—Patent or proprietary medicine means any drug or medicinal preparation in the internal or external treatment of or for the prevention of, ailments in human being or animals, which bears either on itself or on its container or both a name which is not specified in a monograph in a Pharmacopoeia, Formulary or other publications notified in this behalf by the Central Government in the Official Gazette, or which is a brand name that is a name or registered trade mark under the Trade and Merchandise Marks Act, 1958 (43 of 1958) or any other mark such as a symbol, monogram, label, signature or invented words or any writing which is used in relation to that medicine for the purpose of indicating or so as to indicate a connection in the course of trade between the medicine and some persons having the right either as propietor or otherwise to use the name or mark with or without any indication of the identity of that person.	10 per cent *ad valorem*

TABLE 19.7—*Contd.*

1	2	3
	Explanation II:—"Alcohol", "Opium" "Indian Hemp", "Narcotic Drugs" and "Narcotics" have the meaning respectively assigned to them in Section 2 of the Medicinal and Toilet Preparations (Excise Duties) Act, 1955.	
	NOTES.—(1) Under Government of India, Ministry of Finance (Department of Revenue) Notification No. 104/61-Central Excises, dated the 20th April, 1961, medicinal contraceptives are exempt from the payment of the excise duty leviable thereon.	
	(2) Under Government of India, Ministry of Finance (Department of Revenue), Notification No. 105/61-Central Excises, dated the 10th November, 1961, clinical samples issued by any manufacturer of patent or proprietary medicines are exempt from the payment of the excise duty leviable thereon, provided—	
	(i) such clearances are limited to a quantity not exceeding 5 per cent by value of the total duty paid clearances during the preceding month of all types of patent or proprietary medicines,	
	(ii) samples are intended for free supply to hospitals, nursing homes or medical practitioners or for test in a laboratory, or for use by the Central Excise or Drugs Control authorities, and	
	(iii) the samples are packed in a form distinctly different from regular trade packing and each smallest packing is clearly and conspicuously marked 'samples, not for sale'.	
	(3) Under Government of India, Ministry of Finance (Department of Revenue) Notification No. 144/65-Central Excises, dated the 4th September 1965, patent or proprietary medicines manufactured wholly or partly out of imported materials are exempt from the payment of so much of excise duty leviable thereon as is equivalent to the amount of Customs duty already paid on such imported materials under Section 2A of the Indian Tariff Act, 1934.	

TABLE 19.7—*Contd.*

1	2	3
	(4) Under Government of India, Ministry of Finance (Department of Revenue), Notification No. 153/61-Central Excises, dated the 31st July, 1961, the following sera and vaccines are exempt from the payment of the excise duty leviable thereon :— 1. ABR Antigen for Milk Ring Test in Brucellosis. 2. Anti Brucella Diagnostic Serum. 3. Autogenous vaccine. 4. Cultures of Micro-organisms. 5. Equine Abortion vaccine. 6. Fowl Cholera Antiserum. 7. Healthy sera from horse, sheep, cattle and goat. 8. Johnin. 9. Mixed Streptococcic vaccine. 10. Salmonella Pullorum plain and coloured Antigen. 11. Salmonella Pullarum positive serum. 12. Salmonella Abortus Equipositive serum. 13. Sheep and Goat Darmatitis Virus. 14. Sheep and Goat Pox Vaccine. 15. Standard Brucella Abortus plain and coloured antigen for test.	
	(5) Under Government of India, Ministry of Finance (Department of Revenue) Notification No. 16/62-Central Excises, dated the 7th April, 1962, 'anaesthetics' falling under this term are exempt from the payment of excise duty leviable thereon.	
	(6) Under Government of India, Ministry of Finance (Department of Revenue) Notification No. 33/62-Central Excises dated the 24th April, 1962, patent or proprietary medicines specified in column 1 of the Table below are exempt from the payment of so much of the excise duty leviable thereon as in excess of the duty specified in the corresponding entry in column 2 thereon.	

TABLE 19.7—*Contd.*

1	2	3
	Description	Duty
	1	2
	Sera and Vaccines	Nil
	All other patent or proprietary medicines	7½ per cent *ad valorem*

(7) Under Government of India, Ministry of Finance (Department of Revenue and Insurance), Notification No. 161/66-Central Excises, dated the 8th October, 1966, the Central Government hereby exempts patent or proprietary medicines, falling under this item from so much of the duty of excise leviable thereon as is in excess of the duty calculated on the basis of—

(i) the value arrived at after allowing a discount of 10 per cent on the prices specified in the price-list showing the wholesale prices referred to in the Drugs Prices (Display and Control) Order, 1966 issued under Section 3 of the Essential Commodities Act, 1955 (10 of 1955), or

(ii) the value arrived at after allowing a discount of 25 per cent on the price as specified in the price list showing the retail prices referred to in the said order:

Provided that the aforesaid exemption shall be admissible only if the price-list represents the prices at which the medicines are ordinarily sold to retail dealers or consumers, as the case may be:

Provided further that a manufacturer shall, at his option be allowed to claim exemption under the notification in respect of all medicines cleared by him either in relation to the wholesale prices or in relation to the retail prices:

Provided further that when once a manufacturer had exercised such option in any financial year he shall not be entitled to vary that option in that financial year.

Explanation.—In the price specified in the price list referred to above, the element of excise duty, if any, added to the price of any of the medicines shall be deducted before allowing the discount.

TABLE 19.7—*Contd.*

1	2	3
(8)	Under Government of India, Ministry of Finance (Department of Revenue and Insurance), Notification No. 160/66-Central Excises, dated the 8th October, 1966 the Central Government hereby exempts the patent or proprietary medicines falling under this item, and specified below, from so much of the duty of excise leviable thereon as is in excess of 2½ per cent *ad valorem* namely :— 1. Quinine and its salts, Totaquina and Cinchona Febrifuge ; 2. Dapsone ; 3. Isoniazid ; 4. Para-amino Salicylic Acid, its salts and esters; 5. Insulin, all types; 6. Iodo-chlor-hydroxy-quinoline; Di-Iodo-hydroxy-quinoline and Emetine ; 7. Ethionamide; 8. Cyclos-erine; 9. Pyrazinamide 10. Thiacetazone; 11. Chlorohydroxy quinoline; 12. Penicillin and Streptomycin including Dihydrostreptomycin, in their pure form or as salts or as derivatives or in combination among themselves or with any other medicine at Serial Nos. 1 to 10 above and intended for oral or parenteral use but excluding combinations with any other substance in therapeutic or prophylactic quantities.	
(9)	Under Government of India, Ministry of Finance (Department of Revenue), Notification No. 6/64-Central Excises, dated the 25th January, 1964, patent or Proprietary Medicines falling under this Item which, having been cleared on payment of the duty of excise leviable thereon, are brought back to the same factory and cleared after repacking or relabelling or both, are exempt from the payment of the duty already paid thereon on the initial clearance from the factory: Provided that where such repacking or relabelling or both is done in a manner which reduces the value of the medicines cleared, no part of the duty already paid shall be refunded to the manufacturer on account of such reduction value.	

TABLE 19.7—*Contd.*

1	2	3
	(10) Under Government of India, Ministry of Finance (Department of Revenue and Insurance), Notification No. 117/66-Central Excises, dated the 16th July, 1966, as subsequently amended by Notification No. 198/66-Central Excises, dated the 24th December, 1966 the Central Government hereby exempts patent or proprietary medicines falling under this item and supplied directly from the factory of the manufacturer to Government Departments including railways, local bodies and hospitals from so much of the duty of excise leviable thereon as is in excess of— (i) 2½ per cent, in respect of the medicines specified in the Notification of the Government of India in the Ministry of Finance (Department of Revenue and Insurance) No. 160/66-Central Excise, dated the 8th October 1966, and (ii) 7½ per cent in respect of all other medicines of the value calculated on the basis of price excluding Central Excise duty fixed under the terms of relevant contract between the parties for such supply: Provided that the aforesaid exemption shall be admissible only if the price referred to above represents the price actually charged by the manufacturer in respect of such supplies and evidence in support of that is produced before the Central Excise officer. *Explanation*.—For the purposes of this notification, "manufacturer" includes with reference to any area his sole distributor in that area or branch office situated therein.	
	(11) Under Government of India, Ministry of Finance (Department of Revenue and Insurance), Notification No. 25/67-C.E, dated 4-3-1967, the Central Government hereby exempts pharmacopoeial preparations containing single therapeutic agents and falling under this item, from the whole of the duty of excise leviable thereon: Provided that the said pharmacopoeial preparations are cleared from the manufactory in bulk quantity in a form which is not ready for use, that is, not in a a dosage form and without a label or other indication of dose, method of usage or application or any other therapeutic information.	

TABLE 19.7—*Concld.*

1	2	1
Explanation.—For the purpose of this notification—		
	(1) the expression 'pharmacopoeial preparations' means any drug or medicinal preparation specified in a monograph in a pharmacopoeial formulary or other publication notified by the Central Government in the Official Gazette in pursuance of the Explanation to item No. 14E aforesaid;	
	(2) the expression 'bulk quantity' means a quantity that represents 1,000 doses or more, the dosage being taken as the minimum (i) adult dose where different doses have been prescribed for adults and infants, and the relevant pharmacopoeia, formulary of other publication, and (ii) infant dose where a drug has been so prescribed for infants only where in the case of a drug no dosage has been so prescribed, 'bulk quantity' shall mean a quantity which is maketed in a form not meant for use as such in therapy.	

19.3.3. *The Medicinal and Toilet Preparation (Excise Duty) Act*, 1955.—In 1955 Parliament enacted legislation to provide for the levy and collection of duties of excise on medicinal and toilet preparations containing alcohol, opium, Indian hemp or other narcotic drug or narcotic drugs. The rules framed under the Act provide for the method of collection, refund of and exemption from the duty leviable under the Act, manufactured in bond and outside bond, warehousing, licensing and inter-State movement of the goods dutiable under the Act. These lay down that all the powers including the collection of excise duty under the Act and Rules are exercisable by the Excise Commissioners of the States. Exemptions have however been laid down in certain cases and no duty is to be collected on medicinal preparations containing alcohol manufactured in India and supplied direct from bonded factories or warehouses to the following institutions:—

(i) hospitals and dispensaries working under the supervision of the Central or State Government,

(ii) hospitals and dispensaries subsidised by the Central or State Government,

(iii) charitable hospitals and dispensaries under the administrative control and management of local bodies, and

(iv) every other institution certified by the Principal Medical Officer of the district in which such institution is situated as supplying medicines free to the poor.

The current rates of duty levied under the Medicinal and Toilet Preparation (Excise Duty) Act, 1955 are as given in Table 19.8.

TABLE 19.8

Excise duties leviable on goods specified in item 84 of List I of the 7th Schedule to the Constitution of India, viz., medicinal and toilet preparations containing alcohol, opium, Indian hemp or other narcotic drugs, or narcotic under the Medicinal and Toilet preparations (Excise Duties) Act, 1955

Sl. No.	Particulars	Rate of duty
1	2	3
	Medicinal Preparations	
1.	**Allopathic Medicinal Preparations**	
	(i) Medicinal preparations containing alcohol which are not capable of being consumed as ordinary alcoholic beverages—	
	(a) Patent or proprietary medicines	10 per cent *ad valorem* or Rs. 1.10 Per litre of the strength of London proof spirit, whichever is higher.
	(b) Others	Rs. 1.10 per litre of the strength of London proof spirit.
	(ii) Medicinal preparations containing alcohol which are capable of being consumed as ordinary alcoholic beverages—	
	(a) Medicinal preparations which contain known active ingredients in therapeutic quantities	10 per cent *ad valorem* or Rs. 3.85 per litre of the strength of London proof spirit, whichever is higher.
	(b) Others	Rs. 15.50 per litre of the strength of London proof spirit.
	(iii) Medicinal preparations not containing alcohol but containing opium, Indian hemp or other narcotic drug or narcotic.	10 per cent *ad valorem*.

TABLE 19.8—*Contd.*

1	2	3
2.	Medicinal preparations in Ayurvedic, Unani or other indigenous system of medicines—	
	(i) Medicinal preparations containing self generated alcohol which are not capable of being consumed as ordinary alcohol beverages.	Nil
	(ii) Medicinal preparations containing self generated alcohol which are capable of being consumed as ordinary alcoholic beverages.	38 paise per litre of the strength of London proof spirit.
	(iii) All others containing alcohol which are prepared by distillation or to which alcohol has been added.	Rs. 15.50 per litre of the strength of London proof spirit.
	(iv) Medicinal preparations not containing alcohol but containing opium, Indian hemp, or other narcotic drugs or narcotic.	10 per cent *ad valorem*.
3.	Homocopathic preparations containing alcohol	Rs. 3.85 per litre of the strength of London proof spirit.
	Toilet Preparations	
	Toilet preparations containing alcohol, opium, Indian nemp, or other narcotic drug or narcotic.	25 per cent *ad valorem* or Rs. 3.85 per litre of the strength of London proof spirit whichever is higher.

Explanation I—Patent or proprietary medicines means any medicinal preparations which bears either on itself or on its container or both, a name which is not specified in a monograph in a Pharmacopoeia, Formulary or other publication notified in this behalf by the Central Government in the Official Gazette, or which is a brand name, that is a name or a registered trade mark under the Trade and Merchandise Marks Act, 1958, or any other mark such as a symbol monogram, label, signature or invented words or any writing which is used in relation to that medicinal preparation for the purpose of indicating or so as to indicate a connection in the course of trade between the preparation and some person having the right either as preparation and some person having the right either as proprietor or otherwise to use the name or mark with or without any indication of the identity of that person.

TABLE 19.8—*Concld.*

1	2	3
	Explanation II—Where any article is chargeable with duty at a rate dependent on the value of the article, such value as determined in accordance with the provisions of section 4 of the Central Excises and Salt Act, 1944.	
	Explanation III—Where in respect of any dutiable goods the unit assessment for the purpose of any duty under this Act is a litre of the strength of London proof spirit, the duty shall be increased or reduced in such proportion as the strength of the dutiable goods is greater or less than that of the London proof spirit.	

19.4.1. The industry has made certain representations with regard to difficulties that are being experienced in the matter of these levies. It has, for instance, been mentioned that owing to lack of uniformity in the Sales Tax Acts and Rules of different States, the maintenance of a uniform price structure throughout the country is not possible. It has also stated that the differential tax rates result in unauthorised movement of drugs from one State to another. Certain municipal corporations and municipalities also levy Octroi on medicines and the rates of such levy vary. It has been suggested that the Central and States sales tax may be merged and receipts reallocated centrally.

19.4.2. The Indian Chemical Manufacturers' Association has pointed out the following procedural difficulties in the administration of the two Acts (and Rules) relating to excise.

(1) *Price approvals for Central and State Excise :* Under *ad valorem* basis of assessment both for Central and State Excise duties, the price has to be approved by the Excise Authorities before clearance. Price approvals are given by the Excise Authorities only on provisional basis and very often for an indefinite period. This imposes a threat that if the prices are not approved subsequently, the manufacturers will be liable to pay duty at the revised higher rate which they will not be able to collect with retrospective effect from their customers. It has, therefore, been suggested that a time limit of preferably two weeks, but in any case not more than one month, be imposed on all such price approval by Excise Authorities so that further liabilities on this account could be avoided.

(2) Recoveries with retrospective effect are made under the provisions of Rule 10(a) of the Central Excise Rules and No. 12 of the Medicinal and Toilet Preparations (Excise Duties) Rules and some times demand notices on past assessment even for periods of 4 to 5 years are issued. A suggestion has been made that these rules should be so modified that the application is rejected only in cases where excise duty is required to be levied retrospectively on certain products by the Government of India in the course of any accounting year and not later.

(3) *Non-recognition of Loan Licensing permitted by the Drugs Act*: Under the Drugs and Cosmetics Act and Rules, loan licensing arrangements are permitted for manufacture of pharmaceuticals, whereas the Central Excise department does not recognise such loan licensing arrangements and makes it obligatory for the principal manufacturer to clear products of loan licensees. Serious difficulties arise especially when the companies have different modes of sales and distribution. It has therefore been suggested that the loan licencee should be assessed independently by the Central Excise Department.

(4) *Lac of uniformity in Excise procedures in Central and State Excise Administration*: All patent and proprietary medicines except alcoholic products are subject to duty under the Central Excise Act, whereas similar medicines containing alcohol are subject to duty under Medicinal and Toilet Preparations (Excise Duties) Act. Both these Acts are Central Government Acts but the administration of the latter is left to the State Government. This results in a lack of uniformity in the implementation of the two Acts regarding the mode of assessment, the rate of duty, free clearance of samples, etc. The Central Excise duty was reduced from 10 per cent to 7½ per cent for Patent and Proprietary medicines and 2½ per cent for Essential Drugs, whereas the Medicinal and Toilet Preparations (Excise Duties) Act retains the duty at 10 per cents. Also the latter Act does not allow an alternative mode of assessment as provided in the Central Excise Act. Free clearance of samples upto 5 per cent is also not permitted in the former Act. These disparities create considerable hardship to the assessees. It has, therefore, been suggested that the two Excise Acts should be made more uniform in their implementation and should preferably be implemented by the same authorities to avoid duplication of work.

19.4.3. The Organization of Pharmaceutical Producers of India has also made certain comments in this respect. It has stated

that under the Central Excise and Salt Act duty is levied on the maximum retail prices but there is no duty on the same drugs, if these are sold, under generic names. This distinction is in the view of the Organisation not fair. It has also stated that there are innumerable time consuming procedural routines connected with the administration of the Medicinal and Toilet Preparations (Excise Duties) Act, 1955.

19.4.4. We are of the view that the anomalies pointed out by the manufacturers Associations should be removed. In the matter of raw materials and intermediates needed specifically for the drug industry which are being manufactured in the country but not in adequate quantities to meet the demand the rates of duty vary from 14 per cent to 100 per cent. It would be desirable in these cases to promulgate a concessional rate of duty in consideration of the fact that the drugs do not have adequate indigenous production. These concessional rates may be effective until such time as indigenous production is established. In case of raw materials and intermediates for which there is no domestic production and which are not likely to be produced in the near future, the rates of duty may be even lower than the rates on raw materials and intermediates which are being produced in inadequate quantities. It would , however, be desirable in the case of the former to ensure that a manufacturer in the country has to pay a uniform price irrespective of the fact whether the raw material or intermediate is imported or supplied from indigenous sources. A system of pooling centrally by the State Trading Corporation or a similar organisation may in such cases be introduced in order to ensure that no manufacturer is in a more advantageous position in the matter of availability of raw material than others.

CHAPTER 20

IMPORTS

20.1. The import of seven out of the 18 specified basic drugs is allowed at present, according to the reply received from the D. G. T. D., on the ground that the local output is not adequate to meet the entire requirements of the country. These are:—

(1) Sulphadiazine
(2) Streptomycin
(3) Tetracyclines
(4) Amodiaquin
(5) Chloroquin
(6) Tolbutamide
(7) Tetanus Anti-toxin

Sulphadiazine, Chloroquin and Tetanus Anti-toxin are allowed to be imported on a restricted basis. The formulations of these drugs are, however, not permitted to be imported. The import policy in respect of each of the specific drugs for the years 1965-66, 1966-67, 1967-68 and 1968-69 has been set out in Appendix IX. While previously there were some quotas for permissible drugs, for the year 1967-68 there was and overall quota of 23 percent of the best year's imports and permissible drugs were allowed to be imported within this quota by the drug manufacturers.

20.2. In July, 1966 following the devaluation of the rupee Government of India announced import liberalisation policy in respect of 59 "Priority" industries. In terms of this policy units belonging to these industries were permitted import of raw materials on a liberal scale. In case of units registered with the Directorate General of Technical Development, units were required to apply through that Directorate but in the case of small scale units they were issued import licences for a value three times the value of licences issued du ing 1964-65 and covering the same items mentioned in their 1964-65 licences. Further the importer was given the freedom to import any drug in as much quantity as he liked within the overall value of the licence. This resulted in a situation where certain basic drugs like Chloramphenicol,

Vitamin C, I.N.H. could be imported by manufacturers merely because they occurred in their 1964-65 licences even though they were being produced in the country in fairly adequate quantities.

20.3. As the price differential between the import price and the local selling price in respect of these drugs was high, manufacturers availed of this opportunity and imported large quantities of such drugs. These drugs were also imported in substantial quantities under the National Defence Remittance Scheme and against licences issued under the Export Promotion Scheme.

20.4. The position of the production within the country of the permissible drugs and their imports during the years 1964, 1965, 1966 and 1967 is given in Table 20.1.

TABLE 20.1

Installed capacity, production, imports and domestic consumption of basic drugs permitted for imports

Sl. No.	Name of the basic drug	Unit of measurement	Installed capacity				Production			
			1964	1965	1966	1967	1964	1965	1966	1967
1	2	3	4	5	6	7	8	9	10	11
1	Sulphadiazine	Tonnes	118	193	193	193	77	108	77	44
2	Streptomycin	,,	70	120	120	120	58	92	104	125
3	Tetracyclines	,,	23·0	25·5	25·5	25·5	19·8	20·6	19·8	15·7
4	Amodiaquin	,,	36·6	36·6	36·6	36·6	10·0	10·7	15·0	11·6
5	Chloroquin	,,	1·3	3·0	3·0	3·0	1·2	2·4	2·8	3·4
6	Tolbutamide	,,	42·6	42·6	42·6	42·6	11·0	16·5	24·9	12·0
7	Tetanus Anti-toxin	Thousand M.U.	11·5	12·7	14·3	14·3	8·4	4·9	5·5	6·9

TABLE 20.1—*Contd.*

Sl. No.	Name of the basic drug	Unit of measurement	Imports				Total (Production+Imports)				Domestic consumption			
			1964	1965	1966	1967	1964	1965	1966	1967	1964	1965	1966	1967
1	2	3	12	13	14	15	16	17	18	19	20	21	22	23
1	Sulphadiazine . . .	Tonnes	64	59	109	122	141	167	186	166	146	161	182	176
2	Streptomycin . . .	,,	51	44	2	62	109	136	106	187	118	143	106	188
3	Tetracyclines . . .	,,	2·0	3·3	32·0	23·1	21·8	23·9	51·8	38·8	15·7	22·0	50·1	40·7
4	Amodiaquin . . .	,,	8·0	..	..	..	18·0	10·7	15·0	11·6	17·8	11·6	15·0	9·8
5	Chloroquin . . .	,,	12·5	15·5	2·4	18·5	13·7	17·9	5·2	21·9	13·8	15·1	6·1	21·9
6	Tolbutamide . . .	,,	1·6	1·2	0·5	1·5	12·6	17·7	25·4	13·5	13·1	13·7	20·0	20·4
7	Tetanus Anti-toxin . .	Thousand M.U.	6·2	15·0	4·5	5·1	14·6	19·9	10·0	12·0	14·6	19·9	10·0	11·5

20.5 The above Table indicates the following picture with regard to each of the seven drugs :

Sulphadiazine

The installed capacity for the production of Sulphadiazine in the country is 193 tonnes. Production went upto 108 tonnes in 1965. The total consumption in the country without taking into account any carry over of imports during the last four years was 146, 161, 182 and 176 tonnes. If the entire capacity which has been established could be realised the total demand in the country could have been met. In 1965 when the installed capacity was already 193 tonnes the production was 108 tonnes and the imports were 59 tonnes. But next year the imports went up to 109 tonnes, with the result that production fell down to 77 tonnes. The reason for allowing import was that the cost of the penultimate intermediate from which Sulphadiazine was manufactured was very high and that it was more economical to import the finished product.

Streptomycin

For Streptomycin the licensed capacity in the country is 215 tonnes, but the installed capacity is only 120 tonnes. In 1965 the production was 92 tonnes and imports were 44 tonnes. Next year the imports were only 2 tonnes and the production went up to 104 tonnes. In 1967 the production was 125 tonnes but the imports were also heavy at 62 tonnes. Domestic consumption has shown considerable fluctuations during the years 1964 to 1967. In 1964 it was 118 tonnes, 147 tonnes in 1965 and then it fell down to 106 in 1966 and went up to 178 in 1967. If the entire licensed capacity is realised the necessity for imports could be obviated. However, in the case of this drug it cannot be said that imports had any depressing effect on the indigenous production since the maximum production in accordance with the installed capacity was achieved in 1967.

Tetracyclines

The licensed capacity stands at 145 tonnes, but the installed capacity is only 25.5 tonnes. Production in 1963 was 21.5 tonnes when the installed capacity was only 18 tonnes. Imports in 1964 and 1965 were two and three tonnes respectively and in 1966 imports were heavy, being 32 tonnes and in 1967 these were 23.1 tonnes. Production had gone up to 20.6 in 1965, but fell down to 19.8 in 1966 and further down to 15.7 tonnes in 1967. Domestic consumption was only 15.7 tonnes in 1964, 22.0 tonnes

in 1965, but went up to more than double at 50.1 tonnes in 1966 and again it came down to 40.7 in 1967. Here again import have been responsible for the low utilisation of the installed capacity.

Amodiaquin

Licensed and installed capacity is 37 tonnes almost since 1956. The best production was 15 tonnes in 1966. Imports were made in 1964 only. The domestic production appears to be adequate to meet the indigenous demand.

Chloroquin

As against the licensed capacity of 26 tonnes the installed capacity is only 3 tonnes and the best production was in 1967 of 3.4 tonnes. The licences were granted between 1960 and 1963. Domestic requirement did not show any specific trend since this was only 6.1 tonnes in 1966 as against 13.8 in 1964 and 21.9 in 1967. Considerable quantities of this drug have been and will continue to be imported until the domestic installed capacity matches the licensed capacity and the units go into full production.

Tolbutamide

Imports during the last four years have varied between 0.5 and 1.6 tonnes. As against this the production during the same period was between 11.0 and 24.9 tonnes. Domestic consumption has gone up steadily from 13.1 in 1964 to 13.7, 20.0 and 20.4 tonnes during the years 1965, 1966 and 1967 respectively. It is quite possible that the domestic production could be relied upon to supply the entire domestic demand since one of the units is capable of producing about 24 tonnes, as it did in the year 1966. No imports appear to have been necessary.

Tetanus Anti-toxin

This is one of the drugs of which heavy imports have been made in the past and the imports have affected domestic production. In 1963 production within the country was 8,100 M.U., in 1964 it was 8,400 M.U., but it fell down to 4,900 M.U. in 1965 rose to 5,500 in 1966 and to 6,900 M. U. in 1967. Imports were 6,200 M. U. in 1964 but went up to 15,000 M.U. in 1965. In the two subsequent years these matched almost the domestic production. Domestic installed capacity is 14,285 M.U. and it could have satisfactorily met the entire demand even if there were no imports.

20.6. In addition to these seven permissible drugs there have been considerable imports of some other drugs also, such as

Vitamin B-12, Vitamin C, Penicillin, Chloramphenicol, Insulin, I. N. H. and P. A. S. Out of the 18 drugs under our survey there are only four drugs of which imports had been nil or in very small quantities and these are Vitamin A, Iodo-chlor/ Di-iodo hydroxy-quinoline, Chlorpropamide and Prednisolone. The picture of imports of the seven basic drugs with considerable imports is as follows:—

Vitamin B-12

This is on the banned list. Production plus import of this drug, together in 1964 and 1965 was 22.4 kgs. and 27.9 kgs. respectively. As against this in 1966, 41.8 kgs. and in 1967, 43.4 kgs. were produced. Even assuming a 15 per cent increase in the demand the domestic production should have sufficed to meet the domestic needs, but heavy imports were allowed in 1967, of as much as 26 kgs. It appears that licences were given immediately after the import liberalisation but the actual import was made at a much later date resulting in a surplus availability of the drug despite adequate domestic production.

Vitamin C

This is one of the drugs for which imports are not allowed under the Import Control Policy. The licensed capacity is 245 tonnes and the installed capacity is 180 tonnes. The only unit which was producing this drug steadily went on increasing its production as the following figures would show :

34	tonnes in .	1962
62	,, .	1963
78	,, .	1964
90	,, .	1965
131	,, .	1966

The factory was, however, closed down in the month of September 1967 owing to the heavy imports at low prices, with which the unit could not compete. Imports during the last two years were indeed very heavy and exceeded not only the domestic production but even the highest possible limit of domestic consumption. We have already dealt with this matter in Chapter 8. It may be stressed that the liberalisation policy of imports may be permitted only to the extent that a drug or a commodity is needed in the country and not with a view to create conditions of severe competition for the indigenous manufacturers, a situation in which the latter are invariably likely to suffer and be worsted in the end.

Penicillin

Imports of this drug have been fluctuating as the following figures would show :

43	M.M.U.	in	1964
11	,,		1965
41	,,		1966
78	,,		1967

Domestic production went up from 54 MMU in 1962 to 147 MMU in 1966 but all of a sudden fell down to 119 MMU in 1967 partly owing to heavy imports and partly also due to comparative fall in demand. In this case also imports should be restricted to the extent of the gap between domestic production and a reasonable estimate of domestic demand.

Chloramphenicol

Imports during each of the four previous years have been almost the double of domestic production, even though this drug is not on the list of the pharmaceutical drugs the necessity for import of which may have been considered to exist. The installed capacity is 23.3 tonnes and the production has been slightly better than the installed capacity and went up to 25.6 tonnes in 1965 but fell down to 24.3 tonnes in 1966, and further to 21.6 tonnes in 1967. The licensed capacity is 72.4 tonnes and if efforts are made to ensure the installation of the licensed capacity, the necessity for imports would be completely obviated. Owing to the heavy flow of imports the consumption figures do not show any logical trends and register heavy rise and fall. If the position of stocks of imports was known it might have been possible to find the actual consumption and extent to which increases where registered during each of the previous years. However, since the position of the stocks of the imported drugs could not be made available the consumption figures include the entire quantity imported in a particular year, while for the indigenous production only that quantity has been adopted which was self-consumed or actually sold and the rest taken over to the next year.

Insulin

The domestic production fell-down from 458 M.U. to 416 M.U. in 1967. This is attributed partly to heavy imports in the years 1964 and 1965 which were 757 M.U. and 520 M.U. respectively. It is a welcome sign that the imports have fallen during 1966 and 1967 and were only 69 M.U. and 24 M.U. in these two years.

I. N. H.

Domestic consumption has been fluctuating between 56 and 85 tonnes. Production in 1964 was 61.8 tonnes but it fell steadily from this until last year it was only 52.5 tonnes. Imports have been heavy in each of the four years and these are considered to be the cause of the fall in domestic production.

P. A. S.

1965 was the best year with production at 333 tonnes. Then the production fell down to 320 tonnes in 1966 and further to 256 tonnes in 1967. Imports in 1963 were of the order of 31 tonnes but 419 tonnes were imported between 1964 and 1967 giving an average of 105 tonnes annually. In this case again imports were responsible for inhibiting domestic production.

20.7. It is understood that the import of most items which are produced in adequate quantities were subsequently banned by Government. As licences issued in 1966 have mostly expired now very little imports of these items are, it is learnt, being effected at present. Once the imported stocks are exhausted the off take from the indigenous manufacturers is expected to increase. We consider that imports should always be related to the requirements of the country. Indian economy has not yet reached a stage and particularly in the chemical and pharmaceutical industries, where it can be exposed to competition from abroad or expected to establish its own market in the international field and compete at the level of international prices which in many cases are much lower than indigenous prices prevailing in the country of origin. This industry like other industries in the country has been enjoying protection in the form of quantitative restrictions on imports and if such protection is withdrawn all of a sudden and the industry is exposed to foreign competition disastrous consequences are likely to ensue. These have been amply demonstrated during our inquiry for the 18 drugs, when in the case of not less than six items, the fall in the domestic production and setback to the industry has resulted from unplanned imports based on such estimates of production and demand, which were neither realistic nor helpful to the consolidation and development of the domestic units. Basic manufacture of drugs in the country has been established after considerable effort and no steps should be taken which may retard the progress already made.

CHAPTER 21

EXPORTS

21.1. Before devaluation there was setback in exports in the year 1963-64 compared with the year 1962-63. But since then there was an increasing trend. Import entitlements at twice the import content of raw material with a ceiling of 75 per cent of the price of the exported product did help in some measure to further the sales of the extra production from additional raw materials supplies. After devaluation, export promotion schemes were withdrawn but replenishment imports were liberalised and licences were granted upto 20 per cent of the f.o.b. value of exports. In addition, a cash subsidy or assistance of 15 per cent of the f.o.b. value was allowed. Even so, in foreign exchange terms there has been a noticeable fall in the overall exports. According to the published accounts of the D. G. C. I. and S., the total exports of medicinal and pharmaceutical products amounted to Rs. 3.38 crores in 1967-68 as against Rs. 3.44 crores in 1966-67. This shows that the benefit from the post-devaluation measures has been somewhat slow in coming. From the subsequent tendencies, however, there has been some picking up of the exports.

21.2. The actual exports of medicines and drugs as recorded in the published accounts of Foreign Trade of India were of the value of Rs. 1.07 crores in 1962-63, Rs. 0.98 crores in 1963-64, Rs. 2.11 crores in 1964-65, Rs. 2.63 crores in 1965-66, Rs. 3.44 crores in 1966-67, and Rs. 3.33 crores in 1967-68. The break down of the export figures under broad groups is given in Table 21.1 :—

TABLE 21.1.

Exports of medicinal and pharmaceutical products

(Value in Rupees)

Name of the Group	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
Vitamins and preparations . . .	13,94,821	5,56,605	8,91,031	6,81,218	8,27,237	7,88,327
Bacteric Products, Sera and Vaccines .	2,73,306	4,94,489	1,95,035	—	—	—
Penicillin, Streptomycin and other Antibiotics	1,23,830	1,23,830	22,11,234	14,83,477	4,59,156	12,49,025
Opium, Alkaloides Cocaine, Coffin, Quinine and other Salts and derivatives	20,93,439	17,75,577	63,00,472	1,33,52,484	2,33,12,379	1,44,69,785
Hormones	..	..	..	71,975	13,052	15,157
Glycosedş, Glands, Extracts, Sera and Vaccines.	..	..	..	5,78,964	2,51,120	5,20,734
Medicaments	..	..	..	1,00,89,864	96,55,356	1,55,00,358
Medicinal and Pharma Products NES .	67,00,448	70,67,704	1,15,02,719	1,79,889	5,05,259	7,36,140
	1,05,85,844	98,18,205	2,11,00,491	2,63,87,821	3,44,23,559	3,32,79,526

21.3. The exports of the specified basic drugs were as follows:

TABLE 21.2

Exports of the specified basic drugs

Drug	Year	Unit	Quantity exported
1	2	3	4
Vitamin B 12	1964	Kg.	1·2
	1965	,,	0·6
Vitamin C	1965	Tonne	1·4
Penicillin	1966	MMU	0·3
Streptomycin	1965	Tonne	1·0
	1966	,,	0·2
Chloramphenicol	1965	,,	2·5
	1966	,,	3·0
	1967	,,	1·0
Chloroquin	1965	,,	1·7
Chlorpropamide	1966	,,	4·9
I. N. H.	1965	,,	0·5
P. A. S.	1964	,,	3·5
	1965	,,	1·0
Tetanus Antitoxin	1964	MU	40
Prednisolone	1967	Kg.	75·0

21.4. There is some variation between the figures furnished to us by the Basic Chemicals and Pharmaceuticals and Soap Export Promotion Council, Bombay and those published in the Foreign Trade of India. Since the detailed breakup was available only from the former source, the figures supplied by it have been given in the Table above.

21.5. The Basic Chemicals, Pharmaceuticals and Soap Export Promotion .Council has stated that India is endowed with vast botanical species which form the starting material for the manufacture of valuable alkaloids. Even at the present

evel of exports, crude drugs contribute as much as Rs. 3 crores to the country's foreign exchange earnings. If these could be processed and the drugs obtained therefrom were exported, the value could, in the opinion of the Council, be increased to a large extent. The Organisation of Pharmaceutical Producers of India has represented that the scheme for exports in force after devaluation offered extremely inadequate incentives for encouraging exports and was not conducive to any long term development of the industry in this field. The Indian Chemical Manufacturers' Association has pointed out that frequent changes in Government policy regarding exports, extremely high cost of promotional efforts for establishing a product in a new market, low cost of production of overseas competitors, strict price control in India of drugs which prevents the manufacturers from increasing domestic prices to subsidise exports in order to compete in overseas markets, lack of sophisticated packing materials, reluctance of manufacturers to push exports for fear that it may any time be declared as non-essential, were responsible for lack of substantial exports.

21.6. The following Table 21.3 shows the difference between the fair ex-works prices of the specified basic drugs as arrived at by us and the c.i.f. prices of recent imports, expressed as percentages of the c.i.f. prices.

TABLE 21.3

Fair ex-works prices of basic drugs compared with their latest c.i.f. prices.

Sl. No.	Basic Drug	Unit	Fair ex-works prices recommended by the commission (Rs.)	Latest c.i.f. Rates (at the Bombay Port)		Percentage Variation from the price recommended by Commission (4-6 as % of 6)
				Country from which imported	C.I.F. price. (Rs.)	
1	2	3	4	5	6	7
1	Vitamin-A-Palmitate.	1000 MU	391·15	(Not imported)	..	..
2	Vitamin-B-12 .	gm.	113·84	(i) Holland	47·25	140·93
				(ii) France	41·33	175·44

TABLE 21.3—*Contd.*

1	2	3	4	5	6	7
8	Vitamin-C .	kg.	72·70	(i) Yugoslavia	30·00	142·33
				(ii) USSR	28·00	159·64
				(iii) Hungary	27·82	161·32
				(iv) U.S.A.	26·50	174·34
4	Sulphadiazine .	kg.	58·89	(i) West Germany.	41·00	43·63
				(ii) France	40·50	45·41
				(iii) Holland	39·60	48·71
5	Penicillin—					
	Potassium-G	B.U.	351·00	(c.i.f. price not available).		
	Potassium-V .	Do.	537·00	(c.i.f. price not available)		
	Procain-G	Do.	336·00	(i) France	144·00	133·33
				(ii) U.S.A.	115·35	191·29
	Sodium-G .	Do.	399·00	(i) U.S.A.	203·00	96·55
				(ii) France	172·00	131·98
				(iii) Holland	136·00	193·38
6	Streptomycin	kg.	285·00	(i) Poland	240·00	18·75
				(ii) Hungary	225·00	26·67
				(iii) U.S.A.	225·00	26·67
7	Chloramphenicol	kg.	357·66	(i) Hungary	136·00	162·99
				(ii) West Germany.	120·00	198·05
				(iii) Switzerland	115·00	211·01
				(iv) Holland	102·00	250·65
8	Tetracycline .	kg.	709·25	(i) Bulgaria	190·00	273·29
				(ii) Poland	170·00	317·21
				(iii) Switzerland.	160·00	343·28
9	Amodiaquin .	kg.	106·91	(Not imported)		
10	Chloroquin .	kg.	259·53	(i) France	133·00	95·14
				(ii) West Germany.	122·00	112·73
				(iii) U.K.	122·00	112·73
11	Iodo-chlorhydroxyquinoline.	kg.	45·14	(Not imported)		

TABLE 21.3—*Concld.*

1	2	3	4	5	6	7
12	Chlorpropamide	kg.	95·60	(i) West Germany.	52·00	83·85
				(ii) Italy	51·00	87·45
13	Tolbutamide .	kg.	74·16	(i) Poland	37·00	100·43
				(ii) Italy	24·00	209·00
14	Insulin . .	MU	5136·56	(Not imported)		
15	I. N. H. .	kg.	91·58	(i) West Germany.	25·00	266·32
				(ii) Japan	24·00	281·58
16	P. A. S. . .	kg.	31·28	(i) France	13·10	138·78
				(ii) Japan	12·60	148·25
17	Tetanus Antitoxin		(No price fixed).			
18	Prednisolone .	kg.	11946·21	France	5100·00	134·24

21.7. It would be observed that the cost of production of drugs in India is between 19 per cent to 343 per cent higher than the c.i.f. prices at which they can be imported. Unless therefore we can bring down our cost drastically it is not possible to build up any substantial exports, except at the cost of the internal market and by selling our products at less than half the cost. In so far as the export of finished drugs and formulations is concerned the future therefore does not appear to be very bright.

21.8. According to the latest figures available exports in terms of gross value of the turnover were for cerain countries as follows:—

Israel	79%
United Kingdom	24%
United States of America	18%
Italy	11%
Japan	4%
India	2%

As against the value of Rs. 26.51 crores of imports of drugs and intermediates and pharmaceutical chemicals in 1967-68, exports amounted to only Rs. 3.33 crores and the negative trade balance amounted to Rs. 23.18 crores.

CHAPTER 22

SELLING SYSTEM AND SALES PROMOTION

22.1 Selling system :

22.1.1. Sales of medicines by manufacturers are generally effected through distributors or stockists to druggists and chemists and the latter dispense them to consumers. In certain cases sales are organised by a sole selling agent or agents who supply the goods from their regional branches and depots to the wholesalers and retailers. Some leading manufacturers have their own regional offices or depots from where goods are sent to dealers. Five of the manufacturers of basic drugs, namely, Boehringer-Knoll, Cyanamid, Hoechst, Pfizer and Wyeth Labs. sell their products directly to formulators. Producers claim that by means of continuous contracts and inspection of the depots of the distributors through the manufacturers' own staff appointed for this purpose, effective control over the selling system is exercised. The selling system obtaining in the units which manufacture one or more of the basic drugs or formulations in the scope of the inquiry, is as given in Table 22.1.

TABLE 22.1

(a) *Manufacturers who have sole selling distributors*

Sl. No.	Name of the manufacturer	Name of the sole selling distributor
1	2	3
1	Alembic Chemical, Baroda . .	Alembic Distributors Ltd., Bombay.
2	Atul Products, Bulsar . . .	Voltas Ltd., Bombay-1.
3	Biochemical & Synthetic, Hyderabad.	Neo Pharma Pvt. Ltd., Bombay.
4	Boehringer-Knoll, Bombay . .	Rallies (India) Ltd., Bombay.
5	Cilag-Hind, Bombay . . .	(i) Neo Pharma Pvt. Ltd., Bombay (for all products except Rarical).
		(ii) Johnson & Johnson of India Ltd. Bombay (for Rarical).

24—1T. C. Bom./70

TABLE 22.1—*Contd.*

1	2	3
6	Dey's Medical, Calcutta	Dey's Medical Stores (P) Ltd., Calcutta.
7	May & Baker, Bombay	May & Baker (India) Pvt. Ltd. Bombay.
8	Merck-Sharp, Bombay	Voltas Ltd., Bombay.
9	Roche Products, Bombay	Voltas Ltd., Bombay.
10	Synbiotics, Baroda	Sarabhai Merck Ltd., Baroda.
11	Unichem Labs., Bombay	Unichem Distributors Ltd., Bombay
12	Wander Pharmed, Bombay	Vallabhadas & Co., Bombay.
13	Wyeth Labs., Bombay	Geoffrey Manners & Co., Ltd., Bombay.
14	Franco-Indian Manufacturing, Bombay.	Franco-Indian Pharmaceuticals Pvt. Ltd., Bombay.
15	Pharma Products, Thanjavur	Vijaya Agencies, Thanjavur.

(b) *Manufacturers who have sales offices at important places*

Sl. No.	Name of the manufacturer	Number of sales offices run by them
1	Bengal Immunity, Calcutta	13
2	Bengal Chemical, Calcutta	4
3	Boots Pure Drug Co., Bombay	3
4	CIPLA, Bombay	6
5	East India Pharmaceutical, Calcutta	17
6	Fairdeal Corporation, Bombay	3
7	Glaxo Laboratories, Bombay	12
8	Geoffrey Manners, Bombay	9
9	Martin & Harris, Calcutta	21
10	Oriental Pharmaceutical Industries, Bombay	7
11	Pfizer, Bombay	16
12	Rallies India, Bombay	16
13	Standard Pharmaceuticals, Calcutta	8
14	Smith, Stanistreet, Calcutta	14
15	Sarabnai Chemicals, Baroda	18
16	Sarabhai Merck, Baroda	5
17	Zandu Pharmaceu ombay	2
18	Ranbaxy Laboratories, New Delhi	5

TABLE 22.1—*Concld.*

(c) *Manufacturers who undertake sales through distributors and stockists to chemists and druggists*

Sl. No.	Name of the manufacturer	Number of distributors	Number of stockists
1	Anglo French Co., (Eastern), Bombay. . .	..	32
2	Brahmachari Research Institute, Calcutta . .	24 (Distributors and stockists)	..
3	Bayer India, Bombay	18	6
4	Biological Evans, Hyderabad	23	..
5	Burroughs Welcome, Bombay	25	2
6	British Drug House, Bombay	38	..
7	Chemo-Pharma Laboratories, Bombay . .	41 (Distributors and stockists)	..
8	Ciba of (India), Bombay	8	..
9	Cyanamid, Bombay	5	..
10	Hoechst Pharmaceuticals, Bombay . . .	36	..
11	Kemp & Co., Bombay	21	..
12	Khandelwal Laboratories, Bombay . . .	38	..
13	Mac Laboratories, Bombay	12	..
14	Parke-Davis, Bombay	29	..
15	Gurco Pharma, Delhi	19	..
16	Lyka Laboratories, Bombay	10	15
17	Pharmaceutical Research Laboratories, Madras .	5	..

22.1.2. Government medical stores supply medicines and drugs to Central hospitals and hospitals under the Employees State Insurance Scheme. In their turn these stores invite tenders and rate contracts are entered into at the lowest terms of a full

years supply through the D. G. S. & D. State Governments purchase through tenders or special rate contracts. Most of the manufacturers answer the tenders from the State Governments and hospitals directly. The percentages of sales to Governments as compared to total sales are as follows :

TABLE 22.2

Sales of basic drugs and formulations to Government as percentages of total sales

(In lakh Rupees)

Particulars	1964	1965	1966	1967
Basic Drugs				
(i) Sales to Government .	40	40	23	1·0
(ii) Total sales . . .	638	1,029	1,156	791
Percentage of (i) to (ii) .	6	4	2	0·1
Formulations				
(i) Sales to Government .	282	300	488	591
(ii) Total sales . . .	2,070	1,773	2,682	3,008
Percentage of (i) to (ii) .	14	17	18	20

In the case of basic drugs the sales directly made by manufacturers to Government have not been taken into account nor have sales made through the distributors been included. It is, however, very unlikely that the figures so omitted may be significant. In the case of formulations the percentages do not appear to be fully representative, since there is a likelihood that some of the sales may have been made through agents other than formulators. For tenders to Government hospitals and Government Departments are also made by distributors and large dealers. These figures however include particulars of only 51 formulators who have furnished the information to us. The sales of basic drugs by indigenous manufacturers to Government as well as to others during the four years from 1964 to 1967 for each of the units and each of the specified drugs are given in Table 22.3 Sales to Government as well as the total sales by some of the units for the same period of formulations are given in Table 22.4.

TABLE 22.3

Sales of basic drugs by large scale manufacturers

(Rs. in thousands)

Sl. No.	Name of the basic drug and name of manufacturer	1964			1965			1966			1967		
		Value of sales to Govt.	Value of sales to others	Value of total sales	Value of sales to Govt.	Value of sales to others	Value of total sales	Value of sales to Govt.	Value of sales to others	Value of total sales	Value of sales to Govt.	Value of sales to others	Value of total sales
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	*Vitamin—A*												
	(i) Glaxo	..	672	672	..	873	873	..	2,134	2,134	..	2,226	2,226
	(ii) Roche Products	..	2,940	2,940	..	3,360	3,360	..	3,347	3,347	..	3,414	3,414
	TOTAL	..	3,612	3,612	..	4,233	4,233	..	5,481	5,481	..	5,640	5,640
2	*Vitamin—B-12 and B-12(b)*												
	(i) Merck Sharp	..	3,379	3,379	..	4,073	4,073	..	4,674	4,674	..	N.A.	N.A.
	(ii) Glaxo (B12-b)	..	..	..	..	..	..	..	153	153	..	40	40
	(iii) Themis Pharmaceuticals	..	..	..	..	..	..	..	..	..	..	121	121
	TOTAL	..	3,379	3,379	..	4,073	4,073	..	4,827	4,827	..	161	161
3	*Vitamin—C*												
	Sarabhai Merck	765	5,329	6,094	354	7,489	7,843	397	7,777	8,174	66	2,945	3,011
	TOTAL	765	5,329	6,094	354	7,489	7,843	397	7,777	8,174	66	2,945	3,011

TABLE 22.3—*Contd.*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
4	*Sulphadiazine*												
	(i) Atul Products	..	..	..	..	..	..	..	843	843	..	..	..
	(ii) May & Baker	..	..	..	..	..	..	38	31	69	..	314	314
	TOTAL	..	..	..	..	..	..	38	874	912	..	314	314
5	*Penicillin*												
	(i) Alembic Chemical	..	5,850	5,850	..	9,150	9,150	..	7,834	7,834	..	5,025	5,025
	(ii) Standard Pharmaceuticals	..	4,945	4,945	..	6,226	6,226	..	9,442	9,442	..	2,856	2,856
	(iii) Hindustan Antibiotics	..	7,706	7,706	..	25,830	25,830	..	28,111	28,111	..	20,515	20,515
	TOTAL	..	18,501	18,501	..	41,206	41,206	..	45,387	45,387	..	28,396	28,396
6	*Streptomycin*												
	(i) Hindustan Antibiotics	..	4,401	4,401	..	8,737	8,737	..	10,534	10,534	..	8,545	8,545
	(ii) Synbiotics	..	260	260	..	9,896	9,896	..	9,203	9,203	..	17,866	17,866
	TOTAL	..	4,661	4,661	..	18,633	18,633	..	19,737	19,737	..	26,411	26,411
7	*Chloramphenicol*												
	Boehringer-Knoll	..	1,745	1,745	..	3,173	3,173	..	1,863	1,863	..	360	360
	TOTAL	..	1,745	1,745	..	3,173	3,173	..	1,863	1,863	..	360	360

8	*Tetracycline*														
	(i) Synbiotics	..	2,081	2,081	..	1,695	1,695	..	3,996	3,996	..	1,569	1,569
	(ii) Cynamid	..	507	507	..	817	817	..	274	274	..	Nil	..
	(iii) Pfizer	..	3,899	3,899	..	1,692	1,692	..	235	235	..	241	241
	TOTAL	..	6,487	6,487	..	4,204	4,204	..	4,505	4,505	..	1,810	1,810
9	*Amodiaquin*														
	Parke-Davis	..	..	..	..	..	..	..	..	..	..	..	..
	TOTAL	..	..	..	..	..	..	..	..	..	..	..	..
10	*Chloroquin*														
	Bengal Immunity	..	303	303	..	644	644	..	409	409	..	18	18
	TOTAL	..	303	303	..	644	644	..	409	409	..	18	18
11	(a) *Iodo-chlor-hydroxy-quinoline*														
	(i) Bramachari Research Institute	..	22	22	..	21	21	..	21	21	..	..	..
	(ii) East India Pharmaceutical	3,230	..	3,230	3,642	..	3,648	1,873	..	1,873	..	..	..
	(iii) Atul Products	..	..	..	..	..	..	..	2,829	2,839	..	1,231	1,231
	TOTAL	3,230	22	3,252	3,642	21	3,669	1,873	2,850	4,733	..	1,231	1,231
	(b) *Di-iodo-hydroxy-quinoline*														
	(i) Bengal Immunity	..	..	..	..	..	..	..	0.35	0.35	..	..	Nil
	(ii) Biological Evans	..	..	..	..	..	..	..	58	58	..	..	..
	(iii) Symbiotics	..	..	..	..	..	..	..	330	330	..	..	..
	(iv) Brahamchari Research Inst.	..	6	6	..	7	7	..	6	6	..	..	..
	TOTAL	..	6	6	..	7	7	..	394	394	..	..	..

TABLE 22.3—*Concld.*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
12	*Chlorpropamide*												
	Pfizer	..	..	..	..	..	..	..	700	700	..	..	..
	TOTAL .	..	..	..	..	..	..	..	700	700	..	..	..
13	*Tolbutamide*												
	(i) Hoechst	..	14	14	..	33	33	..	139	139	..	139	139
	(ii) Unichem Labs. . . .	..	17	17	..	3	3	..	6	6	..	2	2
	TOTAL .	..	31	31	..	36	36	..	145	145	..	141	141
14	*Insulin*												
	Boots	..	..	..	..	426	426	..	938	938	..	784	784
	TOTAL .	..	..	..	..	426	426	..	938	938	..	784	784
15	*I. N. H.*												
	(i) Bengal Immunity . . .	..	540	540	..	653	653	..	18	18	..	..	..
	(ii) Biological Evans . . .	..	575	575	..	701	701	..	450	450	..	..	..
	(iii) Biochemical & Synthetic .	..	..	..	..	..	..	..	2,291	2,291	..	..	..
	(iv) Synbiotics . . .	..	2,752	2,752	..	1,402	1,402	..	1,021	1,021	..	169	169
	(v) Chemo-pharmia . . .	..	..	..	..	..	..	..	38	38	..	307	307
	TOTAL .	..	3,867	3,867	..	2,756	2,756	..	3,818	3,818	..	476	476

16 *P. A. S.*														
(i) Biological Evans	..	1 290	1,290	..	730	730	..	1,435	1,435	..	..	..
(ii) Wander Pharmed	..	284	284	..	2,857	2,857	..	1,554	1,554	..	2,474	2,474
(iii) Pfizer	..	..	..	..	..	..	..	197	197	..	243	243
TOTAL	..	1,574	1,574	..	3,587	3,587	..	3,186	3,186	..	2,417	2,417
17 *Tetanus Anti-toxin*														
Bengal Immunity	..	6,541	6,541	..	4,059	4,059	..	3,502	3,502	..	2,473	2,473
TOTAL	..	6,541	6,541	..	4,059	4,059	..	3,502	3,502	..	2,473	2,473
18 *Prednisolone*														
(i) Merck Sharp	..	1,207	1,207	..	131	131	..	15	15	..	..	..
(ii) Glaxo Labs.	..	1,055	1,055	..	803	803	..	128	128	..	36	36
(iii) Wyeth Labs.	..	1,426	1,426	..	3,406	3,406	..	6,600	6,600	..	5,346	5,346
TOTAL	..	3,688	3,688	..	4,340	4,340	..	6,738	6,738	..	5,382	5,382
GRAND TOTAL	3,995	59,766	63,761	4,002	98,887	1,02,889	2,303	1,13,294	1,15,602	66	78,999	79,065

TABLE 22.4

Total value of sales by formulators

(Rs. in '000)

Sl. No.	Name of the formulator	Government sales				Non-Government sales				Total sales			
		1964	1965	1966	1967	1964	1965	1966	1967	1964	1965	1966	1967
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Alembic Chemical	..	..	..	..	..	..	..	..	19,407	21,638	21,389	28,205
2	Anglo-French	..	..	..	..	..	..	..	..	1,003	1,683	..	..
3	Bayer	10	25	..	2	238	227	..	543	248	262	..	545
4	Bengal Chemical	..	..	..	..	..	..	..	..	457	397	451	262
5	Biological Evans	..	..	..	..	..	..	..	..	..	11,045	1,462	..
6	Boehringer-Knoll	..	..	1,556	697	..	..	2,237	2,149	..	..	3,793	2,846
7	Boots	..	27	343	396	1,742	1,426	2,259	3,029	1,742	1,453	2,602	3,425
8	British Drug House	..	..	..	..	..	..	..	..	1,518	1,201	1,383	1,013
9	Burroughs Welcome	..	..	..	..	..	..	..	..	827	1,245	1,165	696
10	Chemo-Pharma	..	..	24	121	..	..	11	1	..	..	35	122
11	Ciba	..	..	329	291	..	..	2,407	2,632	2,763	2,863	2,736	2,923
12	Crookes Interfran	..	..	..	..	..	..	..	..	904	679	1,786	1,251
13	Cyanamid	1,141	1,215	1,920	2,727	9,972	11,632	14,287	12,869	11,113	12,847	14,289	15,596
14	Dey's Medical	4,470	..	..	..	5,019	..	..	..	9,489	8,020	..	..

15	East India Pharmaceutical	..	..	1,643	1,698	..	..	4,251	4,274	..	..	5,895	5,972
16	Fairdeal Corpn.	..	..	..	..	..	..	..	..	140	253	172	..
17	Geoffrey Manners	..	..	20	26	..	..	391	531	509	525	411	557
18	Glaxo Labs.	..	..	..	..	..	..	..	..	21,349	23,525	22,855	22,501
19	Hindustan Antibiotic	18,724	23,705	26,071	32,958	1,694	1,589	1,729	3,858	20,418	24,794	27,800	36,816
20	Hoecht	..	..	..	..	..	..	..	..	..	..	160	110
21	Indian Health Institute	..	..	..	..	..	..	..	..	1,470	1,937	44	56
22	Kemp & Co.	33	..	..	..	92	..	..	..	125	..	..	..
23	Mac Labs.	25	3	..	..	2,875	2,997	..	..	2,900	3,000	1,200	..
24	Martin & Harris	..	..	22	76	..	..	55	30	..	..	77	106
25	May & Baker	..	..	38	..	..	..	31	314	..	..	69	314
26	Merck Sharp	..	..	1,856	5,535	..	..	7,709	6,428	..	..	9,565	11,963
27	Neo-Pharma	335	714	1,229	1,585	1,705	1,451	2,202	3,327	2,040	2,165	3,431	4,912
28	Parke-Davis	907	227	1,818	1,315	7,923	8,789	17,064	16,941	8,830	9,303	18,882	18,256
29	Pfizer	956	1,652	11,035	10,276	4,013	4,774	36,726	34,582	4,969	6,426	47,761	44,857
30	Rallis	60	75	124	199	32	4	30	32	92	79	654	231
31	Roche Products	..	..	..	..	..	..	..	..	3,570	4,380	3,838	3,944
32	Sarabhai Chemicals	..	..	..	..	..	..	..	..	69,276	9,845	60,139	76,391
33	Smith Stanistreet	537	802	76	302	2,507	3,321	317	364	3,044	4,123	393	666
34	Spencer	10	3	..	..	66	53	..	..	76	56	49	3
35	Standard Pharmaceuticals	..	..	200	..	219	1,320	950	..	1,531	1,624	1,150	..
36	Stadmed	78	55	..	53	3,993	4,110	..	3,180	4,071	4,165	..	3,233
37	Therapeutic Pharmaceuticals	761	986	..	..	1,989	2,515	..	..	2,750	3,501	..	..

TABLE 22.4—*Contd.*

(Rs. in '000)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
38	U. S. Vitamin	..	..	..	..	..	..	..	..	2,193	3,094	1,700	..
39	Wyeth Labs.	13	349	166	139	819	849	1,025	1,616	832	1,198	1,191	1,755
40	Zandu	..	45	31	60	479	436	568	632	479	481	599	692
41	Binichem	..	..	..	..	..	..	..	..	750	900	900	500
42	Glucodex	..	..	242	625	..	..	123	100	..	..	365	725
43	Gurco Pharma	..	..	..	..	..	..	..	..	..	1,740	..	1,220
44	Laboratories Grimault	..	..	..	..	..	..	..	..	1,014	1,455	..	..
45	Lyka Labs.	..	..	..	..	..	..	..	..	3,785	3,403	5,415	5,223
46	Neil Pharmaceuticals	120	102	150	..	40	43	50	..	160	145	200	..
47	Pharma-Products	..	..	..	..	..	..	..	..	111	151	134	145
48	Pharma Medico	..	..	..	..	..	..	760	1,092	752	1,151	760	1,092
49	Retort Labs.	..	..	..	..	..	..	..	..	693	871	946	1,272
50	Sunny Industries	..	..	..	..	..	..	..	..	..	..	163	198
51	Smith Pharma	..	..	..	2	30	103	152	258	30	103	152	260
	Total	28,180	29,985	48,793	59,083	45,447	45,689	95,334	98,782	2,06,967	1,77,320	2,68,154	3,00,863

22.1.3. It has been suggested that the purchases of State Governments also should be made on country-wide basis through D. G. S. & D. in order to ensure uniformity as well as the right quality of drugs. The attention of the State Governments as well as of the Government of India is drawn to this suggestion.

22.1.4. The formulators of basic drugs have advocated the adoption of the system of sales direct to the formulators instead of through sole distributors or selling agents. Since the number of formulators is not very large this suggestion is commended for the attention of the manufacturers of basic drugs.

22 2. **Sales Promotion :**

22.2.1. The manufacturers of drugs have stressed that the normal means of mass communication are not sufficient for the drug industry as pharmaceutical products have to pass through the medical profession before they could reach the hands of the consumers. They contend that they have to incur considerable expenditure to introduce their products and promote their sales. This is done by various methods : appointment of a large number of salesmen, supply of free literature and free samples to the medical profession, advertisements in medical journals for ethical drugs and in these as well as elsewhere for the remaining. The salesmen travel extensively from town to town and village to village meeting the practising doctors, call at hospitals and explain the value of the drugs and supply literature and free samples. The quantum of amount spent on sales promotion cannot be related to the total turnover of a particular unit or even that of the industry but is related to the particular group of drugs to which it relates. For the outlay on promotion or development is related to specific groups of medicines the use of which is not interchangeable. In U. K. the number of doctors is about 50,000 and the promotion costs work out to Rs. 2,773 per doctor. On the other hand there are about 100,000 registered medical practioners in India and other with medical degrees and the average promotion costs comes to Rs. 409.20 per doctor which is almost 1/7th of the figures for the U. K. costs and compares with the ratio of per capita cost of drugs in the two countries. It has been argued that it is unlikely that units of the private sector which have profits as their primary aim would wish to spend more on sales promotion than is necessary for the performance of their organisation. Information received from the formulators on the amount annually spent by them on (1) their sales promotion departments (supply of free samples and free literature) and (2) items like advertisement,

price competition and special incentives is given in Table 22.5 in respect of the units which have furnished the relevant information to us. Very scanty information could be obtained from the small scale units and it has not been included.

22.2.2. A sample survey conducted by the OPPI gives the following figures as percentage spent on sales promotion to total sales.

	Per centage
Medical representation	5·93
Direct	1·36
Advertisement in medical charges	0·82
Cost of samples	2·46
Other promotional activities	1·83
TOTAL	12·40

The percentage worked out on the basis of the samples in Table 22.5 comes to 9.6 percent.

TABLE 22.5

Total sales of farmulators and their annual expenditure on sales and sales promotion

(Rs. in thousands)

Sl. No.	Name of the Unit	Year to which expenditure relates	Total sales of the company in that year	Expenditure on sales promotion Department			Total	Percentage of Col. 8 to Col. 4	Other expenditure on sales			Total	Percentage of Col. 13 to Col. 4	Grand Total (Col. 8 + Col. 13)	Percentage of Col. 15 to Col. 4
				Staff	Free Samples	Free literature			Advertisements	prize competitions	Special incentives				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Alembic Chemical	1966	62,700	2,508	1,881	314	4,703	7.1	1,566	Nil	25	1,591	2.5	6,294	10.0
2	Anglo-French	1965	9,393	842	239	189	1,270	13.5	12	,,	75	87	0.01	1,357	13.5
3	Bayer	1965-66	12,500	350	175	100	625	4.8	18	,,	Nil	18	0.1	63	5.0
4	Biological Evans	1966	12,100	473	283	103	859	7.1	5	,,	5	10	0.04	869	7.1
5	Burroughs Wellcome	1965-66	14,500	901	112	174	1,187	8.2	510	,,	187	697	4.8	1,884	13·0
6	British Drug House	1966	21,700	1,204	473	217	1,894	8.7	126	,,	58	184	0.8	2,078	9.6
7	Bochringer Knoll	1965-66	15,500	1,320	748	344	2,412	15.6	377	,,	317	694	2.0	3,106	20.0
8	Boots	1965	20,100	644	93	47	784	3.9	666	,,	150	816	4.1	1,600	8.0
9	Bengal Immunity	1965-66	22,400	1,120	1,120	392	2,632	11.7	425	,,	1,120	1,545	6.9	4,177	18.6
10	Ciba	1965	69,943	1,696	1,032	127	2,855	7.2	53	,,	197	250	0.6	3,105	7.8
11	Chemo-Pharma	1965	6,500	406	300	140	846	13.0	40	,,	50	90	1.4	936	14.4

TABLE 22.5—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
12	CIPLA . . .	1965-66	8,600	700	243	70	1,013	11.8	60	,,	73	133	1.5	1,146	13.3
13	Cyanamid . .	1964-65	41,200	1,863	1,351	529	3,743	9.1	100	,,	247	347	0.8	4,090	9.9
14	East India Pharmaceutical.	1965	23,700	1,500	500	350	2,350	9.9	670	,,	110	780	3.2	3,130	13.2
15	Fairdeal Corpn. .	1965-66	2,900	8	108	31	147	5.1	9	,,	25	34	0.1	181	5.2
16	Glaxo Labs. . .	1966	1,64,600	3,150	700	680	530	2.1	173	,,	3,230	3,405	5.1	12,933	7.9
17	Geoffrey Manners .	1965-66	56,111	600	250	41	891	1.6	6	,,	57	63	0.1	954	31.7
18	Hindustan Antibiotics	1965-66	53,900	211	16	Neg.	227	0.42	110	,,	Nil	110	0.2	337	0.62
19	Hoechst . . .	1965	42,300	247	1,922	773	2,942	7.0	79	,,	499	578	1.4	3,520	8.3
20	Merck Sharp . .	1965-66	31,300	1,748	285	552	2,585	8.3	37	Nil	968	1,005	3.2	3,590	11.5
21	Mac Labs. . .	1965-66	4,100	162	100	33	295	7.2	53	8	50	111	2.7	406	9.9
22	May & Baker . .	1965-66	33,400	1,818	592	682	3,092	9.3	42	Nil	Nil	42	0.1	3,134	9.4
23	Neo Pharma . .	1966	12,000	885	368	58	1,311	10.9	37	9	Nil	46	0.4	1,357	11.3
24	Parke-Davis . .	1965-66	52,700	2,841	733	1,004	4,578	8.7	846	24	132	1,002	1.9	5,580	10.6
25	Pfizer . . .	1965-66	1,27,000	7,105	2,113	777	9,995	7.9	262	Nil	150	412	0.3	10,407	8.2
26	Roche Products .	1966	31,300	803	395	Nil	1,198	3.8	1,839	Nil	1,039	2,867	9.2	4,065	12.9
27	Standard Pharmaceuticals	1965-66	18,200	410	473	75	958	5.3	50	14	60	124	0.7	1,082	5.9
28	Smith Stanistreet .	1965-66	9,938	748	295	58	1,001	10.1	839	3	360	1,202	12.1	2,803	28.2
29	Sarabhai Chemicals .	1965-66	1,16,000	5,223	2,909	1,032	9,164	7.9	1,685	Nil	8,700	10,385	9.00	19,549	16.9
30	Stadmed . . .	1966-67	4,523	437	279	129	845	18.7	Nil	Nil	Nil	Nil	..	845	18.7
31	Unichem Labs. . .	1965-66	22,000	786	1,100	Nil	1,886	8.6	724	11	107	842	3.8	2,728	12.4
?	U. S. Vitamin . .	1965-66	3,973	390	158	99	647	16.3	10	8	34	52	3.1	699	17.6
	Wyeth Labs. . .	1965-66	12,300	223	268	137	628	5.1	4	Nil	4	8	0.1	636	5.2
	Zandu . . .	1965-66	11,514	276	115	Nil	391	3.4	115	Nil	Nil	115	1.0	506	4.4
			11,50,895	43,598	21,729	9,257	74,584	6.5	11,548	77	23,018	34,643	3.0	109,227	9.6

22.2.3. Analysed by the proportion which the expenditure on sales promotion bears to the total turnover of the unit in a given year the position is a as follows :

Units whose expenditure on sales promotion was between 20 and 25 per cent	2
Units whose expenditure on sales promotion was between 15 and 20 per cent	4
Units whose expenditure on sales promotion was between 10 and 15 per cent	11
Units whose expenditure on sales promotion was between 5 and 10 per cent	14
Units whose expenditure on sales promotion was between 0 and 5 per cent	3
TOTAL .	34

A large number of units fall within the range of expenditure between 5 and 15 per cent.

22.2.4. Advertising promotion of drugs has been a controversial issue for a long time. Since ethical drugs are not sold directly to the public and are sold only on the prescription of doctor the manufacturers have necessarily to approach the prescribing doctors so far as promotion of these drugs is concerned. For the rest the normal channels of advertising are used. It has been alleged that sales promotion tends to invest drugs of particular brand names with attributes and qualities which they do not in reality possess and therefore misleads the doctors. The amount of expenditure on such sales promotion is also considerable in certain cases. In U. S. A. some years ago in the course of the inquiry known as the Kefauver Inquiry it was found that about 24 per cent of the turnover was spent on sales promotion which was the largest single item on the cost of drugs, the cost of the materials being only a little more than 32 per cent, research and development six per cent, general administration 11 per cent, taxes 13 per cent and net profit after taxes 13 per cent. The constant stream of literature published and distributed amongst medical practitioners is also said to a large extent to be a waste since it is more often than not repetitive and is not even read. With the sole object of promoting the sales of a particular drug all the techniques of normal advertising are used without adequate realisation of the fact that even a slight departure from truthfulness is likely to result in great potential harm to the patient if

the doctors were to be gulliable and go by the extravagant and dramatic claims made. It has been urged that free supplies of samples to medical profession leads to unhealthy competition. Some State Drugs Controllers have said that restrictions should be imposed on the supply of sample of drugs which have been in use for five years as no useful purpose is served in giving a large number of samples of well-known medicines. The Director, Drugs Control Administration, Maharashtra has added that a certain ceiling should be fixed for expenditure on sales promotion by making necessary provisions in the form of a suitable legislation. The practice of free supply of medicines gives rise to unhealthy competition amongst manufacturers who try to vie with each other in obliging the medical profession with a view to obtain its support. The State Drugs Controller for Mysore has also advocated a ceiling for the distribution of samples in the interests of reduction of ultimate cost of the product and has suggested that less amount be spent on literature, etc. We consider that sales promotion may be considered unobjectionable in the case of new drugs provided that no unsubstantiated claims are made but that it should not be as relentless as it appears to be at the present moment in the case of already well established drugs and that in any case the total expenditure on sales promotion should not exceed ten per cent of the *ex*-factory cost of the drug. In determining the fair prices of formulations we have made suitable adjustments on these lines.

CHAPTER 23

CHARACTERISTICS OF THE INDUSTRY, NATURE OF INVESTMENT AND COLLABORATION :

23.1. Characteristics of the industry—Distribution by size nature of investment and turnover.

23.1.1. It has already been mentioned that there are 118 units registered or licensed with the D. G. T. D. and that there are 2131 units in the small scale sector licensed by State Drugs Controllers making a total of 2249 units which manufacture basic drugs and formulations. There are certain special features of the industry in India which need to be mentioned. Even in the case of the organised sector the largest Indian companies are small compared to European or American companies. The smallest Vitamin A plant in those countries has a capacity of at least five times the size of the largest plant in India. In Europe and U. S. an economic size unit is twenty times that of the largest in India. In U. S. S. R. the standard size of a unit is about ten times that of the largest unit in India. In the case of Tetracycline, fermentation vessels in India are of 6,000 U. S. gallons. In other countries the minimum capacity is considered to be 12,000 gallons. In larger plants those of 25,000 U. S. gallons and over are used and the economic size of the fermentation plant is regarded as that of 50 tonnes a year. The plants in our country are those with a capacity of 5 or 10 tonnes. In a glass lined reaction vessel of 100 gallons for the production of Chlorpropamide the batch size is 40 to 50 kilograms and in spite of this diminutive size the licensed capacity of one and half tonnes can be produced in a month. For economic operations it is considered that demand should be at least fifteen tonnes as against the country's requirement of five tonnes. In the case of antibiotics, the capacity of a unit in India is about one tonne per month while in the U.S.A. it is about 12 tonnes. The lot size is 100 kilogrames in India while it is 1140 kilograms in the U.S. The basic vessel size is about 500 kilograms in India while it is 3,500 kilograms in the U.S.A. In the case of anti-malarials, the capacity of a plant operating in the U.S.A. is 4800 kilograms per month as against those of 2500 kilograms in India. The difference in lot size is about 1200 as against 500 kilograms in India and the basic vessel size is 500 kilograms in India and double this capacity in the U.S.A.

23.1.2. The drug industry is by and large international and some of the largest units operate in many countries in the world. Even in U. K. there is a large number of units which are foreign owned. In that country in 1964, 53 per cent of the market share was held by U. S. based companies, 12 per cent by Swiss firms, 8 per cent by other foreign organisations and only 27 per cent by indigenous ones. Canada's foreign subsidiaries supply almost the whole drug market and 80 per cent of companies are foreign owned. Compared to U. K. there is lower incidence of foreign ownership of pharmaceutical firms in India. Another characteristics of the industry is that owing to competition by product substitution and not by price cutting the units have to keep themselves on their toes and to concentrate on the production of innovations even if those are in the nature of what is known as molecule manipulations. Compared to other leading drug manufacturing countries in the world the number of units in our country is very large, particularly because of the existence of a very large number of small scale units. In the case of the small scale units it has been argued that the standards achieved by them are not likely to be satisfactory or uniform. We have not been able to get a break up of substandard drugs found in the course of inspections undertaken by Government Inspectors which came from the small scale units. Our attention has however been drawn to para 3.3.1 of the Report on the Committee on Drugs Control (1966) which relates to the working conditions of small scale units and is reproduced below :—

> "3.3.1. By far and large the smaller units being housed in residential buildings are not designed with necessary layout for pharmaceutical manufacture. The uniflow is a very desirable feature in manufacture and it is not possible to achieve this in the existing premises. Some of the units have, no doubt, put up properly planned and good buildings for the purpose, while there were others which were housed in dilapidated structures. Except in a few units, attention was not paid to the hygienic conditions in the plants as well as in the surrounding areas. Even in respect of the condition of the buildings and hygienic conditions one would clearly observe the difference in the units located in States where there was adequate machinery for enforcement with proper supervision and States there this was lacking."

23.1.3. Of the 118 units in the large scale sector, 62 manufacture the specified basic drugs or their formulations and of the 2131 units in the small scale sector there are 391 units manufacturing basic drugs or formulations under inquiry. Very little data if at all are available with regard to the investment, turnover

23.1.5 The distribution of these 40 units by the range of employed capital is as follows :—

TABLE 23.2

Pattern of foreign capital participation

(Amount in lakh Rs.)

Range of employed capital	Entirely foreign owned		With major foreign equity participation		With 50 percent foreign equity participation		With minor foreign equity participation		Entirely Indian owned	
	No.	Amount of foreign capital	No.	Amount of foreign capital	No.	Amount of foreign captital	No.	Amount of foreign capital	No.	Amount of foreign capital
Over 1000	1	300	..	..	..	..	..	..	1	..
501—1000	..	..	2	411	..	..	..	..	2	..
401—500	..	..	..	..	..	..	..	..	1	..
301—400	1	253	..	..	1	32	..	..	..	..
201—300	..	..	5	472	..	..	2	36·8	..	..
101—200	1	42	1	56	..	..	1	6	5	..
51—100	1	89	1	25	..	..	3	28.4	2	..
26—50	..	..	1	5·5	..	..	1	0·2	1	..
1—25	..	..	1	3	1	1	..	..	4	..
TOTAL	4	684	11	972·5	2	33	7	71·4	16	..

The entirely Indian owned companies as well as certain other units which have foreign equity participation in capital have entered into foreign collaboration, particulars of which are given in the following paragraphs.

23.2. Collaboration for manufacture and formulation of specified drugs:

23.2.1. For the purpose of the present inquiry, we have examined the foreign collaborations of companies engaged in the manufacture and/or formulation of the specified drugs. The following

table shows for each specified drug, the number of producers who have foreign collaboration and also the countries with which they collaborate.

TABLE 23.3

Extent and pattern of foreign collaboration for the specified basic drugs

Basic drugs for which collaborating	Total No. of units in production	No. of units with foreign collaboration	Their distribution, according to the countries with which collaborating				
			U.K.	U.S.A.	Switzerland	West Germany	Italy
1	2	3	4	5	6	7	8
Vitamins :							
1. Vitamin-A	2	2	1	..	1	..	..
2. (a) Vitamin-B12	1	1	..	1	..	..	..
(b) Vitamin-B12(b)	2	2	1	1	..	..	..
3. Vitamin-C	1	1	..	..	..	1	..
Sulpha Drugs :							
4. Sulphadiazine. .	2	2	1	..	1	..	..
Antibiotics :							
5. Penicillin	3	..	..	..	..	..	..
6. Streptomymycin .	2	2	...	2	..	..	..
7. Chloramphenicol	3	3	..	1	..	1	1
8. Tetracyclines .	4	3	..	3	..	..	..
Anti-Malarials :							
9. Amodiaquin	2	1	..	..	..	..	..
10. Chloroquin	2	..	..	..	..	..	..

TABLE 23.3—*Contd.*

1	2	3	4	5	6	7	8
Anti-Disentric :							
11. (a) Iodo-chlorhyd-droxy-qui-noline .	8	1	..	..	1	..	..
(b) Di-Iodo-hydroxy-quinoline	9	1	1	..	..	..	..
Anti-Diabetics :							
12. Chlorprop-amide .	3	1	..	1	..	..	..
13. Tolbutamide	3	1	..	..	..	1	..
14. Insulin .	1	1	1	..	..	..	..
Anti-Tuberculosis							
15. I.N.H. .	9	2	..	1	..	..	1
16. P.A.S. .	4	2	..	1	1	..	..
Anti-Toxin Sera :							
17. Tetanus Anti-toxin	5	..	..	..	..	..	..
Others :							
18. Prednisolone	3	2	1	1	..	..	..

23.2.2. It may be noted that all the specified drugs excepting three, namely Pencillin, Chloroquin, and Tetanus Anti-toxin, are subject to collaboration. As regards the extent of collaboration available to each specified drug, in the case of seven specified drugs, namely, Vitamin-A, Vitamin B12 and B12(b), Vitamin C, Sulphadiazine, Streptomycin, Chloramphenicol and Insulin, all the producing units have foreign collaboration or financial participation. For the remaining eight specified drugs, some of their producers only have foreign collaboration or financial participation. The country with which the manufacturers of specified drugs collaborate most frequently is the U.S.A., and next come U.K., Switzerland, West Germany and Italy.

23.2.3. Out of the 62 units in the large scale sector which are engaged in the manufacture and/or formulation of the specified drugs, only 28 units have foreign collaboration or participation the particulars of which are given in Table 23.4 :

TABLE 23.4

Classification of units with foreign collaboration and capital participation

	No. of units with foreign equity participation.	No. of units with collaboration without participation
Manufacturers	2	1
Formulators	8	2
Manufacturers-*cum*-formulators	14	1
TOTAL	24	4

Foreign collaboration without participation in the equity capital is in the case of Sarabhai Chemicals, Hindusthan Antibiotics and Fairdeal Corporation. In some cases (*e.g.* Mac Labs.) there is a collaboration for the specified drugs and also its formulations.

23.2.4. Subsidiaries of foreign manufacturing organisations

23.2.4.1. The wholly foreign owned units engaged in the manufacture and/or formulation of the specified drugs are only four of which three are engaged in the manufacture as well as formulation of the specified drugs. They are Glaxo Labs. which is licensed to produce three of the specified drugs ; May & Baker, a foreign branch licensed to produce three of the specified basic drugs; and Boots, licensed for one specified drug. The fourth unit is Burroughs Wellcome which is engaged only in the formulations of the specified drugs. All the four units are British owned.

23.2.4.2. The total employed and paid-up capital of these four wholly foreign owned concerns are as follows :

TABLE 23.5

Employed and paid-up capital of foreign owned units

(Rs. in Lakhs)

	Employed capital	Paid-up capital
Glaxo Labs.	1,066	300
May & Baker	322	253
Boots	130	42
Burroughs Wellcome	89	50
TOTAL .	1,607	645

Glaxo Labs. has foreign collaboration agreements for the manufacture of two specified drugs namely Vitamin A and Prednisolone. For Vitamin A, it has entered into an agreement with Eastman Kodak in 1958 which will lapse in 1973. The rate of royalty to be paid by Glaxo Laboratories is 7½ per cent on the fair market value. Except to U.S.A. and Canada, it can export to any other country. Further for Prednisolone, Glaxo has a ten year collaboration agreement with Scherico Ltd. (U.S.A.) which lapses in 1968. The Royalty rate is 6 per cent on sales, and it can export Prednisolone to any country excepting U.S.A. Boots has informed us that it collaborates with its parent company in U.K. for the manufacture of Insulin and its formulations. Burroughs Wellcome, which is engaged in only formulations of the specified drugs, has entered into a collaboration agreement with Wellcome Foundation (U.K.) in 1951 which is renewable from time to time. The rate of royalty is 5 per cent nett on sales, and 5 per cent nett for technical know-how. Except for Glaxo Labs. the other wholly foreign owned concerns do not have limiting conditions on the export of their products.

23.2.5. Collaboration with equity participation in capital

Foreign participation in the enquity capital of units engaged in the manufacture and/or formulation of the specified drugs is either with a majority interest (51 to 99%) or with a minority

interest (3 to 49%) or with an equal interest on 50-50 basis. The total number of units which have a foreign majority share-holding is 12—five formulators and seven manufacturers-*cum*-formulators of the specified drugs. Their particulars are given in Table 23.6 :

TABLE 23.6

Particulars of units with majority foreign capital participation

Sl. No.	Name of company	Employed	Paid up capital	Foreign share-holdings		Participating country
		(Rs. in lakhs)	(Rs. in lakhs)	(Rs. in lakhs)	As % of 4	
1	2	3	4	5	6	7
1	Ciba . . .	779	325	211	65	Switzerland
2	Bayer . . .	240	265	141	54	W. Germany
3	Pfizer . . .	537	248	200	81	U.S.A.
4	Merck Sharp . .	245	180	108	60	U.S.A.
5	Parke-Davis . .	249	105	88	83	U.S.A.
6	Roche Products .	258	100	89	89	Switzerland
7	Wyeth Labs . .	152	75	56	74	U.S.A.
8	Cyanamid . .	192	70	46	65	U.S.A.
9	Geoffrey Manners .	72	32	25	78	U.S.A.
10	Franco-Indian . .	14	2	1·2	60	France
11	Wander Pharmed .	26	10	5·5	55	Switzerland
12	Cilag-Hind . .	8	5	3	60	Switzerland
	TOTAL .	2,772	1,417	973·7	..	..

23.2.6. Particulars regarding foreign collaboration in the manufacture of the specified basic drugs and formulations are as follows :

TABLE 23.7

Particulars regarding foreign collaboration of the units manufacturing specified basic drugs and formulations

Sl. No.	Name of the Company	Name of the specified basic drug or formulation for which agreement was entered into	Collaborator's name and country	Period of agreement		Rate of Royalty	Basis of royalty	Conditions, if any, limiting exports by Indian firm
				from	to			
1	2	3	4	5	6	7	8	9
1	Atul Products .	Iodo-chlor-hydroxy quinoline	CIBA (Switzerland).	..	..	..	..	..
2	Bayer . .	Formulations	BAYER (West Germany)	1964	1983	..	..	Export permitted only to the agents or distributors of BAYER.
3	Biological Evans .	I.N.H. and formulations	Bracco Industrial Chemical (Italy).	1961	1971	3·3%	On sales value	Export prices to be approved by collaborator.
4	Boehringer-Knoll	Chloramphenicol	CF Boehringer & Soehn (W. Germany).	1959	..	..	..	..
5	Boots . .	Insulin and its formulations.	Boots Pure Drug Co. (U.K.) (Parent Co.).	.	..	..	..	..

TABLE 23.7—*Contd.*

1	2	3	4	5	6	7	8	9
6	Burroughs Wellcome.	Formulations	Wellcome Foundation (U.K.)	1951	Renewable from time to time	5%	Nett on sales Nett for technical know-how.	..
7	Ciba . . .	Formulations	CIBA Ltd., Switzerland.	1956	1966	..	..	..
8	Cilag-Hind .	Formulations	Cilag Chemical Ltd., Switzerland.	1957	1967	5%	Nett proceeds of the sale	..
9	Cynamid . .	Tetracyclines	American Cyanamid (U.S.A.)	1962	1972/77	5%	..	On the value calculated on the basis of world market.
10	Fairdeal Corporation.	Formulations	Hamol Ltd. (Switzerland).	1963	1968	..	..	No export permitted.
11	Franco-Indian .	Formulations .	Roussel - Uclaf (France).	(Indefinite)		..	..	Export permitted to such places where the collaborators are not operating already. In a country where the Indian firm exports

								other agencies of Roussel Uclaf will not be permitted to export.
12	Geoffrey Manners	Formulations	American Home Products Corpn. (U.S.A.)	..	1975	..	..	..
13	Glaxo Labs. .	1. Vitamin-A	Eastman Kodak Inc. (U.S.A.)	1958	1973	7½%	Fair market value.	Throughout the world except U.S.A. & Canada.
		2. Prednisolone	Secherico Ltd. (U.S.A.).	1959	1968	6%	Sales	Except U.S.A.
14	Hindustan Antibiotics.	Streptomycin	Merck & Co. (U.S.A.)	1961	1971	1½% to 2½%	Net sales in India.	At higher royalty rate.
15	Hoecast . .	Tolbutamide	Farbweke Hoechst A. G. (W. Germany)	1956/59	1976	..	..	..
16	Mac Labs. . .	Chloramphenicol and formulations.	Carlo Erba S.P.A. (Italy).	..	..	5%	Cost price	..
				1954	..	5%	Cost price of specialities manufactured and sold.	
17	May & Baker .	1. Sulphadiazine	May & Baker (U.K.).	..	..	..	..	..
		2. Di-iodo-hydroxy-quinoline.	Do.	..	..	..	..	..

TABLE 23.7—*Concld.*

1	2	3	4	5	6	7	8	9
18	Merck Sharp	Vitamin B12	Merck & Co. (U.S.A.).	1959	1969	..	..	..
19	Neo-Pharma	Formulations	Archifar, S.R.Ls. Milan (Italy).	Valid upto June 1968. Automatic renewal for further period of 3 years.		..	..	..
20	Parke-Davis	1. Chloramphenicol	Parke-Davis (U.S.A.).	1958	Terminable on six months' notice	..	..	..
		2. Amodiaquin	Do.	1958	Do.	..	..	..
21	Pfizer	1. Tetracyclines	Pfizer Corpn. (Panama).	1960	1970	..	..	..
		2. Chlorpropamide	..	1965	1975	..	..	..
22	Roche Products	Vitamin A	F. Hoffman La Roche. (Switzerland).	1958	1968	..	..	..
23	Sarabhai Chemicals	Formulations	E.R. Squibb and sons (U.S.A.)	Indefinite		Percentage of royalty varies from product to product. During 1965-66 it worked out to 2·9% after taxes.		

24	Sarabhai Merck .	Vitamin-C	E. Merck AG (W. Germany).	1958	1968	...	..	Prior sanction of collaborator is required.
25	Synbiotics . .	1. Streptomycin	Olin Mathieson Chemical Corpn. (U.S.A.)	1961	Indefinite	—	..	Tetracycline cannot be exported.
		2. Tetracyclines	,,				..	..
		3. Di-iodohydroxy-quinoline	,,	1961 1961	,, ,,	— —	..	..
		4. I.N.H.	,,	1961	,,	...	—	..
26	U.S. Vitamins .	Formulations	U. S. Vitamin & Pharmaceutical Corpn. (U.S.A.)	1961	1971	—	..	They have been given franchise for export to Pakistan, Ceylon & Singapore.
27	Wander Pharmed	PAS & its Salts	Dr. A. Wander S.A. (Switzerland).	1963	1973	5%	Of the amount of invoice based on ex-factory prices.	
28	Wyeth Labs .	Prednisolone	American Home Products Corpn. (New York) (USA)	—	Indefinite	..	..	..

23.2.7. There are only two units with foreign equity capital at par with indigenous capital namely, (1) Hoechst which is a manufacturer-*cum*-formulator, and (2) U.S. Vitamin which is only a formulator of the specified drugs. Their paid-up capital in 1966-67, foreign share holdings and the names of participating countries are as follows :

	Employed capital (Rs. in lakhs)	Paid-up capital (Rs. in lakhs)	Foreign share holdings		Participating Country
			(Rs. in lakhs)	Percentage	
Hoechst . . .	355	63	31·5	50	W. Germany
U.S. Vitamin and Pharmaceutical Corpn. .	7·9	2·5	1·25	50	U.S.A.
	362·9	65·5	32·75	50	

23.2.8. Hoechst has a collaboration agreement for the manufacture of Tolbutamide with Forbwerke Hoechst (W. Germany) for the period 1956/69 to 1976. U. S. Vitamin, which is only a formulator of the specified drug, has a ten year collaboration agreement with U. S. Vitamin and Pharmaceutical Corpn. (U.S.A.) for the period 1961 to 1971, and it is given "franchise for export to Pakistan, Ceylon and Singapore."

23.2.9. As regards foreign equity capital participation with a minority interest ranging (from 3 to 49 per cent), there are seven units in which such participation has taken place. Of these seven units two are manufacturer, one formulator and four manufacturer-*cum*-formulators of the specified drugs. Their names and paid-up capital and foreign equity capital participation, and the names of the participating countries are given in Table 23.8.

TABLE 23.8

Particulars of units with minority foreign capital participation

Name of units	Employed capital (Rs. in lakhs)	Paid-up capital (Rs. in lakhs)	Foreign share holdings (Rs. in lakhs)	As percentage of paid up capital	Participating Country
A. *Manufacturers of basic drugs.*					
Synbiotics . .	271	75·0	36·0	48	U.S.A.
Sarabhai Merck .	178	16·5	6·0	35	West Germany
B. *Formulators*					
Neo Pharma . .	50	12·0	0·8	1	Italy
C. *Manufacturers*-cum-*formulators of basic drugs.*					
Biological Evans .	73	28·4	5·4	18	U.K.
Boehringer-Knoll .	114	35·0	17·0	48	W. Germany
East India Pharmaceutical . . .	49	24·0	6·0	25	N.A.
Mac Labs .	32	5·0	0·2	3	Italy
	767	195·9	71·4	36	

23.2.10. Of the two manufacturers, Synbiotics has a collaboration agreement with Olin Mathieson Corporation (U.S.A.) for the manufacture of Streptomycin, Tetracyclines, I.N.H. and Di-iodo-hydroxy-quinoline. The agreement was entered in 1961 for an indefinite period. The terms of agreement do not permit Synbiotics to export its manufactures of these four specified drugs. On the other hand, Sarabhai Merck has a ten year collaboration agreement with E. Merck AG (W. Germany) for the manufacture of Vitamin-C, which it had entered into in the year 1958 and which will lapse this year. In regard to exports of Vitamin-C manufactured by Sarabhai Merck, the agreement requires it to secure prior sanction of its collaborator.

Neo-Pharma has a collaboration agreement with Archifar, S. R. L. Milan, (Italy), which is valid upto June, 1968, and which can be automatically renewed for further periods of three years.

23.2.11. Out of the four manufacturers-*cum*-formulators who have foreign mainority enquity capital participation, only three have collaboration agreements. Biological Evans has a ten-year collaboration agreement with Bracco Industrial Chemical (Italy), commencing from 1961 for the manufacture of I.N.H. This agreement stipulates royalty at 3.3 per cent to be paid on sales value. Boehringer-Knoll has an agreement with CF Boehringer & Soehn (W. Germany) for the manufacture of Chloramphenicol, which it entered into in 1959 for an indefinite period. Mac Labs. has a collaboration agreement with Carlo Erba (Italy) for the manufacture of Chloramphenicol and its formulations which it entered into in 1954 and is renewable, and the rate of royalty to be paid is 5 per cent on the cost price.

23.2.12. We have come across a foreign collaboration agreement which stipulates that benefit by alternative method of manufacture or processing of any new formula suggested or discovered by the Indian company in connection with the products covered by the agreement and the benefit of any improvements in methods which may be discovered by the Indian company will belong exclusively to the foreign company abroad.

Another agreement stipulates that all Patents obtained by the Indian company in connection with the manufacture and use of all the listed products in the agreement shall promptly be assigned by Indian company to the foreign company abroad. Really speaking the foreign company should get licence from the Indian company to make use of such improvements.

23.2.13. Synbiotics has been formed in financial collaboration between Sarabhai Chemicals and Olin Mathieson Chemical Corporation of U.S.A. Sarabhai Chemicals has an agreement with Squibbs which is now owned by Olin Mathieson. The licence obtained by Sarabai Chemicals to manufacture the listed products is sub-licensed in the case of a few items to Synbiotics which is to pay an agreed subsidy to Sarabhai Chemicals. In the case of Streptomycin thus sub-licensed, Synbiotics has to pay 10 per cent royalty to Sarabhai Chemicals which has to pay to Suibbs in New York an amount equal to 12 per cent of Sarabhai

Chemicals' net sales of listed products manufactured, sub-divided or packaged by Sarabhai Chemicals under this agreement.

23.2.14. **Purely indigenous units**

Out of 62 units in the large scale sector engaged in the manufacture and/or formulation of the specified drugs, 37 units are wholly Indian owned, though some of them have a small percentage (not exceeding 3 per cent) of share capital held by non-Indian nationals. Out of 37 Indian owned units, 2 are manufacturers, 23 formulators and 12 manufacturers-*cum*-formulators of the specified drugs.

23.2.15. The paid-up capital of the two wholly Indian manufacturers of the specified drugs is given below :

Rs. in lakhs

	Employed Capital	Paid-up capital
Atual Products	1,370	200
Biochemical & Synthetic	19	8
	1,389	208

Of these, Atul Products only has foreign collaboration, that is, with CIBA (Switzerland) with sales arrangement under which all its production of Sulphadiazine is sold to CIBA (India).

23.2.16. Of the 23 above wholly Indian formulators of the specified drugs, only two have foreign collaboration. Sarabhai Chemicals has stated that it has an agreement for an indefinite period with E. R. Squibb & Sons (U.S.A.) in regard to formulation and its rate of royalty is 12½ per cent of Sarabhai Chemicals' net sales of products manufactured, sub-divided or packaged by the unit. Fairdeal Corporation has entered into an agreement with Hamol Ltd. (Switzerland) for the period 1963-1968 under which it is not allowed to export its preparation. The paid-up capital of Sarabhai Chemicals is Rs. 178 lakhs, and of Fairdeal Corporation is Rs. 7 lakhs.

23.2.17. The 12 wholly Indian manufacturers-*cum*-formulators of the specified drugs have their paid-up capital (1966-67) and non-Indian share holdings as follows :

TABLE 23.9

Particulars regarding wholly Indian Units

Sl. No.	Name of the units	Employed capital	Paid-up capital	Non-Indian Share holding (in Rs. lakhs)
1	Hindustan Antibiotics . . .	730	247	—
2	Alembic Chemical	440	208	0·05
3	Haffkine Inst.	155	162	—
4	Bengal Chemical	195	80	0·64
5	Unichem Labs	98	45	..
6	Standard Pharmaceuticals . .	143	43	0·48
7	Bengal Immunity	75	26	0·26
8	Chemo-Pharma	50	20	..
9	Calcutta Chemical	80	20	..
10	Albert David	15	15	..
11	Dey's Medical	119	15	..
12	Brahmachari Research Institute . .	10	3	..
		2,110	884	1·43

Out of the the above 12 units, only Hindustan Antibiotics a public sector concern has collaboration agreement which it has entered into with Merck & Co. (U.S.A.) for a period of 10 years commencing from 1961 for the manufacture of Streptomycin. The rate of royalty to be paid by Hindustan Antibiotics is 1½ to 2½ per cent on the net sales in India, which will increase in the case of exports to foreign countries.

23.3. Certain problems and issues raised and suggestions made by the medium and small scale units:

23.3.1. Broadly speaking the industry has a substantial investment of foreign capital resulting in foreign control of the the subsidiaries or units which have a majority participation in the share capital. Next come units which collaborate on terms of equity participation and with indigenous control ; in the third

category are wholly Indian-owned units. There is yet a fourth category comprising of small scale units whose number is almost 19 times that of large scale units but whose contribution to the entire industry is only about one-fifth. These units together with some of the Indian-owned units in the organised sector which are lower down the rung, appear to have numerous grievances against the rest of the organised sector and also certain problems in so far as their position in the industry is concerned. It also appears that on occasions the organised sector is identified with foreign-owned industry in India. Even the associations of drug manufacturers reflect this opposition of interest and approach. The OPPI represents as it were the affluent and the large units encompassing all foreign-owned and majority foreign investment units in India. On the other hand, the Indian Drug Manufacturers' Association represents mostly the small scale units and those Indian-owned units registered with the D.G.T.D. which are called medium scale units. The Federation of the Associations of Small Scale Industries of India (F.A.S.I.I.) has also represented to us certain problems faced by the small scale units. The latters organization has stated that (a) the small scale units in the drugs and pharmaceutical industry have been facing uncertain future due to a lack of proper and equitable policy as regards industrial licensing, import licensing and allocation of imported and indigenous raw materials ; (b) the bulk of imported and indigenous raw materials goes to the "scheduled" sector, (c) the large scale units being the producers of most of the raw materials and intermediates are in a position to dictate their price and terms to the small scale units ; and (d) most of the producers of intermediates also produce the end-products, and this enables them to drive out the small scale units from the market. The Indian Drug Manufacturers' Association (I.D.M.A.) has also complained that the large scale units manufacturing the basic drugs reserve their output to themselves and deny supplies to the small scale formulators.

23.32. In this regard it has been suggested by F.A.S.I.I. (a) that the units manufacturing intermediates or raw materials should not be permitted to manufacture products in dosage forms, (b) that small scale units should be supplied with adequate quantities of raw materials at reasonable prices, and organisation like the State Trading Corporation should be directed accordingly, and (c) that Government should also take concrete steps to ensure the availability of indigenous materials from large scale producers by reserving a certain percentage of the quota of their output for distributing among small scale industrial units.

23.3.3. The I.D.M.A. has also suggested that (a) for manufacture of basic drugs licences be issued to more than one party for the same basic drug ; (b) while issuing licences, first the market prices of the basic drugs be determined, and then the manufacturing licences be issued for only such items which can be sold by the indigenous manufacturer at or near international price or within the fixed prices ; (c) basic drug manufacturing and formulation activity be treated completely separately and that no licence be issued for the formulation activity merely because the party offers to manufacture basic drugs ; otherwise, there must be a definite ratio, *e.g.*, say 1:1 between his production of basic drug and his production of formulations made out of that basic drug particularly in the case of foreign manufacturing units ; (d) in future no foreign unit be allowed to do formulations; (e) arrangement should be made for import of know-how by a Government agency and to sell it to Indian concerns for a few basic items; (f) import licences for the intermediates and other required raw materials, etc. be given on the basis of production of particular basic items and not for items of formulations; (g) import licences for formulation industry be separately set out, and the Indian concerns should first get whatever they need. the existing foreign controlled ones the balance only, while the new foreign units be totally denied; and (h) all import duties, etc. on intermediate be removed so as to see that the basic items are sold at or near c.i.f. international prices.

23.3.4. It is stated by the I.D.M.A. that the existing governmental control on prices it actually not price control but a price freeze of the individual manufacturer's price list as prevailing in November, 1963. Both the I.D.M.A. and the F.A.S.I. I. have complained that the Indian manufactures who fixed lower and reasonable prices for their products before the Price Control Order have been obliged to maintain those prices under the Price Control Order, and they have been finding it difficult to do so with increasing prices of raw materials, packing etc., whereas the foreign concern whose original list prices were already high could absorb the increases in the prices of chemicals, packing materials, etc. that took place subsequent to the Price Control Order.

23.3.5. The F.A.S.I.I. has stated further that although there is a provision for increase in prices under the Price Control Order, the procedure stipulated is very cumbersome involving long delays ; and that by the time sanction is obtained for revision of prices, a further revision becomes necessary on account of the steadily rising prices of raw materials etc. It has, there fore,

urged that this procedure should be simplified and that applications for upward revision of prices should be dealt with and disposed of as early as possible by the State Drugs Controllers. It has also suggested that for the drugs considered essential, Government might fix the maximum selling prices for single drug formulations, and review them every quarter of half year according to the cost of the indigenous and packing material available.

23.3.6. The F.A.S.I.I. has complained that the prices charged by the indigenous manufacturers of basic drugs are very high compared to the prices of similar imported drugs, and that the increases in their raw material prices like those of sugar, bottles and packing materials are also creating havoc for the small scale sector particularly in view of their existing low level of prices. The F.A.S.I.I. has urged that Government must ensure that raw materials like sugar etc. be made available to the small units in this industry at controlled prices and that there should be freezing of the price structure of other ancillary items like bottles, packing materials as otherwise the small units in this industry will gradually get eliminated if there is only a price freeze for drugs. It has also complained that the prices charged by differrent indigenous manufacturers for the same product and of the same strength vary and that the prices charged by foreign companies in India are higher than those charged in other countries by their parent or associated companies.

23.3.7. The existence of numerous small scale pharmaceutical and drugs units helps in the stabilisation of prices of drugs and medicines in the market, according to the F.A.C.I.I. In fact it has been stated that the price of I.N.H. which was as high as Rs. 120 per kg. in the pre-devaluation days is now-a-days quoted at less than Rs. 70 per kg. because of the impact of the small units that have come into production.

23.3.8. It is complained by F.A.S.I.I. that large scale units are allowed foreign collaboration for such items as food colours that are manufactured in the country by certain small scale units. As this results in unhealthy competition between the large scale and small scale units, it is suggested by F.A.S.I.I. that foreign collaboration for simple plant products should not be encouraged.

23.3.9. According to I.D.M.A., the foreign controlled concerns in the industry command 65 to 70 per cent of the domestic pharmaceutical market and that their average profit margin on sales in 1964-65 was 7.4 per cent compared to 3.4 per cent of the Indian concerns.

CHAPTER 24

SELLING PRICES

24.1. Amodiaquin and Chlorpropamide are not sold at all as the producers formulate and make use of the entire quantity themselves. Vitamin C is not formulated by the producer and the entire quantity is sold. As regards the rest of the drugs, the quantities produced and sold during the last three years are given in the following Table:

TABLE 24.1

Production and sales of basic drugs

Name of Drug	Unit	Production			Sales			Sales as % of production		
		1965	1966	1967	1965	1966	1967	1965	1966	1967
1	2	3	4	5	6	7	8	9	10	11
1. Vitamin A . . .	MMU	24·5	21·4	23·8	6·3	8·2	8·4	26	37	35
2. Vitamin B 12 . . .	Kgs.	27·2	41·8	53·7	22	28	33	81	68	61
3. Vitamin C . . .	Tonnes	90	131	77	102	112	38	113	85	49
4. Sulphadiazine . .	Tonnes	108	77	44	62	14	5	57	18	11

5. Penicillin . . .	MMU	103	147	119	84	92	53	81	63	.. 45
6. Streptomycin . . .	Tonnes	92	104	125	80	84	90	87	81	.. 72
7. Chloramphenicol . .	Tonnes	25·6	24·3	21·6	7·7	4·5	0·8	30	19	.. 4
8. Tetracyclines . . .	Tonnes	20·6	19·7	15·7	6·6	4·7	3·5	32	24	.. 22
9. Chloroquin . . .	Tonnes	2·4	2·8	3·4	0·5	0·9	0·1	21	32	3
10. Iodochlorhydroxy quinoline	Tonnes	68·6	87·0	71·5	45·6	53·7	39·1	66	62	55
11. Tolbutamide . . .	Tonnes	16·5	24·9	12·0	0·1	2·1	0·4	1	8	3
12. Insulin	M.U.	439	458	410	88	199	165	20	43	40
13. I.N.H.	Tonnes	63	63	53	49	22	19	78	35	36
14. P.A.S.	Tonnes	333	320	256	218	172	178	65	54	70
15. Tetanus Antitoxin . .	Thousand M.U.	4·9	5·1	6·9	Nil	Nil	Nil	..	..	..
16. Prednisolone . . .	Kgs.	360	588	484	257	412	348	71	70	72

24.2. In the case of six drugs, namely, Vitamin B12, Streptomycin, Tetracyclines, Iodo-chlor-hydroxy-quinoline P.A.S. and Prednisolone, the sales contributed the bulk of the production (more than 50%) while in the case of the remaining the sales were of a quantity lower than that used by the basic manufacturers of the drugs put together in each case.

24.3. Producers' bulk prices for the specified basic drugs in 1966-67 are given in Table 24.2 :

TABLE 24.2

Producers' bulk prices for the specified basic drugs in India

Sl. No.	Basic Drug/Selling Manufacturer	Description of the drug/bulk packing	Strength, if any, given	Unit for pricing	Prices in 1966-67 Rs.	Price revision, if any, during 1967-68
1	2	3	4	5	6	7
1	VITAMIN-A					
	(1) Roche Products . . .	Pharmaceutical Grade Synthetic Vitamin—A.				
		(1) Acetate	1·0 MU per gm	BU	594	—
		(2) Palmitate	1·0 MU per gm	BU	594	—
		(3) Palmitate	1·7 MU per gm.	BU	594	—
		(4) Watermiscible	0·1 MU per ml.	BU	874	—
		(5) Watermiscible plus Vit.D2 (10:1)	—	BU	885	—
		(6) Dry Vit. A Acetate Type 325	Type 325	Kg.	275	—

	(7) Dry Vit. A 500		Kg	421	..
	(8) Dry Vit. A Palmitate type 500	Type 500	Kg	421	..
(2) Glaxo Labs . . .	(1) Vitamin-A Palmitate/Acetate.	1·0 MU per gm.	BU	594	..
2 VITAMIN-B12					
(1) Merck Sharp . . .	(1) Cryst. Vit. B-12	..	gm	175	160
	(2) Trit. of Vit. B12 with calcium phosphate Diabasic 0·5% ... 0·1%	..	gm	221	..
	(3) Trituration of Vit. B12 0·1% in Gelatin.	..	gm	261	..
(2) Themis Pharmaceuticals .	Vitamin B12	..	gm	135	..
(3) Glaxo Labs. . . .	(1) Vitamin B12(b)	..	gm	330	275
3 VITAMIN-C					
(1) Sarabhai Merck . .	Vitamin-C	..	Kg.	74	..
4 SULPHADIAZINE					
(1) Atul products . . .	(1) Sulphadiazine	..	kg.	64	..
(2) May & Baker . . .	(only 0·2% of sulphadiazine produced in 1966 sold to other pharmaceutical firms.				65—72 (depending upon size of order)

TABLE 24.2—*Contd.*

1	2	3	4	5	6	7
5 PENICILLIN						
	(1) Hindustan Antibiotics	(1) Crystaline Pen. G. Potassium First Crystals non-soluble salts.	...	BU	400	..
		(2) Procain Benzyl Pen. I.P. plain powder.	...	BU	500	..
		(3) Procain Benzyl Pen. I.P. Tweencoated powder.	...	BU	500	..
		(4) Penicillin V Potassium I.P. (for tablets).	...	BU	800	..
		Soluble Salts				
		(5) Benzyl Pen. (Pot. Salt) I.P. suitable for parenteral use	...	BU	500	...
		(6) Benzyl Pen. (Pot. Salt) I.P. (Tablet Grade).	..	BU	500	..
	(2) Alembic Chemical	Penicillin (Proposed to take over the distribution work by the company from 1-1-1967).	...	BU	500	...
	(3) Standard Pharmaceuticals	(1) Penicillin Sterile	...	BU	500	...
		(2) Penicillin Non-sterile.	...	BU	400	...

6 STREPTOMYCIN					
(1) Hindustan Antibiotics .	Streptomycin Sulphate	—	Kg.	295	..
(2) Synbiotics	Streptomycin Sulphate	—	Kg.	295	..
7 CHLORAMPHENICOL					
(1) Parke-Davis . . .	No bulk sales				
(2) Boehringer-Knoll . .	Chloramphenicol	—	Kg.	410	..
(3) Mac Labs	No bulk sales; production for self consumption.				
8 TETRACYCLIN					
(1) Pfizer	Tetracycline Hydrochloride	—	Kg.	1147	..
(2) Cyanamid India . .	Tetracycline Powder	..	Kg.	1147	..
(3) Hindustan antibiotics . .	Chlortetracycline . . .	..	Kg.	1150	..
(4) Synbiotics	Tetracycline Hydrochloride	—	Kg.	1147	..
9 CHLOROQUIN					
Bengal Immunity . . .	Chloroquine Phosphate USP	..	Kg.	275	..
10 IODOCHLORHYDROXY QUINOLINE.					
A. Large Scale Units Atul Products		..	Kg.	80	..

TABLE 24.2—*Concld.*

1	2	3	4	5	6	7
	B. Small Scale units					
	(1) Neogy Labs . . .	..	..	Kg.	38to 42	48
	(2) Syno Chem . . .	..	..	Kg.	45	..
	(3) Sunny Industries . .	..	..	Kg.	50	51·50
11	TOLBUTAMIDE					
	(1) Unichem Labs . . .	..	..	Kg.	80 (Ex-factory only)	..
	(2) Hoechst Pharmaceutical .	..	..	Kg.	70	121
12	INSULIN					
	Boots	(1) Crystals from plain Insulin solution.	..	MU	4200	5000
		(2) Enzyme tested from P.Z. Insulin solution.	..	MU	4500	5300
		(3) Nova Crystals from Lente Insulin solution.	..	MU	5300	6100
		(4) Hegedown Crystals from N.P.H. Insulin solution.	..	MU	5300	6100
13	I.N.H.					
	A. Large Scale units					
	(1) Bengal Immunity . .	..	..	Kg.	100	..

Bengal Chemical . .	..	..	Kg.	120 (f.o.r. Calcutta)	..	
Pfizer	Bulk prices not yet fixed					
Synbiotics . . .	..	..	Kg.	85	..	
Biological Evans. . .	..	..	Kg.	80 (f.o.r. Hyderabad)		65
Chemo-Pharma . . .	..	..	Kg.	95		66·25
ıall Scale Units						
Dr. Karanth's Pharma .	..	..	Kg.	70—75	..	
Suneeta Labs. . . .	..	..	Kg.	80 plus tax	..	
Bio-Chemical & Synthetic .	Entire product is taken over by its collaborators, Cilag-Hind				..	
Pfizer	Not selling in bulk					
Biological Evans. . .	..	..	Kg.	32		33.60
Wander Pharmed . .	..	..	Kg.	36	..	
NUS ANTI-TOXIN (Not sold in bulk)						
NISOLONE						
Glaxo Labs . . .	..	..	gm.	25	..	
Merck-Sharp . . .	..	..	gm.	16	..	
Vgeth Labs. . . .	..	..	gm.	17	..	

'oreign domestic prices for some of the drugs were as follows :

TABLE 24.3

gn domestic prices of basic drugs in 1967 (for some important countries)

ountry	Description of Drug/ bulk packing	Strength if any given	Unit for pricing	Price in foreign country & particulars of price	Price in Indian Currency (Rs.)
1	2	3	4	5	6
N-A	(1 *Million international units of A=1 Kg. of A*)				
. . . . .	(1) Synthetic, dry (50 kg. lots)	0·5 M.U. per gm.	per kg.	$ 22 (delivered price)	167
	(2) Liquid in oil (50 B.U. lots)	1.0 M.U. per gm.	per BU	$ 40 (f.o.b. New York)	304
ıark. . . .	Acetate; mineral stable dry powder (feed grade)	0·325 M.U. per gm.	per kg.	$ 6·15 (U.S.) (also its world market price)	47
IN-B12					
A.	(1) Crystaline (USP) (cyano-cobalamin) (vials) (1·50 gm. lots).	..	per gm.	$ 32 (f.o.b. New York)	243

	(2) 0·1% Cyanocobalamin in Gelatin (1 and 25 kg. drums).	..	per gm. activity	$ 42 (freight allowed)	319
(2) Denmark. . . .	Vitamin B12 (feed grade)	..	per gm. activity	$ 4(US) (also its world market price).	30
(3) VITAMIN-C					
(1) U.S.A.	Ascorbic acid (U.S.P.); (100 kilo lots).	..	per kg.	$ 4·10 (delivered price)	31
(2) Denmark. . . .	(1) Vitamin-C	..	per kg.	$ 3·30 (U.S.).	25
	(2) Vitamin-C coated	..	per kg.	$ 4·10 (U.S.) (also its world market price)	31
4. SULPHADIAZINE					
(1) U.S.A.	(1) Sulphadiazine (U.S.P.) Powdered (500 kilos drums)	..	per kg.	$ 12·15	92
	(2) Sulphadiazine (U.S.P.) micro-crystals (500 kilos drums)	..	per kg.	$ 16·15	100
	(3) Sulphadiazine-Sodium (U.S.P.) (500 kilos drums)	..	per kg.	$ 13·15 (Minimum prices)	123
(2) Denmark. . . .	Sulphadiazine	..	per kg.	$ 5·75 (U.S.) (It is also the world market price)	44

TABLE 24.3—*Contd.*

1	2	3	4	5	6
(3) K.	Sulphadiazine powder form				
	(1) 50 kg. fibre drums	..	per kg.	Sh. 42/- (for wholesalers in U.K.).	38
	(2) 5 kg. tins	..	per kg.	Sh. 48/5 d (for wholesalers in U.K.)	44
	(3) ½ kg. bottles	..	per kg.	Sh. 55/9 d (for wholesalers in U.K.).	50
(4) France	3 tonnes lots	..	per kg.	Sh. 40/9 d	30
5. PENICILLIN					
(1) U.S.A.	(1) Penicillin Potassium non-sterile crystals (bulk)	..	per B.U.	$ 21·75	165
	(2) Penicillin Procaine, Sterile crystals (bulk)	..	per B.U.	$ 23·75	181
(2) Denmark. . . .	(1) Penicillin G Procaine Sodium or Potassium.	..	per B.U.	$ 20·50 (U.S.) (It is also the world market price)	156
	(2) Penicillin V (Phenoxymethyl penicillin potassium)	..	Per B.U.	$ 22·00 (U.S.)	167

(3) France	(1) Penicillin G Sodium	..	per B.U.	$ 21·50 (U.S.)	163
	(2) Procaine Penicillin G .	..	per B.U.	$ 21.50 (U.S.)	163
6. STREPTOMYCIN					
(1) U.S.A. (The Oil, Paint and Drug Reporter for Sept. 1967)	Streptomycin Sulphate (U.S. A.) (bulk)	..	per kg.	$ 33	251
(2) Denmark (Marsing & Co., Ltd., Dec. 1966).	Streptomycin Sulphate	..	per kg. base	$ 27 (U.S.) (It is also the world market price)	205
(3) France (M/s Rhone Poulene, Paris, which is represented in India by Voltas Ltd.).	(1) Streptomycin base represented as sulphate)	..	per kg.	$ 30.50 (U.S.)	232
	(2) Hydrostreptomycin base (represented as sulphate).	..	per kg.	$ 30·50 (U.S.)	232
7. CHLORAMPHENICOL					
(1) Denmark. . . .	1. Chloramphenicol	..	per kg.	$ 17·50 (U.S.) (It is also the world market price).	133
	2. Chloramphenicol Palmitate	..	per kg.	$ 17·50 (It is also the world market price).	133
8. TETRACYCLINES . .	..	..	..	..	..
9. AMODIAQUIN . .	..	..	..	..	..

TABLE 24.3—*Concld.*

1	2	3	4	5	6
10. CHLOROQUIN					
(1) Denmark. . . .	Chloroquin Diphosphate	..	per kg.	$ 18·25 (It is also the world market price)	139
	(2) Chloroquin (Imperial Chemical Industries Ltd.)	Pack of less than 500 kg.	per kg.	Sh. 150/-	135
		Pack of over 500 kg.	per kg.	Sh. 145/-	130·50
(2) France	Chloroquin Diphosphate (in bulk of 500 kgs. only).	..	per kg.	Sh. 140/ 8½d	127
11. (a) IODO-CHLORHYDROXY-QUINOLINE					
(1) U.S.A.	(1) U.S.P. XVI (100 lb. drums)	..	per lb.	$ 8·60 (Freight allowed)	65
(2) Denmark. . . .	Iodo-chlor-hydroxyquinoline	..	per kg.	$ 4·80 (U.S.) (also world market price)	36
(3) France	5-chloro-7-Iodo 8-Hydroxy-quinoline (1 tonne lots)	..	per kg.	Sh. 39/3d	35
. . . .	Iodochlorohydroxyquinoline	pack of 250 kg.	per kg.	Sh. 48/od	43·20

11. (b) DI-IODO-HYDROXY-QUINOLINE					
1. U.K. (May & Baker)	Powdered				
	(1) 25 kg. fibre drums	—	per kg.	Sh. 77/6d	69
	(2) 5 kg. tins	—	per kg.	Sh. 80/-	72
(Ware Blenkinsop & Co.)	(3) pack of 250 kg.	..	per kg.	Sh. 50/-	45
12. I.N.H.					
(1) U.S.A.	Isoniazid powder	..	per kg.	$ 6·25	47
(2) Denmark. . . .	Isonicotonic Acid Hydrazide	..	per kg.	$ 3·80 (U.S.) (also the world market price)	29
(Ward Blenkinsop & Co. Ltd.)	Pack of 250 kg.	..	per kg.	Sh. 37/6 d	33·75
13. P.A.S.					
(1) U.S.A.	Para-Aminosalycylic Acid (U.S.P.) (in drums of 100 lbs. or more).	..	per lb.	$ 4·50 (freight adjusted)	34
(2) Denmark. . . .	P.A.S. Sodium	..	per kg.	$ 1·65 (U.S.) (also the world market price)	13
(3) France	(1) Sodium P.A.S.	..	per kg.	Sh. 14/7 ½d	13
	(2) P.A.S. Acid	..	per kg.	Sh. 26/1 d	24

24.5. These figures show that the domestic prices of the selected drugs are generally very much lower in most cases in other countries. The industry has represented that it is wrong to compare the prices in India with those of other countries since the manufacturing costs here are higher than elsewhere. It has been stated that high cost of chemicals, intermediates and equipment, high taxation, absence of automation and low productivity in India are responsible for increase in costs. Again the largest units in the industry in India are pigmies in comparison with units in advanced countries. On the question of prices we have already stated the industry's point of view in Chapter 4 and in this chapter it is therefore proposed to deal with factual issues only.

24.6. Coming to formulations the prices of single drug formulations are set out in Table 24.4 and those of multiple drug formulations in Table 24.5. Table 24.6 gives particulars of domestic prices in other countries and also in many cases of the same producer as in India.

TABLE 24.4

Selling prices of single drug formulations

Sl. No.	Name of the formulation and Name of the formulator	Brand name, if any	Dosage	Pack	Unit pricing	Selling prices	
						Whole sale price (Rs.)	Maximum Retail price (Rs.)
1	2	3	4	5	6	7	8
	Vitamin A. Inj.						
1	*Bengal Immunity*	—	0.05 lac unit/ml	Box of 6 amps of 2 ml	per box	4.60	5.52
2	Unichem Labs.	MASSIVE-A	1 lac unit/ml	6 × 1 ml vial	per vial	4.35	4.75
		MASSIVE-A FORTE	3 lacks unit/ml	6 × 1 ml vial	per vial	6.75	7.40
3	Roche Products	AROVIT	3 lacs unit/ml	3 × 1 ml vial	per amp.	6.41	7.91

4	Glaxo Labs.	PREPALIN	1 lac I..U/ml	6 × 1 ml carton	each carton	4.28	5.28
		PREPALIN FORTE	3 lac I.U./ml	6 × 1 ml carton	each carton	6.42	7.92
	Vitamin-A Tabs.						
1	Roche Products	AROVIT	0.5 lac I.U./Tab	Pack of 200 tabs.	per pack	42.70	52.70
	Vitamin B-12 Inj.						
1	Anglo French	—	100 mcg/ml	10 ml vial	per vial	1.86	2.25
			50 mcg/ml	5 ml vial	per vial	3.30	4.00
			500 mcg/ml	10 ml vial	per vial	5.78	7.00
			1000 mcg/ml	5 ml vial	per vial	5.78	7.00
2	CIPLA	CIPLAMIN	500 mcg/ml	5 ml vial	per vial	4.28	5.28
			1000 mcg/ml	5 ml vial	per vial	6.42	7.92
3	Sarabhai Chemicals	RUPRAMIN	100 mcg/ml	5 ml vial	per vial	1.61	1.99
			500 mcg/ml	5 ml vial	per vial	4.28	5.28
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24
4	Bengal Immunity*	—	100 mcg/per ml.	Bottle of 10 ml.	per bottle	1.10	1.32
			500 mcg/ml	Bottle of 10 ml.	per bottle	4.00	4.80
			1000 mcgl/ml	Bottle of 5 ml.	per bottle	4.00	4.80
5	British Drug House	ANACOBIN	100 mcg/ml	vial of 10 ml	per vial	2.46	3.06
			200 mcg/ml	vial of 10 ml	per vial	4.82	5.97
			500 mcg/ml	vial of 5 ml	per vial	4.07	5.02
			1000 mcg/ml	vial of 5 ml	per vial	7.06	8.71
6	Bengal Chemical	—	100 mcg/ml	Box of 6 vial	per box	2.25	3.00
7	Smith Stanistreet	COBASTAN	500 mcg/ml	5 ml vial	per vial	3.60	4.45
8	Unichem Labs.	CYANOCOBALAMIN	100 mcg/ml	10 ml vial	per vial	2.20	2.50
			100 mcg/ml	5 × 10 ml vial	per vial	9.90	11.35
			500 mcg/ml	5 × 10 ml vial	per vial	4.00	4.60
			1000 mcg/ml	5 × 10 ml vial	per vial	7.00	8.05

*Exclusive of central excise duty.

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
9	Dey's Medical . .	VITADOUZE "500"	500 mcg/ml	vial of 5 ml	per vial	3.52	4.18
		VITADOUZE "1000"	1000 mcg/ml	vial of 5 ml	per vial	6.14	7.29
10	Albert David . . .	SIOCOBIN	100 mcg/ml	vial of 5 ml	per vial	1.25	1.50
			500 mcg/ml	vial of 5 ml	per vial	2.75	3.30
			1000 mcg/ml	vial of 5 ml	per vial	3.75	4.50
11	Rallis		100 mcg/ml	vial of 10 ml	per vial	2.56	3.01
			500 mcg/ml	vial of 5 ml	per vial	4.21	4.91
			1000 mcg/ml	vial of 5 ml	per vial	7.41	8.60
12	Cadila Labs. . . .	COBALMIN-500	500 mcg/ml	5 ml vial	per vial	2.40	2·75
13	OPIL	—	100 mcg/ml	10 ml vial	per vial	1.10	1.26
		CYANOCOBALMIN	500 mcg/ml	10 ml vial	per vial	2.75	3.15
				5 ml vial	per vial	1.75	2.00
			1000 mcg/ml	10 ml vial	per vial	4.75	5.45
			100 mcg/ml	20 × 10 ml vial	per vial	20.00	..
			500 mcg/ml	20 × 5 ml vial	per vial	33.00	..
			1000 mcg/ml	20 × 5 ml vial	per vial	53.00	..
			100 mcg/ml	50 × 10 ml vial	per vial	47.50	..
			500 mcg/ml	50 × 10 ml vial	per vial	75.00	..
			1000 mcg/ml	50 × 5 ml vial	per vial	115.00	..
14	Therapeutic Pharmaceuticals	CYANOMIN	100 mcg/ml	10 ml vial	per vial	2.04	2.40
				10 × 10 ml vial	per 10 vial	16.15	19.00
			500 mcg/ml	5 ml vial	per vial	3.77	4.45
				10 × 5 ml vial	per vial	32.30	38.00
			1000 mcg/ml	5 ml vial	per vial	6.46	7.60
				10 × 5 ml vial	per 10 vial	53.76	63.25

15	Gurco Pharma	—	100 mcg/ml	10 ml vial	per vial	1.00	1.25
			500 mcg/ml	5 ml vial	per vial	1.50	1.87
				10 ml vial	per vial	2.75	3.44
			1000 mcg/ml	5 ml vial	per vial	2.75	3.44
				10 ml vial	per vial	5.00	6.25
16	Zandu	—	50 mcg/ml	5 ml vial	per vial	0.68	0.80
				10 ml vial	per vial	0.85	1.00
			100 ml vial	5 ml vial	per vial	0.85	1.00
				10 ml vial	per vial	1.27	1.50
			500 mcg/ml	5 ml vial	per vial	1.79	2.10
				10 ml vial	per vial	3.15	3.70
			1000 mcg/ml	5 ml vial	per vial	2.97	3.50
				10 ml vial	per vial	5.52	6.50
17	Khandelwal Labs.	CYNOPLON	100 mcg/ml	10 ml vial	per vial	1.60	1.90
			300 mcg/ml	5 ml vial	per vial	2.50	2.95
			mcg/ml	10 ml vial	per vial	4.25	5.00
			1000 mcg/ml	5 ml vial	per vial	4.25	5.00
				10 ml vial	per vial	8.25	9.75
18	Shetty's Pharmaceutical	—	100 mcg/ml	10 ml vial	per vial	1.19	1.40
			500 mcg/ml	5 ml vial	per vial	2.12	2.50
			1000 mcg/ml	10 ml vial	per vial	3.80	4.50
				5 ml vial	per vial	3.80	4.50
				10 ml vial	per vial	6.80	8.00
19	Gujarat Pharmaceutical	—	500 mcg/ml	10 ml vial	per vial	3.15	4.35
20	Merck Sharp	REDISOL	100 mcg/ml	5 ml vial	per vial	1.61	1.89
				10 ml vial	per vial	2.57	3.17
			500 mcg/ml	5 ml vial	per vial	4.28	5.28
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
21	Glaxo Labs. . . .	MACRABIN	100 mcg/ml	5 ml vial	per vial	1.61	1.99
				10 ml vial	per vial	2.57	3.17
			500 mcg/ml	5 ml vial	per vial	4.28	5.28
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24
22	Alembic Chemical . .	CYCOBAL	100 mcg/ml	5 ml vial	per vial	1.60	2.00
			500 mcg/ml	5 ml vial	per vial	4.25	5.31
			1000 mcg/ml	5 ml vial	per vial	7.45	9.31
23	Mac Labs .	COBMAC	100 mcg/ml	10 ml vial	per vial	1.70	2.00
				10 ml × 50 vials	50 vials	90.00	..
			500 mcg/ml	5 ml vial	per vial	2.97	3.50
				5 ml × 50 vials	50 vials	150.00	..
			1000 mcg/ml	5 ml vial	per vial	4.67	5.50
				5 ml × 50 vials	50 vials	250.00	..
24	Pfizer . .	DUVIT	500 mcg/ml	5 ml vial	per vial	4.37	4.89
			1000 mcg/ml	5 ml vial	per vial	7.68	8.59
	Vitamin B12 Injection						
1	Anglo-French . .	..	500 mcg/ml	5 ml vial	per vial	3.96	4.80
			1000 mcg/ml	5 ml vial	per vial	7.01	8.50
2	CIPLA . . .	CIPLAMIN-H	50 mcg/ml	5 ml vial	per vial	4.28	5.28
3	Sarabhai Chemicals .	RUBRAMIN-H	500 mcg/ml	5 ml vial	per vial	4.28	5.28
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24
4	Unichem Labs. . .	..	500 mcg/ml	5 ml vial	per vial	4.00	4.60
5	Therapeutic Pharmaceuticals	CYNOMIN-H	500 mcg/ml	5 ml vial	per vial	4.25	5.00
				10× 5 ml vial	per 10 vials	40.38	47.50

..	500 mcg/ml	10× 5 ml vial	per 10 vial	3.73	4.37
..	500 mcg/ml	10× 5 ml vial	per vial	3.80	4.30
		10× 5 ml vial	per vial	7.00	8.00
	100 cg/ml	5× 5 ml vial	per vial	7.00	8.80
OBIN-H	500 mcg/ml	5 ml vial	per vial	3.73	4.37
	1000 mcg/ml	5 ml vial	per vial	6.00	7.50
MACRABIN-H	500 mcg/ml	5 ml vial	per vial	4.28	5.28
	1000 mcg/ml	5 ml vial	per vial	7.49	9.24
REDISOL-H	500 mcg/ml	5 ml vial	per vial	4.92	6.07
	1000 mcg/ml	5 ml vial	per vial	3.62	10.63
..	500 mg/ampoule	25× 5 ml Box	per box	10.48	12.70
RETAMID	500 mg/ml	2 ml box of 5 amps	per box	1.82	2.17
		2 ml box of 50 amps	per box	10.60	13.10
	100 mg/ml	Box of 5 amps	per box	1.82	2.17
		Box of 50 amps	per box	10.70	13.20
	500 mg/5 ml	5 ml box of 10 amps	per box	4.48	5.28
		5 ml box of 50 amps	per box	16.06	19.81
VITACIN	100 mg/ml	2 ml box of 6	per vial	1.46	1.95
		2 ml box of 50	per vial	9.71	12.95
..	100 mg/2 ml	Box of 6 amps	per vial	1.85	2.22
		Box of 12 amps	per vial	3.50	4.20
		Box of 25 amps	per vial	7.10	8.52
		Box of 50 amps	per vial	13.45	16.14
		Box of 100 amps	per vial	25.00	30.00
	200 mg/2 ml	Box of 50 amps	per vial	18.00	21.66
		Box of 100 amps	per vial	35.00	42.00

TABLE 24.4—*Contd.*

3	4	5	6	7	8
	500 mg/2 ml	Box of 3 amps	per vial	2.10	2.52
		Box of 6 amps	per vial	3.85	4.62
		Box of 12 amps	per vial	6.90	8.28
		Box of 25 amps	per vial	12.65	15.18
		Box of 50 amps	per vial	22.20	26.64
		Box of 100 amps	prer vial	40.00	48.00
..	50 mg/ml	Box of 5 amps 2 ml	per box	1.20	1.40
		Box of 100 amps 2 ml	per box	18.00	20.70
..	100 mg× 1 ml	6 amps pack	per pack	1.20	1.35
		25 amps pack	per pack	3.65	4.06
		100 amps pack	per pack	13.65	15.15
	500 mg× 5 ml	6 amps pack	per pack	2.00	2.24
		25 amps pack	per pack	6.45	7.14
		100 amps pack	per pack	25.25	28.00
IN	100 mg	6 amps pack	per pack	1.87	2.31
		25 amps pack	per pack	6.42	7.92
OXON	100 mg	50 2 ml amps	per pack	16.87	20.82
	500 mg	25 5 ml amps	per pack	15.69	19.36
ACID	100 mg/ml	Box of 50 amps	per box	10.15	12.18
	500 mg/5 ml	Box of 50 amps	per box	21.60	25.92
..	100 mg	Bottle of 1000 tabs.	per bottle	13.20	16.00
	0.5 G	Bottle of 500 tabs.	per bottle	29.04	35.20

2	CIPLA	CETAMID	100 mg	25's tabs pack	per pack	1.07	1.32
				100's tabs pack	per pack	2.67	3.27
				500's tabs pack	per pack	11.77	14.52
				1000's tabs pack	per pack	20.34	25.09
3	Sarabhai Chemicals .	ASCORBICIN	250 mg	20's Bottle	per bottle	1.34	1.65
				100's Bottle	per bottle	5.35	6.60
4	Bengal Immunity . .	ASCACID	50 mg	Bottle of 50 tabs.	per bottle	1.00	1.20
			50 mg	Bottle of 100 tabs.	per bottle	8.80	10.56
			100 mg	Bottle of 100 tabs.	per bottle	2.50	3.00
				Bottle of 1000 tabs.	per bottle	15.85	19.02
			500 mg	Bottle of 20 tabs.	per bottle	2.65	3.81
				Bottle of 100 tabs.	per bottle	8.80	10.56
5	Bengal Chemical . .	VITACIN	200 mg	50 tabs. pack	per back	3.48	4.10
6	Dey's Medical . .	..	50 mg	Tin of 1000's Tabs.	per tin	9.00	10.80
			100 mg	Tin of 1000's Tabs.	per tin	15.00	18.00
7	Cyanamid . . .	CHEWCEE	500 mg	10 × 10's pack	per pack	18.00	22.50
8	Kemp & Co. . . .	..	100 mg	100 tabs pack	per pack	2.75	3.30
9	Albert David . . .	..	100 mg	Bottle of 20's Tabs.	per bottle	0.70	0.84
				Bottle of 25's Tabs.	per bottle	0.85	1.02
				Bottle of 50's Tabs.	per bottle	1.60	1.92
				Bottle of 100's Tabs.	per bottle	3.05	3.66
				Bottle of 500's Tabs.	per bottle	13.15	15.18
				Bottle of 1000's Tabs.	per bottle	25.00	30.00
				Bottle of 20's Tabs.	per bottle	1.50	1.80
			500 mg	Bottle of 50's Tabs.	per bottle	3.50	4.20
				Bottle of 100's Tab.	per bottle	6.75	8.10
				Bottle of 500's Tabs.	per bottle	32.00	38.40

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
10	Martin & Harris	..	50 mg/tab.	Bottle of 100's	per botlte	1.24	1.45
				Bottle of 1000's	per bottle	8.65	10.20
			100 mg/tab.	Bottle of 100's	per bottle	2.27	2.65
			100 mg/tab.	Bottle of 1000's	per bottle	14.51	17.05
				Bottle of 500's	per bottle	30.00	35.30
				Bottle of 50's	per bottle	3.23	3.80
11	Cadila Labs. . .	ASCORBICIN	100 mg.	1000's pack	per pack	14.00	16.10
			500 mg.	20's pack	per pack	2.70	3.10
12	OPIL	..	50 mg.	Bottle of 100's	per pack	1.30	1.50
			50 mg.	Bottle of 1000's	per pack	12.00	13.80
			100 mg.	Bottle of 100's	per pack	2.50	2.90
			100 mg.	Bottle of 1000's	per pack	22.00	25.30
13	Zandu	..	50 mg	25's pack	per pack	0.93	1.01
				100's pack	per pack	1.86	2.01
				250's pack	per pack	3.93	4.23
				1000's pack	per pack	13.96	15.06
14	Khandelwal Labs . .	..	50 mg.	500's pack	per pack	6.00	7.00
			100 mg.	500's pack	per pack	8.50	9.50
15	Shetty's Pharmaceutical .	..	100 mg.	1000's pack	per pack	..	16.50
			500 mg.	1000's pack	per pack	..	74.75
16	Gujarat Pharmaceuticals .	CISCORBIN	500 mg.	10's pack	per pack	2.55	2.80
				100's pack	per pack	6.50	7.15

17	Glaxo Labs. . . .	CELIN	50 mg/tab.	100's pack	per pack	1.87	2.31
				1000's pack	per pack	13.91	17.16
			100mg/tab.	100's pack	per pack	2.68	3.31
				1000's pack	per pack	21.41	26.41
			500 mg/tab.	20's pack	per pack	2.68	3.31
				500's	per pack	52.40	64.40
18	Alembic Chemical . .	CIVINAL	50 mg/tab.	1000's	per pack	10.90	13.62
19	Roche Products . .	REDOXON	50 mg/tab.	20's pack	per pack	0.91	1.12
				100's pack	per pack	3.90	4.81
				250's pack	per pack	9.29	11.46
			200 mg/tab.	20's pack	per pack	2.83	3.49
				100's pack	per pack	12.49	15.41
				100's pack	per pack	16.28	20.09
			500 mg/tab.	10×10's pack	per pack	19.22	23.72
				500's pack	per pack	72.59	89.59
20	Mac. Labs. . .	SCORMAC	.5 gm.	Pack of 10 Bot. of 10 tabs. each	per pack	12.75	15.00
				Bottle of 100 tabs.	per pack	8.7	9.50
	Sulphadiazine Tabs.						
1	May & Baker . . .	..	0.5 gm/tab	10×10 pack	per pack	5.34	6.34
				50×10 pack	per pack	26.69	31.69
2	Mac Labs. . .	..	0.166 mg/tab.	500's	per pack	28.00	..
3	Boots	..	0.5 gm/tab.	Tin of 1000's	per tin	45.00	52.94
4	Anglo-French . .	..	0.5 gm/tab.	Tin of 1000's	per tin	38.00	42.00
5	Cyanamid . .	..	0.5 gm/tab.	500's pack	Per pack	25.00	31.25
6	Kemp & Co. . . .	..	0.5 gm/tab.	500's Pack	per pack	21.00	25.20
7	South India Res. Inst. .	..	0.5 gm/tab.	1000's pack	per pack	45.00	51.75

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
8	Martin & Harris . .	..	0.5 gm/tab.	1000's pack	per pack	38.68	48.50
				5000's pack	per pack	200.00	229.00
9	OPIL	..	..	250's pack	per pack	12.50	13.75
10	Zandu	..	0.5 mg/tab.	100's pack	per pack	4.50	5.50
11	Khandelwal Labs . .	..	0.5 gm/tab.	500's pack	per pack	25.00	28.00
12	Shetty's Pharmaceutical .	..	0.5 gm/tab.	1000's pack	per pack	..	45.00
	Sodium Penicillin G. Inj.						
1	Hindustan Antibiotics .	..	2 lac U/ml.	Single vial	per vial	0.42	0.45
			5 lac U/ml.	Single vial	per vial	0.61	0.65
2	Alembic Chemical . .	..	10 lac U/ml.	5 vials pack	per pack	0.94	1.00
			2 lac U/ml.	5 vials pack	per pack	2.15	2.30
			5 lac U/ml.	5 vials pack	per pack	3.12	3.39
			10 lac U/lm.	5 vials pack	per pack	4.80	5.60
3	Merck Sharp . .	SOPEN—2	2 lac U/ml.	10 vials pack	per pack	4.20	4.67
		,,—5	5 lac U/ml.	10 vials pack	per pack	6.10	6.78
		,,—10	10 lac U/ml.	10 vials pack	per pack	9.40	10.44
4	Glaxo Labs . .	CRYSTAPEN	2 lac U/ml.	5 vials pack	per pack	2.15	2.38
				50 vials pack	per pack	21.50	23.80
			5 lac U/ml.	5 vials pack	per pack	3.12	3.46
				50 vials pack	per pack	31.20	34.60
			10 lac U/ml.	5 vials pack	per pack	5.15	5.70
				50 vials pack	per pack	51.50	57.00

5	Sarabhai Chemicals .	..	2 lac U/ml.	Box of 10 vials	Per Box	4.29	4.76
			5 lac U/ml.	Box of 10 vials	Per Box	6.23	6.91
			10 lac U/ml.	Box of 10 vials	Per Box	10.31	11.40
6	Dey's Medical . .	..	5 lac U/ml.	Single Dose	per Dose	0.62	0.74
			10 lac U/ml.	Single Dose	per Dose	1.03	1.14
	Penicillin Tabs.						
1	Hindustan Antibiotics .	..	65 mg	12 Tabs. Box	per box	1.75	1.85
				36 Tabs. Box	per box	4.75	5.00
2	Alembic Chemical . .		2 MU	12 Tabs. Box	per box	2.00	2.50
3	Standard Pharmaceuticals	STANPEN	2 lacs units	48 Tabs. (in 8 strips each)	per 48 Tabs.	8.60	10.00
4	Pfizer	PENOCIN	65 mg.	100 Tabs. pack	per pack	19.59	20.66
		PENOCIN FORTE	130 mg.	100 Tabs. pack	per pack	37.25	39.28
5	May & Baker . .	CFACYN "k"	62.5 mg.	10 x 10 Tabs. pack	per pack	17.38	20.28
			125 mg.	10 x 10 Tabs. pack	per pack	31.70	37.90
6	Glaxo Labs. . . .	CRYSTAPEN	65 mg.	10 Tabs. pack	per pack	1.92	2.15
			65 mg.	100 Tabs. pack	per pack	17.64	19.56
			125 mg.	10 Tabs. pack	per pack	3.42	3.80
			125 mg.	100 Tabs. pack	per pack	32.20	35.70
7	Sarabhai Chemicals .	PENTIDS	2 lacs units	48 Tabs. pack	per pack	8.63	9.57
8	Zandu	..	0.2 lac units	100 Tabs. pack	per pack	16.83	19.80
	Streptomycin Sulphate Injection						
1	Hindustan Antibiotics .	..	1 gm.	Single vial	per vial	0.69	0.71
2	Merk Sharp . . .	MERSTREP	1 gm.	10 vials pack	per pack	5.80	6.44
3	Alembic Chemical . .	..	1 gm.	5 vials pack	per pack	3.35	3.73
4	Glaxo Labs. . . .	COMYCIN	1 gm.	5 x 1 g vials	per 5 vials	3.42	3.80
				50 x 1 g vials	50 vials	34.20	38.00
				5 x 2 g vials	5 vials	5.36	5.96

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
5	Pfizer	STREPTONEX	1 gm.	25 vials pack	per pack	15.58	16.40
6	Sarabhai Chemicals	AMBYSTRYN	1 gm.	10 vials Box	per Box	6.84	7.00
7	Dey's Medical	..	1 gm.	Single vial	per vial	0.59	0.71
	Di-hydro Streptomycin Sulphate Injection						
1	Merck Sharp	DYSTREP	1 gm.	10 vials pack	per pack	5.80	6.44
2	Sarabhai Chemicals	..	1 gm.	10 vials pack	per pack	5.92	6.56
	Chloramphenicol Caps						
1	Parke-Davis	CHLORMYCETIN	250 mg.	12 caps pack	per pack	7.26	9.51
		KAPSEALS	100 mg.	12 caps pack	per pack	3.63	4.75
2	Boehringer-Knoll	CHLORAMPHYCIN	250 mg.	12 caps pack	per pack	6.13	7.13
				100 caps pack	per pack	37.32	43.52
3	May & Baker	EMBACETIN	250 mg.	12 caps pack	per pack	5.74	6.34
				100 ,, ,,	Do	36.30	42.30
4	Alembic Chemical	ALCOPHENICOL	250 mg.	12 ,, ,,	Do	5.45	6.81
				100 ,, ,,	Do	38.15	47.68
5	CIPLA	CIBLAMYCETIN	250 mg.	12 ,, ,,	Do	4.80	5.70
				500 ,, ,,	Do	133.44	150.00
6	Dey's Medical	ENTERO MYCETIN	250 mg.	Bottle of 12's	per Bottle	5.55	6.59
				Strip of 100's	per Stip	37.10	44.04
				Strip of 500's	Do	188.34	217.69
				Strip of 1000's	Do	365.09	438.49
7	Cadila Labs.	..	250 mg.	1000 Caps pack	per pack	200.00	230.00

8 OPIL	OPIMYCETIN	250 mg.	12	Caps	pack	per pack	4.00	4.95
			100	,,	,,	Do	28.00	34·93
			250	,,	,,	Do	60.00	74.17
			500	,,	,,	Do	115.00	142.16
			1000	,,	,,	Do	225.00	272.15
9 Gurco Pharma	GURCOMYCETIN	250 mg.	12	,,	,,	Do	3.20	3.75
			100	,,	,,	Do	25.60	30.00
			500	,,	,,	Do	122.60	148.75
			1000	,,	,,	Do	239.98	281.25
		185 mg.	12	,,	,,	Do	2.13	2.50
			100	,,	,,	Do	14.93	17.50
			1000	,,	,,	Do	188.80	156.25
10 Ranbaxy Labs	RANPHENICOL	250 mg.	12	,,	Bottle	per Bottle	5.59	6.89
			100	,,	,,	Do	36.55	45.05
			500	,,	Tin	per Tin	178.18	219.62
			1000	,,	,,	Do	34.23	427.98
Chloramphenicol Tabs.								
1 Mac Labs.	KEMICETIN	250 mg.	Bottle	of	12's	per Bottle	4.93	5.80
			Bottle	of	100's	Do	38.25	45.00
			Bottle	of	500's	Do	182.75	215.00
2 Unichem Labs.	UNIMYCETIN VF	0.25 g.	12	Tab	Pack	per pack	4.00	4.60
			100	,,	,,	Do	30.00	34.60
			250	,,	,,	Do	69.00	79.35
3 Gujarat Pharmaceutical	THENICHLOR	0.25 g.	12	,,	,,	Do	4.40	4.85
			100	,,	,,	Do.	25.00	27.50
Chloramphenicol Suspension (Powder)								
1 Gurco Pharma	GURCOMYCETIN PALMITATE	125 mg.	50 gm pack			per pack	4.27	5.00
			500 gm. pack			Do	32.00	37.50

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
2	Zandu	ZANDU MYCETIN .	..	60 ml. Bottle	per Bottle	4.67	5·05
	Tetracycline Injection—						
1	Pfizer	TETRACIN. . .	100 mg.	Single vial	per vial	2.17	2.43
			250 mg.	Single vial	per vial	6.73	7.53
	Tetracycline Caps.—						
1	Pfizer	TETRACYN . .	250 mg.	100 Caps pack	per pack	103.02	115.13
2	Merck Sharp . . .	TRYCIN . .	250 mg.	4 ,, ,,	Do	3.74	4.61
				12x4 ,, ,,	Do	44.80	55.26
3	Mac Labs . . .	TETRAMAC . .	0.25 gm.	4 ,, Bottle	per Bottle	3.61	4.25
				100 ,, ,,	Do	86.00	100.00
4	Alembic Chemical . .	ALCYCLIN . .	250 mg.	4 ,, Pack	per Pack	4.80	5.43
				4x4 ,, ,,	Do	14.25	17.81
				100 ,, ,,	Do	87.00	108.75
5	Sarabhai Chemicals . .	STECLIN . . .	250 mg.	12x4 ,, ,,	Do	45.49	56.11
6	Hoechst Pharmaceuticals .	HOSTACYCLINE .	250 mg.	Strip of 5x4 caps	per strip	18.10	21.72
7	Dey's Medical . .	SUBAMYCIN . .	Do	Bottle of 8's	per Bottle	7.74	9.39
				Strip of 100's	per Strip	92.82	110.21
8	Cyanamid . .	ACHROMYCIN . .	..	4 caps Pack	per Pack	3.86	4.82
				12x4 ,,	Do	42.50	53.12
				24x4 ,,	Do	83.70	104.62
				25x4 ,,	Do	..	..

	ACHROMYCIN V	..					
	Capsules		4 caps.	Pack	per pack	3.86	4.82
			12x4	,,	Do	42.50	53.12
			24x4	,,	Do	83.70	104.62
			25x4	,,	Do	..	..
	SV Caps.	..	4	,,	Do	4.02	5.02
			12x4	,,	Do	42.50	55.25
			25x4	,,	Do	..	..
9 Opil	OPICYCLINE . .	250 mg.	4	caps pack	Do	3.70	4.56
			100	,, ,,	Do	75.00	88.15
			250	,, ,,	Do	180.00	212.8
			1000	,, ,,	Do	650.00	768.62
10 Gurco Pharma . . .	VIRSAMYCIN . .	250 mg.	4	,, ,,	Do	2.99	3.50
			8	,, ,,	Do	5.76	6.75
			100	,, ,,	Do	64.00	75.00
11 Ranbaxy Labs . .	RANCYCLIN . .	250 mg.	5x4	Caps box	per Box	20.16	24.85
			25x4	,, ,,	Do	96.97	119.53
12 Khandelwal Labs. . .	TETRAPLON . .	250 mg.	4	Caps Bottle	per Bottle	8.20	3.68
			25x4	,, Box	per box	80.00	92.00
Oxytetracycline Caps.							
1 Pfizer	TERRAMYCIN . .	250 mg.	100 (25x4)	caps.	per Pack	103.02	115.13
Chlor-Tetracycline Caps.							
1 Hindustan Antibiotics .	..	250 mg.	4	Caps	per Pack	2.95	3.10
			100	Do	,,	65.00	68.25
2 Cyanamid . . .	AUREOMYCIN . .	..	4	Caps pack	3.86	2.89	4.82
			12x4	,,	42.50	31.87	53.12
			25x4	,,	..	..	65.40

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
	Demethyl Tetracycline Caps						
1	Cyanamid	LEDERMYCIN	150 mg.	4 caps pack	per pack	4.19	5.24
				12x4 ,, ,,	Do	46.19	57.74
				24x4 ,, ,,	Do	90.98	113.72
				25x4 ,, ,,	Do	..	..
			300 mg.	2 ,, ,,	Do	4.19	5.24
				12x2 ,, ,,	Do	46.19	57.74
				24x2 ,, ,,	Do	90.98	113.72
				25x2 ,, ,,	Do	..	..
				50x2 ,, ,,	Do	..	..
	Amodiaquin Tabs						
1	Parke-Davis	CAMOQUIN	0.2 gm.	250 Tabs Pack	per pack	31.44	41.19
2	Albert David*	..	0.2 gm.	Strip 150's	per strip	16.50	19.80
				Strip 300 's	per strip	32.00	38.40
	Chloroquin Tabs						
1	May & Baker	NIVAQUINE	200 mg.	25x4 Tabs Pack	per pack	8.55	10.15
				125x4 ,, ,,	per pack	42.75	50.75
2	Bengal Immunity*	..	0.25 g.	Box of 100 tabs	per box	8.00	9.60
				Box of 1000 tabs	per box	75.00	90.00
3	Unichem Labs	UNIQUIN	0.25 g.	10 Tabs Pack	per pack	1.10	1.15
				100 Tabs Pack	per pack	8.20	8.95
4	Martin & Harris	..	250 mg.	Bot. of 100 tabs	per bottle	9.50	11.15
				Bot. of 500 tabs	per bottle	37.62	44.25

5	Zandu	..	0.25 g.	25 Tabs Pack	per pack	2.55	3.00
				100 ,, ,,	Do	9.35	11.00
				250 ,, ,,	Do	21.25	25.00
				1000 ,, ,,	Do	76.50	90.00
6	Shettys' Pharmaceutical .	..	250 mg.	500 ,, ,,	Do	..	70.00
7	Gujarat Pharmaceutical .	..	0.25 g.	500 ,, ,,	Do	45.00	49.50
	Iodo-chlor-hydroxy-quinoline Tabs						
1	Alembic Chemical" . .	ALCHLOQUIN	250 mg.	500 tabs pack	per pack	20.00	25.00
				1000 tabs pack	per pack	37.85	47.31
2	Bengal Chemical . .	ENTEROKIN	0.25 g.	100 tabs in strip	per strip	5.10	6.00
				500 tabs in strip	per strip	23.80	28.00
3	Smith Stanistreet . .	STANQUINATE	0.25 g.	10 x 10 Strip	per strip	9.30	11.60
				500's Bottle	per bottle	30.00	37.00
4	Unichem, . . .	..	0.25 g.	500 tabs pack	per pack	26.25	28.75
5	Dey's Medical . .	DEQUINOL	0.25 g.	500's strip	per strip	18.41	27.30
6	Albert David* . .	QUINOFORM	0.25 g.	20's Bottle	per bottle	1.10	1.32
				100's Bottle	per bottle	4.00	4.80
				500's Bottle	per bottle	16.00	19.20
				1000's Bottle	per bottle	30.00	36.00
7	Martin & Harris . .	..	250 mg.	1000's Bottle	per bottle	35.00	41.15
8	East India	ENTROQINOL	250 mg.	20's Pack	per Pack	1.85	2·25
9	Therapeutic Pharmaceuticals	AMIDOCLOR	0.25 gm.	500's Pack	per pack	20.40	24.00
				1000's pack	per pack	38.25	45·00
10	Zandu . . .	..	0.25 gm.	20's Pack	per Pack	1.45	1.70
				100's Pack	per Pack	3.82	4.50
				250's Pack	per pack	6.80	8.00
				1000's Pack	per Pack	25.50	30.00

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
	Di-iodo-hydroxy-quinoline Tabs						
1	CIPLA	DIODOXYLIN	0.21 gm.	25 tabs pack	per pack	1.64	1.94
				100 tabs Pack	per pack	4.50	5.40
				500 tabs Pack	per pack	17.38	20.78
2	Bengal Immunity . .	DINOQUIN	0.25 gm.	10 strip × 10 tabs	Box of 100 tabs	3.55	4.26
				50 strips × 10 tabs	Box of 500 tabs	14.10	16.92
				100 strips × 10 tabs	Box of 1000 tabs	26.40	31.68
3	Cadila Labs . . .	DIOQUIN	213 mg.	500 Tabs pack	per pack	12.00	13.80
				1000 Tabs pack	per pack	20.00	23.00
				5000 Tabs pack	per pack	90.00	103.50
4	Zandu	..	0.21 g.	20 Tabs pack	per pack	0.85	1.00
				100 Tabs Pack	per pack	3.40	4.00
				250 Tabs Pack	per pack	6.80	8.00
				1000 Tabs Pack	per pack	25.50	30.00
5	Shetty's Pharmaceutical .	..	250 mg.	1000 Tabs Pack	per pack	..	21.00
6	OPIL	..	..	30 Tabs Bottle	per bottle	1.20	1.40
				100 Tabs Bottle	per bottle	3 00	3.45
				1000 Tabs Bottle	per bottle	25.00	28.75
	Chlorpropamide Tabs						
1	Pfizer	DIABINESE	100 mg.	100 Tabs Pack	per pack	16.30	18.22
			250 mg.	100 Tabs Pack	per pack	35.14	38.28
2	Bengal Chemical . .	DIABINOL	100 mg.	30 Tabs Pack	per pack	4.04	4.75
				100 Tabs Pack	per pack	11.48	13.50
			250 mg.	100 Tabs Pack	per pack	25.50	30.00

3	Komp & Co. . . .	DIABECHLOR	200 mg.	30 Tabs Pack	per pack	4.50	5.40
				100 Tabs Pack	per pack	13.50	15.60
				500 Tabs Pack	per pack	55.00	66.00
4	Albert David* . .	DIALANE	0.25 gm.	20 Tabs Bottle	per bottle	3.50	4.20
				100 Tabs Bottle	per bottle	16.00	19.20
				500 Tabs Bottle	per bottle	78.00	93.60
				1000 Tabs Bottle	per bottle	150.00	180.00
5	Haffkine	..	0.25 gm	100 Tabs Pack	per pack	14.00	..
				50 Tabs Pack	per pack	8.00	..
6	Gujarat Pharmaceuticals .	CHLORINESE	0.25 g.	30 Tabs Pack	per pack	4.50	5.05
				100 Tabs Pack	per pack	13.00	14.30
	TOLBUTAMIDE TABS						
1	Unichem Labs. . .	UNITOLBID	0.25 g.	25 Tabs Pack	per Pack	4.00	4.60
				100 Tabs Pack	per Pack	15.00	17.25
				500 Tabs Pack	per Pack	70.00	80.50
2	Hoechst	RASTINON	0.5 g.	10×10 Tabs Strip	per Strip	21.95	26.34
				100×10 Tabs Strip	per Strip	183.00	219.60
				1000 Tabs. Pack	per pack	..	219.60
				5 × 20 ml. box	per box	15.75	18.90
3	Cadila Labs . . .	DIATOL	500 mg	40 Tabs Pack	per pack	6.60	7.60
				100 Tabs Pack	per pack	14.00	16.10
				500 Tabs Pack	per pack	65.00	74.75
				1000 Tabs Pack	per pack	120.00	138.00
4	Albert David* . .	..	0.5 gm	25 Tabs Bottle	per bottle	4.00	4.80
				50 Tabs Bottle	per bottle	8.00	9.60
				100 Tabs Bottle	per bottle	15.00	18.00
				500 Tabs Bottle	per bottle	70.00	84.00

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
	Insulin Inj.						
1	Alembic Chemical . .	..	0.40 m.u. per ml.	10 ml. vial	per vial	3.40	4.25
			0.81 m.u. per ml.	10 ml. vial	per vial	6.50	8.12
2	Boots	..	40 units per ml.	10 ml. vial	per vial	3.75	4.69
			80 units per ml.	10 ml. vial	per vial	7.25	9.06
3	Pfizer	INSULIN-NOVO LENTE	40 units per ml.	10 ml. vial	per vial	6.24	7.01
4	Bengal Immunity * .	..	40 units per ml.	10 ml. vial	per vial	3.75	4.50
5	Burroughs Wellcome .	..	40 units per ml.	10 ml. vial	per vial	3.84	4.77
6	British Drug House . .	..	40 units per cc.	vial of 10 cc.	per vial	3.75	4.69
			80 units per cc.	vial of 10 cc.	per vial	7.25	9.06
7	Unichem Labs.. . .	..	40 units per ml.	10 ml.	per vial	3.60	4.15
8	Kemp & Co. . . .	..	40 units per ml.	10 ml.	per vial	3.40	4.08
	Insulin Zinc Suspension Inj.						
1	Boots	..	40 units/ml.	10 ml. vial	per vial	5.63	7.00
2	Burroughs Wellcome .	..	40 units /ml.	10 ml. vial	per vial	8.50	6.87
3	British Drug House . .	..	40 units per cc.	10 ml. vial	per vial	5.63	6.98
			80 units per cc.	10 ml. vial	per vial	11.26	13.95
4	Unichem Labs. . .	LENTE INSULIN UNI DURA	40 units/ml.	10 ml. vial	per vial	5.20	5.95
	Insulin Protamine Zinc Inj.						
1	Boots	..	40 units/ml.	10 ml. vial	per vial	4.50	5.62
2	Burroughs Wellcome .	..	40 units ml.	10 ml. vial	per vial	4.60	5.73
3	British Drug House . .	..	40 units/ml.	10 ml. vial	per vial	4.50	5.62

4	Unichem Labs. . .	..	40 units/ml.	10 ml. vial	per vial]	4.20	4.80
5	Alembic Chemical . .	..	40 units/ml.	10 ml. vial	per vial	4.00	5.00
	Insulin Isophane N.P.H. Inj.						
1	Boots	..	40 units/ml.	10 ml. vial	per vial	6.50	8.12
2	Alembic Chemical . .	..	40 units/ml.	10 ml. vial	per vial	5.60	7.00
3	Burroughs Wellcome .	..	40 units/ml.	10 ml. vial	per vial	6.50	8.12
4	Kemp & Co. . . .	..	40 units/ml.	10 ml. vial	per vial	4.90	5.88
	I. N. H. Tabs.						
1	Mac Labs.	MACUHZIDE	0.40 gms.	15 tabs. pack	per pack	2.55	3.00
				100 tabs. pack	per pack	15.30	18.00
2	Glaxo Labs. . . .	PELAZID	50 mg.	100 tabs. pack	per pack	1.69	2.11
				1000 tabs. pack	per pack	12.28	15.28
			100 mg.	100 tabs. pack	per pack	2.56	3.19
				1000 tabs. pack	per pack	20.47	25.47
3	Alembic Chemical . .	ALZIDE	100 grms.	100 tabs. pack	per pack	2.60	3.25
				1000 tabs. pack	per pack	20.60	25.75
4	Biological Evans . .	..	50 mg.	100 tabs. pack	par pack	1.54	1.84
				1000 tabs. pack	per pack	8.20	9.10
				5000 tabs. pack	per pack	38.87	42.87
			100 mg.	100 tabs. pack	per pack	2.36	2.82
				1000 tabs. pack	per pack	14.35	17.15
				5000 tabs. pack	per pack	66.62	79.62
5	Sarabhai Chemicals . .	NYDRAZID	50 mg.	100 tabs. pack	per pack	2.04	2.30
				1000 tabs. pack	per pack	12.40	16.43
			100 mg.	100 tabs. pack	per pack	2.82	3.51
				1000 tabs. pack	per pack	20.73	25.79

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
6	Bengal Immunity* . .	..	50 mg.	100 tabs. pack	per pack	1.15	1.38
				1000 tabs. pack	per pack	8.00	9.60
			100 mg.	100 tabs. pack	per pack	1.70	2.04
				1000 tabs. pack	per pack	14.00	16.80
				5000 tabs. pack	per pack	68.00	81.60
7	Bengal Chemical . .	..	50 mg.	1000 tabs. pack	per pack	10.20	12.00
8	Smith Stanistreet . .	..	100 mg.	1000 tabs. pack	per pack	19.50	23.40
9	Chemo Pharma . .	..	50 mg.	100 tabs. pack	per pack	2.20	2.75
				1000 tabs. pack	per pack	15.24	19.05
			100 mg.	100 tabs. pack	per pack	3.30	4.12
				1000 tabs. pack	per pack	24.36	30.45
10	Unichem Labs. . .	UNIZYDE	100 mg.	100 tabs. pack	per pack	2.85	3.10
				1000 tabs. pack	per pack	21.00	23.00
11	Dey's Medical . . .	..	50 mg.	100 tabs. pack	per pack	1.50	1.80
				1000 tabs. pack	per pack	11.00	13.20
			100 mg.	100 tabs. pack	per pack	2.75	3.30
				1000 tabs. pack	per pack	20.00	24.00
12	South India Res. Inst. .	..	50 mg.	1000 tabs. pack	per pack	10.00	11.50
			100 mg.	1000 tabs. pack	per pack	18.00	20.70
13	Albert David . . .	..	50 mg.	50 tabs. pack	per pack	0.60	0.72
				100 tabs. pack	per pack	1.00	1.20
				500 tabs. pack	per pack	4.75	5.70
				1000 tabs. pack	per pack	8.50	10.20

		100 mg.	50 tabs. pack	per pack	1.20	1.44
			100 tabs. pack	per pack	2.00	2.40
			500 tabs. pack	per pack	9.00	10.80
			1000 tabs. pack	per pack	17.00	20.40
14	Martin & Harris	50 mg.	100 tabs. pack	per pack	1.34	1.60
			1000 tabs. pack	per pack	11.56	13.60
		100 mg.	100 tabs. pack	per pack	2.58	3.05
			1000 tabs. pack	per pack	20.42	24.00
15	Haffkine	..	..	..	..	..
16	Cadila Labs. . . . CADIZID	100 mg.	100 tabs. pack	per pack	2.60	3.00
			1000 tabs. pack	per pack	20.50	23.55
17	OPIL	50 mg.	100 tabs. pack	per pack	1.35	1.55
			500 tabs. pack	per pack	5.50	6.33
		100 mg.	100 tabs. pack	per pack	2.40	2.75
			500 tabs. pack	per pack	9.50	10.93
18	Therapeutic Pharmaceuticals ..	50 mg.	1000 tabs. pack	per pack	11.30	13.30
			5000 tabs. pack	per pack	51.00	60.00
			10000 tabs. pack	per pack	100.30	118.00
		0.1 gm.	100 tabs. pack	per pack	2.07	2.45
			1000 tabs. pack	per pack	20.40	24.00
			5000 tabs. pack	per pack	99.87	117.50
			10000 tabs. pack	per pack	195.50	230.00
19	Gurco Pharma . . GURCOZID	50 mg.	1000 tabs. pack	per pack	10.23	12.50
		100 mg.	1000 tabs. pack	per pack	18.40	22.50
20	Zandu . . . ISOLIDE	50 mg.	250 tabs. pack	per pack	2.97	3.50
			1000 tabs. pack	per pack	11.05	13.00
		100 mg.	50 tabs. pack	per pack	1.45	1.70
			250 tabs. pack	per pack	5.52	6.50
			1000 tabs. pack	per pack	20.82	24.50

TABLE 24.4—*Contd.*

1	2	3	4	5	6	7	8
21	Shetty's Pharmaceutical .	..	100 mg.	1000 tabs. pack	per pack	..	15.00
22	Gujarat Pharmaceuticals .	..	50 mg.	1000 tabs. pack	per pack	12.60	15.00
	P. A. S. Granules						
1	Pfizer . .	PASDUMEX	70%	100 gm. pack	per pack	5.68	6.37
2	Biological Evans . .	..	65%	110 gm. pack	per pack	4.00	4.90
				250 gm. pack	per pack	9.22	11.02
				1000 gm. pack	per pack	35.87	42.87
3	Hoechst . . .	AMINOX	48.7%	100 gm. pack	per pack	4.25	5.10
				250 gm. pack	per pack	9.90	11.88
4	Albert David* . .	..	..	500 gm. pack	per pack	24.00	28.80
5	Wander Pharmed .	..	65% 70%	Manufacture only against tender enquiries from Govt. Semi-Govt. Institutions.			
6	Gurco Pharma . .	..	66%	100 gm. pack	per pack	4.61	5.62
				500 gm. pack	per pack	17.90	21.87
7	Gujarat Pharmaceutical .	..		100 gm. pack	per pack	4.20	5.00
				1000 gm. pack	per pack	39.90	47.50
	Sodium P.A.S. Tabs.						
1	Albert David* . .	..	0.5 gm/tab.	50 tabs. bottle	per bottle	1.75	2.10
				100 tabs. bottle	per bottle	3.40	4.08
				500 tabs. bottle	per bottle	16.00	19.20
				1000 tabs. bottle	per bottle	31.00	37.20

2	Martin & Harris	500 mg.	1000 tabs. bottle	per bottle	24.21	28.50
			5000 tabs. Tin	per Tin	110.00	129.40
3	Gurco Pharma	500 mg.	1000 tabs. Tin	per Tin	30.00	37.50
4	Zandu . . . AMISAL	0.34 gm.	250 tabs. Tin	per Tin	5.95	7.00
			1000 tabs. Tin	per Tin	22.10	26.00
5	Shetty's Pharmaceutical . ..	0.5 gm.	1000 tabs. Tin	per Tin	..	35.00
	Caclium P.A.S. Tabs.					
1	Martin & Harris	500 mg.	1000 tabs. bottle	per bottle	27.95	32.90
			5000 tabs. Tin	per Tin	125.00	147.06
2	Zandu . . . CALAMISAL	0.5 G	100 tabs. Tin	per Tin	3.57	4.20
			250 tabs. Tin	per Tin	7.22	8.50
			1000 tabs. Tin	per Tin	27.20	32.00
	Tetanus Anti-toxin Inj.					
1	Biological Evans	1500 I.U./amps	Single amp	per amp	1.75	2.10
		10,000 I.U./vials	Single amp	per amp	10.00	12.00
		50,000 I.U./vials	Single amp	per amp	40.00	48.00
2	Bengal Immunity* ..	750 I.U.	Single amp	per amp	1.60	1.92
		1500 I.U.	Single amp	per amp	2.40	2.88
		5000 I.U.	Single amp	per amp	6.80	8.16
		10,000 I.U.	Single amp	per amp	13.20	15.84
		20,000 I.U.	Single amp	per amp	24.80	29.76
		50,000 I.U.	Single amp	per amp	61.60	73.92
3	Bengal Chemical ..	750 I.U.	Single amp	per amp	1.20	1.50
		1500 I.U.	Single amp	per amp	2.00	2.50
		5000 I.U.	Single amp	per amp	6.80	8.50
		10,000 I.U.	Single amp	per amp	13.20	15.35

TABLE 24.4—*Concld.*

1	2	3	4	5	6	7	8
4	Haffkine		1500 I.U./vial	Single amp. 1 ml vial	Per amp. per vial	2.20	..
				1 ml × 10 vial	per box	22.00	..
				2 ml vial	per vial	2.00	..
				2 ml × 10 vial	per box	20.00	..
			10,000 I.U.	4 ml vial	per box	3.00	..
				10 ml vial	per box	10.00	..
			20,000 I.U.	10 ml × 100 vial	per box	108.00	..
				5 ml vial	per box	24.00	..
	Prednisolone Tabs						
1	Pfizer	DELTACORTRIL	5 mg.	10 tabs pack	per pack	2.66	2.97
				100 tabs pack	per pack	23.63	26.41
2	Merck sharp	CODELCORTONE	5 mg.	10 tabs pack	per pack	2.41	2.87
				30 tabs pack	per pack	7.06	8.71
				100 tabs pack	per pack	21.35	26.34
				1000 tabs pack	per pack	192.65	237.65
3	Alembic Chemical	PRECIN	5 mg.	10 tabs pack	per pack	2.18	2.72
				box 10 × 10 tabs.	per box	21.80	27.25
				500 tabs	per box	95.00	118.75
4	Boots	DELTASTAB	0.5 gm.	10 per pack	per pack	1.93	2.38
				100 per pack	per pack	18.90	22.30
5	CIPLA	..	5 mg.	20 per pack	per pack	4.00	4.20
				100 per pack	per pack	18.10	21.90

6	Wyeth Labs. . .	WYSOLONE	5 mg.	10 × 10 tabs	per pack	21.41	26.41
				500 × 10 tabs	per pack	60.00	70.00
7	Hoechst	HOSTACORTIN-H	5 mg.	10 × 10 tabs strip	per strip	20.00	24.00
				100 × 10 tabs strip	per strip	181.20	218.16
8	Dey's Medical . .	..	5 mg.	100 per strip	per strip	18.50	22.20
9	OPIL	..	5 mg.	10 per bottle	per bottle	2.50	2.90
				100 per bottle	per bottle	16.00	18.40
				500 per bottle	per bottle	77.50	89.15
10	Therapeutic Pharmaceuticals	PRENILON	5 mg	10 per pack	per pack	2.42	2.85
				100 per pack	per pack	16.57	19.50
				1000 per pack	per pack	157.25	185.00
11	Gurco Pharma . .	..	5 mg.	100 tabs pack	per pack	15.00	18.75
				1000 tabs pack	per pack	125.00	156.25
12	Zandu	..	5 mg.	10 tabs pack	per pack	1.36	1.60
				20 tabs pack	per pack	2.63	3.10
				100 tabs pack	per pack	12.75	15.00
				1000 tabs pack	per pack	on application	
13	Ranbaxy Labs . .	RANBISOLONE	5 mg.	100 tabs pack	per pack	20.00	26.00
				250 tabs pack	per pack	47.50	59.40
14	Khandelwal Labs. . .	ASMAPLON	..	25 tabs pack	per pack	15.00	17.25
				500 tabs pack	per pack	59.00	67.85
				1000 tabs pack	per pack	114.00	131.10
15	Shetty's Pharmaceutical .	..	5 mg.	100 tabs pack	per pack	13.00	15.25
				500 tabs pack	per pack	60.00	74.75
16	Gujarat Pharmaceutical .	..	5 mg.	10 × 10 tabs tube	per tube	15.00	18.70
				100 tabs pack	per pack	13.50	17.05
				10 × 10 tabs strip	per strip	15.00	18.70
				500 tabs pack	per pack	65.00	86.25

TABLE 24.5

Selling prices for multiple drugs formulations

Sl. No.	Name of the formulation	Brand Name	Drugs contained and dosage	Pack	Unit for pricing	Prices	
						Wholesale price (Rs.)	Retail price (Rs.)
1	2	3	4	5	6	7	8
			Combination of different forms of Penicillin				
1	Pfizer . . .	PPF-4	Procaine Penicillin G.3 lac units Pot. Penicillin G. 1 lac units	25 vials Pack	per pack	14.76	15.56
		PPF-20	Procaine Penicillin G 15 lac units Pot. Penicillin G. 5 lac units	5 vials Pack	per pack	10.30	10.55
2	Sarabhai Chemicals .	CRYS-4	Cryst. Sod. Penicillin G. 4 lac units Procaine Penicillin 2 lac units	10 vials Pack	per pack	5.62	6.23
		CRYS-8	Cryst. Sodium Penicillin G. 8 lac units Procaine Penicillin 6 lac units	10 vials Pack	per pack	8.58	9.50
		CRYS-12	Cryst. Sod. Penicillin G 12 lac units Procaine Penicillin 9 lac units	10 vials Pack	per pack	12.05	13.40
			Combination of different forms of streptomycin				
1	Sarabhai Chemicals .	AMBISTRYN	Crystallin Di-hydrostreptomycin Sulphate 0.5 gm. Streptomycin sulphate 0.5 gm	10 vials Pack	per pack	5.92	6.56
2	Merck Sharp . .	DUOSTREP	Streptomycin Sulphate 0.5 gm Dihydrostreptomycin sulphate 0.5 gm	10 vials Box	per box	5.80	6.44
			Injections of Penicillion and Streptomycin				
1	Hindustan Antibiotics	STREPTOPE-NICILLIN	Procaine Penicillin G-3 lac units Sodium penicillin 1 lac units Streptomycin Sulphate 1 gm	½ gm dose	per vial	0.77	0.81
			Procaine Penicillin G-3 lac units Sodium penicillin 1 lac units Streptomycin Sulphate 1 gm	1 gm dose	per vial	1.02	1.08

2	Pfizer	COMBIOTIC	Procaine Penicillin G-3 lac units Sodium Penicillin G-1 lac units Streptomycin Sulphate 0.5 gm.	0.5g × 25 vials 5 dose × 5 vials	Per vial 5 dose × 5 vials pack	20.21 17.60	21.25 18.50
		COMBIOTIC-FORTE	Procaine Penicillin G. 3 lac units Sodium Penicillin G. 1 lac units Streptomycin Sulphate 1 gm.	5 vilas	5 vials	5.37	5.65
3	Pfizer	DEFEMYCIN	(1) Pot. Penicillin G 5 lac units and (2) Streptomycin Sulphate equivaient to 0.5 G base	25 vials pack	Per pack	22.28	23.48
4	Merck Sharp	PENSTREP 4:1	(1) Penicillin Procaine 3 lac units (2) Sodium Penicillin 1 lac units and (3) Streptomycine Sulphate 1 grm.	10 vials pack	Per pack	7.00	7.78
		PENSTREP 4:1	(1) Penicillin Procaine 3 lac units (2) Sodium Penicillin 1 lac units and (3) Streptomycin Sulphate 1 grm.	10 vials pack	Per pack	8.50	9.44
5	Sarabhai Chemicals	PENMYN	(1) Sodium Penicillin 5 lac units and (2) Streptomycin 0.25 grms.	10 vials box	Per box	7.25	8.10
		PENMYN FORTIS	(1) Sodium P-G 5 lac units and (2) Streptomycin 5 gms	10 vials box	Per box	8.47	9.39
		DICRYSTICIN-5 800	(1) Procaine P-G 3 lac units (2) Sodium P. 2 lac units and (3) Streptomycin 0.50 gm (1 dose)	10 vials box	Per box	11.74	13.02
		DICRYSTICIN-S	(1) Procaine Penicillin G 3 lac units and (2) Streptomycin 0.5 gm (3) Sodium Penicillin 1 lack unit	1 does Box of 10 vials	Per box	7.66	8.50
		DICRYSTICIN-S FORTIS	(1) Procaine Penicillin G 3 lac units (2) Sodium Penicillin 1 lac units and (3) Streptomycin 1 gm (1 dose)	10 vials box 50 vials box	Per box Per box	10.21 44.75	11.30 47.20

TABLE 24.5—*Contd.*

1	2	3	4	5	6	7	8
5	Sarabhai Chemicals —*Contd.*	DICRYSTICIN-S PEDIATRIC	(1) Procaine Penicillin 3 lac units (2) Sodium Penicillin 1 lac units and (3) Streptomycin 0.25 gm	10 vials box	per box	6.84	7.58
6	Hoechst . . .	OMNAMYCIN 4:05	(1) Penicillin and (2) Streptomycin	5 vials box 100 vials box	per vial per box	1.70 161.50	1.89 179.27
7	Day's Medical . .	PRO-K-MYCIN	(1) Procaine Penicillin and (2) Streptomycin sulphate	4 lac units 0.5 gm	per vial	0.77	0.85
			IV. *Caps of Chloramphenicol and Tetracyclines*				
1	Gurco Pharma . .	TETRACHLOR	(1) Tetracycline Hydrochloride 100 mg (2) Chloramphenicol 150 mg	12 caps pack 100 caps pack	per pack per pack	8.53 53.33	10.00 62.50
2	Mac Labs. . .	KEMICYCLINE	(1) Chloramphenicol 0.2 gm and (2) Tetracycline Hcl 0.1 gm	8 caps pack 100 caps pack	per pack per pack	6.37 63.75	7.50 75.00
			V. *Tabs. of Di-iodo-hydroxy-quinoline and Chloroquin Phosphate*				
1	Bengal Immunity* .		(1) Di-iodo-hydroxyquinoline 0.25 G and (2) Chloroquin 0.75 G	100 Tabs. box 500 Tabs. box 100 Tabs. box	per box per box per box	10.00 42.50 80.00	12.00 51.00 96.00
2	Martin & Harris .	DIQUINATE	(1) Chloroquin and (2) Di-iodo-hydroxyquinoline	100 Tabs. box 500 Tabs. box	per box per box	8.50 34.13	10.00 40.15
3	May & Baker .	NIVEMBIN	(1) Chloroquin and (2) Di-iodo-hydroxyquinoline	100 Tabs. box 500 Tabs. box	per box per box	10.68 53.38	12.68 63.38
			VI. *Caps of Chloramphenicol and Streptomycin Sulphate*				
1	Mac Labs. . .	STREPTOKE-MICETINE	Chloramphenicol 0.125 G and Di-hydrostreptomycin 0.100 G	12 caps pack 100 caps pack	per pack per pack	5.10 38.25	6.00 45.00

2	Standard Pharmaceuticals	TYPOSTREP	Chloramphenicol	125 mg.	12 caps	per pack	5.20	6.20
			Streptomycin	125 mg.	120 caps		44.00	..
3	Boehringer-Knoll .	CHLORAM-PHYCIN—S	Chloramphenicol and Streptomycin sulphate	125 mg.	12 caps pack	per pack	5.33	6.28
				125 mg.	100 caps pack	per pack	40.51	47.21
4	Parke-Davis . .	CHLORSTREP	Chloramphenicol and Di-hydrostreptomycin	125 mg and 125 mg.	12 caps pack	per pack	6.05	7.92
		CHLORSTREP SUSPENSION	Chloramphenicol	125 mg	32 ml. pack	per pack	6.45	8.45
			Di-hydrostreptomycin		60 ml. pack	par pack	11.29	14.79
5	Gurco Pharma . .	GURCOMY-CETIN	Chloramphenicol and Di-hydrostreptomysin	125 mg and 125 mg.	12 caps pack	per pack	4.27	5.00
					100 caps pack	per pack	29.87	35.00
					500 caps pack	per pack	138.66	162.50
		GURCOMYCE-TIN STREP SUSPENSION	Chloramphenicol and Di-hydrostreptomycin	125 mg and 125 mg.	1000 caps pack	per pack	266.60	312.60
					50 grms pack	per pack	4.27	5.00
					300 grams pack	per pack	32.00	37.00
		VII. *Injection of Tetracycline and Vitamin C*						
1	Standard Pharmaceuticals	CETRAMYCE-TIN	Tetracycline	125 mg	4 caps	per pack	16.60	20.00
			Chloramphenicol and Vitamin C 250 mg	125 mg and	100 caps	per pack	76.00	..
2	Cyanamid . .	ACHROMYCIN INTRAVENOUS			250 mg vial	per vial	5.70	7.13
					500 mg vial	per vial	9.23	11.54
		VIII. *Ointment of Prednisolone and Chloramphenicol*						
	Alembic Chemical .	PRECIN	Prednisolone & Chloramphenicol		3.5 grams pack	per pack	3.45	4.31
		FORTIFIED OPHTHALMIC FORTIFIED TOPICAL	Prednisolone & Chloramphenicol		5 grams pack	per pack	5.20	6.50

[*Exclusive of excise duty.]

TABLE 24.5—*Concld.*

1	2	3	4	5	6	7	8
			IX. *Tabs. Granules of I.N.H. & P.A.S.*				
1	Biological Evans	BAPANEX—	P.A.S. 78% and	100 grams pack	per pack	6.15	7.95
		Granules	I.N.H. 2.5%	250 grams pack	per pack	14.35	17.15
2	Smith Stanistreet	DIPASON	P.A.S. & I.N.H.	500 Tabs. pack	per pack	28.00	34.85
3	Cadila Labs.	ISOCADIPAS	P.A.S. & I.N.H.	1000 Tabs pack	per pack	56.00	75.90
		ISOCADIPAS					
		Graunules	P.A.S. & I.N.H.	30's packets	per packet	19.00	21.85
		ISOPAR	P.A.S. & I.N.H. 100 mg.	500 tabs. pack	per pack	32.00	36.80
				1000 tabs. pack	per pack	61.80	71.05
				4000 tabs. pack	per pack	220.00	253.00
4	Zandu	ISOCALAMISAL	Calcium P.A.S. 0.5G and	250 tabs. pack	per pack	8.92	10.50
			I.N.H. 15 mg.	1000 tabs. pack	per pack	33.66	39.60
5	Gujarat Pharmaceuticals	I.C.P.	P.A.S. & I.N.H.	1000 Tabs pack	per pack	27.00	28.35
				5000 Tabs pack	per pack	130.00	136.50
6	Neo Pharma	INAPAS	P.A.S. & I.N.H.	100 Tabs pack	per pack	6.60	7.75
				1000 Tabs pack	per pack	59.50	70.00
			X. *Tabs. of Iodo-chlor-hydroxy- quinoline, Tetracycline and Chloroquin Phosphate*				
1	OPIL	TEQUINOPIL	(1) Tetracycline Hydrochloride (2) Iodo-chlor-hydroxy-quinoline (3) Chloroquin Phosphate	30 Tabs pack 250 Tabs pack	per pack per pack	7.50 55.00	8.84 64.83
2	Lahs. Grimault	AMICLINE	(1) Tetracycline HCL 25 mg (2) Di-iodo 250 mg and (3) Chloroquin Phosphate 80 mg	40 Tabs pack Strip of 8 tabs	per pack per strip	10.20 ..	12.00 2.40

TABLE 24.6

Foreign domestic prices of the formulations of the specified drugs
(Formulations with an asterisk were selected for cost investigation)

Sl. No.	Formulation/Country	Description of formulation	Packing	Strength	Unit or pricing	Price in Foreign Currency		Price in Indian Currency (Rs.)	
						Trade/ whole sale	Consumer's retail	Trade/ whole sale	Consumer's retail
1	2	3	4	5	6	7	8	9	10
1	*Vitamin-A Inj.*								
1	U.K.								
	(The Crookes Labs. Ltd.)		Boxes of 6 × 1 ml. ampoules	100,000 I.U. per ampoule	per box of 6 × 1 amps.	8 sh.	12 sh.	7.20	10.80
2	Czechoslovakia .	Inj.lc.cm.	5 injs	50.000 U.	5 Injs	..	16.80 Kes 1 Re. 1.92 kes	..	8.75
3	Hungary . .		5 × 1 ml.	100.000 E	per pack	..	32.00 Forints	..	10.29
			50 × 1 ml.	100.000 E per ml.	per pack	..	259.40 Forints	..	83.40
			20 × 1 ml.	50,000 E	per pack	..	29.20 Forints	..	9.39
2	*Vitamin-A-Tabs*								
1	U.K.								
	(a) Roche Products "Ro-A-VIT"		30 tabs	50,000 IU per tab.	per pack	7 sh.	..	6.30	..
			200 tabs	per tab.	per pack	40 sh.	..	36.00	..

TABLE 24.6—*Contd.*

1	2	3	4	5	6	7	8	9	10
2	Hungary . .	(1) Vit-A	50 × 5000E		per pack	..	9.40 Forints	..	3.02
		(2) Vit-A+D2	50 × 5000 E		per pack	..	10.20 Forints	..	3.28
3	*Cyanocobalamin. Inj.*								
	(1) U.K. (Glaxo Products)	"CYTAMEN"	6 × 1 ml.	100 Mg/ml.	per pack		*2/6sh. 3/4 sh.	2.25	3.00
			6 × 1 ml.	250 Mg/ml.	per pack		*2/9sh. 3/8 sh.	2.48	3.30
			6 × 1 ml.	1000 Mg/ml.	per pack		*5/9sh. 7/8 sh.	5.18	6.90
	(2) Czechoslovakia	Cyanocobalamin	5 ml. vial.	1000 mg/per ml.	per pack	..	60 kes	..	31.25
	(3) Hungary . .	Vit B12	3 × 1 ml.	200 gamma	per pack	..	5.60 Forints	..	1.80
			3 × 1 ml.	300 gamma	per pack	..	32.80 Forints	..	10.55
			3 × 1 ml.	1000 gamma	per pack	..	102.30 Forints	..	32.89
4	*Hydroxocobalamin* Inj.								
	(1) U.K. (Glaxo Products)	"NEO-CYTAMEN"	6 × 1 ml.	250 Mg/per ml.	per pack	..	*2/9sh. 3/8sh.	2.48	3.30
			6 × 1 ml.	1000 Mg/per ml.	per pack	..	*15/9sh. 7/8sh.	5.18	6.90
5	*Ascorbic Acid Tabs*								
	(1) U.K. (Roche Products)	"REDOXON"	100 tabs	50 mg.	per pack	3/-sh.	..	2.70	..
			1000 tabs	50 mg.	per pack	16/-sh.	..	14.40	..
			100 tabs	500 mg.	per pack	15/8 sh.	..	14.10	..
			500 tabs	500 mg.	per pack	67/-sh.	..	60.30	..
	(2) Czechoslovakia		20 pc	100 mg.	per pack	Kes. 1.92	Kes. 8.20	1.00	1.67

6 *Ascorbic Acid Inj.*								
(1) U.K. (Roche Product)	"REDOXON"	6 Injs.	100 mg/ 2 ml.	per pack	3/- sh.	..	2.70	..
(2) Hungary		50 Injs.	100 mg/ 2 ml.	per pack	20/- sh.	..	18.00	..
		5 × 1 ml.	100 mg/ml.	per pack	..	8.75 Forints	..	2.81
		100 × 1 ml.	100 mg/ml.	per pack	..	175.00 Forints	..	56.26
7 *Sulphadiazine Tabs.*								
(1) U.K. (Roche Products)		100 tabs	0.5 g.	per pack	7/9½ d	13/9.	7.01	12.38
(May & Baker)		500 tabs	0.5 g.	per pack	34/- d	60/- d.	30.60	54.00
(2) Switzerland .	Sulfathyzol	20 tabs		per pack	..	2.90	..	5.02
(3) Hungary . .	Sulfathyzol	250 tabs	500 mg.	per pack	..	122.00 Forints	..	39.22
8 *Sodiumpenicillin G. Inj.*								
(1) U.K. (Glaxo Products)	CRYSTAPEN Inj.	10 vials	2 lac units 120 mg	per pack	*5/- s	7/6	4.50	6.75
	(Sodium-Penicillin G.)	10 vials	5 lac units 300 mg	per pack	*6/- s	9/-	5.40	8.10
		10 vilas	1 lac units (0.6 gram)	per pack	*9/- s	13/6	8.10	12.15
(2) Czechoslovakia	Kalium Penicillin		5 lac units	per vial	..	Kes4.	..	2.08
			10 lac units	per vial	..	Kes8.	..	4.17
(3) Hungary . .	Penicillin G. Injection	1 × 100.000E				6.80 Forints	..	2.19
		1 × 200.000E			..	8.80 Forints	..	2.83
		1 × 1000.000E			..	40.— Forints	..	12.86
	Retardillin	1 × 400.000E			..	12.— Forints	..	3.86
		1 × 1000.000E			..	25.80 Forints	..	8.29
	Prompteillin Injection	1 × 400.000E			..	12.20 Forints	..	3.92
		1 × 800.00E			..	23.70 Forints	..	7.62

TABLE 24.6—*Contd.*

1	2	3	4	5	6	7	8	9	10
9	*Procaine Penicillin G. Inj.*								
	(1) U.K. (Glaxo Products)	'SEGLOMYCIN'	10 vials	Procaine Penicillin G-3 lac units Sod. Penicillin G.1 lac units Streptomycin 0.5 gm.	per pack	*10/- sh.	15/sh.	9.00	13.50
10	*Penicillin Tabs*								
	(1) U.K.	CRYSTAPEN-V-TABS	100	125 mg.	per pack	*14/-sh	21/-sh	12.60	18.90
	(Glaxo Products)	(Potassium penicillin-V.)	100	250 mg.	per pack	*27/-sh	40/-sh	24.30	36.45
	(2) Czechoslovakia	Penicillin-V-Tablets	24 tablets	2 lac units	per pack		Kes. 26.	..	13.54
	(3) Hungary . .	Beacillin tabletta	12 x 200.000E		per pack	..	30.90 Forints	..	9.93
			250 x 200.000E		per pack	..	643.70 Forints	..	206.95
		Vegacillin Tabletta	12 x 200.000E		per pack	..	30.90 Forints	..	9.93
			250 x 200.000E		per pack	..	643.70 Forints	..	206.95
11	*Streptomycin Sulphate Inj.*								
	(1) U. K. (Glaxo Product)	"STREPOLIN" Streptomycin Sulphate 33 per cent	10 vials 1 x 1 gm.	1 gram (3 ml.)	per 10 vials		14/23 sh.	8.55	12.83
	(2) Hungary . .	Streptomycin Injection	1 x 1 gm.			per pack	30.20 Forints	..	9.71
		Streptoplex		1 x 1 gm.		**per pack**	**30.20 Forints**	..	**9.71**

12 *Di-Hydrostreptomycin Sulphate—Inj.*								
(1) Hungary . .	Dihydroxtreptomycin Inj.	1 x 1 gm.		Per pack	..	30.20 Forints	..	9.71
13 *Chloramphenicol Caps*								
(1) U.K. (Parke Davis & Co.)	CHLORONYCETIN (Chloramphenicol) caps.	20's	250 mg.	Per pack	9sh.4d	14sh.0d	8.40	12.60
		100's	250 mg.	Per pack	74sh.2d	111sh.3d	66.75	100.13
		500's	250 mg.	Per pack	358sh.10d	538sh.3d	322.95	484.43
		1000's	250 mg.	Per pack	715sh. 0d.	1072sh. 6d.	643.50	965.25
(2) Czechoslovakia .	Packing in caps. 20 pc.			Per pack	..	Kes.40	..	20.88
(3) Switzerland .	Chloramphencol	12 caps.		Per pack	..	5.10	..	8.33
	Mediamycetin	100 caps		Per pack	..	27.90	..	48.32
14 *Chloramphenicol Inj.*								
(1) Hungary . .	Chlorocid	1 x 1 gm.		Per pack	..	16. Forints	..	5.14
	Injection	50 x 1 gm.		Per pack	..	680 Forints	..	218.62
15 *Tetracyclin ps.*								
(1) U.K. (a) (MEDCO Labs.)	Chlortetracycline Caps.	100's	250 mg	Per bottle of 100	59/6d.	93/6d.	53.55	84.15
(b) Pfizer . .	'TETRACYN' Tetracycline Caps.	Bottle of 16	250 mg	Per pack	10/10d. £ s d	16sh. 3d. £ s d	9.75	14.63
		100	250 mg	Per pack	5 5 2	4 17 9		
		100	250 mg	Per pack	51 9 0		58.65	87.98
		1000	250 mg	Per pack		47 3 6	566.10	849.15
(2) Czechoslovakia	Tetracycline	20 pc	250 mg.	Per pack	..	Kes. 50	..	26.04
(3) Switzerland .	(a) MEDIACYCLIN	16 Caps				17.40	..	30.14
	(b) TETRACYN	16 Caps				22.30	..	38.62

TABLE 24.6—*Contd.*

1	2	3	4	5	6	7	8	9	10
16	*Oxytetracycline Caps*								
	(1) U.K. (Pfizer)	TERRAMYCIN Oxytetracyclin Caps.	Bottle of 16	250 mg.	Per Bottle	S d 13 11	S d 1-0-10	12.53	18.76
						£ s d	£ s d		
			100	250 mg.	Per Bottle	4 3 10	6 5 9	75.46	113.18
			1000	250 mg.	Per Bottle	40 9 5	60 14 1½	728.48	1092.71
	(2) Czechoslovakia	Oxytetracline Hydrochloride 50 pc.				..	Kes. 30.	..	26.04
	(3) Switzerland	TERRAMYCIN	16 caps.			..	22.30	..	38.62
	(4) Hungary . .	Tetran B-2/270 mg Oxytetacyclin Tartalem	16 x 900 mg			..	70.40 Forints	..	22.63
17	*Chlortetracycline Caps*								
	(1) U.K. (MESCO-LAPS)	Chlortetra-cyclin hydroch-loride	100's	250 mg.	Per Bottle	59 sh. 6d.	93sh. 6d.	53.55	84.15
	(2) Czechoslovakia	Chlortetracyclin hydrochloride 20 pc		250 mg.		..	Kes. 25.	..	13.02
	(3) Hungary . .	Chlortetracline Hydrochloride Tabletta	16 x 250 mg			..	318.20 Forints	..	102.30
18	*Tetracycline Injs.*								
	(1) U.K.	TERRACYN				Sh. d.	Sh. d.		
	(Pfizer) . .	(a) Intramuscular	100 mg. vial	100 mg.	Per vial	2 0	3 0	1.80	2.70
		(b) Intravenaus	250 mg. vial	250 mg.	Per vial	3 8	5 6	1.30	4.95
				500 mg.		6 6	9 9	5.85	8.78
	(2) Hungary . .	Tetracycline hydrochloride Inj.	16 x 250 mg.			..	238.70 Forints	..	76.70

19 ***Oxytetracyclin Inj.***									
(1) U.K. (Pfizer)	TERRAMYCIN (a) Intramuscular	100 mg. vial	100 mg.	Per vial	Sh. d. 2 6	Sh. d. 3 9	2.25	3.38
	(b) Intravenaus	250 mg.	250 mg.	Per vial	4 8	7 0	4.20	6.30
		500 mg. vial	500	Per vial	8 5	12 7½	7.58	11.36
20 ***Chloroquine Phosphate Tabs***								
(1) U.K. (Imperial Chemical Industries Ltd.)	"ARCHLOR" Chloroquine Phosphate Tabs B.P. 0.25 grm.	100's	0.25 gramme	Per vial	10sh. 3d.	18 Sh. 1½d.	9.23	16.31
		500's	0.25 gramme	Per vial	42sh. 2d.	74sh. 6d.	37.95	67.05
(2) Czechoslovakia	Chloroquine Phosphate Tabs	30 tabs	0.25 g.		..	Kcs.10.80	..	5.62
(3) Switzerland	Resochine Tabs	100 tabs			..	21.80		37.76
(4) Hungary	(a) Delagil tabletta	30 × 250 mg.			..	29.10 Forints	..	9.36
		300 × 250 mg.			..	272.40 Forints.	..	87.38
	(b) Delagil Injection	5 × 5ml.	250 mg./ml.		..	19.80 Forints	..	6.37
		50 × 5ml.	250 mg./ml.		..	173.30 Forints	..	55.72
21 ***Iodo-Chloro-Hydroxyquinolins Tabs.***								
(1) Hungary	Enteroseptol Tabletta	250 mg.			..	16.50 Forints	..	5.30
		250 mg.			..	151.60 Forints.	..	48.74
22 ***Di-Iodohydroxyquinoline Tabs.***								
(1) U. K. (May & Baker)	"EMBAQUIN" Tabs. B.P.	20 × 300 mg.	300 mg.		1 Sh. 6½d.	2 Sh. 9d.	1.39	2.48

TABLE 24.6—*Contd.*

1	2	3	4	5	6	7	8	9	10
23	*Chlorpropamide Tabs*								
	(1) U. K. (Pfizer)	"DIABINESE"	Bottle of 100	100 mg.	per bottle	£. Sh. d. 0 18 0	£. Sh. d. 1 7 0	16.20	24.03
			500	100 mg.	per bottle	3 18 2	5 17 3	70.35	105.53
			100	250 mg.		1 19 5	2 19 1½	35.48	53.21
			500	250 mg.		9 5 7	13 18 4½	167.03	250.54
	(2) Hungary	Osadian	20 × 200 mg.			..	16.50 Forints	..	5.30
		Tabletta Diabenese Tabletta	200 × 200 mg.			..	145.80 Forints	..	46.87
			100 × 250 mg.			..	223.10 Forints	..	71.73
24	*Amodiaquine Hydrochloride Tabs.*								
	(1) U.K. (Parke Davis) .	"COMOQUIN"	3's	200 mg.	Per pack	1 Sh. 2d.	1 Sh. 9d.	1.05	1.58
			100's	200 gm.	Per pack	20 Sh. 8d.	31 Sh.	18.60	27.90
			1000's	200 mg.	Per pack	200 Sh.	300 Sh.	180.00	270.00
	(2) Hungary .	Comoquine Tabletta	50 ×	200 mg.	Per pack	..	273.60 Forints	..	87.96
25	*Tolbutamide Tabs*								
	(1) U.K. .	'ARTOSIN' brand	100's	..	..	..	19 Sh.	..	17.10
	(Riker Labs) .		500's	..	..	..	89 Sh.	..	80.10
	(2) Hungary .	Rastinon	1 × 20 ml.	..	..	..	25.40 Forints	..	8.17
		Injection per cent	5.5 × 20 ml.	..	..	..	114.50 Forints	..	36.81
26	*Insulin Injs.*								
	(1) U. K. .	Insulin Inj.	Dozen	40 units/ml.	..	37 Sh. 4 d.	58 Sh. 6d.	33.60	52.65
	(Burroughs Wellcome & Co.)		Dozen	80 units/ml.		27 Sh. 1d.	113 Sh.	64.87	101.70

	(2) Czechoslovakia	Insulin Inj. vials.	..	40 Units/ml.			..	Kes. 10	..	5.21
	(3) Switzerland .	Insulin 10cc 400 E ca					..	5.	..	8.66
	(4) Hungary .	Insulin Inj.	6 × 10ml.	40 E			..	128 Forints	..	41.22
			1 × 5ml.	200 E			..	17.50 Forints	..	5.63
			1 × 10ml.	400 E			..	31.10 Forints	..	10.00
27	*Insulin Zinc Suspension Inj. Lente*									
	(1) U. K. . .	Insulin Zinc	Dozen	40 units/ml.			Sh. 47	Sh. 70	42.30	63.00
	(Burroughs Wellcome & Co.)	Suspension Inj. lente	Dozen	80 units/ml.			Sh. 89	Sh. 132	80.10	118.80
	(2) Czechoslovakia	Suspension Inj. lente	Dozen	40 units/ml.			..	Kes. 10	..	5.21
	(3) Hungary .	Insulin Novo/ lente/400 E	1 × 10 ml.				..	51.30 Forints	..	16.49
28	*Insulin Zinc Suspension* (Amorphous) Inj. (Semi-Lente)									
	(1) U.K. .	Insulin Zinc	Dozen	40 units per ml.	per dozen		Sh. 47	Sh. 70	42.30	63.00
	(Burroughs Wellcome & Co.)	Suspension (Amorphous) Inj.	Dozen	80 units per ml.			Sh. 89	Sh. 132	80.10	118.80
	(2) Czechoslovakia	Suspension (Amorphous) Inj.	40 units per ml.				..	Kes. 10	..	5.21
	(3) Hungary .	Insulin Semi lente/400 E	1 × 10 ml.				..	51.30 Forints	..	16.49
29	*Insulin Zinc Suspension (Crystalline)* Inj. (Ultralente)									
	(1) U.K. .	Insulin Zinc	Dozen	40 units/ml.	per dozen		Sh. 47	Sh. 70	42.30	63.00
	(Burroughs Wellcome & Co.)	Suspension	Dozen	80 units/ml.	per dozen		Sh. 89	Sh. 132	80.10	118.80

TABLE 24.6—*Contd.*

1	2	3	4	5	6	7	8	9	10
29	*Insulin Zinc Suspension (Crystalline)*—Contd.								
	(2) Czechoslovakia	Insulin Zinc Suspension (Crystalline) Inj. (Ultra lente)				..	Kes. 10	..	5.21
30	*Isophane Insulin Inj.*								
	(1) U.K. . .		Dozen	40 units/ml.	per dozen	Sh. 47	Sh. 70	42.30	63.00
	(Burroughs Wellcome & Co.)	Isophane Insulin Inj.	Dozen	80 units/ml.	per dozen	Sh. 89	Sh. 132	80.10	118.80
31	*Protamine Zinc Insulin Inj.*								
	(1) U. K. . (Burroughs Wellcome & Co.)	Protamine Zinc Insulin Inj.	Dozen	40 units/ml.	per dozen	Sh. 40 2d.	Sh. 63	36.15	56.70
	(2) Czechoslovakia	Protamine Zinc Insulin Inj.	Dozen	40 units/ml.	per dozen	..	Kes. 10	..	5.21
	(3) Hungary .	(a) Protamine Zinc Insulin Inj.	1 × 10 ml.			..	31.10 Forints	..	10.00
		Injection 400	6 × 10 ml.			..	128.20 Forints	..	41.22
		(b) Injection 400E	1 × 10 ml.			..	51.30 Forints	..	16.49
		Tabs							
		(c) Bucarban	20 × 500 mg.			..	27.10 Forints	..	8.71
		Tabletta	250 × 500 mg..			..	293.80 Forints	..	94.46
32	*I. N. H. Tabs.*								
	(1) U. K. .	Isoniazid Tabs.	100's	50 mg.	per dozen	Sh. 19 6d.	Sh. 2 4d. each	17.55	2.10
	(MESCO LABS)		100's	100 mg.	per dozen	Sh. 33 9d.	Sh. 5 d each	34.88	4.50
	(2) Czechoslovakia	Isoniazid Tabs.	100pc.	50 mg.		..	Kes. 10	..	5.21
	(3) Hungary .	Isoniazid Tabletta	200 × 50 mg.			..	66 Forints	..	21.22
			100 × 50 mg.			..	300 Forints	..	106.10
	(4) Switzerland .	Isoniazid Rimifon	100 tabs.	100 mg.		..	8.15	..	14.12

33	*Sodium P.A.S. Tab*								
	(1) U. K. (MESCO LABS)	Sodium P.A.S. Tabs.	500's	0.5 gm.	per dozen	Sh. 181	Sh. 22 6d per tin	162.90	20.25
			1000's		per dozen	Sh. 349	Sh. 44 3d per tin	314.10	39.83
	(2) Czechoslovakia	Sodium P.A.S. Tabs.	1000's			..	Kes. 128	..	66.66
	(3) Hungary	(a) Tebaminal Natrium Tabletta	500 × 413mg.			..	93.80 Forints	..	30.16
			2500 × 413mg.			..	421 Forints	..	135.35
		(b) Tebaminal Natrium/intravenous infuxious oldat Keszitesher	24 gm.			..	55.80 Forints	..	17.94
		(c) Tebaminal drage/intestinosolvents	250 × 300 mg.			..	47 Froints	..	15.11
	(4) Switzerland	PAS 250 Drag				..	12.65	..	21.91
		1000 Drag				..	40.85	..	70.75
34	*Sodium P.A.S. Granules*								
	(1) U.K. (MESCO LABS)	Sodium P.A.S. granules	500 g.		Per dozen	Sh. 400	Sh. 52 3d per tin	396.00	47.03 per tin
			1000 g.		Per dozen	Sh. 830	Sh. 103 d per tin	747.00	92.70 per tin
35	*Tetanus Anti-Toxin Inj.*								
	(1) U.K. (Burroughs wellcome & Co.)	Tetanus Anti-toxin	500 i.u.		Each	Sh. 1 5 D.	Sh. 2 6 D.	1.28	2.25
			10000 i.u.		Each	Sh. 7 8 D.	Sh. 13 6 D.	6.90	12.15
			50000 i.u.		Each	Sh. 34	Sh. 60	30.60	54.00
	(2) Switzerland	Tetanus Anti-toxin	3 amps.			..	4.2	..	7.27

TABLE 24.6—*Concld.*

1	2	3	4	5	6	7	8	9	10
35	*Tetanus Anti-Toxin Inj*—Contd.								
	(3) Hungary .	Tetanus Anti-toxin	1 × 1 ml.			..	3.45	..	1.11
		Injection	50 × 1 ml.			..	107.00	..	34.40
			1 × 10 ml.			..	13.70	..	4.40
		Tetanus serum/	1 × 1500 E			..	11.90	..	3.83
		Lo-bol/	1 × 2000 E			..	106.00	..	34.08
36	*Prednisolone Tabs.*								
	(1) U.K. . (Glaxo Product)	Prednilan tabs. (Prednisolone)	100			Sh. 15	Sh. 20	13.50	18.00
	(Pfizer) .	(a) DELTACORTRIL	Bottle of			£ s. d.	£. s. d.		
		(Prednisolone)	100 1 mg.			0 5 6	0 8 3	4.95	7.43
			500 1 mg.			1 4 5	1 16 9	20.25	33.08
			100 5 mg.			0 18 0	1 7 0	16.20	24.30
			500 5 mg.			4 0 0	6 0 0	72.00	108.00
		(b) DELTA-CORTRIL ENTERIC Prednisolone enteric coated tabs.	100 2.5 mg.			0 11 3	0 16 10½	10.13	15.19
			500 2.5 mg.			2 8 9	3 13 1½	43.88	65.81
	(2) Switzerland .	Prednisolone	20 tabs.			2.90			5.02
			100 tabs.			9.60			16.53
	(3) Hungary .	Prednisolone	20 × 5 mg.			..	50.00 Forints	..	16.08
		tabletta	100 × 5 mg.			..	220.90 Forints	..	71.02
37	*Prednisolone Inj.* U.K. . (Pfizer)	DELTACORTRIL INTRAMUSCULAR/ INTRA-ARTICULAR	25 mg. ml.			..	..	..	..
		Prednisolone Inj.	vial 5 ml.			1 3 0	1 14 6	20.70	31.05

24.7. By and large, the prices in the Indian market of formulations compare favourably with the prices of similar formulations in other countries in their domestic markets.

24.8. The Organisation of Pharmaceutical Producers of India has stated that the prices of Indian made drugs are lower and that these have remained steady. It has argued that the price structure of the drug industry is a highly complex one involving the inter-play of various forces and comparison of the indigenous prices with the prices of similar products in other countries is not valid. For, the Indian prices depend upon the country's economy, rates of local taxes and duties, cost of raw materials and labour which are necessarily very much different from those of other cuntries. It has also gone on to say that no valid conclusions can be reached by comparison of the prices of particular drugs of one company with the prices of similar drugs of another company in this country or elsewhere and that the examination should be confined to the price structure of the company and not to that of particular drugs. Within the total range of the products of a company, it has argued, certain lines may be capable of bearing a higher margin of profit than others and if a high cost drug is pointedly noticed, those of lower costs should also be simultaneously taken into consideration. We have, however, received complaints that the prices charged by different indigenous producers for the same product vary greatly as between unit and unit that the prices charged by foreign companies in India are higher than those of their associates in the foreign countries as shown in the examples given below :

Product	Company	Country	Trade prices	Packing
1	2	3	4	5
1. Tolbutamide	Hoechst	In many European countries	$1·85 (Rs. 14·01)	50 tabs
		In India	$3·57 (Rs. 27·04)	50 ,,
2. Tabs. Chlorpropamide	Pfizer	In Italy	$1·41 (Rs. 10·68)	60 ,, 250 mg.
		In India	$4·00 (Rs. 30·30)	60 mg. tabs in 30' packings

1	2	3	4	5
3. Aureomycin. .	Cyanamid	Argentina	$1·19 (Rs. 9·01)	16 caps. 150 mg.
	Lederle	In India	$6·92 (Rs. 52·42)	16 caps. 250 mg.
4. Tetracycline (Achromycin)	Cyanamid	Argentina	$1·19 (Rs. 9·01)	16 caps. 250 mg.
do.	Lederle	In India	$6·52 (Rs. 49·39)	16 caps. 250 mg.

24.9. In the case of a number of drugs it has been pointed out that the there is great variation of price for drugs of the same strength and same packing as between different manufacturers as the examples given in Table 24.7 of only four drugs would show :

TABLE 24.7

Disparity between the prices for the same drugs

1. *Vitamin B*12

Sl. No.	Name of formulator	Packing	Wholesale price	Retail price
			Rs.	Rs.
1	Alembic Chemical . . .	5 ml.	4·25	5·31
2	Glaxo Labs.	5 ml.	4·28	5·28
3	Anglo-French	5 ml.	3·30	4·00
4	Cadila Lab.	5 ml.	2·40	2·75
5	Therachem	5 ml.	1·50	1·75
6	Gujarat Pharmaceuticals . .	5 ml.	3·60	4·50

N.B.—It was observed that though wholesale and retail price shown in the price list of M/s Therachem Laboratory, Bombay for 5 ml. Injection is Rs. 1·50 and Rs. 1·75 respectively, the manufacturer supplies the same to the dealer at a rate of Rs. 13·50 per dozen and dealer then supplies the same at a rate of Rs. 16·00 per dozen to the doctor.

TABLE 24.7—*Contd.*

2. *Chloramphenicol Capsules* (250 *mg.*)

Sl. No.	Name of formulator	Packing	Wholesale price	Retail price
			Rs.	Rs.
1	Parke-Davis	12 caps.	7·19	9·51
2	Dey's Medical	12 caps.	5·55	6·59
3	Cadila Lab.	12 caps.	3·50	4·00
4	Unique Pharm. . . .	12 caps.	3·80	4·50
5	OPIL	12 caps.	4·00	4·90
6	Pan Pharma	12 caps.	4·28	4·90
7	Alembic Chemical . . .	12 caps.	5·45	6·81
		100 caps.	38·15	47·68
8	Geoffrey Manners . . .	20 caps.	6·00	7·20
9	Therachem Lab. . . .	100 caps.	22·50	26·00
		1000 caps.	220·00	250·00
10	Triumph Products . . .	100 caps.	22·00	25·30
		500 caps.	100·00	115·00
		1000 caps.	190·00	228·00
11	Mercury Pharm. . . .	100 caps.	20·00	24·00
		500 caps.	97·50	117·00
12	British Pharma Laboratory . .	1000 caps.	190·00	228·00

N.B.—It was also observed that though wholesale and retail prices shown in the price list of M/s. Therachem Laboratory, Bombay, for 1000 Capsules is Rs. 220 and Rs. 250 respectively, the manufacturer supplies the same to the deale at a rate of Rs. 115 to a doctor. Similarly wholesale and retail price shown in the price list of M/s British Pharma Laboratories Bombay and Mercury Pharmaceutical, Baroda for 1000 capsules is Rs. 190·00 and Rs. 228·00 respectively while the manulacrurers supply the same to the dealer at a rate of Rs. 83·00 only and the dealer then supplies the same at a rate of Rs. 93·00 to Rs. 95·00 net to a doctor.

TABLE 24.7—*Contd.*

3. *Tetracycline Capsules* (250 *mg.*)

Sl. No.	Name of formulator	Packing	Wholesale price	Retail price
			Rs.	Rs.
1.	Lederle (Cyanamid) . . .	4 Caps.	4·10	5·06
2.	Unique Pharma . . .	4 Caps.	2·80	3·20
3.	Dey's Medical	8 Caps.	7·74	9·19
4.	Gujarat Pharmaceuticals . .	4 Caps.	3·80	4·40
5.	Pfizer	8 Caps.	7·30	8·40
6.	OPIL	25×4 Caps.	103·02	115·13
		4 Caps.	3·70	4·56
		8 Caps.	7·20	8·92
		100 Caps.	72·00	78·15
		1000 Caps.	650·00	768·62
7.	Pan Pharm.	4 Caps.	3·21	3·66
8.	Alembic Chemical . . .	4×4 Caps.	14·25	17·81
		100 Caps.	87·00	108·75
9.	Hoechst	5×4 Caps.	18·10	21·72
		10×10 Caps.	83·65	106·38
10.	British Pharma. Laboratory, Bombay	100 Caps.	65·00	78·00
11.	Mercury Pharm., Baroda .	100 Caps.	65·00	78·00
12.	Therachem Lab., Bombay .	100 Caps.	55·00	63·00

N.B.—It was observed that though wholesale and retail price shown in the price list of M/s Therachem Laboratory, Bombay for 100 capsules is Rs. 55·00 and Rs. 63·00 respectively, the manufacturer supplies the same to the dealer at a rate of Rs. 12·00 only and dealer then supplies the same at a rate of Rs. 17·50 net to a doctor. Similarly wholesale price and retail price shown in price list of M/s British Pharmaceutical Laboratory, Bombay and M/s Mercury Pharmaceutical, Baroda is Rs. 65·00 and Rs. 78 respectively, the manufacturer supplies to the dealer at a rate of Rs. 12·00 the dealer then supplies the same at a rate of Rs. 13·75 to Rs. 15·00 net to a doctor.

TABLE 24.7—*Concld.*

4. *Prednisolone Tablets* (5 *mg.*)

Sl. No.	Name of formulator	Packing	Wholesale price	Retail price
			Rs.	Rs.
1.	Indo Pharm. Works	10 Tabs.	1·70	2·00
2.	Hoechst	1000 Tabs.	181·20	198·16
3.	Glaxo Labs.	10×10 Strip	21·59	26·59
4.	Gujarat Pharmaceuticals	Do.	15·00	19·59
5.	Wyeth Labs.	Do.	20·00	25·00
6.	Cadila Labs.	Do.	20·00	25·00
7.	Ruby Laboratory	Do.	17·00	19·50
8.	Alembic Chemical	10 Tabs.	2·18	2·72
9.	Alpha Chemicals	10×10 Tabs.	20·00	23·00
10.	Pfizer	100 Tabs.	23·63	26·41

24.10. It has also been pointed out that in the case of Chloramphenicol one of the units which marketed 1000 capsules at Rs. 220 wholesale supplied the same to doctors at Rs. 115. In the case of two other units the same packing for which the wholesale price was Rs. 190 was sold to doctors at between Rs. 93 and Rs. 95. The same units offered Tetracycline at about one fourth the wholesale price to doctors. Some of the comparative prices of formulations charged by indigenous manufacturers as furnished by the Indian Drug Manufacturers' Association are as follows :

TABLE 24.8

Variations in the prices of formulations charged by indigenous manufacturers as furnished by the Indian Drug Manufacturers' Association

Sl. No.	Name of the product	Packing	Price ranging between
			Rs.
1	Vitamin B12 100 mcg. . .	10 m. vial	1·50 to 3·00
2	Vitamin C 50 mg. . . .	1000 tbs.	11·00 to 16·25
3	Phthalyl Sulphathiazone tbs. 0·5g	1000 tbs.	22·00 to 56·00
4	Tablets Sulphathiazone 0·5g .	500 tbs.	8·00 to 21·50
5	Tab. Sulphadiazine . . .	100 tbs.	16·50 to 28·50
6	Chloromycetin Capsules . .	12 caps.	2·20 to 7·62
7	Aureomycine capsules . .	4 caps.	3·28 to 4·25
8	Tetracycline capsules . .	4 caps.	3·28 to 4·36
9	Tablets of Iodo-chlor-hydroxy-quinoline.	500 tbs.	12·00 to 41·40
10	Tab. Chloroquin. Phosph. . .	250 tbs.	20·00 to 333·00
11	Tablets Tolbutamide 0·5 .	1000 tabs.	70·00 to 228·00
12	Prednisolone Tablets . . .	10 tabs.	1·35 to 2·25
13	Methyl Testostrone Tab. 10 mg. .	25 tabs.	3·00 to 11·60
14	Doothylcarbamazine citrate tab. 50 mg.	1000 tabs.	28·00 to 60·80
15	Meprobomate 400 mg. Tab. .	50 tabs.	3·00 to 12·00
16	Nikethamide Drops . . .	100 ml.	7·00 to 18·75
17	Tab. Acetazolamide . . .	30 tabs.	18·00 to 28·00

These figures show that vast disparities exist even in the internal market as between the prices charged by one unit and another.

24.11. One of the terms of reference to us is to examine the difference in prices of the formulations when sold under "brand names" and "common names". We find that in the majority of cases formulations have brand names also but in a few cases no brand names exist and the formulations are sold under the generic names. To the extent that such cases can be extracted the position of the range of difference between preparations sold under generic names and brand names is shown in Table 24.9 :

TABLE 24.9

Formulations sold under generic names vis-a-vis *brand names*

(Price in Rs.)

Sl. No.	Name of Formulation	Dosage	Pack	Unit of pricing	Selling prices when sold under generic names			Selling prices when sold under Brand Names			
					Name of unit	Wholesale price Rs.	Retail price Rs.	Name of unit	Brand Name	Wholesale price Rs.	Retail price Rs.
1	2	3	4	5	6	7	8	9	10	11	12
1	*Vitamin B-12 Injection*	100 mcg/ml	Per 10 ml Vial	Per Vial	Anglo French	1.86	2.25	British Drug House	ANACOBIN	2.46	3.06
		,,	,,	,,	Bengal Immunity	1.10	1.32	OPIL	CYANOCOBALAMIN	1.10	1.26
		,,	,,	,,	Unichem Labs.	2.20	2.50	Therapeautic Pharmaceuticals	CYANOMIN	2.04	2.40
		,,	,,	,,	Rallis India	2.56	3.01	Khandelwal Labs.	CYNOPLON	1.60	1.90
		,,	,,	,,	Gurco Pharma	1.00	1.25	Merck Sharp	REDISOL	2.57	3.17
		,,	,,	,,	Zandu	1.27	1.50	Glaxo Labs.	MACRABIN	2.57	3.17
		,,	,,	,,	Shetty's Pharmaceuticals	1.19	1.40	Mac. Lab.	COBMAC	1.70	2.00
		500 mcg/ml	Per 5 ml. Vial	Per Vial	Rallis India	4.21	4.91	CIPLA	CIPLAMIN	4.28	5.28
		,,	,,	,,	Gurco Pharma	1.50	1.87	Sarabhai Chemicals	RUBRAMIN	4.28	5.28
		,,	,,	,,	Zandu	1.79	2.10	British Drug House	ANACOBIN	4.07	5.02
		,,	,,	,,	Shetty's Pharmaceuticals	2.12	2.50	Dey's Medical	VITADONZE	3.52	4.18

TABLE 24.9—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12
1	*Vitamin B-12 Injection*—Contd.	500 mcg/ml	Per 5 ml Vial	Per Vial				Albert David	SICOBIN	2.75	3.30
		,,	,,	,,				Cadila Labs	COBALMIN	2.40	2.75
		,,	,,	,,				Therapeutic Pharmaceuticals	CYANOMIN	3.77	4.45
		,,	,,	,,				Khandelwal Labs.	CYNOPLON	2.50	2.95
		,,	,,	,,				Merck Sharp	REDISOL	4.28	5.28
		,,	,,	,,				Alembic Cehmical	CYCOBAL	4.25	5.31
								Mac Labs	COBMAC	2.97	3.50
		,,	,,	,,				Pfizer	DUVIT	4.37	4.89
		,,	,,	,,				OPIL	CYANOCOBALAMIN	1.75	2.00
		1000 mcg/ml	,,	,,	Anglo French	5.78	7.00	CIPLA	CIPLAMIN	6.00	7.50
		,,	,,	,,	Bengal Immunity	4.00	4.80	Sarabhai Chemicals	RUBRAMIN	7.49	9.24
		,,	5 × 10 ml	,,	Unichem Labs.	7.00	8.00	British Drug House	ANACOBIN	7.06	8.71
		,,	,,	,,	Rallis India	7.41	8.66	Dey's Medical	VITADOUZE	6.14	7.29
		,,	,,	,,	Gurco Pharma	2.75	3.44	Albert David	SICOBIN	3.75	4.50
		,,	,,	,,	Zandu	2.97	3.50	Therapeutic Pharmaceuticals	CYANOMIN	6.46	7.60
		,,	,,	,,	Shetty's Pharmaceuticals	3.00	4.50	Khandelwal Labs.	CYNOPLON	4.25	5.00
		,,	,,	,,				Merck Sharp	REDISOL	7.49	9.24
		,,	,,	,,				Alembic Chemical	CYCOBAL	7.45	9.31
		,,	,,	,,				Mac Labs.	COBMAC	4.67	5.50
								Pfizer	LUVIT	7.68	8.59

2	*Vitamin B-12(b)*	500 mcg/ml	5 ml per Vial	,,	Anglo-French	3.96	4.80	Sarabhai Chemicals	RUBRAMIN-H	4.28	5.28
		,,	,,	,,	CIPLA	4.20	5.28	Therapeutic Pharmaceuticals	CYANOMIN-H	4.25	5.00
		,,	,,	,,	Unichem Labs.	4.20	4.60	Gujarat Pharmaceuticals	COBIN-H	3.73	4.37
		,,	10 × 5 ml	,,	Gurco Pharma	3.73	4.37	Glaxo Labs.	MACRABIN	4.28	5.28
		,,	10 × 5 ml	,,	Khandelwal Labs.	3.80	4.30	Merck Sharp	REDISOL-H	4.92	6.07
		1000 mcg/ml	5 ml Vial	,,	Anglo French	7.01	8.50	Sarabhai Chemicals	RUBRAMIN-H	7.49	9.24
		,,	,,	,,				Gujarat Pharmaceutical	COBIN-H	6.00	7.50
								Glaxo Labs.	MACRABIN	7.49	9.24
								Merck Sharp	REDISOL-H	8.62	10.63
3	*Vitamin C-Tabs*	100 mg	1000 Tabs	Per Pack	Anglo French	13.20	16.00	CIPLA	CETAMID	20.34	25.09
					Dey's Medical	15.00 (Tin)	18.00	Bengal Immunity	ASCACID	15.85	19.02
					Kemp & Co.	27.50	33.00	Cadila Labs.	ASCORCIN	14.00	16.10
					Albert David	25.00	30.00	Glaxo Labs.	CELIN	21.41	26.41
					Martin & Harris	14.51	17.05				
					OPIL	22.00	25.30				
4	*DI-Hydrostreptomycin Sulphate Injection*	1 gm	10 Vials pack	Per Pack	Sarabhai Chemicals	5.92	6.56	Marck Sharp	DYSTREP	5.80	6.44
5	*Chloramphenicol Caps*	250 mg	12 caps pack	Per Pack	CIPLA	4.80	5.70	Boehinger-Knoll	CHLORAMAPHYCIN	6.13	7.13
								May & Baker	EMBACETIN	5.74	6.34
								Alembic Chemical	AICOPHENICOL	5.45	6.81
								Dey's Medical	ENTEROMYCETIN	5.55	6.89
6	*Tetracycline Caps*	250 mg	12 × 4 pack	Per Pack	Sarabhai Chemicals	45.49	56.11	Cyanamid	ACHROMYCIN	42.50	53.12

TABLE 24.9—*Concld.*

1	2	3	4	5	6	7	8	9	10	11	12
7	*Chloroquine Tabs*	0.25 mg	Box of 100 Tabs	per box	Bengal Immunity	8.00	9.60	Unichem Labs.	UNIQUIN	8.20	8.95
8	*Iodochlor-hydroxy-quinoline Tabs*	0.25 gm	500 Tabs in strips	per strip	Unichem Labs.	26.25	28.75	Bengal Chemical	ENTEROKIN	23.80	28.00
								Albert David	QUINOFORM	16.00	19.20
								Therapeutic Pharmaceuticals	AMIDOCLOR	20.40	24.00
9	*Di-iodo-hydroxy-quinoline Tabs*	0.21 gm	500 Tabs pack	per pack	CIPLA	4.50	5.40	Zandu	HISTOQUIN	3.40	4.00
10	*Chlorpropamide*	0.25 gm	100 Tabs pack	per pack	Haffkine	14.00	N.A.	Albert David	DIALANE	16.00	19.20
								Gujarat Pharmaceuticals	CHLORINESE	13.00	14.30
11	*INH Tabs*	50 mg	100 Tabs pack	per pack	Bengal Immunity	1.15	1.38	Glaxo Labs.	PELAZID	1.17	2.11
					Chemo Pharma	2.20	2.75	Sarabhai Chemicals	NYDRAZID	2.04	2.30
					Dey's Medical	1.50	1.60				
					Albert David	1.00	1.20				
					Martin & Harris	1.34	1.60				
					OPIL	1.35	1.55				
					Biological Evans	1.54	1.84				
		50 mg	1000 Tabs pack	per pack	Biological Evans	8.20	9.10	Glaxo Labs	PELAZID	12.28	15.28
					Bengal Immunity	8.00	9.60	Sarabhai Chemicals	NYDRAZID	12.60	15.43
					Bengal Chemical	10.20	12.00				
					Chemo-Pharma	15.24	19.05				
					Dey's Medical	11.00	13.20				

	100 mg	100 Tabs per pack	Biological Evans	2.30	2.82	Glaxo Labs.	PELARID	2.56	3.19
			Bengal Immunity	1.70	2.04	Alembic Chemical	ALZIDE	2.60	3.25
			Chemo-Pharma	3.30	4.12	Sarabhai Chemicals	NYDRAZID	2.82	3.51
			Dey's Medical	2.75	3.30	Unichem Labs.	UNIZYDE	2.85	3.10
	100 mg	1000 Tabs per pack	Biological Evans	14.35	17.15	Glaxo Labs.	PELAZID	20.47	25.47
			Bengal Immunity	14.00	16.80	Alembic Chemical	ALZIDE	20.60	25.75
			Smith Stanistreet	19.50	23.40	Sarabhai Chemicals	NYDRAZID	20.73	25.79
			Chemo Pharma	24.36	30.45	Unichem Labs.	UNIZYDE	21.00	23.00
			Dey's Medical	20.00	24.00	Cadialla Labs.	CADZIDE	20.50	23.55
			South India Res. Insti.	18.00	20.70	Zandu	ISOZIDE	20.82	24.50
			Albert David	17.00	20.40				
			Martin & Harris	20.42	24.00				
			Shetty's Pharmaceuticals	N.A.	15.00				
12	*Prednisolone Tabs*	5 mg	100 Tabs per pack	Dey's Medical	18.50	22.20	Pfizer	DELTACORTRIL	23.63	26.41
				OPIL	16.00	18.40	Boots	DELTASTAB	18.10	22.30
				CIPLA	18.00	21.00				
				Gurco Pharma	15.00	18.75	Hoechst	LOSTACORTIN	20.00	24.00
				Zandu	12.75	15.00	Therapeautic Pharmaceuticals	PRENILON	16.57	19.50
							Ranbaxy Labs.	NISONE	20.00	25.00

24.12. The analysis in Table 24.9 indicates that it is not because of the generic name that the price ranges are comparatively lower but because of the units which manufacture them. By and large, the units in the large scale sector and amongst them those which have established names and are bigger than others have higher prices than units which are not so well-known and are

not comparable in size. Surprisingly enough even though the contrary should be the fact, price differentials are in the present analysis more a factor of standing and size of the units than of the brand name itself.

24.13. Almost all Government purchases are made by generic names even though the drugs supplied have also brand names under which the manufacturer sells them in the market. Owing to a certain degree of monopsony that the Government enojoys the prices at which drugs are purchased are substantially lower than the prices at which these drugs are sold to the general public. We have made an analysis of the comparative rates and these are given in Table 24.10.

TABLE 24.10

Selling prices of formulations for Government compared to those for public

Sl. No.	Name of the formulation	Brand name	Dosage	Pack	Unit packing	Wholesale price	Maximum retail price	Price for Government	Difference between (8) and (9) as % of (8)
1	2	3	4	5	6	7	8	9	10
			(A) *Selling prices of single drug formulations*						
	Vitamin-A Tablets								
1	Roche Products	AROVIT	0.5 lac Iv/tab	Pack of 200 Tablets	per Pack	42.70	52.70	37.50	29.00
	Vitamin-B-12 Injection								
1	Sarabhai Chemicals	RUBRAMIN	100 mcg/ml	5 ml vial	per vial	1.61	1.99	1.60	19.6
2	Smith Stanistreet	COBASTAN	500 mcg/ml	5 ml vial	per vial	4.28	5.28	4.25	19.5
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24	7.45	19.4

3	Therapeutic Pharmaceuticals	CYANOMIN	100 mcg/ml	10 ml vial	per vial	2.04	2.40	3 per cent less of wholesale price	2.5
				10 × 10 ml vial	per 10 vials	16.15	19.00		12.7
			500 mcg/ml	5 ml vial	per vial	3.77	4.45		12.8
				10 × 5 ml vial	per 10 vials	32.30	38.00		12.7
			1000 mcg/ml	5 ml vial	per vial	6.46	7.60		12.8
				10 × 5 ml vial	per 10 vials	53.76	63.25		8.1
4	Merck-Sharp . .	REDISOL	100 mcg/ml	5 ml vial	per vial	1.61	1.99	0.75 to 1.28	32 to 60
				10 ml vial	per vial	2.57	3.17	1.00 to 2.04	32 to 67
			500 mcg/ml	5 ml vial	per vial	4.28	5.28	1.60 to 3.40	32 to 68
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24	3.00 to 5.95	32 to 66
5	Glaxo Labs. .	MACRABIN	100 mcg/ml	5 ml vial	per vial	1.61	1.99	1·28	35.7
				10 ml vial	per vial	2.57	3.17	2.04	35.7
			500 mcg/ml	5 ml vial	per vial	4.28	5.28	3.40	35.6
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24	5.95	35.6
6	Alembic Chemical .	CYCOBAL	100 mcg/ml	5 ml vial	per vial	1.60	2.00	1.30	35.0
			500 mcg/ml	5 ml vial	per vial	4.25	5.31	3.43	35.4
			1000 mcg/ml	5 ml vial	per vial	7.45	9.31	6.00	35.6
	Vitamin B-12 (b)								
1	Sarabhai Chemicals .	RUBRAMIN-H	500 mcg/ml	5 ml vial	per vial	4.28	5.28	4.91	7.00
			1000 mcg/ml	5 ml vial	per vial	7.49	9.24	8.59	7.1
2	Therapeutic Pharmaceuticals	CYANOMIN-H	500 mcg/ml	5 ml vial	per vial	4.25	5.00	Less 5%	14.4

TABLE 24.10—*Contd.*

1	2	3	4	5	6	7	8	9	10
Vitamin B-12(b)—(Contd.)									
3	Merck Sharp . .	REDISOL-H	500 mcg/ml	5 ml vial	per vial	4.92	6.07	3.50 to 3·91	..
			1000 mcg/ml	5 ml vial	per vial	8.62	10.63	6.20 to 6.84	..
	Vitamin C-Tabs.								
1	Sarabhai Chemicals .	ASCORBICIN	250 mg	20's bottle	per bottle	1.34	1.65	1.33	19.4
				100's bottle	per bottle	5.35	6.60	5.33	19.2
2	Cyanamid . .	CHEWCEE	500 mg	10 x 10's pack	per pack	18.00	22.50	16.20	28.0
3	Glaxo Labs. . .	CELIN	50 mg tab	100's pack	per pack	1.87	2.31	2.06	10.8
				1000's pack	per pack	13.91	17.16	15.35	10.5
			100 mg tab	100's pack	per pack	2.68	3.31	2.96	10.6
				1000's pack	per pack	21.41	26.41	23.63	10.5
			500 mg tab	20's pack	per pack	2.68	3.31	2.96	10.6
				500's pack	per pack	52.40	64.40	57.74	10.3
4	Alembic Chemical .	CIVINAL	50 mg/tab	1000's pack	per pack	10.90	13.62	12.00	11·9
5	Roche Products .	REDOXON	50 mg/tab	20's pack	per pack	0.91	1.12	0.86	23.2
				100's pack	per pack	3.90	4.81	3.67	23.7
				250's pack	per pack	9.29	11.46	8.74	23.7
			200 mg/tab	20's pack	per pack	2.83	3.49	2.66	23.8
				100's pack	per pack	12.49	15.41	11.76	23.7
			500 mg/tab	100's pack	per pack	16.28	20.09	18.10	9.0
				10 x 10's pack	per pack	19.22	23.72	15.33	35.4
				500's pack	per pack	72.59	89.59	68.34	23.7

Sulphadiazine Tabs.									
1 May & Baker .		0.5 gm/tab	10 × 10's pack	per pack	5.34	6.34	5.74	9.5
			50 × 10's pack	per pack	26.69	31.69	28.69	9.5
2 Cyanamid . .		0.5 gm/tab	500's pack	per pack	25.00	31.25	16.20	48.2
Sodium Penicillin-G Inj.								
Sarabhai Chemicals .		2 lac u/ml	Box of 10 vial	per box	4.29	4.76	4.61	7.4
		5 lac u/ml	Box of 10 vial	per box	6.23	6.91	6.41	7.2
		10 lac u/ml	Box of 10 vial	per box	10.31	11.40	9.87	15.5
Procaine Penicillin Inj.								
Sarabhai Chemicals	CRYSTICILLIN	30 lac units 10 dose	vial box 10 vials	per box	24.52	25.88	24.46	5.5
Penicillin Tablets								
Sarabhai Chemicals .	PENTIDS	2 lacs units	48 tabs pack	per pack	8.63	9.57	8.87	7.3
Streptomycin Sulphate Inj.								
1 Merck Sharp . .	MERSTREP	1 gm.	10 vials pack	per pack	5.80	6.44	5.51	14.4
2 Sarabhai Chemicals .	AMBYSTRYN-S	1 gm.	10 vials box	per box	6.84	7.60	6.09	6.7
Di-hydrostreptomycin Sul. Inj.								
Sarabhai Chemicals .		1 gm.	10 vials	per pack	5.92	6.56	6.09	7.5
Tetracycline caps.								
1 Sarabhai Chemicals .	STECLIN	250 mg.	12 × 4 caps pack	per pack	45.39	56.11	45.15	19.5
2 Hoechst . .	HOSTACYCLINE	250 mg.	Strip of 5 × 4 caps	per strip	18.10	21.72	17.25	20.6
3 Cyanamid . .	ACHROMYCIN	250 mg.	4 caps pack	per pack	3.86	4.82	2.89	40.00
			12 × 4 caps pack	per pack	42.50	53.12	31.87	40.00
			24 × 4 caps pack	per pack	83.70	104.62	62.87	39.90
			25 × 4 caps pack	per pack	..	..	65.40	..

TABLE 24.10—*Contd.*

1	2	3	4	5	6	7	8	9	10
	Tetracycline Caps (contd.) Cyanamid (contd.)	ACHROMYCIN-V	250 mg.	4 Caps pack	per pack	3.86	4.82	2.89	40.00
				12×4 Caps pack	per pack	42.50	53.12	31.87	40.00
				24×4 Caps pack	per pack	83.70	104.62	62.78	39.90
		ACHROMYGIN-S.V.	250 mg.	4 Caps pack	per pack	4.08	5.02	3.01	40.00
				12×4 Caps pack	per pack	44.20	55.25	33.15	40.00
	Demethyl Tetracycline	*Caps*							
	Cyanamid . .	LEDERMYCIN	150 mg.	4 caps pack	per pack	4.19	5.24	3.18	39.3
				12×4 Caps pack	per pack	46.19	57.74	35.06	39.3
				24×4 Caps pack	per pack	90.98	113.72	69.06	39.3
				25×4 Caps pack	per pack	..	..	71.94	..
			300 mg.	2 Caps pack	per pack	4.19	5.24	3.18	39.3
				12×12 Caps pack	per pack	46.19	57.74	35.06	39.3
				24×2 Caps pack	per pack	90.98	113.72	69.06	39.3
	Iodo-chlor-hydroxy-quinoline Tabs.								
1	Smith Stanistreet .	STANQUINATE	250 mg.	10×10 Strip	per strip	7.00	8.60	4.00	53.5
				500's bottle	per bottle	30.00	37.00	16.00	56.8
2	East India Pharmaceutical	ENTROQUINOL	250 mg.	20's pack	per pack	1.85	5% less 2.25 sale	whole-price	21.8
	Tolbutamide Tabs.								
	Hoechst . . .	RASTINON	0.5 g.	10×10 Strip	per strip	21.95	26.34	20.95	20.5
				100×10 Strip	per strip	183.00	219.60	172.00	21.7
				1000 Tabs. pack	per pack	..	219.60	172.00	21.7
				5×20 ml. box	per box	15.75	18.90	15.00	20.6

Insulin Inj.								
Burroughs Wellcome .		40 units per ml.	10 ml. vial	per vial	3.84	4.77	10% discount	27.5
Insulin Protamine Zinc Inj.								
Burroughs Wellcome .		40 units per ml.	10 ml. vial	per vial	4.60	5.73	10 % discount	.7
I. N. H. Tabs.								
1 Biological Evans .		100 mg.	1000 Tabs. pack	per pack	14.35	17.15	12.00	30.0
			5000 Tabs. pack	per pack	66.62	79.62	58.00	27.2
2 Sarabhai Chemicals .	NYDRAZID	50 mg.	100 Tabs. pack	per pack	2.04	2.30	1.97	14.30
			1000 Tabs. pack	per pack	12.40	15.43	12.93	16.2
		100 mg.	100 Tabs. pack	per pack	2.82	3.51	2.94	16.2
			1000 Tabs. pack	per pack	20.73	5.79	21.60	16.2
P. A. S. Granules								
1 Biological Evans .		65%	1000 Gm. pack	per pack	35.87	42.87	34.00	20.70
2 Hoechst . . .		48.7%	100 Gm. pack	per pack	4.25	5.10	4.05	20.6
			250 Gm. pack	per pack	9.90	11.88	9.45	20.5
Tetanus Anti-toxin Inj.								
Biological Evans .		1500IU/amps	Single amp.	per amp.	1.75	2.10	1.60	23.8
		10000IU/vials	Single vial	per vial	10.00	12.00	9.00	25.00
		50000IU/vials	Single vial	per vial	40.00	48.00	36.00	25.00
Prednisolone Tabs.								
Hoechst .	HOSTACORTIN-H	5 mg.	10 x 10 Tabs. Strip	per strip	20.00	24.00	19.10	20.00
			100 x 10 Tabs. Strip	per strip	181.20	218.16	176.10	19.3

TABLE 24.10—*Concld.*

B. Selling prices for multiple drug formulation

Sl. No.	Name of formulation	Brand name	Drugs contained and dosage	Pack	Unit for pricing	Wholesale price	Maximum retail price	Price for Government	Difference between (8) and (9) as % of (8)
1	2	3	4	5	6	7	8	9	10
			Combination of different forms of Penicillin						
1.	Sarabhai Chemicals .	CRYS-4	Procaine Penicillin 2 lac units. Sod. Penicillin 4 lac Units (1 dozn).	10 vials box	per box	5.62	6.23	5.23	16.1
		CRYS-8	Procaine Penicillin 6 lac units, Sodium Penicillin 8 lac Units.	10 vials box	per box	8.58	9.50	7.98	16.0
		CRYS-12	Procaine Penicillin 9 lac units. Sodium Penicillin 12 lac units.	10 vials box	per box	12.05	13.40	11.21	16.3
			Combination of different forms of Strep tomycin						
	Sarabhai Chemicals .	AMBYSTRYON	Streptomycin 0.5 gm Dihydrostreptomycin 0.5 gm.	10 vials box	per box	5.92	6.56	6.00	7.2
			Injection of Penicillin and Streptomycin						
	Sarabhai Chemicals .	PENMYN	Sod. pen 5. lac units streptomycin 0.25 gm.	10 vials box	per box	7.25	8.10	6.75	16.7

	PENMYN FORTIS	Sod. pen-G 5 lac units streptomycin 0.5 gm.	10 vials box	per box	8.47	9.39	8.47	0.8
	DICRYSTICIN 800	Procaine P-G 3 lac units Sod. P. 1 lac units and streptomycin 0.50 gm (1 dose)	10 vials box	per box	11.74	13.02	12.08	7.2
	DISCRYSTICIN-S	Procaine pen. G3 lac units and streptomycin 0.5 gm. Sod pen 1 lac.	1 dose box of 10 vials	per box	7.66	8.50	7.13	16.1
	DISCRYSTICIN-S FORTE	Procaine pen. G 3 lac units Sod, pen. 1 lac units and streptomycin 1 gm (1 does)	10 vials box	per box	10.21	11.30	9.50	15.9
	DICRYSTICIN-S Pediatric	Procaine pen. 3 lac units Sod. pen.1 lac units and streptomycin 0.25 gm.	10 vials box	per box	6.84	7.58	7.04	7.9
		Injection of Tetracycline and Vitamin C.						
Cyanamid . .	ACHROMYCIN	Tetracycline & Vitamin C	250 mg. Vial 500 mg. Vial	Per vial Per vial	5.70 9.23	7.13 11.54	4.28 6.92	40.00 40.00
		Tabs. of I.N.H. & P.A.S.						
Smith Stanistreet .	DIPASON	P. A. S. and I.N.H.	500 tabs pack	per pack	28.00	35.85	25.20	27.7

CHAPTER 25

COMPARISON OF PRICES AT WHICH BASIC DRUGS AND FORMULATIONS ARE SOLD BY MANUFACTURERS

25. In the reference sent to us by Government one of the points was the examination of the factors relating to the prices at which formulations were sold by manufacturers to Government *vis-a-vis* the prices at which basic drugs manufactured by them were sold to other formulators. The value of the basic drugs contained in formulations is, as would appear from Table 25.1 which follows, comparatively small; and even though we have made an analysis we have come to the conclusion that no comparison can be made between the prices of the formulations as sold to Government and the prices of the equivalent quantity of bulk drug contained in the formulation as the latter is sold to other formulators. The prices of formulations are invariably very much higher as may be seen from the Table given below :

TABLE 25.1

Basic drug producers prices for single drug formulations sold to Government and for the basic drugs sold to formulators

Sl. No	Formulation	Manufacturing unit with the brand name if any, in brackets	Basic drug contained	Price of formaulation as cnargod by the manufacturing unit for Government		Value of basic drug contained in the formulation				
				Packing	Price (Rs.)	Unit	Qty. of basic drug contained	Price per unit of basic drug (Rs.)	Value of basic drug contained (Rs.)	%age of col.(10) to col. (6)
1	2	3	4	5	6	7	8	9	10	11
1	Vitamin A Inj.	1. Glaxo Labs. (PR-EPALIN)	Vitamin-A	1 lac. IU/ml. 6 x 1 ml carton	3.71	mu	0.6	0.594	0.3564	9.6
		2. Roche Products (AROVIT)	Vitamin-A	3 lac. IU/ml 3 x 1 ml amp.	5.63	mu	0.9	0.594	0.5346	9.5

2	Vitamin A Tabs. .	Roche Products(AR-OVIT)	Vitamin-A	0.5 lac. IU/tab 200 tabs/pack	37.50	mu	10.0	0.594	5.94	15.8
3	Vitamin A Caps .	Glaxo Labs.	Vitamin-A	0.24 lac. IU/ml 100 caps.	*9.63	mu	2.4	0.594	1.4256	14.8
4	Vitamin B12-Inj. .	1. Merck Sharp (RA-DISOL)	Vitamin-B12	0.0001 gm/ml 10 ml vial	2.21	gm	0.001	175.0	0.175	7.9
5	Vitamin B12 (b)(Inj.)	1. Glaxo Labs. (MACRABIN-H)	Vitamin-B12	0.0005 gm/ml (b) 5 ml vial	3.66	gm	0.0025	330.0	0.825	22.5
		2. Merck Sharp (RADISOL-H)	Vitamin-B12	0.0005 gm/vial 5 ml vial	3.66	gm	0.0025**	134.32	0.3358	10.4
6	Sulphadiazine Tabs.	May & Baker	Sulphadiazine	0.5 gm/50 × 10 tabs.	26.19	gm	250.0	0.065	16.25	62.0
7	Sod. Pen-G-Inj .	1. Hindustan Antibiotics	Penicillin	2 lac. lu/ml single vial	*0.42	mu	0.2	0.400	0.08	19.0
				5 lac. single vial	*0.61	mu	0.5	0.400	0.20	32.8
				10 lac. single vial	*0.94	mu	1.0	0.400	0.40	42.6
		2. Alembic Chemical	Penicillin	2 lac. lu/ml 5 vials	2.00	mu	1.0	0.50	0.50	25.0
				5 lac. lu/ml 5 vials	2.90	mu	2.5	0.50	1.25	43.1
				10 lac. lu/ml 5 vials	4.80	mu	5.0	0.50	2.50	52.1
8	Proc. Pen. Inj. .	Hindustan Antibiotics	Penicillin	15 lac. IU/ml single vial	*1.30	mu	1.5	0.50	0.75	57.6
9	Penicillin Tabs. .	1. Hindustan Antibiotics	Penicillin	65 mg. × 12 tab.	*1.75	gm	0.78	0.80 (per MU)	0.624	35.6
				65 mg. × 36 tabs.	*4.75	gm	2.34	,,	1.872	39.4
		2. Alembic Chemical	Penicillin	0.2 Mu × 12 tabs.	2.00	mu	2.4	0.50	1.20	60.0
		3. Standard Pharmaceuticals(STAN-PEN).	Penicillin	0.2 Mu × 48 tabs.	*8.60	mu	9.6	0.50	4.80	55.9

TABLE 25.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11
10	Streptomycin Sulphate Inj.	Hindustan Antibiotics	Streptomycin	1 gm/vialsingle vial	*0.58	gm	1.0	0.225	0.225	38.8
11	Chloramphenicol Caps.	1. Parke-Davis (CHLOROMYCETIN KAPSEALS)	Chloramphenicol	250 mg/Caps 12 caps pack	*5.85	gm	3.0	**0.315	0.945	16.1
				250 mg. 1000 caps.	177.00	gm	250.0	**0.315	78.75	44.5
		2. Boehringer-Knoll (CHLORAMPHYCIN)	Chloramphenicol.	250 mg/cap 12 caps	*6.13	gm	3.0	0.410	1.23	20.0
				250 mg/cap 100 caps	19.00	gm	25.0	0.410	10.25	55.7
				1000 caps	170.00	gm	250.0	0.410	102.5	60.2
12	Tetracycline Caps	1. Pfizer (TETRACIN)	Tetracycline	250 mg 4 × 25 caps	*103.02	gm	25.0	1.147	28.68	27.9
		2. Cyanamid (ACHROMYCIN)	Tetracycline	250 mg × 4 caps	2.89	gm	1.0	1.147	1.147	36.4
				12 × 4 caps	31.87	gm	12.0	1.147	13.764	43.4
				25 × 4 caps	65.40	gm	25.0	1.147	28.68	43.9
		(ACHROMYCIN-V)		250 mg × 4 caps	2.89	gm	1.0	1.147	1.147	30.4
				12 × 4 caps	31.87	gm	12.0	1.147	13.764	43.4
				25 × 4 caps	65.40	gm	25.0	1.147	28.68	43.9
		(ACHROMYCIN-SV)		250 mg × 4 caps	3.01	gm	1.0	1.147	1.147	38.0
				12 × 4 caps	33.15	gm	12.0	1.147	13.764	41.5
				25 × 4 caps	68.66	gm	25.0	1.147	28.68	41.8
13	Oxytetracycline Caps	Pfizer (TERRAMYCIN)	Tetracycline	250 mg × 100 caps	*103.20	gm	25.0	1.147	28.63	27.8

14	Chlortetracycline Caps.	Cyanmid (AUREOMYCIN)	Tetracycline	250 mg × 4 caps	2.89	gm	1.0	1.147	1.147	36.4
				12 × 4 caps	31.87	gm	12.0	1.147	13.764	43.4
				25 × 4 caps	65.0	gm	25.0	1.147	28.68	43.9
15	Demethyl Chlortetracycline Caps.	Cyanamid (LEDERMYCIN)	Tetracycline	150 mg × 4 caps	3.18	gm	0.6	1.147	0.6882	21.6
				12 × 4 caps	35.06	gm	7.2	1.147	8.2584	23.6
				25 × 4 caps	71.94	gm	15.0	1.147	17.005	23.6
16	Amodiaquin Tabs.	Parke-Davis (CAMOQUIN)	Amodiaquin	0.2 gm × 250 tabs.	*25.35	gm	50.0	**0.095	4.75	18.7
				0.15 gm × 1000	45.00	gm	150.0	..	14.25	31.8
17	Chloroquin Tabs.	Bengal Immunity	Chloroquin	0.25 gm × 100 tabs.	8.00	gm	25.0	0.275	6.875	85.9
				1000 tabs.	75.00	gm	250.0	0.275	68.75	91.6
18	Iodochloro-hydroxy-quinoline Tabs.	1. East India Pharmacutical (ENTEROQUINOL)	Iodochlorhydroxyquinoline	250 mg × 1000	35.00	gm	125.0	**0.0596	7.45	21.3
				250 mg × 300 bottle	18.00	gm	62.5	**0.0596	3.73	20.4
		2. Alembic Chemical (ALCHLOQUIN)	Iodochlorhydroxyquinoline	250 mg × 500 tabs.	14.50	gm	125.0	N.A.	..	..
				1000 tabs	27.00	gm	250.0	N.A.	..	..
		3. Bengal Chemical	Iodochlorhydroxyquinoline	250 mg × 100 tabs.	*5.10	gm	25.0	N.A.	..	..
				500 tabs	*23.80	gm	125.0	N.A.	..	..
19	Di-iodo-hydroxy-quinolin Tabs.	1. East India Pharmaceutical	Di-iodo-hydroxy-quinoline	250 mg × 1000 tabs.	21.00	gm	250.0	**0.04498	11.245	53.5
		2. Bengal Immunity	Di-iodo-hydrozy-quinoline	250 mg × 500	14.39	gm	125.0	0.08	10.00	69.8
				250 mg × 1000	20.40	gm	250.0	0.08	20.00	99.5
20	Chlorpropamide Tabs	Pfizer (DIABANESE)	Chlorpropamide	100 mg × 100 tabs.	16.30	gm	10.0	**0.107	1.07	6.6
				250 mg × 100 tabs.	35.14	gm	25.0	**0.107	2.675	7.6

TABLE 25.1—*Concld.*

1	2	3	4	5	6	7	8	9	10	11
21	Tolbutamide Tabs	Hoechst (RASTI-NON)	Tolbutamide	500 mg						
				100 × 10 tabs	10.00	gm	50.0	0.07	3.50	35.0
				1000 tabs	100.00	gm	500.0	0.07	35.00	35.0
		Unichem (UNITO-LBID	Tolbutamide	580 mg × 100 tabs	15.70	gm	58.0	0.08	4.64	29.6
				500 tabs	*73.50	gm	290.0	0.08	23.20	31.6
22	Insulin Inj. . .	Boots	Insulin	40 U/ml 10 ml vial	*4.22	MU	0.0004	4200	1.68	39.9
				80 U/ml 10 ml vial	*8.15	MU	0.0008	4200	3.36	41.2
23	Insulin Zinc Susp. Inj.	Boots	Insulin	40 U/ml 10 ml vial	*6.18	MU	0.0004	4200	1.68	27.2
24	Insulin Protamine Zinc Inj.	Boots	Insulin	40 U/ml 10 ml vial	*0.06	MU	0.0004	4200	1.68	33.2
25	Insulin Isophane Inj.	Boots	Insulin	40 U/ml 10 ml vial	7.31	MU	0.0004	4200	1.68	23.0
26	I.N.H. Tabs . .	1. Pfizer (ISONEX)	I.N.H.	50 mg × 1000 tabs	*13.38	gm	50.0	**0.0935	4.675	35.5
				100 mg × 100 tabs	*3.26	gm	10.0	**0.0935	0.935	28.
				100 mg × 100 tabs	*22.69	gm	100.0	**0.0935	9.35	41.2
		2. Biological Evans	I.N.H.	50 mg × 100 tabs	*1.50	gm	5.0	0.08	0.40	26.6
				50 mg × 1000 tabs	*11.00	gm	50.0	0.08	4.00	36.4
				100 mg × 100 tabs	*2.30	gm	10.0	0.08	0.80	34.8
				100 mg × 1000 tabs	12.00	gm	100.0	0.08	8.00	66.7
				100 mg × 5000 tabs	58.00	gm	500.0	0.08	40.00	67.9

	3. Bengal Immunity	I.N.H.	50 mg × 100 tabs	1.13	gm	5.0	0.10	0.50	44.3
			50 mg × 1000 tabs	6.80	gm	50.0	0.10	5.00	73.5
			100 mg × 100 tabs	1.67	gm	10.0	0.10	1.00	59.9
			100 mg × 1000 tabs	11.90	gm	100.0	0.10	10.00	84.0
	4. Bengal Chemical	I.N.H.	50 mg × 1000	*10.20	gm	50.0	0.12	6.00	58.7
	5. Chemo-Pharma	I.N.H.	50 mg × 100 tabs	*2.20	gm	5.0	0.095	0.475	21.6
			50 mg × 1000 tabs	*15.24	gm	50.0	0.095	4.75	31.2
			100 mg × 100 tabs	*3.30	gm	10.0	0.095	0.95	28.8
			100 mg × 1000 tabs	*24.36	gm	100.0	0.095	9.50	39.1
27 P.A.S. Granules	1. Pfizer	P.A.S.	(70%) 100 gm pack	*5.68	gm	100.0	**0.039	3.90	68.7
			100 gm pack	*51.06	gm	1000.0	**0.039	39.00	71.4
	2. Biological Evans	P.A.S.	(65%) 100 gm pack	*4.00	gm	100.0	0.032	3.20	80.0
			1000 gm pack	*35.00	gm	1000.0	0.032	32.00	91.5
28 Prednisolone Tabs	1. Merck Sharp (CODELCORTONE)	Prednisolone	5 mg × 100 tabs	20.11	gm	0.5	16.00	8.00	39.8
			5 mg × 1000 tabs	181.40	gm	5.0	16.00	80.00	44.2
	2. Wyeth Labs. (WYSOLONE)	Prednisolone	5 mg × 100 tabs	*21.41	gm	0.5	17.00	8.50	39.7
			500 tabs	*60.00	gm	2.5	17.00	42.50	70.8
	3. Glaxo Labs. (DELTACORTIN)	Prednisolone	5 mg × 10 tabs	2.06	gm	0.05	25.00	1.25	60.6
			100 mg × 10 tabs	18.59	gm	0.5	25.00	12.50	67.3
			1000 mg × 10 tabs	172.00	gm	5.0	25.00	125.00	73.6

* In these cases Government prices for formulations are not available. Wholesale prices have been adopted.

** In these cases the rates for basic drug are the ex-works costs per the drug as ascertained by the Commission's Cost Accounts Officers.

25.2 The analysis of the ratio between the formulation price and that of the basic drug shows that the value of the basic drug generally constitutes a very small fraction of the total cost of the formulation, and that any monopoly of the basic drug is not likely to be a factor in the ultimate price of the formulation. There is enough room for competition and economies in cost above the stage of basic drug.

25.3. The disparity between prices of bulk drugs used in certain formulations and the prices of formulations containing the same amount of drug is so self-evident that it may appear surprising that this item should have been included for the Tariff Commission inquiry. In none of the instances quoted which have been adopted from a very large number of items, is there any correspondence or near parity between the price of the formulation as sold to the Government and the price of the drug contained in the formulation as sold to other formulators. However, a solitary instance has been brought to our notice. In this case the rates quoted and accepted under Employee's States Insurance Scheme for the period 1968-69 under Schedule 2 Group 9 page 10 serial 69 of the tender Prednisolone tablets of 5 mg. each in packings of 1000 tablets have been tendered at Rs. 71/- including sales tax of 3 per cent by Geoffery Manners which is the sister concern of Wyeth Laboratories Ltd. the manufacturers of Prednisolone in India. On the other hand the rate for powder Prednisolone in bulk is Rs. 16.50 per gramme excluding sales tax at 3 per cent.

The quantity needed for 1000 tablets of 5 million grammes each would theoretically be valued at Rs. 82/50. Adding to this the amount of sales tax at 3 per cent it works out to Rs. 2.47, the total would come to Rs. 84.97. Over and above the amount of Rs. 84.97 the formulator would need to make additional outlays in the form of wastages in the process of manufacture, cost of conversion, packing costs and dealers' commission. The price of prednisolone at which we have arrived is Rs. 59.73 including return for 5 grammes and the price of formulation of 5 mg. tablets in packing of 1000 tablets containing the same quantity of the basic drug works out to Rs. 85 for the unit with the lowest price. The same formulation is sold at Rs. 60 for 500 tablets by Wyeth Labs. at Rs. 181 for 1000 tablets by Merck Sharp and for Rs. 172 for 1000 tablets by Glaxo Labs. It appears therefore that in this particular instance the rate quoted to the Government was abnormally low. This is however the only instance

where the price at which the bulk drug as supplied to formulators is higher than the price at which a formulation containing the same quantity of bulk drug is offered to Government. It is possible that there may be such other instances too but notwithstanding the fact that we publicised the terms of reference and invited evidence from all parties concerned, no other example was brought to our notice.

CHAPTER 26

INCIDENCE OF DISCOUNT OR COMMISSION TO THE STOCKISTS, DEALERS, RETAILERS AND THE MARGIN OF PROFITS FOR EACH

26.1. The rates of margin allowed to stockists and dealers vary from unit to unit and the total margin allowed to intermediaries including the retailer between ex-factory cost of the drug and the cost to the consumer varies from 9 per cent to 50 per cent in the case of basic drugs and from 4.5 per cent to 66.7 per cent in the case of formulations. The selling system adopted by the different manufacturers has already been discussed in Chapter 22. The range of the margin that is allowed to wholesalers and distributors by the various units is as given in Table 26.1 :—

TABLE 26.1

Margins allowed to stockists, wholesalers and retailers

Sl. No.	Name of the unit	Sales arrangement whether through stockists, wholesalers or agents	Margin allowed on list price to			Total margin between the *ex*-factory price and the maximum retail price as percentage of *ex*-factory price
			Stockists (%)	Wholesailers (%)	Retailers (%)	
1	2	3	4	5	6	7
	Alembic Chemical					
	(a) Basic drugs . .	Selling directly to the manufacturers.		Not applicable		
	(b) Formulations . .	Through Stockists . .	14·6	2½ to 5	10 to 20	39·6

Bengal Chemical						
(a) Basic drugs	Products are distributed through their offices in Calcutta, Bombay, Kanpur and Delhi. Besides they have other distributors.	No discount is allowed to the customers. 12½% commission is allowed to the distributors on their total transactions.				
(b) Formulations						34
Bengal Immunity						
(a) Basic drugs	Selling directly to the wholesalers					
(b) Formulations	Discount depends on volume of purchase	..	3 to 7	3 to 7		14
Boehringer-Knoll						
(a) Basic drugs	Sales to the manufacturers at *ex*-factory price. No intermediaries.	Not applicable				
(b) Formulations	Through sole distributor	12	15		37 to 40	
5 *Boots*						
(a) Basic drugs	Through distributors who are allowed a discount of 29% of the retail price, of which 20% is passed on to the trade.					
(b) Formulations		9	8	12		29
6 *Chemo-Pharma*						
(a) Basic drugs	Sales are managed departmentally from the head office.	Not applicable (Basic drugs are sold only to viallers and other manufacturers)				
(b) Formulations		15	10	5		25

TABLE 26.1—*Contd.*

1	2	3	4	5	6	7
7	*Cyanamid*					
	(a) Basic drugs . .	No discount. Sold exclusively to formulators.		Not applicable		
	(b) Formulations . .	Through distributors	8	20	11	39
8	East India Pharmaceuticals	Do not have any scheme of discounts as such. However, have a scheme of bonus and commission depending on the volume of business.				
9	*Glaxo Labs.*					
	(a) Basic drugs . .	Sales direct to manufacturers.				
	(b) Formulations . .	Sales are made from the Branches/Depots to any dealer.	..	5 to 10	10	
10	*Haffkine*					
	(a) Basic drugs . .	No Sales		Not applicable		
11	*Hind Chemicals*					
	Formulations . .	—	..	20	20	6·9
12	*Hindustan Antibiotics*					
	(a) Basic drugs . .	Sales are managed departmentally from the Head Office.	..	(65% of the total production sold directly to manufacturers)		

(b) Formulations . .	Through distributors	—	10	5	15
13 *Hoechst*					
(a) Basic drugs . .	Sale directly to the formulators		Not applicable		
(b) Formulations	Through distributors	—	6 to 7	9 to 17	37 to 50
14 *May and Baker*					
(a) Basic Drugs . .	Only 0·2% of sulphadiazine produced in 1966 sold to other pharmaceutical firms.		(Sales negligible)		
(b) Formulations . .	Special discounts are affected to :		(1) Preferred stockists (2½% to 5%) and (2) Local stockists (4%) depending on the quantum of their business.		
15 *Merck-Sharp*					
(a) Basic drugs . .	Through Voltas who are the sole distributors.	20	—	..	9·2 to 46·7
(b) Formulations . .	Through Voltas who are the sole distributors.	7½ to 17	—	10 to 20	20
16 *Parke-Davis*					
(a) Basic drugs (b) Formulators . .	Through distributors	—	10	25	19·4 to 62·5 (10% goes to the remaining intermediaries.)

TABLE 26.1—*Contd.*

1	2	3	4	5	6	7
17	*Roche Products*					
	Basic drugs . . . (Synthetic Vit.-A)	Voltas are their exclusive distributors in India.	7½	13	20	50
18	*Sarabhai Merck*					
	Basic drugs . . .	Major portion sold to all manufacturers directly.	Not applicable			
19	*Synbiotics*					
	Basic drugs . .	75% sold to M/s. Sarabhai Chemicals. The rest through Sarabhai Merck to the market.	--	—	—	3 (to Sarabhai Merck.)
20	*Wander Pharmed*					
	(a) Basic drugs . .		..	8	—	8
	(b) Formulations . .	Through sole distributor	5	—	—	..
21	*Wyeth Labs.*					
	(a) Basic drugs . .	Through wholesalers .	..	5 to 10	..	..
	(b) Formulations . .	Geoffrey Manners sole distributors	..	5	20	25
22	Dr. Karanth's Pharmaceuticals Industry Isniazid B.P. . .		.. ..	..	29	20 to 40

23	Neogy Labs.	No discount is allowed at present. Concessional prices given according to the merit of the consumers or dealers regarding payment.	.. ..				
24	Anglo French	Through stockists	.. 10	—	17½	15 to 43	
25	Bayer	Through distributor	— 7	—	14	21	
26	British Drug House	Through Distributor	7½ to 10	—	20	30	
27	Burroughs Wellcome	Through Distributors and Stockists	5 to 7½ (for Insulin) 10 (for others)	—	20	33·7 to 42·9	
28	Ciba	Through regional Distributors	7½ to 12½	—	20	27½	
29	Dey's Medical	Through exclusive Distributor	16 to 23	—	—	..	
30	Geoffrey Manners		—	10 to 20	10 to 20	11·1 to 24·9	
31	Laboratories Grimault	Through sole selling agents	11	9	15	47	
32	Martin & Harris		—	5	—	8·5 to 37·6	
33	Neo Pharma	Through Distributors	—	12½	15	27½	
34	Smith Stanistreet	Through wholesalers	—	1	13 to 19	30·4 to 42·2	

TABLE 26.1—*Contd.*

1	2	3	4	5	6	7
35	South India Res. Inst.	Through wholesalers	—	7½	7½	11·5 to 15·4
36	Standard Pharmaceuticals.	Through authorised Distributors	20% trade discount 5% special discount and 10% Commission to the distributor	..	20 % trade discount and 5% special discount	25
37	Unichem Labs.	Through M/s. Uni-Distributors Pvt. Ltd., who appoints stockists and sub-stockists.	—	5	8 to 11	28 to 38
38	Zandu	Chief Stockist in Bombay @10% discount	10 (5% for Antibiotics)	—	—	19·9 to 50·9
39	AHAVA	—	—	10	15	25
40	Beacon	—	—	10	15	28 to 48
41	Binichem	—	—	Selling at common market rate.	—	20 to 43
42	Bronkol	—	—	Nil	Nil	6·3 to 15.8
43	Eisen Pharmaceutical	—	—	15	15	68

44	Flora Pharma . .	..	--	10 to 15	10 to 15	42 to 83
45	Gurco Pharma . .	Through distributors	..	5 to 45 (5% to 6¼% for Chloramphenicol and Tetracycline and Vit. C formulation 25% for Vit. B12 and B12 (b) formulations. 45% for others)	Nil	6·5 to 33·3
46	Imperial Pharmaceutical	Discount depends on the value of sales.	--	8	--	--
47	Lyka Labs. . . .	Through distributors	--	8	19 to 31	27·8 to 55·6
48	Milnex Labs. . .	Through stockists	5 to 10 ..		9·3 to 17·5	14·3 to 27·5
49	Orissa Red Cross . .	..	..	Nil	Nil	..
50	Pharma Medico . .	..	..	10	25 to 30	57·8 to 66·7
51	Pharmaceuticals & Research Labs.	Through distributors	10 to 25 ..		15	25·6 to 28·2
52	Pharmakon Labs. .	..	..	7½ to 10	15	22½
53	Royal Labs. . .	..	..	5	20	4·5 to 20
54	Roc Pharmaceuticals .	Through wholesalers	..	3 to 7½	10 to 15	13·4 to 25·6
55	Fairdeal Corpn. . .	Through wholesalers	..	7½ to 10	20 to 25	23·4 to 33·3
56	Lyovak Labs. . .	Through authorised distributors and stockists.	..	2½ to 25	20	32

26.2. We have reliably been informed that notwithstanding the higher margins permitted to retailers by the manufacturers in a number of cases the Retailers Association in Bombay has come to an informal understanding that in the case of a large number of items of formulations the maximum margins that would be charged by them will be only 10 per cent. This clearly indicates that in so far as Bombay city is concerned the amount of 10 per cent is not unremunerative. It is however possible that in outlying areas this margin may be incommensurate with the needs of the retailers where expenses to be incurred may be higher and turnover of the stocks may need a higher margin.

26.3. We have been informed that margins available to dealers are from 50 to 60 per cent in the case of about 25 per cent of the total turnover of the drugs, about 40 per cent for 15 per cent of the turnover and for the remaining 60 per cent of the turnover the range of margin is only from 5 to 15 per cent cent. These latter with low range of margin are mostly household remedies which sell on the counter. In other countries it is said the dealers' margins vary from 25 to 40 per cent. In U. K. wholesalers' discount is approximately 15 per cent and in the U.S.A. about 20 per cent. In Germany it is 25 per cent, in U.K. and Middle East countries 33 per cent and in U.S.A. 40 per cent. It was represented to us by the All India Retail Chemists Association that there is need to fix a higher margin for the retailer in view of the risks and expenditure involved. The dealers have to employ qualified pharmacists, have to maintain a multiplicity of records and are always faced with the risk of not selling certain drugs since their sales are dependent upon the prescription of doctors and not on any consumer choice. To a pointed question with regard to the incidence of time expired stocks the loss of which the retailers have to bear we were informed that it works out to from 2 to 2½ per cent on annual turnover. The All-India Retail Chemists' Association has advocated a uniform pattern of distribution ensuring proper margin for everyone. The retailers have, in addition to employing qualified staff as required under the provisions of the Act, to arrange for proper storing facilities, refrigeration, keep salesmen who are well-educated and well-mannered and to make investment on stocks of drugs the demand for which cannot easily be foreseen, to face losses resulting from products which are discontinued or are replaced by newer items. In some cases they have to offer night dispensing services and have to make available every drug in the farthest corners of the country even if the demand for the drug is seasonal. It has been represented that the chemist cannot clear all his stock by offering it at reduced price or by organising a sale. They have advocated a uniform margin of

25 per cent of the consumers' prices and have urged that the consumers prices may be fixed as a norm and the margins worked backwards and that the prices shown on the price lists of manufactures should be those which are applicable to the consumer and be inclusive of excise duty and sales tax if any.

26.4. We have very carefully considered the various points raised and have come to the conclusion that the following rates of commission would be equitable :—

Mark-up.—The Development Council for the Drugs and Pharmaceuticals Industry had attempted to evolve a suitable mark-up and to establish a norm for conversion charges. It was found not practicable for them to specify the items which should form either a conversion charge or the mark-up. In view of the difficulties experienced by them, and as the accounting methods considerably differed from unit to unit, the Commission decided that in order to provide an element of return to the formulator a mark-up of 15 per cent over the cost of sales would be sufficient. This has been provided.

Margin.—The drugs have been distinguished under two categories *viz.*, (i) ethical and (ii) non-ethical drugs. In ethical drugs are included such items which are pharmacopoeial items and normally administered under medical advice. The range of commission for ethical drugs was decided at 25 per cent. *i.e.*, 15 per cent to the retailer and 10 per cent to other intermediaries. In the case of non-ethical drugs the range of commission was, however, decided at 15 per cent, *i.e.*, 10 per cent for the retailer and 5 per cent for other intermediaries. Formulations of the 18 specified basic drugs are classified as follows under prescription and non-prescription drugs.

Prescription Drugs	Non-Prescription Drugs
1	2
1. Sulphadiazine	1. Vitamin 'A'
2. Prednisolone	2. Vitamin 'B-12'
3. Penicilln	3. Vitamin 'C'
4. Tetracyclines	4. Chloroquin
5. Streptomycin	5. Amodiaquin

1	2
6. Chloramphenicol	6. (a) Iodo-chlor-hydroxy quinoline
	(b) Di-iodo-hydroxyquinoline
7. I.N.H.	7. Tolbutamide
8. P.A.S.	8. Insulin
	9. Tetanus Anti-toxin
	10. Chlorpropamide

We have allowed the respective rates of commission to arrive at the net retailers' prices, which takes into account all amounts payable in the shape of discounts, agency charges etc.

CHAPTER 27

ANALYSIS OF BALANCE SHEETS

27.1. Reserve Bank of India's Study :

27.1.1. The following are some of the findings on the basis of the study of profit margins of the drugs and pharmaceuticals industry by the Reserve Bank of India published in its Bulletin for December 1967 :

(i) The ratios of gross profits to sales were much higher (14.0 per cent in 1960-61 and 16.5 per cent in 1965-66) in the pharmaceuticals industry during the period, when compared to the 23 companies under the other chemical products and the 1333 public limited and 501 private limited companies. The 36 companies of Basic Industrial chemicals only showed a slightly higher ratios in this ragard than the pharmaceuticals group. The ratios of gross profits to total capital employed for the industry were also much higher than for the other four sectors. Gross profits of the industry as percentage of total capital employed also steadily rose from 14.0 per cent in 1960-61 to 17.2 per cent in 1965-66.

(ii) The ratios of profits after tax in relation to net worth were also much higher for the pharmaceuticals group than for the other sectors. The Drugs industry, indeed, seems to have declared good dividends judged from the ratios of ordinary dividends to ordinary paid-up capital and total dividends as percentage of total paid-up capital which were much higher as compared to those of the other sectors.

(iii) However, the tax provision made out of profits before tax which was about 45 per cent for the industry in 1960-61 went up to 60 per cent in 1965-66 under the sample. During the same period, the corresponding rates for the 1333 public limited companies showed a relative increase from 39 per cent in 1960-61 to 51 per cent in 1965-66, while in the case of the 501 private limited companies, the range of increase was from 46 to 66 per cent.

(iv) The dividends declared by the pharmaceuticals group after tax were generally more than 56 per cent during the years under study (except for 1961-62 when it was 51 per cent). The other sectors also indicate a similar higher rates in this regard during the period.

(v) Above all, the ratios of profits ratained (that is profits available for plough back as percentage of profits after tax) in the case of the drugs and pharmaceutical industry were always higher than those of the 1333 public limited companies as well as the 501 private limited companies under study.

27.1.2. According to this study the structure of assets of the pharmaceuticals industry in the year 1965-66 as compared to that of the basic industrial chemicals, other chemical products and the entire industrial sector, shows the following picture :

(a) The net fixed assets formed a little less than one-third of the total assests of the pharmaceuticals industry while it was more than one third for the entire industrial sector.

(b) The proportion of the finished goods to the total assets was slightly higher (16.2 per cent) in the case of the pharmaceuticals industry than in the other two sectors as well as the entire industrial sector.

(c) The ratio of inventories of raw materials to net fixed assets was about 1:7 for basic industrial chemicals, about 1 : 2 for chemical products, and about 1 : 3 for the pharmaceuticals industry and 1 : 4 for the entire industrial sector. This shows that the pharmaceuticals industry was much less fixed-capital intensive than the basic industrial chemicals, but slightly more fixed-capital intensive than the chemical products industry.

(d) Inventories were less than half of the fixed assests in the case of the basic industrial chemicals, and nearly one and a half times the fixed assets in the case of the chemical products while they were equal to the fixed assets in the case of the pharmaceuticals industry.

(e) Loans and advances etc. and cash and bank balances formed a relatively higher proportion of the total assets of the pharmaceuctical industry than in the case of the basic industrial chemicals but less than that of the chemical products industry.

27.1.3. The pattern of liabilities of the pharmaceuticals industry in comparison with the other three sectors shows the following features :

(a) Reserves and surplus formed a higher percentage (19.5%) for the pharmaceuticals industry than in the case of the basic industrial chemicals (16%), other chemical products (16.8%) and the entire industrial sector (18.6%).

(b) The proportion of the provisions to the total liabilities was 18.1 per cent for the pharmaceuticals industry, while it was much lower for all the other companies (9.9%).

(c) Borrowings formed nearly one-fourth of the total liabilities of the pharmaceuticals industry, while it was around one-third for the two other sectors (*viz.* Basic chemicals and all public limited companies) covered by the Reserve Bank Study.

27.1A We would like to invite attention to another study of the balance-sheets of a sample of 88 pharmaceutical companies registered in Maharashtra made by Hazari and Lakhani (Economic and Political Weekly, Vol. II-No. 26, July 1, 1967). It includes 11 of the 34 units costed by us—4 wholly foreign, 6 foreign majority and 1 Indian majority. Its relevant conclusions are :

1. "Retained profits have become more important as a source of finance between 1958 and 1964 and the proportion of fixed to total assets has risen consistently. During this period, only about one-half of gross total funds raised were, however, fixed investment and working capital absorbed the balance."

2. "In 1964, 47 companies (excluding those wholly Indian owned with accumulated losses) were earning after tax 24 per cent on net worth and 10 per cent on sales. The wholly foreign owned companies were earning a cash profit (profit after tax before depreciation) which would fetch their investment back within two years. The foreign majority companies were taking a little more than four years to do so. The profitability of this sample compares favourably with that of companies in the Reserve Bank samples of public and private companies."

27.2. Our study :

27.2.1. Since the Reserve Bank Study covered only public limited companies, an attempt was made by us to analyse the working results of 34 companies in the Drugs and pharmaceuticals group including both public limited and private limited companies situated in the different parts of the country. 25 of these are major costed units and nine others are leading units of the industry. This sample includes 14 companies out of 32 public limited companies covered by the Reserve Bank Study as in 1966. Twenty-four of the 34 selected companies are public limited (of which one—Hindustan Antibiotics is a public sector concern), 9 are private limited companies and the remaining one (Haffkine Institute) is a State Government undertaking. As regards the ownership and control of these 34 companies, the position was that five companies were wholly foreign, eight were with foreign majority shares; two companies were with 50% Indian and 50% foreign share holdings, four companies were with foreign minority and Indian majority share-holdings and 15 companies were wholly Indian. The 34 companies selected for our study cover about 65 per cent of the total sales of the entire pharmaceuticals industry (*i.e.* Rs. 113 crores out of Rs. 175 crores in 1965-66 respectively) as against 25 to 30 per cent of sales turnover of the industry covered by the Reserve Bank's sample of 32 public limited companies for the year 1965-66. Brief particulars of these units are as given in Table 27.1 :

TABLE 27.1

Net assets, working capital and sales for some major units

(Amounts in Rs. lakhs)

Sl. No.	Name of the Company	Year	Net assets	Working capital	Total sales
1	2	3	4	5	6
1	Glaxo Laboratories (India) P. Ltd.	1963-64	438	569	1268
		1964-65	431	600	1331
	(Financial Year : July-June)	1965-66	431	520	1438
2	Boots Pure Drug Co. (India) Ltd.	1964	44	46	194
	(Fin. year : Jan.-Dec.)	1965	48	81	201
		1966	48	64	218

TABLE 27.1—*Contd.*

1	2	3	4	5	6
3	British Drug House (India) P. Ltd.	1964	60	48	183
	(Fin. Year : Jan.-Dec.)	1965	59	46	207
		1966	77	40	217
4	Burroughs Wellcome & Co. P.	1963-64	32	9	107
	Ltd.	1964-65	34	19	125
	(Fin. year : Sept.-Aug.)	1965-66	30	59	145
5	May & Baker Ltd. . . .	1963-64	115	217	253
	(Fin. year : Aprl.-Mar.)	1964-65	134	167	294
		1965-66	131	156	334
6	Franco-Indian Mfrs. P. Ltd. .	1963-64	5	3	38
	(Fin. year : April-Mar.)	1964-65	5	8	45
		1965-66	6	9	60
7	Pfizer Ltd.	1963-64	94	346	911
	(Fin. year : Dec.-Nov.)	1964-65	131	539	1087
		1965-66	150	487	1270
8	Merck Sharp & Dohme of India	1963-64	163	37	206
	Ltd.	1964-65	153	65	262
	(Fin. year : Dec.-Nov.)	1965-66	147	76	313
9	Parke-Davis (India) Ltd. . .	1963-64	94	215	389
	(Fin. year : Dec.-Nov.) . .	1964-65	87	285	457
		1965-66	81	296	527
10	Cyanamid India Ltd. . .	1963-64	102	147	366
	(Fin. year : Dec.-Nov.) . .	1964-65	92	163	412
		1965-66	79	182	504
11	Wyeth Laboratories Ltd. . .	1963-64	99	48	40
	(Fin. year : Nov.-Oct.) . .	1964-65	89	67	92
		1965-66	78	72	123
12	Bayer (India)Ltd. . . .	1963-64	20	55	85
	(Fin. year : April-March upto	1964-65	26	255	104
	1964-65. Now Jan.-Dec.)	1966	35	160	125
13	Roche Products Ltd. . . .	1964	145	130	284
	(Fin. year : Jan.-Dec.)	1965	145	131	283
		1966	134	167	331

TABLE 27.1—*Contd.*

1	2	3	4	5	6
14	Boehringer-Knoll Ltd. . .	1963-64	59	32	85
	(Fins year : May-April)	1964-65	58	49	93
		1965-66	55	56	155
15	Crookes Interfran Ltd. .	1963-64	24	20	67
	(Fin. year : July-June)	1964-65	30	24	79
		1965-66*	41	46	156
16	Hoechst Pharmaceuticals Ltd. .	1964	70	139	300
	(Fin. year : Jan.-Dec.)	1965	83	138	423
		1966	137	265	491
17	Synbiotics Ltd.	1963-64	151	43	72
	(Fin. year : April-March)	1964-65	128	81	169
		1965-66	154	92	222
18	Sarabhai Chemicals . . .	1963-64	78	520	879
	(Fin. year : April-March)	1964-65	78	519	964
		1965-66	90	584	1160
19	Alembic Chemical Works Co. Ltd.	1964	240	146	542
	(Fin. year : Jan.-Dec.)	1965	247	171	632
		1966	262	223	627
20	Bengal Chemical & Pharmaceu-	1963-64	78	71	235
	tical Works Ltd.	1964-65	87	72	245
	(Fin. year : April-March)	1965-66	87	87	269
21	Sarabhai Merck Ltd. . .	1963-64	72	60	74
	(Fin. year : April-March) .	1964-65	67	85	172
		1965-66	69	93	215
22	Biological Evans Ltd . .	1964	28	27	74
	(Fin. year : Jan.-Dec.)	1965	30	45	93
		1966	30	49	121
23	Standard Pharmaceuticals Ltd. .	1963-64	40	48	129
	(Fin. year : April-March)	1964-65	49	65	152
		1965-66	51	63	182
24	Unichem Laboratories Ltd. . .	1963-64	36	46	157
	(Fin. year : Oct.-Sept.)	1964-65	36	58	174
		1965-66	40	70	220

[*For 18 months July, 65 to December, 66.]

TABLE 27.1—*Concld.*

1	2	3	4	5	6
25	Dey's Medical Stores (Mfg.) Pvt. Ltd. (Fin. year : Jan.-Dec.)	1964	60	15	324
		1965	73	31	413
		1966	73	52	431
26	Bengal Immunity Co. Ltd. . . (Fin. year : May-April)	1963-64	38	31	203
		1964-65	40	35	219
		1965-66	42	31	224
27	East India Pharmaceutical Works Ltd. (Fin. year : Jan.-Dec.)	1964	31	16	204
		1965	33	19	237
		1966	38	19	263
28	Chemical Industrial & Pharmaceutical Laboratories Ltd. (Fin. year : Nov.-Oct.)	1963-64	20	35	64
		1964-65	20	34	80
		1965-66	23	36	86
29	Neo Pharma Pvt. Ltd. (Fin. year : Jan.-Dec.)	1964	6	26	115
		1965	6	35	108
		1966	6	37	120
30	Chemo-Pharma Laboratories Ltd. (Fin. year : Jan.-Dec.)	1964	14	22	60
		1965	21	29	65
		1966	26	24	69
31	Mac Laboratories Pvt. Ltd. . (Fin. year : April-March)	1963-64	16	4	34
		1964-65	17	5	34
		1965-66	19	7	41
32	Bio-chemical & Synthetic Products Ltd. (Fin. year : Jan.-Dec.)	1964	15	2	6
		1965	15	3	6
		1966	15	3	7
33	Hindustan Antibiotics Ltd. (Govt. of India concern) (Fin. year : April-March)	1963-64	357	279	447
		1964-65	333	281	383
		1965-66	351	355	539
34	Haffkine Institute (Govt. of Maharashtra concern) (Fin. year : April-March)	1963-64	89	44	89
		1964-65	96	52	88
		1965-66	108	54	78
	TOTAL . .	1963-64	2933	3496	8484
		1964-65	2981	4257	9729
		1965-66	3144	4534	11281

NOTE.— 1. In computing *net assets*, capital work-in-progress has been excluded

2. Working capital=Current Assets *less* current liabilities.
Current assets do not include loans and advances.
Current liabilities do not include provisions.

27.2.2. The following Tables give the net fixed assets and working capital for the manufacturers, the formulators and the manufacturers-*cum*-formulators of the eighteen basic drugs specified. The figures in brackets indicate the percentages to the total fixed assets or working capital, as the case may be, of the 34 selected companies.

TABLE 27.2

Break-up of net fixed assets of 34 companies

(In Rs. Lakhs)

Category	No. of companies	1963-64	1964-65	1965-66	Percentage increase in 1965-66 over 1963-64
(A) Manufacturers of specified drugs.	3	238 (8·1)	210 (7·0)	238 (7·6)	..
(B) Manufacturers-*cum*-formulators	23	2450 (83·5)	2513 (84·3)	2598 (82·6)	6·0
(C) Formulators of specified drugs	8	245 (8·4)	258 (8·7)	307 (9·8)	25·3
All companies .	34	2933 (100)	2981 (100)	3143 (100)	7·2

TABLE 27.3

Break-up of working capital of 34 companies

(In Rs. Lakhs)

Category	No. of companies	1963-64	1964-65	1965-66	Percentage increase in 1965-66 over 1963-64
(A) Manufacturers of specified drugs	3	105 (3·0)	169 (4·0)	188 (4·2)	79·0
(B) Manufacturers-*cum*-formulators	23	2675 (76·5)	3148 (73·9)	3375 (74·4)	26·2
(C) Formulators of specified drugs	8	716 (20·5)	940 (22·1)	972 (21·4)	35·8
All companies .	34	3496 (100)	4257 (100)	4535 (100)	29·7

27.2.3. It will be seen from these figures that the net fixed assets for 34 companies had increased by about 7 per cent from Rs. 29 crores in 1963-64 to Rs. 31 crores in 1965-66. During the same period, the net fixed assets of 32 companies of the Reserve Bank sample referred to in paragraph 27.1 above increased from Rs. 18 crores to Rs. 20 crores (over 10 per cent). The net fixed assets of manufacturers-*cum*-formulators constituted the largest proportion (over 80%) of the total fixed assets of all the 34 companies covered by our study during the period, while the manufacturers and formulators of specified drugs accounted for less than 10 per cent of the total in each case. In absolute terms, while the formulators increased their net fixed assets to over 25 per cent and manufacturers-*cum*-formulators by 6 per cent only, the manufacturers did not record any increase thereof during the period.

27.2.4. As regards working capital, it rose from Rs. 35 crores in 1963-64 to Rs. 45 crores in 1965-66, by nearly 30 per cent, for all the 34 companies of the sample. Here again, the manufacturers-*cum*-formulators accounted for about 75 per cent of the total working capital of all the 34 companies under the sample, while the formulators and manufacturers of specified drugs accounted for about 21 per cent and 4 per cent respectively of the total during the period. In absolute terms, however, all the three categories increased their working capital significantly during the period.

27.3.1. The following Table gives the paid-up capital, reserves, net worth, borrowings, capital employed, sales turnover, profits, ratio of borrowings to total sources of funds and the percentage of non-Indian share-holdings in the paid up capital of the sample for the years 1963-64 to 1965-66.

TABLE 27.4

The overall financial position of 34 companies engaged in the manufacture of Drugs and Pharmaceuticals

(Rs. in lakhs)

Particulars	1963-64	1964-65	1965-66
1	2	3	4
1. Paid-up Capital	2,372	2,833	3,045
2. Reserves	2,078	2,315	2,740
3. Net Worth	4,450	5,148	5,785

TABLE 27.4—*Contd.*

1	2	3	4
4. Borrowings	1,863	2,215	2,522
5. External sources of finance as percentage of total funds. . . .	29·5	30·0	30·4
6. Capital employed*	5,591	6,373	7,287
7. Sales	8,484	9,729	11,281
8. Profits**	1,769	1,909	2,294
9. Profits as percentage of Capital employed	31·6	30·0	31·5
10. Profits as percentage of sales . .	20·8	19·6	20·3
11. Dividends paid on equity shares . .	16·8	16·9	17·4

NOTE.— *Capital employed during the year.

**"Profits" are calculated as net receipts from sales *minus* costs of material and labour "other expenses" and depreciation. "Other expenses" exclude interest charges, managing agency commission, corporation taxes, and expenses such as share issue expenses, donations etc.

27.3.2. Some of the findings on the basis of this study are as given below :

Rate of profits on capital employed and sales according to the nature of products produced by the selected companies

The following Table gives the rate of profits on capital employed and the rate of profits on sales for the manufacturers, the formulators and the manufacturers-*cum*-formulators of the eighteen specified basic drugs. Profits on capital employed as well as on sales turnover are higher for the category of companies engaged in both manufacture and formulation of the specified drugs than for those engaged only in the manufacture or only in the formulation of those drugs.

TABLE 27.5

Rate of profits on capital employed and sales

Category	No. of Cos.	1963-64	1964-65	1965-66
(A) Manufacturers of specified basic drugs . . .	3	6·5	12·5	22·5
		(13.8)	(13.5)	(18.5)
(B) Manufacturers-*cum*-formulators of the specified drugs .	23	35·4	33·5	34·9
		(23·4)	(21·6)	(22·6)
(C) Formulators of specified drugs	8	20·6	19·2	18·8
		(10·4)	(11·6)	(11·4)
(D) All companies . . .	34	31·6	30·0	31·5
		(20·8)	(19·5)	(20·4)

NOTE.—Figures in bracket relate to rate of profits on sales turnover.

27.3.3. Rate of profits on capital employed and sales turnover for the public and private Ltd. companies

The following table shows that the rate of profits on capital employed as well as on sales turnover is higher for the public limited than for private limited companies engaged in the manufacture and/or formulation of the specified drugs.

TABLE 27.6

Rate of Profits on Capital employed and Sales

Category	No. of Cos.	1963-64	1964-65	1965-66
1	2	3	4	5
(A) *Public Ltd. Companies* (including Hindustan Antibiotics)	24	32·5	30·9	34·3
		(22·9)	(20·5)	(22·8)
(B) *Private Ltd. Companies* (including Haffkine) . .	10	29·7	28·0	25·2
		(17·1)	(17·7)	(15·4)

TABLE 27.6—*Contd.*

1	2	3	4	5
(C) Govt. Companies (Hindustan Antibiotics)	..	21·9 (32·1)	11·8 (20·2)	22·6 (28·0)
Haffkine	..	14·7 (23·5)	8·5 (16·1)	5·0 (11·4)
(D) All Companies . . .	34	31·6 (20·8)	30·0 (19·5)	31·5 (20·4)

27.3.4. Rate of profits on capital employed and sales according to the extent of foreign ownership and control of companies

The profitability ratios on capital employed or on sales (given in brackets) are the highest for the foreign majority share-holding companies and the lowest for the Indian majority share-holding as well as for the wholly Indian owned pharmaceutical companies, as revealed by the following Table :

TABLE 27.7

Rate of profits on capital employed and Sales

Category	No. of Cos.	1963-64	1964-65	1965-66
Wholly foreign companies . .	5	34·5 (23·9)	31·2 (22·9)	28·7 (19·8)
Foreign majority share-holding companies	8	59·6 (31·3)	55·9 (26·9)	54·5 (33·8)
Companies with 50% foreign and 50% Indian share-holding .	2	28·1 (17·4)	33·8 (18·5)	25·9 (16·8)
Indian majority share-holding companies	4	8·4 (12·1)	14·5 (14·4)	25·2 (16·0)
Wholly Indian companies . .	15	19·9 (13·2)	17·7 (11·9)	19·2 (12·4)
All Companies .	34	31·6 (20·8)	30·0 (19·5)	31·5 (20·4)

27.3.5. **Rate of dividends on equity capital according to the nature of production of companies**

The following table shows the rates of dividend declared on equity capital according to the nature of production of companies.

TABLE 27.8

Rate of dividend on equity in per cent

Category	No. of Cos.	1963-64	1964-65	1965-66
(A) Manufacturers of specified drugs	3	Nil	Nil	Nil
(B) Manufacturers-cum-formulators of specified drugs .	20	16·4	18·2	18·7
(C) Formulators of specified drugs	5	11·6	10·4	13·2
All companies .	28	15·1	16·9	17·4

It will be seen that dividends were paid only by 25 out of 34 companies during 1963-65. The dividends of companies engaged in both manufacture and formulation of the specified drugs were higher than those of companies engaged in only formulations. None of the three selected companies engaged only the manufacture of the specified drugs distributed dividends in the year 1963-64 to 1965-66.

27.3.6. **Rate of dividends on equity in the public limited and private limited companies**

The public limited companies progressively increased their rate of dividends from 14.5 per cent to 17.8 per cent during the period while the dividend rate of the private limited companies which was higher than what of the public limited companies in 1963-64 and 1964-65 (17.1 and 17.8) declined in 1965-66 (15.5).

TABLE 27.9

Rate of dividend on equity in per cent

Category	No. of Cos.	1963-64	1964-65	1965-66
(A) Public Ltd. Cos. (including Hindustan Antibiotics)	21	14·5	16·7	17·8
(B) Private Ltd. Cos. (including Haffkine)	4	17·1	17·8	15·5
All Companies	25	15·1	16·9	17·4

27.3.7. Rate of dividends on equity according to nature of ownership (foreign or Indian owned)

The companies with foreign majority share holdings paid the highest dividends each year, ranging from 23 to 30 per cent. The wholly foreign owned companies had a range of 19 to 24 per cent dividends during the period as shown below :

TABLE 27.10

Rates of dividend on equity in per cent

Category	No. of Cos.	1963-64	1964-65	1965-66
(A) Wholly foreign companies	2	19·1	25·0	23·7
(B) Foreign majority shareholding Cos.	8	23·4	29·8	29·9
(C) Companies with 50% foreign and 50% Indian shareholding	2	8·9	7·5	9·0
(D) Indian majority shareholding Cos.	2	9·0	11·2	15·0
(E) Wholly Indian Cos.	11	11·9	12·6	11·5
All Companies	25	15·1	16·9	17·4

It may also be noted that all the eight foreign majority share holding companies which made profits during the three years paid dividends. However, out of the five wholly foreign companies which made profits during all the three years, only two paid dividends.

27.3.8. **Percentage of borrowings to total sources of funds according to the nature of output produced by companies**

The following table shows the percentages of borrowings to total sources of funds according to the nature of output of companies.

TABLE 27.11

Percentage of borrowings to total sources of funds

Category	No. of Cos.	1963-64	1964-65	1965-66
(A) Manufacturers of specified drugs	3	17·5	69·4	66·9
(B) Manufacturers-*cum*-formulators	23	14·6	17·8	21·1
(C) Formulators of specified drugs	8	63·3	50·7	37·9
All companies	34	29·5	30·0	30·4

The percentage of borrowings was the highest for companies engaged only in the manufacture of specified drugs. The next highest percentages were for those engaged only in the formulations. But they reduced their borrowings from 63 to 38 per cent from 1963-64 to 1965-66. The companies engaged in both manufacture and formulation of the specified drugs are observed to have the lowest percentages of borrowings, which however, progressively increased from 14.6 per cent in 1963-64 to 21 per cent in 1965-66.

27.3.9. Percentage of borrowings to total sources of funds for the public limited, private limited and Government Companies

TABLE 27.12

Percentage of borrowings to total sources

Category	No. of Cos.	1963-64	1964-65	1965-66
(A) Public Ltd. Cos. (including Hindustan Antibiotics)	24	29·3	30·5	30·6
(B) Private Ltd. Cos. (including Haffkine Inst.)	10	30·0	29·2	29·9
(C) *Govt. Companies* Hindustan Antibiotics	..	Nil	Nil	Nil
Haffkine	..	Nil	Nil	Nil
All Companies	34	29·5	30·0	30·4

The public sector pharmaceutical concerns which depend upon the Government budgets do not depend upon borrowings from banks and other outside source.

27.3.10. Percentage of borrowing to total sources of funds according to the nature of ownership of companies

The percentage of borrowing is bound to vary with the extent of foreign and Indian ownership and control. Dependence on borrowings was the lowest for the wholly foreign owned concernes, and it increased in an accending order for the foreign majority share-holding companies, the companies with 50 per cent foreign and 50 per cent Indian share-holding and Indian majority share-holding companies.

TABLE 27.13

Percentage of borrowings to total sources of funds

Category	No. of Cos.	1963-64	1964-65	1965-66
(A) Wholly foreign Cos. . .	5	7·3	8·2	7·0
(B) Foreign majority share-holding companies . .	8	26·0	26·0	23·2
(C) Companies with 50% foreign and 50% Indian share-holding	2	60·7	58·4	62·5
(D) Indian majority share-holding companies . .	4	70·0	70·0	63·5
(E) Wholly Indian companies .	15	31·8	33·5	34·6
All Companies .	34	29·5	30·0	30·4

The wholly Indian companies depended on borrowings to the extent of one-third of their total sources of funds. Their dependence on borrowed finance was more than that of the foreign majority share-holding companies, and their percentage of borrowings also increased progressively during the period. The Indian majority share-holding companies, however, accounted for the highest proportion of borrowed finance during all the three years under study.

27.4.1. Of the 34 units for which cost analysis was undertaken, one did not furnish its balance-sheet. Of the remaining, the figures for two show very wide deviations in comparison to other units. In the case of one which is in the small scale sector losses were shown for the period costed and in the case of another which again is in the small scale sector the average capital employed was shown as Rs. 1.81 lakhs while the cost of sales was shown as Rs. 47.86 lakhs, a highly disproportionate figure. These two units have also therefore been excluded from the analysis of the balance sheets on the basis of the figures ascertained as a result of costing. The financial working of the remaining 31 units in relation to the overall cost of manufacture and their profitability covering all the products manufactured by them

based on the Balance Sheets and the Profit and Loss Accounts relating to the period for which the actual costs were compiled are set out in Table 27.14

TABLE 27.14

Gross margin expressed as percentage of capital employed and cost of sales, ratio of capital employed to cost of sales and 15 per cent of capital employed as percentage of cost of sales in respect of the costed units

Sl. No. of the unit	Gross Margin as a percentage of		Ratio of capital employed to cost of sales	15% on capital employed as related to cost of sales
	Capital employed	Cost of sales		
1	2	3	4	5
1	22·48	18·73	1 : 1·200	12·50
2	19·51	5·27	1 : 3·699	4·06
3	8·34	2·77	1 : 3·012	4·98
4	1·61	4·85	1 : 0·332	45·18
5	22·92	16·06	1 : 1·427	10·51
6	25·06	24·26	1 : 1·033	14·52
7	28·82	20·78	1 : 1·386	10·82
8	50·00	10·83	1 : 4·619	3·25
9	15·74	11·59	1 : 1·357	11·05
10	79·34	43·47	1 : 1·825	8·22
11	35·13	10·73	1 : 3·273	4·58
12	65·02	13·76	1 : 4·724	3·19
13	31·48	25·63	1 : 1·228	12·21
14	5·67	12·14	1 : 0·467	32·12
15	26·86	37·71	1 : 0·712	21·07
16	20·74	17·71	1 : 1·172	12·80
17	26·14	12·83	1 : 2·038	7·36
18	18·96	4·81	1 : 3·941	3·81
19	10·67	9·49	1 : 1·125	13·33
20	32·16	33·68	1 : 0·955	15·71
21	7·88	4·66	1 : 1·690	8·88
22	109·86	106·35	1 : 1·033	14·52
23	82·16	53·27	1 : 1·542	9·72
24	44·35	52·54	1 : 0·844	17·77

TABLE 27.14 —*Concld.*

1	2	3	4	5
25	17·71	15·64	1 : 1·132	13·25
26	38·91	40·35	1 : 0·964	15·56
27	3·04	4·47	1 : 0·679	22·09
28	36·80	19·56	1 : 1·881	7·97
29	6·68	7·77	1 : 0·860	17·44
30	15·39	23·48	1 : 0·656	22·87
31	11·27	5·62	1 : 2·004	7·49
Average .	34·77	27·64	1 : 1·258	11·93

This sample is somewhat smaller than the sample analysed earlier. For, the total turnover of the 34 units in the earlier analysis amounted to Rs. 112.62 crores while the corresponding figure for these 31 units is Rs. 97.92 crores. Of these 23 units are common to both while the remaining are different. Five of the units are manufacturers of basic drugs, 21 manufacture both basic drugs as well formulations and five only formulations. The overall financial position of these units is set out as follows :—

TABLE 27.15

Overall financial position of 31 companies engaged in the manufacture of drugs and pharmaceuticals

(Rs. in lakhs)

Particulars		
1. Paid-up capital	2,403·97	(1965-66)
2. Reserves and surplus	2,450·04	(1965-66)
3. Net worth	4,854·01	(1965-66)
4. Loans	1,294·56	(1965-66)
5. Loans as percentage of total funds	21·1	(1965-66)
6. Average capital employed	6,098·68	(Actual costed period)
7. Sales turnover	9,791·98	Do.
8. Gross margin	2,120·40	Do.
9. Gross margin as percentage of average capital employed	34·8	Do.
10. Gross margin as percentage of sales turnover .	21·7	Do.

27.4.2. Analysed by the nature of activity the rate of gross margin on average capital employed as well as on turnover was as follows :—

TABLE 27.16

Rate of gross margin on average capital employed and sales turnover

Category	No. of companies	On capital employed (Actual period)	On sales turnover costed
(A) Manufacturers of specified basic drugs .	5	9·7	10·3
(B) Manufacturer-*cum*-formulators . .	21	38·3	23·4
(C) Formulators of specified basic drugs .	5	17·1	8·5
All companies .	31	34·8	21·7

27.4.3. By nature of holding the position of the rate of gross margin on average capital employed as well as turnover was as follows :—

TABLE 27.17

Rate of gross margin on average capital employed and sales turnover

Category	No. of companies	On capital employed	On sales turnover
(A) Wholly foreign companies . . .	3	26·8	18·0
(B) Foreign Majority	7	62·5	34·1
(C) Equal Participation	1	20·7	15·0
(D) Indian Majority	6	17·0	12·1
(E) Wholly Indian	14	26·1	16·1
All companies .	31	34·8	21·7

27.4.4. If these units are distributed according to the constitution the position is as follows :—

TABLE 27.18

Rates of gross margin on average capital employed and sales turnover

Category	No. of companies	On capital employed	On sales turnover
		(Actual period)	costed
(A) Public Ltd. Companies . . .	22	36·9	23·8
(B) Private Ltd. Companies . . .	5	30·9	16·0
(C) Partnership Concerns . . .	3	39·9	16·7
(D) Departmental Concerns . . .	1	3·5	6·7
All companies .	31	34·8	21·7

27.4.5. In the case of units analysed earlier profits as percentage of the capital employed worked out to 31.5 per cent for the year 1965-66 while the corresponding figure for the present sample is 34.8. Gross margin as percentage of sales turnover is 20.4 per cent in the earlier sample and 21.7 per cent in the present one. Both in the present and previous sample manufacturers-*cum*-formulators constitute two-thirds of the sample and of the remaining the two classes of producers are equally divided in the present while in the previous analysis formulators predominated. There is, however, a certain degree of disparity between the figures of profitability in the previous and present sample with regard to the manufacture of basic drugs. It is not so large for the other classes. Broadly speaking manufacturing-*cum*-formulating appears to be more profitable than either of the other two activities carried on singly. On the basis of both the analyses pure formulating activity is less remunerative than manufacture of basic drugs as well as formulations. Partnership concerns have shown a high level of profit on capital employed. By sales turnover both private limited companies and partnership concerns are on the same level while public limited companies have definitely fared better. Foreign majority holding have done better than only foreign companies or those with equal participation. By nature of

activity and also by ownership the rate of gross margin on cost of sales and ratio of capital employed to cost of sales the position is as indicated in tables 27.19 and 27.20.

TALBE 27.19

Rate of gross margin on cost of sales and ratio of capital employed to cost of sales

Category	No. of Cos.	Rate of gross margin on cost of sales	Ratio of capital employed to cost of sales
		(Actual costed period)	
(A) Manufacturers of specified drugs . .	5	11·5	1: 0·85
(B) Manufacturers-*cum*-formulators . .	21	30·5	1: 1·26
(C) Formulators of specified drugs . .	5	9·2	1: 1·86
All companies .	31	27·6	1 : 1·26

TABLE 27.20

Rate of gross margin on cost of sales and ratio of capital employed to cost of sales

Category	No. of Cos.	Rate of gross margin on cost of sales	Ratio of capital employed to cost of sales
		(Actual costed period)	
(A) Public Ltd. Companies . . .	22	31·3	1 : 1·18
(B) Private Ltd. Companies . . .	5	19·1	1 : 1·62
(C) Partnership Concerns	3	20·0	1 : 2·00
(D) Departmental Concern . . .	1	7·5	1 : 0·47
All companies .	31	27·6	1 : 1·26

27.4.6. The same analysis by nature of holdings is given in Table 27.21.

TABLE 27.21

Rate of gross margin on cost of sales and ratio of capital employed to cost of sales

Category	Nos. of Cos.	Rate of gross margin on cost of sales	Ratio of capital employed to cost of sales
	(Actual	costed	period)
(A) Wholly foreign	3	22·0	1 : 1·22
(B) Foreign Majority	7	51·6	1 : 1·21
(C) Equal Participation	1	17·7	1 : 1·17
(D) Indian Majority	6	13·7	1 : 1·23
(E) Wholly Indian	14	19·2	1 : 1·36
All Companies .	31	27·6	1 : 1·26

27.4.7. The percentage of loans, total funds etc. analysed by nature of activity, ownership and holding is set out in Tables 27.22, 27.23 and 27.24.

TABLE 27.22

Percentage of loans to total funds

Category	No of Cos.	Loans as % of total funds (1965-66)
(A) Manufacturers of specified drugs . .	5	69·5
(B) Manufacturers-*cum*-formulators . .	21	16·7
(C) Formulators of specified drugs . .	5	17·9
All Companies .	31	21·1

TABLE 27.23

Percentage of loans to total funds

Category	No of Cos.	Loans as % of total funds (1965-66)
(A) Public Ltd. Companies . . .	22	23·3
(B) Private Ltd. Companies . . .	5	15·4
(C) Partnership Concerns	3	37·0
(D) Departmental Concern . . .	1	37·0
All Companies .	31	21·1

TABLE 27.24

Percentage of loans to total funds

Category	No. of Cos.	Loans as % of total funds (1965-66)
(A) Wholly foreign Companies . . .	3	6·9
(B) Foreign Majority	7	10·2
(C) Equal Participation	1	47·9
(D) Indian Majority	6	55·8
(E) Wholly Indian	14	26·6
All Companies .	31	21·1

27.4.8. The sales turnover is roughly equivalent to the capital employed in the case of manufacturers of basic drugs, it is very much higher in the case of the units which combine both the activities and the highest for formulators only. These conclusions are confirmed by both the studies. Manufacture of basic drugs appears therefore to be an activity which is capital intensive and in which the profitability is to be judged from the point of view of the capital employed. On the other hand, formulating activity by itself is not capital intensive and profitability is related to the sales turnover since capital employed is about half of the amount of sales turnover.

CHAPTER 28

ESTIMATES OF COSTS AND FAIR EX-WORKS PRICES OF BASIC DRUGS

28.1.1. As mentioned in chapter 3 we selected certain representative units for detailed cost study of the 18 basic drugs specified in the terms of reference which would indicate the disparity between the costs (based on current trends of prices of raw materials, stores and expenses) and the existing selling prices. For this purpose, initially 36 units in the industry were selected. From the selected sample, three units had to be subsequently excluded and a new one added for the following reasons :—

(i) In the case of the Oriental Pharmaceutical Industries Ltd., Bombay details maintained were far from adequate to assess costs of its products.

(ii) Data relating to costs of the Bengal Chemicals & Pharmaceutical Works Ltd., Calcutta were not capable of being analysed. Several activities of this firm were so inextricably mixed up that separation of costs posed problems. Records showing timings for different products made in the same department were also not available.

(iii) The Standard Pharmaceuticals Ltd., Calcutta was initially chosen for cost study but was replaced later on at the suggestion of the Assessor by Dey's Medical Stores (Mfg.) Pvt. Ltd., Calcutta which produces a large range of formulations.

28.1.2. Cost data for the selected periods were compiled in respect of 34 units, covering producers of the 18 specified 'basic drugs' and their formulations. The results from this selection may be considered as fairly representative costs of the industry as a whole.

28.1.3. Estimates of future costs have also been prepared taking into account the latest prices of raw materials, labour costs, stores and other expenses, as well as the volume of production envisaged for future. The analyses of the costs of 'basic drugs' and 'formulations' thereof are being discussed later in the Report. The reports of the Cost Accounts Officers on detailed costs for the actual period and the Commission's estimates for the future are sent along with Report as confidential enclosures.

28.1.4. **Units and products manufactured**

Of the 34 units selected for costing, five produce 'basic drugs' exclusively; ten units only 'formulations' and the remaining 19 units produce both 'basic drugs' and 'formulations'. The names of the selected units and the range of their products covered by our cost study are given in Table 28.1.

TABLE 28.1

List of units and their basic drugs and/or formulations selected for costing

Sl. No.	Name of the Unit	Basic drugs	Single drug formulations		Multiple drug formulations	
			Name (Brand name in capital)	Basic drug contained	Name (Brand name in capital)	Basic drugs contained
1	2	3	4	5	6	7
		A. *Manufacturers of basic drugs registered with D.G.T.D.*				
1	Alembic Chemical Works Ltd., Baroda.	1. Penicillin	1.(a) Sodium Penicilin G. Inj. (b) Procain Penicillin G. Inj. (c) Penicillin G. procain fortified with Penicillin G. Sodium Inj.	Penicillin	1. PRECIN (Fortified with opthalmic ointment)	Prednisolone and Chloramphenicol.
			2. Penicillin V. Tabs.	Penicillin		

			3. CYCOBAL	Vitamin B12		
			4. CYCOBAL-H	Vitamin B12		
			5. (a) ALCHLO-QUIN Tabs.	Iodo-Chloro-hydo-xy-quinoline		
			(b) ALIDOQUIN tabs.	,,		
			6. Streptomycin Inj.	Streptomycin		
			7. Streptomycin Inj.	Streptomycin		
			8. BISTREPEN Inj.	Streptomycin		
			9. ALCOPHENI-COL Caps.	Chloramphenicol.		
			10. ALCYCLIN	Tetracycline		
			11. ASCORBIC ACID Inj.	Vitamin C		
			12. CIVINAL Tabs.	Vitamin C		
			13. Suphadiazine Tabs.	Sulphadiazine		
2	Bengal Immunity Co. Ltd., Calcutta	1. I.N.H.	1. Isoniacid Tabs.	I. N. H.	DINOCHLOR Tabs.	Iodochlorhydroxy-quinoline and Chloroquin.
		2. Iodo-chlor-hydroxy-quinoline	2. Iodo-Chlor-hydroxy-quinoline Tabs.	Iodochlor-hydro-xy-quinoline		
		3. Chloroquin	3. Chloroquin Phosphate Tabs.	Chloroquin		
		4. Tetanus Antitoxin	4. Cyanocobalamin Inj.	Vitamin B12		

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
2.	Bengal Immunity Co. Ltd. Calcutta—*Contd.*		5. Ascorbic Acid Inj.	Vitamin C		
			6. Insulin Inj.	Insulin		
			7. Tetanus Anti-Toxin Inj.	Tetanus Anti-toxin.		
3	Biochemical and Synthetic products Ltd., Hyderabad.	PAS and its Salts	—	—	—	—
4	Biological Evans Ltd., Hyderaba.	1. I. N. H.	1. Isoniazid Tabs	I. N. H.		
		2. PAS and its salts	2. Sodium PAS granules	PAS		
		3. Tolbutamide	3. Sodium PAS Tabs.		—	
		4. Iodochlor-hydroxy quinoline	4. Tetanus Anti-toxin Inj.			
		5. Tetanus Antitoxin	5. Vit. B12 Inj.			
5	Bohringer Knoll Ltd., Bombay.	Chloramphenicol	Chloramphenicol (CHLORAMPHYGIN)	Chloramphycin S Caps.	Chloramphenicol & Streptomycin.	
6	Boots Pure Drug Co. (India) Ltd., Bombay.	Insulin	1. Insulin Inj.	Insulin		
			2. Insulin Zinc suspenion	Insulin		

			3. Isophane Insulin Inj.	Insulin		
			4. Insulin Protamin Zinc Inj.			
			5. Sulphadiazine Tabs.	Sulphadiazine		
			6. DELTASTAB	Prednisolone		
7	Cyanamid India Ltd., Bulsar.	Tetracyclines	1. ACHROMYCIN Caps.	Tetracycline	Aureomycin	Tetracycline
			2. AUREOMYCIN Caps.		Intravenous	HCL and Ascorbic acid buffer.
			3. AUREOMYCIN Ointment.			
			4. UAREOMYCIN Superesoid Powder			
			5. LEDERMYCIN Caps.			
			6. Sulphadiazine	Sulphadiazine		
			7. CHEWCEE	Vitamin C		
8	East India Pharmaceutical Works Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline	Iodochlorohydroxy-quinoline Tabs. (ENTEROQUINOL)	Iodo-chlor-hydro--xyquinoline		
9	Glaxo Laboratories (India) Pvt. Ltd., Bombay.	1. Vitamin B12	1. Cyanocobalamin Inj.	Vitamin B12	1. MYSTRETON Inj.	Penicillin Dihydrostreptomycin.
		2. Prednisolone	2. Hydroxycobalamin Inj.	Vitamin B12	2. Comycin	Dihydrostreptomycin & Streptomycin

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
9	Glaxo Laboratories (India) Pvt. Ltd., Bombay—*Contd.*	3. Vitamin A	3. Prednisolone Tabs. (DELTA-EFCORLIN)	Prednisolone	3. CRYSTAMYCIN	Sodium Penicillin G and streptomycin.
					4. SECLOMYCIN FORTE	Penicillin Sodium, Benzyl Penicillin Procain & Streptomycin Sulphate.
			4. Ascorbic Acid Inj. (CELIN)	Vitamin C		
			5. Ascorbic Acid Tabs. (CELIN)	Vitamin C		
			6. Penicillin G. Sodium Inj. (CRYSTAPEN)	Penicillin		
			7. Penicillin V Tabs. (CRYSTAPEN V)	Penicillin		
			8. Penicillin G Procaine fortified with penicillin G Sodium Inj. (SECLOPEN)	Penicillin		
			9. Streptomycin Sulphate Inj.	Streptomycin		

			10. Di-hydro-streptomycin Sulphate Inj.	Di-hydrostreptomycin		
			11. Vitamin A Inj. (PREPALIN FORTE)	A Vitamin		
			12. Isoniazid Tabs.	I. N. H.		
			13. Insulin Inj.	Insulin		
			14. Insulin Zinc suspension (Lente) Inj.	Inlsulin		
			15. Protamin Zinc Insulin Inj.	Insulin		
10	Haffkine Institute, Bombay.	Tetanus-Anti-toxin	1. Tetanus-Anti-toxin Inj.	Tetanus Anti-toxin		
			2. Tolbutamide Tabs.	Tolbutamide		
11	Hindustan Antibiotics Ltd., Poona.	1. Penicillin	1. Sodium Penicillin G. Inj.	Penicillin	Streptopenicillin Inj.	Procain Penicillin G. Sodium Penicillin & Streptomycin.
		2. Streptomycin	2. Procaine Penicillin	Penicillin		
			3. Penicillin V. Tabs.	Penicillin		
			4. Penicillin G Procaine fortified with Penicillin G Inj.	Penicillin		

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
11	Hindustan Antibiotics Ltd. Poona—*Contd.*		5. Streptomycin Sulphate Inj.	Streptomycin		
			6. Streptodicin Inj.	Streptomycin		
			7. Chlortetracycline caps.	Tetracycline		
12	Hoechst Pharmaceuticals Ltd., Bombay.	Tolbutamide	1. Tolbutamide Tabs. (RASTINON)	Tolbutamide		
			2. Tetanus Antitoxin Inj.	Tetanus Antitoxin.		
			3. Prednisolone Tabs.	Prednisolone		
			4. Calcium PAS Granules (AMINOX)			
			5. Sodium PAS Granules	PAS		
			6. Tetracycline caps. (HOSTACYCLINE)	Tetracycline		
13	May & Baker Ltd., Bombay.	Sulphadiazine	1. Sulphadiazine Tabs.	Sulphadiazine		
			2. Di-iodo-hydroxyquinoline Tabs. (EMBEQUIN)	Iodo-chlor-hydroxy-quinoline.		
			3. Penicillin Tabs.	Penicillin		

			4. Isoniazid Tabs.	I. N. H.		
			5. Chlro-quinphosphate Tabs (NEVAQUIN)	Chloroquin		
14	Merck Sharp & Dohme of India Ltd., Bombay.	1. Vitamin B12	1. Cyanocobalamin Inj. (RADISOL)	Vitamin B12	DIOSTREP	Streptomycin and dihydrostreptomyin.
		2. Prednisolone	2. Hydroxycobalamin Inj. (RADISO-LH)	Vitamin B12		
			3. Prednisolone Tabs. (CODELOCRTON)	Prednisolone		
			4. Penicillin G Inj. (SOPHEN)	Penicillin		
			5. Streptomycin Sulphate Inj.	Streptomycin		
			6. Dihydrostreptomycin Inj.	Dihdrostreptyomyin Inj.		
			7. TRYCIN Caps.	Tetracycline		
15	Parke-Davis Ltd., Bombay.	1. Chloramphenicol	1. Chloramphenicol Caps. (CHLORNYCETIN KAPSEALS)	Chloramphenicol		
			2. Amodiaquine Tabs.(COMOQUIN)	Amodiaquin	1. CHLOROSTREP KAPSEALS	Chloramphenicol & streptomycin.
			3. Chloromycitin Intra-mascular Inj.	Chloramphenicol.	2. CHLOROSTREP SUSPENSION.	Chloramphenicol & streptomycin.

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
16	Pfizer Ltd., Bombay.	1. I. N. H.	1. Isoniazid Tabs	I. N.H	1. DUPENMYCIN Inj.	Sodium Penicillin G. and Streptomycin Sulphate.
		2. PAS & its Salts	2. Sodium PAS Granules	PAS		
		3. Tetracycline	3. PAS Acid Granules.	PAS		
		4. Chlorpropamide	4. Penicillin G Inj. (DUPEN).	Penicillin		
					2. COMBIOTIC inj.	Streptomycin Sulphate, Procaine Penicillin G & Sodium Penicillin G.
					3. PPF-4 Inj. 4. PPF-20 Inj.	Sodim Penicillin G & Sodium Penicillin.
			5. Penicillin V Tabs. (PENCIN)	Penicilllin		
			6. Penicillin G Procain fortified with Penicillin G Sodium Inj.	Penicillin		

7. Streptomycin Sulphate (STREPTONEX).	Streptomysin
8. Streptodicin Inj.	Streptomycin
9. Dihydrostreptomycin Inj.	Dihydrostreptomycin.
10. Streptopenicillin Inj.	Streptomycin
11. Chloramphenicol Caps (CHLORAMED)	Chloramphenicol.
12. Tetracycline Caps.	Tetracycline
13. Oxytetracycline Caps (TERRAMYCIN).	Tetracycline
14. Prednisolone Tabs. (DELTACORTRIL).	Prednisolone
15. Insulin Zinc Suspension (INSULIN NOVO LENTE).	Insulin
16. Insulin Inj.	Insulin
17. Insulin, Zinc Suspension (Amorphous) Inj. (INSULIN NOVO SEMI LENTE).	Insulin

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
16	Pfizer Ltd., Bombay—*contd.*		18. Insulin Zinc Suspension (Crystaline Inj. (INSULIN NOVO ULTRA LENTE).	Insulin		
			19. Chloropropamide Tabs. (DIA BANESE).	Chloropropamide		
17	Roche Products Ltd., Bombay.	Vitamin A	1. Vitamin A Inj. (AROVIT).	Vitamin A		
			2. Vitamin A Tabs. (AROVIT).	Vitamin A		
			3. Ascorbic Acid Inj. (REDOXON).	Vitamin C		
			4. Ascorbic Acid Tabs. (REDOXON).	Vitamin C		
18	Sarabhai Merck Ltd., Baroda.	Vitamin C	..	..	..	..
19	Synbiotics Ltd., Baroda.	1. Streptomycin 2. Tetracyclines 3. Vitamin B12 4. I. N. H. 5. Iodochlorhydroxyquinoline.	..	..	..	..

20	Wander Pharmed Ltd., Bombay.	PAS	1. PAS, Sodium 0·5 gm. Tabs. 2. Calcium PAS 0·5 gm Tabs. PAS.	}*		
21	Wyeth Laboratories Ltd., Bombay.	Prednisolone	1. Prednisolone Tabs.	Prednisolone		
			2. WYSOLONE	Prednisolone		

B. *Small scale manufacturers of basic drugs*

22	Alliance Trading Corporation, Calcutta.	Iodochlohydroxyquinoline	1. Iodo-chlor-hydroxyquinoline Tabs.	Iodo-chlorhydroxyquinoline	1. PASIMECIN	I. N. H. Vitamin B12 & Calcium PAS.
			2. Sodium PAS Granules.	PAS		
23	Neogy Laboratories, Calcutta.	Iodochlorhydroxyquinoline.	--	--	--	--
24	Gujarat Pharmaceuticals, Ahmedabad.	1. I. N. H.	1. Tetracycline Caps (BIOCYCLINE)	Tetracycline	1. C. P. Tabs.	PAS 500 mg. and Isoniazid 16·66 mg.
		2. P. A.S.	2. Tolbutamide Tabs.	Tolbutamide		
		3. Iodochlorhydroxyquinoline	3. Chloramphenicol Caps.	Chloramphenicol		
			4. Cynocobalamin Injection.	Vitamin B12		

*Manufactured under loan licence and not taken for costing.

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
24	Gajarat Pharmaceuticals, Ahmedabad—*contd.*		5. Hydroxy Cobalamin Injection.	Vitamin B12		
			6. Vitamin C Tabs.	Vitamin C		
			7. Chlorpropamide Tabs.	Chlropropamide Tabs.		
			8. Prednisolone Tabs.	Prednisolone		
			9. Chloroquin phosphate Tabs.	Chloroquin		
25	Suneeta Laboratories, Indore.	I. N. H.	..	..	..	..
			C. *Formulators* (*Not manufacturers of basic drugs*)			
26	Cadila Laboratories, Ahmedabad.		1. Cyanocobalamin Inj.	Vitamin B12	ISOCADIPAS	I. N. H. & P AS
			2. Hydroxycobalamin Inj.	Vitamin B12		
			3. Chloramphenicol	Chloramphenicol.		
			4. Sulphadiazine Tabs.	Sulphadiazine		

		5. Vitamin C Tabs.	Vitamin C
		6. Isonicotinic Acid Hydrazide Tabs. (CADIZIDE)	I.N.H.
		7. PAS Acid Tabs.	PAS.
		8. Prednisolone Tabs.	Prednisolone
		9. Di-iodohydroxy-quinoline Tabs.	Iodochlorhydro-xyquinoline
27	Chemical Industrial & Pharmaceutical Laboratories Ltd. (CIPLA), Bombay.	1. Chloramphenicol Caps (CIPLAMYCETIN)	Chloramphenicol
		2. Ascorbic Acid Inj. (CETAMID)	Vitamin C
		3. Ascorbic Acid Tabs.	Vitamin C
		4. Tolbutamide Tabs. (TOLMID)	Tolbutamide
		5. Cyanocobalamin Inj.	Vitamin B12
		6. Hydroxycobalamin Inj.	Vitamin B12(b)
		7. Di-iodohydroxy-quinoline Tabs.	Iodochlorhydroxyquinoline

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
28	Dey's Medical Stores (Mfg.) Co., P. Ltd., Calcutta.		1. Streptomycin Sulphate Inj.	Streptomycin	ENTROSTREP-C	Chloramphenicol & Streptomycin Sulphate.
			2. Chloramphenicol Caps. (ENTEROMY-CETIN)	Chloramphenicol	Calcium PAS & INH	PAS & INH
			3. Tetracycline capsules (SUBAMYCIN)	Tetracycline	ENTEROCY-CLINE Caps.	Chloramphenicol & Tetracycline Hydrochloride
			4. Cyanocobalamin Inj. (VITADOUZ)	Vitamin B12	ENTEROCY-CLINE-C Caps.	Chloramphenicol & Tetracycline Hydroxide.
			5. Ascorbic Acid Tabs.	Vitamin C	PRO-K-MYCIN Inj.	Procaine Penicillin G Forte & Streptomycin Sulphate.
			6. Isoniazid Tabs.	INH.		
			7. Sulphadiazine Tabs.	Sulphadiazine		
			8. Calcium PAS Tabs.(Calcium Amino Salcylates)	PAS		
			9. Iodochlorhydroxyquinoline Tabs.	Iodochlorhydroxyquinoline		
			10. Prednisolone Tabs.	Prednisolone		

29	Gurco Pharma Pvt. Ltd., New Delhi.	1. Chloramphenicol Caps.	Chloramphenicol	Gurcomycetin	Chloramphenicol & Di-hydrostreptomycin Sulphate.
		2. Tolbutamide Tabs.	Tolbutamide	Strep Cap.	
		3. Vitamin C Tabs.	Vitamin		
		4. INH. Tabs.	INH		
		5. Sodium PAS Tabs.	PAS		
		6. Prednisolone Tabs.	Prednisolone		
		7. Tetracycline Tabs.	Tetracycline		
		8. Cyanocobalamin Inj.	Vitamin B12		
		9. Hydroxycobalamin Inj.	Vitamin B12		
30	Khandelwal Laboratories Ltd., Baroda.	1. Tetracycline Caps.	Tetracycline		
		2. Cyanocobalamin Inj.	Vitamin B12		
		3. Sulphadiazine Tabs.	Sulphadiazine		
		4. Vitamin C Tabs.	Vitamin C		
31	Martin & Harris Ltd., Calcutta.	1. Sodium PAS Tabs.	PAS	DIAQUINITE Tabs.	Chloroquin Phosphate & di-iodohydroxyquinoline.

TABLE 28.1—*Contd.*

1	2	3	4	5	6	7
91	Martin & Harris Ltd., Calcutta—*contd.*		2. Sulphadiazine Tabs.	Sulphadiazine		
			3. Ascorbic Acid Tabs.	Vitamin C		
			4. Chloroquin Phosphate	Chloroquin		
			5. Di-iodohydroxyquinoline	Iodochlorhydroxyquinoline		
			6. PAS Calcium Tabs.	PAS.		
			7. Vitamin B12	Vitamin B12		
			8. INH. Tabs.	INH.		
92	Sarabhai Chemicals Ltd., Bombay.		1. AMBYSTRIN-5 Inj.	Streptomycin	CRYs-4 Inj.	Sodium Penicillin & Procaine Penicillin
			2. ASCORBICIN Tabs.	Vitamin C	CRYs-5 Inj.	
			3. CRYSTICILIN Inj.	Procaine Penicillin G	CRYs-12 Inj.	Sodium Penicillin & Procaine Penicillin
			4. NYDRAZID Tabs.	INH.	DICRYSTIN-S Inj.	Procaine Penicillin G & Streptomycin
			5. Penicillin G Sodium Inj.	Penicillin	PENMYNFORTIS Inj.	Sodium Penicillin G and Streptomycin

		6. Pentid Tabs.	Penicillin		
		7. RUBRAMIN-H	Cyanocobalamin		
		8. RUBRAMIN-H	Hydroxycobalamin		
		9. STECLIN Caps.	Tetracycline		
		10. STECLIN/INTRAVENUS	Tetracycline		
33	Unichem Laboratories Ltd., Bombay.	1. Hydroxycobalamin Inj.	Vitamin B12	TEQUINOPIL	Tetracycline Hydrochloride & Iodochlor hydroxyquinoline & Chloroquin Phosphate
		2. Tolbutamide Tabs. (UNITOLBID)	Tolbutamide	Tabs.	
		3. Insulin Inj.	Insulin		
		4. Insulin Zinc Suspension (LENTE) Inj. (INSULIN UNIDURA)	Insulin		
		5. Insulin Zinc Suspension Inj. Amorphous (INSULIN SEMODURA)	Insulin		
		6. Insulin Protamin Zinc Inj.	Insulin		
		7. Vitamin A Inj. (MASSIVE)	Vitamin A		

TABLE 28.1—*Concld.*

1	2	3	4	5	6	7
			8. Iodochlorhydroxyquinoline Tabs.	Iodochlorhydroxyquinoline		
			9. Insulin Inj.	Insulin		
			10. I.N.H. Tabs.	I.N.H.		
			11. Vitamin B12 Inj.	Vitamin B12		
			12. Vitamin C Tabs.	Vitamin C		
			13. Chloramphenicol Caps.	Chloramphenicol		
			14. Chloroquin Phosphate Tabs.	Chloroquin		
34	Zandu Pharmaceuticals Ltd., Bombay.		1. Iodochlorhydroxyquinoline Tabs.	Iodochlorhydroxyquinoline	Isocalamisal Tabs.	Isoniazid and Calcium PAS
			2. Prednisolone Tabs.	Prednisolone		
			3. Sodium PAS Tabs.	PAS		
			4. Isoniazid Tabs.	PAS		
			5. Penicillin Tabs.	Penicillin		
			6. Vitamin B12 Inj.	Vitamin B12		
			7. Vitamin B12 Tabs.	Vitamin B12		
			8. Vitamin C Inj.	Vitamin C		

28.1.5. The distribution of the units as between small scale and large scale manufacturers is as follows :

Particulars	Large scale Units	Small scale Units	Total
Basic drugs only.	3	2	5
Formulations only	7	3	10
Basic drugs and formulations both .	18	1	19
. .	28	6	34

It will thus be observed that among the costed units 21 in the large scale and 3 in the small scale manufacture basic drugs, and 25 in the large scale and 4 in the small scale manufacture formulations.

28.1.6. There are certain basic drugs which are produced by single units and therefore an inter-firm comparison of their costs of the same products is not possible to evaluate whether the costs obtained at these units are reasonable or otherwise. In such cases the alternative is to frame our conclusions based on the results of our cost studies, discussions with the representatives of the units and our Assessors. The units in this category together with the respective basic drugs manufactured by them are listed below :—

Name of unit	Basic drug manufactured
(i) Merck-Sharp	Vitamin B-12
(ii) Sarabhai Merck	Vitamin C
(iii) May & Baker	Sulphadiazine
(iv) Parke-Davis	Amodiaquine
(v) Bengal Immunity . . .	Chloroquin Phosphate
(vi) Pfizer.	Chlorpropamide
(vii) Hoechst	Tolbutamide
(viii) Boots	Insulin
(ix) Wyeth Labs.	Prednisolone

28.1.7. Since comparative cost data of the units are not available it is of utmost importance to make a careful study of the costs at these units and determine fair prices for these basic drugs, so that ultimately the 'formulations' made with these may be priced reasonably. Another reason for a rigid scrutiny of costs of these producers is to ensure that the 'formulators' outside the manufacturing firms of 'basic drugs' are not put to any significant disadvantage by a price disparity of basic drugs. The basic drug manufacturer has no doubt, an inherent advantage in the prices of his formulations *vis-a-vis* the formulator who has to purchase the basic drug and this appears inevitable, but an approach to the problem has been made with a view to obviating this anomaly, as far as practicable.

28.1.8. In regard to the other nine specified 'basic drugs' there are producers whose costs are comparable and the problem is therefore confined to an analysis of comparable data and fixation of prices by giving weightage to capacities installed, optimum utilisation of such capacities, material usage and their present prices, the level of expenses, capital related costs (i.e. depreciation), etc.

28.1.9. The terms of reference envisage examination and analysis of the following preliminary to the formulation of estimates of fair prices.

1. Capital outlay including plant and machinery in relation to (i) actual production (ii) potential capacity.
2. Amount spent on sales promotion through (i) advertisements (ii) distribution of free samples (iii) expenditure on sales staff (iv) publication of leaflets and literature and (v) other incentives and miscellaneous expenses.
3. Comparison of the cost arrived at as between the organised sector and the small scale units.
4. Cost of production including raw materials and intermediates and cost of containers and printing of labels.
5. Operational efficiencies of the processes.
6. Difference in prices of formulations when sold under brand names and common names and the prices quoted against Government tenders and general public.
7. Prices at which formulations are sold by manufacturers to Government *vis-a-vis* the prices at which bulk drugs manufactured by them are sold to other formulators.

Issues relating to items 5, 6 and 7 above have already been dealt with under Chapters 15, 24 and 25 respectively.

Chapter 22 contains a discussion supported data of matters relating to item No. 2 above. The incidence of cost of raw materials and intermediates referred to in item 4 above has been indicated in the following cost analysis for each of the specified basic drugs and the relevant formulations. The cost of packing including the cost of containers and printing of labels has also been included in the cost of individual drugs or formulations as the case may be. Summaries of these costs have been given in this Chapter but details are to the extent these were available included in the Commission's estimates being sent separately. In Chapter 30 comparison has been made as between the cost of production of the large scale units and that of the small scale units both for basic drugs as well as for formulations. The relevant issues have been discussed in detail under each of the drugs and formulations for which comparative data are available.

28.1.10. Capital outlay including plant and machinery is relevant for the purposes of calculation of depreciation as an item of cost and for allowing return on the employed capital. It needs to be pointed out that some of the units which have been studied have composite activities and do not generally produce only those drugs or formulations which are under inquiry. Those units also produce other drugs and formulations and in some cases they have also several other activities not relating to the production of pharmaceuticals. Efforts were made in each case to isolate the specific assets for each product but where the plant and machinery were utilised for the manufacture of a number of products some of them being the subject of the inquiry and others not, and these were so inextricably involved that the items could not be separated certain technical estimates furnished by the units were with suitable modifications adopted. As a result we have arrived at the net assets for the proportionate value of net assets relating only to the product under cost examination. The second point that is contained in the reference of the Government is with regard to the actual production and potential capacity. Once the value of the net assets relating to the product under inquiry has been arrived at and its capacity established the point to consider is whether any further reduction in this value would be justified on account of the fact that the entire installed capacity was not utilised. On this question the past experience is not of much relevance since the future estimates are based on installed capacity related to domestic demand. We have as far

as possible tried to adopt utilisation of capacity to the extent warranted by the actual installation which exist and the extent to which these can be worked with reference to future requirements. In most cases the estimates are based on almost full utilisation of capacity, in certain others, the installed capacity may not be fully utilised. It is however not possible to make any reductions in the value of the plant and machinery or exclude any item in the plant and machinery on the ground that there is likelihood of lack of full utilisation. For depreciation will inevitably take place and no reduction on the full notional depreciation which is allowed as an item of cost is possible, unless it can be established that the installation is cut of all proportion to the output. We have not observed any such over investment. Return has also to be provided in the case of manufacture of basic drugs on the net fixed assets (together with the working capital) which have been isolated for the particular proudct in question. In the case of formulations for reasons which have been explained later their cost of production has been adopted as the basis for allowing the rate of return and the capital outlay on machinery and plant does not therefore figure.

28.1.11. Allocation of selling overheads has been indicated separately in the cost of basic drugs and also that of formulations. It was not found practicable to separate the expenses under each of the items which constitute the total selling overheads since most companies do not maintain specific accounts for each separate item. While the actual costs show the totality of expenses incurred on the distribution of free samples, emoluments of sales staff, incentives, publication of leaflets and literature and advertisements, in working out the costs for the future we have in the case of basic drugs limited this element of cost to certain fixed rates. We have discussed at length the position as well as the incidence of a sales promotion in Chapter 22 on the basis of the Actual expenditure incurred we have reached the medium figure of 15 per cent which we consider fairly reasonable and the same rate has been adopted for working out the element of cost relating to sales promotion for formulations. Where however the actual expense incurred has been less no upward revision has been made. Basic drugs do not call for any special selling effort in as much as these are sold to manufacturers of formulations and the incidence has been restricted to 5 per cent only. Where the cost incurred was less for the actual period the actual rate was allowed in the uture estimates also.

28.1.12. Before we proceed to deal with the cost of production of each of the 18 basic drugs a few general observations with

regard to the elements of costs and the manner in which these have been worked out need to be made.

28.1.13. **Material costs.**— Material costs have generally been adopted on the basis of the costs incurred by the unit during the actual period of costing with such increases as were warranted by the increase in prices duly authenticated by the invoice of the latest purchases that had been made by the unit. As between the actual period and the estimates for future the range of increases is as follows :—

Range	Number of cases
I. *Increase*	
1. upto 5%	5
2. 5% to 20%	10
3. 20% to 50%	8
4. 50% and above	1
	24
II. Break even cases	5
III. *Decrease*	
2·7% to 10·5%	7
TOTAL	36

In the case of the same raw materials consumed by different units we found a wide range of disparity which has already been indicated in Chapter 12. While it was not possible to adopt lowest rates, in several cases we have made suitable modifications where it was considered necessary to do so. In the case of imported raw materials the rates at which the particular raw material has been purchased are bound to differ, depending upon the source from which licences for import were made available. Some of the foreign markets are cheaper than others but it may always not be possible for all the units to purchase from the cheapest sources since the availability of foreign exchange is distributed over a number of countries. Keeping this factor in view alterations in rates of imported material have been made only when the circumstances justified the same.

28.1.14. **Usage factor.**—We did not find any significant sparities in the usage factors of the same raw material for the

production of the same drug as between different units nor was there any occasion to notice any wide variations between the accepted usage factor and the usage factor claimed by the units. However, suitable modifications have been made where the usage factor was claimed at a rate substantially higher than so warranted by the chemical processes and reaction involved. Brief indications of the changes made, have been given under the individual items of drugs discussed. Closely related to the usage factor is also the factor of recoveries. We have given indications of the low recoveries wherever these were particularly noticeable. It has however not been possible to assume recoveries at significantly higher rates than have been obtained by the units concerned in the past.

28.1.15. **Wages and salaries.**—Normal additions to wages and salaries and grade increments have been included together with such additions as were necessitated on account of awards of labour tribunals. Where increase in staff has been justified as a result of adoption of higher production suitable additions have been made.

28.1.16. **Other conversion charges.**—Repairs, consumable stores, factory and administrative overheads have been adopted with appropriate adjustments wherever found necessary.

28.1.17. **Packing charges.**—Wherever packing charges have been allowed and shown separately these are for the material cost only since the labour and other charges for packing have been included under the respective elements of cost. It would have been desirable to isolate packing charges from other charges both in respect of material as well as other charges but it was not found possible to do so without the outlay of much additional labour and time. It would however be desirable in case any future cost study is undertaken to make this study and separate the packing charges from other costs even if it means more work.

28.1.18. **Royalty.**—Wherever royalty agreements exist appropriate quantums for different basic drugs or formulations as the case may be have been included.

28.1.19. **Selling expenses.**—We have discussed selling expenses in chapter 22 and have for the reasons already given adopted the maximum rate of 5 per cent for basic drugs and that of 15 per cent in the case of formulations. However, where the actual amount spent and claimed for the future is less we have allowed selling expenses at the existing or anticipated future rates.

Allocation of selling overheads is separately indicated in the cost of basic drugs and formulations. It was found impracticable to separate the expenses under each of the items which constitute the total selling overhead as accounts in most of the companies are not maintained properly and data in respect of each of the items were therefore not available separately. For instance, printing of labels, leaflets and literature etc. are generally covered in the accounts under "printing and stationery" which is mixed up with the overall stationery or printing charges. Even some companies which had estimated these items within the gambit of total expenses could not be taken as factually representative. The costing approach, therefore, had to be confined to the various expense heads as are reflected in the books of account and these items have been incorporated for cost purposes under "selling". As far as basic drugs are concerned, we feel that they do not call for any special selling effort in as much as the basic drug manufacturers sell their products to manufacturers of formulations and therefore the incidence of selling expense could be restricted to 5 per cent of the total cost only. However, where the impact was less, the actual incidence has been allowed in the future estimates.

28.1.20. **Depreciation.**—In our calculation of costs provision for depreciation has been made according to the income tax rates on the written down value of fixed assets. The industry has, however, argued that new research, new processes and new products are being continuously developed with the result that the processes and products are liable to become rapidly out-dated. It has therefore been pressed that the rate of depreciation allowed under the Income-tax Act is inadequate and that higher rates should be allowed. In this connection it may be stated that the Income Tax Act provides a reasonable allowance for the exhaustion, wear and tear of property used in the trade or business including a reasonable allowance for obsolescence. The calculation of depreciation is only notional and while it is possible that there may be a rapid rate of deterioration in the case of some plant and machinery, in others the value of net fixed assets may be greater than assumed, owing to lower incidence of actual deterioration. Further, the depreciation funds recovered periodically are usually utilised either as working capital or for investment in securities outside the business or for further expansion and by that process also they earn a certain amount of return. When the funds are used to run business as working capital, they are transformed into current assets, thereby reducing the need for current borrowing. If however, the funds are used in securities,

they earn interest or dividends. If such returns are reinvested, the resources for replacement would be further augmented and would provide additional sums which can be utilised for financing replacement of worn-out assets. On the other hand, when the depreciation is utilised for expansion, further depreciation on the new plants is recovered through costs from the time the added machinery starts production and is also eligible for tax relief on account of development rebate. Thus over a period, the depreciation fund with the industry will be more than what is allowed under the Income-Tax Act. We are therefore unable to accede to the industry's request to provide for higher depreciation rates in our estimates of costs.

28.1.21. **Cost of transmitted technology.**—It has been stated that foreign collaboration permits not only the right to work patents, know-how and other ancillary services but to a large extent it transmits advance technology and management practices which contribute to the development of the particular industry. In the long run it also contributes to decreasing the country's dependence on imports and helps to increase exports. In other words, the benefits available from collaborations are :

1. Right to work patents, know-how and ancillary services.
2. Contribution made to the development of industry by transmitted technology.
3. Help thus provided for reducing the dependence on imports and increasing exports.

While item No. 1 is paid for, no additions to cost or return are allowed for items 2 and 3.

The industry has also represented that the profits earned by a number of companies in India result from the fruits of research which are made available through a variety of collaboration agreements, and such expenditure is incurred in the country and not shown towards cost. It desires that a notional quantum of such costs should be adopted for purposes of arriving at fair ex-works prices.

28.1.22. Pfizer has argued that expenses incurred on behalf of the unit by the parent company for which no contribution is made should be adopted as an item of cost. These items of expenditure have been mentioned as follows :

1. Basic research & development.
2. Products & formulations development.

3. Technical assistance in the form of know-how.
4. Design engineering & construction services.
5. Patents and trade marks.
6. Training of technicians.
7. Assistance in the local development of new products and processes.
8. Training of key personnel in management techniques.
9. Assistance in the improvement of quality control standards.
10. Assistance in the improvement of production yields based on local conditions and usage of local materials.
11. Supply of clinical trial data obtained from diefferent parts of the world in respect of each of the drugs.
12. Supply of product promotion leaflets, schemes and ideas from all parts of the world.
13. Marketing techniques based on the experience gained in serveral other countries.
14. Management control & techniques in the areas of administration and finance.

It has been suggested that the expenses incurred by the parent company in the case of these would be equivalent to four per cent of the sales turnover and should be included.

28.1.23. Our approach on this issue is that know-how and research are paid for through royalty agreements and where there is equity participation, by profit-sharing. In the case of units which work as subsidiaries of larger foreign organisations their ability to function in this country and to prosper in competition with the rest of the indigenous industry in itself is the reward for the superior technology or know-how which they bring with them. No additional payment for the same would be warranted. The existence of a market where investment can be made and profits secured is the reward for any contributions which are made by the parent organisation in the form of intangible costs.

28.1.24 **Escalation for future rise in prices.**— A plea has been entered that in view of inflationary tendencies future costs should contain an element of escalation based on past experience. These assumptions, if made, would be hypothetical and may not ultimately be found correct. We have therefore

avoided any conjectural increases in material costs for the future. On the other hand we have observed that the same raw materials have been procured by different manufacturers situated within the same area at different prices and the variation has been significant in certain cases. We expect that the manufacturers would try to locate, in future, sources which would make available raw materials at competitive prices. We have evaluated the material costs on the basis of the latest prices, in accordance with our usual practice and no provision of an escalation in the future costs was considered necessary.

28.1.25. **Return.**—Overall profitability of the industry according to the two samples *viz.* (a) of the units costed and (b) of most large units whose balance sheets were made available to us has been discussed in Chapter 27. In Chapter 31 we have further discussed the issue of the rate of return and have arrived at suitable rates which have been added to the cost of basic drugs as well as that of formulations.

28.1.26. **Bonus.**—The industry has argued that the payment of bonus is a long term contractual obligation which is allowed as a taxable expenditure for income-tax purposes and that it sees no justification for disallowing this in the computation of product costs. In support of this argument, it has stated that in a study conducted by the Indian Merchants' Chamber in collaboration with the Institute of Chartered Accountants, an observation has been made that legally as well as in the effect the entire concept of bonus has completely changed in recent years. In practice, it is no longer an *ex-gratia* payment dependent solely upon substantial profit, *i.e.*, profits made beyond reasonable expectation or beyond what is regarded as reasonable return. Bonus to exmployees is thus, in practice, regarded by employees and Adjudicating Tribunals alike as an additional emolument legitimately forming part of the wage structure in an endeavour to raise the minimum fair wage to the level of living wage.

28.1.27. While there is some force in the above contention, we consider that bonus is an arrangement stipulated under the Bonus Act, for the purpose of sharing the total profits by the employees as well. The Act was the result of continued discontent between the employees and the Management because the employees felt that they had a right to a share in the profits of the company in so far as they had played a vital part in contributing to its profit earning capacity. Any payment made out of appropriation of profit cannot be considered as an element of cost. Further

under the Bonus Act, payment of bonus is conditional. For new establishments will be required to pay bonus only for the accounting year in which the employer makes a profit from such establishments or from the sixth accounting year in which the products manufactured in the establishment are sold, whichever is earlier. Again, if there is no surplus, and there is no amount or sufficient amount carried forward for the purpose of payment of the minimum bonus laid down at 4 per cent of the salary or Rs. 40 whichever is higher, then such amount or the deficiency will be carried over for being set off in the succeeding accounting years. It is, therefore, clear that bonus is payable only if there is a profit and though a minimum of 4 per cent is payable even if there is no profit in a particular year, that can be treated only as an advance to be adjusted in subsequent years when profits are available. However, the bonus which aims at increasing the productivity of labour like the production incentive bonus can be admitted by us as an item of cost. But the bonus payable under the Bonus Act wihch does not contribute to productivity but is only an appropriation of profit should, in our opinion be kept out of cost. It will at the same time be wrong to assume that we do not give any consideration for the payment of bonus merely because its incidence is not included in cost. Although we do not consider it as an item of cost we recognise the liability of the company so far as payment of bonus (under the Bonus Act) is concerned by adding an appropriate amount in the return allowed to the industry. So far as the final price is concerned it makes no difference whether the incidence of bonus payment is included in cost or in the return added to the cost.

28.1.28. Each of the basic drugs referred to us for inquiry has been dealt with separately in the following paragraphs:—

28.2. "**Vitamin A—Palmitate**"

28.2.1. There are only two firms *viz.*, Glaxo Laboratories (India) Pvt. Ltd., and Roche Products Ltd., both of Bombay which produce 'Vitamin A—Palmitate' in the country from lemon grass oil. These companies have good costing systems and costs have been examined for the year ended 30th June 1967 in the case of Glaxo Labs. and 31st December 1967 in the case of Roche Products. Except for a few raw materials, other materials used in the production are not comparable in these units. Roche Products produces Vitamin Acetate Crystalline, and thereafter Vitamin A Palmitate (bulk) and converts it into Vitamin A Palmitate commercial. Glaxo Labs. exports a large quantity of Beta Iopone and only a small portion is utilised in the production of Vitamin

A Palmitate, *viz.*, about 10 per cent. Glaxo Lbs. produced in the past certain other basic drugs also which have since been given up. Formulations from these selected basic drugs as well as other basic drugs are done at both these units ; besides, Glaxo Labs. has a department for food products.

28.2.2. During the costed period Glaxo Labs. produced 4.3 m.m.u. and Roche Products 14.3 m.m.u. of Vitamin 'A' Palmitate. The capacity utilised by Glaxo Labs. was very low. In developing the estimates for future, we have adopted a production level for each company of 15 m.m.u. of Vitamin 'A' Palmitate in consultation with the Assessors and on the basis of the demand, off-take, etc. both as basic drug and for use in formulations. The estimates are summarised below :—

Per 1000 m.i.u.

	Glaxo Labs.	Roche Products
	Rs.	Rs.
(a) Materials	119·30	102·26
(b) Conversion charges	200·71	195·27
(c) Total factory cost (Bulk)	320·01	297·53
(d) Packing	4·26	2·88
(e) Royalty	24·43	..
(f) Research	..	..
(g) Selling expenses	16·00	15·12
(h) Total cost	364·70	315·53
(i) Return	36·06	66·02
(j) Fair *ex*-works price	400·76	381·55
(k) Existing selling price	564·06	546·42

28.2.3. **Materials.**—The material costs are fairly comparable and the minor difference between the two companies in this item is due to dissimilar materials being used as the processes of manufacture are different. By and large, the material costs may not be viewed as unreasonable in the present circumstances.

28.2.4. **Conversion charges.**—The conversion charges are comparable as the production is practically taken at the same level for these two units.

28.2.5. **Packing.**—During 1966, Roche Products had not made any sale of this basic drug as such to the market but had consumed it in the production of its own formulations. The company has now entered the market for sale of Vitamin A in bulk. On the other hand, Glaxo Labs. has withdrawn its sale of bulk drug from the market and has since started concentrating on the formulations only. The packing materials cost for Roche Products has been estimated at Rs. 2.88 and for Glaxo at Rs. 4.26 per 1000 m.i.u. depending on the sources of purchase and the type of packing materials used.

28.2.6. **Royalty.**—This is applicable only to Glaxo Labs. and has been allowed at Rs. 24.43 per 1000 m.i.u. Roche Products does not pay any royalty.

28.2.7. **Research.**—No provision has been made under this head as there was no specific expenditure for this product in both the companies.

28.2.8. **Selling expenses.**—This is estimated at 5 per cent of the factory cost.

28.2.9. **Return.**—For reasons stated in Chapter 31 return has been provided at 15 per cent on capital employed.

28.2.10. **Fair ex-works price.**—For fixing the fair price for Vitamin A (Palmitate), after discussion with the Assessors we have come to the conclusion that the weighted average cost of Glaxo Labs., and Roche Products should be taken. On this basis, the price works out to Rs. 391 per 1000 m.i.u.

28.3. **Vitamin B12—Crystalline**

28.3.1. Vitamin B12 is exclusively manufactured in India, by Merck Sharp & Dohme India Ltd., at its factory in Bhandup, Bombay. A major part of the share capital (60 per cent) is held by the foreign parent company, Merck & Company Inc., U.S.A. Besides, Vitamin B12 and its formulations, small quantities of Prednisolone was also produced in the past but this has since been given up.

28.3.2. The company has a good costing system. The actual costs for the year ended 30th November 1966 were examined. During that year the company produced 40.178 kgs. of Vitamin B12 which represented about 85.5 per cent of its installed capacity. Of this production, 27.667 kgs. were utilised for conversion into Vitamin B-12 Crystalline for sale and also for use in Hydroxocobalamin. In the estimate for future, the optimum production

level has been adopted at 45 kgs. per annum in consultation with the Assessors assuming the same pattern of sale as in the past.

28.3.3. The estimate of costs for future based on 45 kgs. per annum of Vitamin B12 Crystalline is given below :—

		Estimate for future
		Rs. Gramme
(a)	Materials	33·08
(b)	Conversion charges	55·48
(c)	Total factory cost (Bulk)	88·56
(d)	Packing	0.79
(e)	Royalty and research	—
(f)	Selling expenses	4.43
(g)	Total cost	93·78
(h)	Return	20.06
(i)	Fair *ex*-work price	113·84
(j)	Existing selling price	119.20

28.3.4. **Materials.**—The total material costs have been assessed at Rs. 33.08 per gramme of Vitamin B12 for future of which 77.3 per cent represents the imported items.

28.3.5. **Conversion charges.**—The total conversion charges estimated for future amount to Rs. 55.48 per gramme.

28.3.6. **Packing cost** has been estimated at Rs. 0.79 per gramme.

28.3.7. **Royalty and Research.**—There is neither royalty payment nor research expenditure for this basic drug.

28.3.8. **Selling expenses.**—The company produces Vitamin B12 both for its own consumption in formulations as well as for sale as such to outside parties. Selling expenses have been provided at 5 per cent of the factory cost, *viz.* Rs. 4.43 per gramme.

28.3.9. **Return.**—We have provided return at 15 per cent on capital employed, *viz.*, Rs. 20.06 per gramme.

28.4. **Vitamin 'C'**

28.4.1. Vitamin 'C' is produced only by one company *viz.*, Sarabhai Merck Ltd., under a collaboration agreement with Messrs. L. Merck A. G., West Germany, for a period of 20 years from May 1958. No royalty, however, is contemplated in the agreement.

28.4.2. The company has a fairly good system of costing and costs of manufacture of Vitamin C were examined for the year ended 31st March 1967. The paid up capital was Rs. 16.5 lakhs and the volume of turnover for the costed year was Rs. 233.4 lakhs for all its products. No formulations, however, are made from the basic drugs.

28.4.3. The licensed capacity of Sarabhai Merck is for a production of 120 tonnes of Vitamin 'C' per annum. During 1966-67 the company exceeded this level, and produced 135 tonnes. The Assessors were of the view that the existing plant is capable of giving a larger output *viz.*, 180 tonnes and therefore the optimum production level of 160 tonnes per annum (*i.e.* 90 per cent of the capacity) could be adopted for cost assessment purposes. The main reason why a higher production could not be attained in the earlier years was stated to be that large imports were then allowed into the country which resulted in the curtailment of indigenous production. Since there is a ban on imports now, it should be possible for the company to achieve full utilisation of capacity.

28.4.4. Based on a production of 160 tonnes of Vitamin 'C' per annum, our estimate of future has been built up as shown below:—

Items	Estimate (future) Rs./Kg.
(a) Materials	31·55
(b) Conversion charges	33·44
(c) Total factory cost (Bulk)	64·99
(d) Packing	0·51
(e) Royalty	..
(f) Research	0·32
(g) Selling expenses	0·15
(h) Total	65·97
(i) Return	6·73
(j) Fair *ex*-works price	72·70
(k) Existing selling price	73·50

The surplus margin available is small.

28.4.5. **Materials.**—Five imported materials and 31 indigenous chemicals are used in producing Vitamin 'C'. The value of imported materials constitutes about 39 per cent of which Acetone

alone works out to about 31.4 per cent. Two major indigenou s items *viz.*, Dextrose and Caustic Lye account for about 47.8 per cent in value of the raw material.

28.4.6. **Conversion charges.**—The conversion charges have been estimated at Rs. 33.44 per kg. after taking into account the increased production for future. The recovery of Vitamin C from Pure Sorbitol is about 36 per cent which is very low in comparison to the 60 per cent recoveries available to units in Europe.

28.4.7. **Packing.**—Vitamin C is sold in bags for bulk and in containers for small quantities. Packing cost has been estimated at Re. 0.51 per kg. for bulk.

28.4.8. **Research and Development.**—A small laboratory is maintained where research on a minor scale is carried out. This cannot be viewed as in the nature of regular research for the development of the product in future. A sum of Rs. 0.47 lakh was spent in 1966/67 and after minor adjustments the expenditure under the above head has been estimated at Rs. 0.32 per kg. for future.

28.4.9. **Selling expenses.**—The total expenditure in the sales department during 1966-67 was about Rs. 5.03 lakhs and this related mostly to salaries and wages. As practically the entire production is given to another company within the same group of industries which may not need a selling organisation of this magnitude the selling expenditure appears to be excessive. A provision of Rs. 2,000 per month should, in our opinion be adequate and this would work out to Re. 0.15 per kg.

28.4.10. **Return.**—A 15 per cent return on capital employed has been provided which works out to Rs. 6.73 per kg. Since the commencement of business in 1958-59, the company had been continuously accumulating losses which reached a peak in 1963-64 when it stood at Rs. 81.12 lakhs. Thereafter both production and sales improved and the losses came down to Rs. 13.20 lakhs in 1966-67. But subsequently the position deteriorated because of imports of Vitamin 'C' by other parties thereby retarding the sales potentialities of Sarabhai Merck. The tide should turn in favour of this company because of the present ban on imports of Vitamin 'C'.

28.5. **Sulphadiazine**

28.5.1. May & Baker Ltd., Bombay and Atul Products Ltd., Bulsar had been manufacturing this basic drug. Since the

latter discontinued its regular production in 1967, May & Baker was selected for costing of sulphadiazine as well as its formulations.

28.5.2. May & Baker has an installed capacity of 210 tonnes of sulpha drugs per annum but it had to limit its production far below its capacity owing to inadequate demand. Even during the costed period the production was only 95.5 tonnes which was about 45 per cent of the installed capacity. This heavy underutilisation of capacity has been explained by the producer as due to heavy imports of foreign sulpha drugs. The import of sulphadiazine was allowed for the reason that acetyl sulphadiazine, the penultimate intermediate from which it is manufactured, was being imported and it was found uneconomical to import the finished product. Now that this unit manufactures the drug from basic materials the necessity of import of high level intermediates at a high cost will be obviated. According to the Government import control policy there is a ban on imports of sulphadiazine and this should stimulate the demand for the domestic sulphadiazine and provide an incentive to the company to step up its production. In view of this it would not be unreasonable to adopt the optimum capacity utilisation of about 190 tonnes per annum. (*i.e.* 90 per cent of the capacity). Of this, about 90 tonnes will be in the form of sulphadiazine.

28.5.3. The estimates of future cost and price based on the production of 90 tonnes per annum of sulphadiazine are given below :

	Estimate
	Rs./Kg.
(a) Materials	41·50
(b) Conversion charges	11·51
(c) Total factory cost	53·01
(d) Packing	1·25
(e) Royalty and research	..
(f) Selling expenses	..
(g) Total cost	54·26
(h) Return	4·63
(i) Fair *ex*-works price	58·89
(j) Existing price	No price fixed

28.5.4. **Materials.**—The company uses four imported and 17 indigenous chemicals in the manufacture of sulphadiazine. The imported materials account for about 77.6 per cent of the total materials cost of which 53.7 per cent relate to Aminodiazine and 17.9 per cent to Acetanilide. The major indigenous material is Chlorosulphonic Acid which constitutes 14.4 per cent of the total material cost.

28.5.5. **Conversion charges.**—These have been estimated at Rs. 11.51 per kg. indicating a reduction of about 34 per cent for an increase in production of about 26 per cent.

28.5.6. **Packing.**—Since the company does not sell sulphadiazine as such but consumes it exclusively in the manufacture of its own formulations, the cost of packing materials used for storage only has been included in the estimate. The amount allowed is Rs. 1.25 per kg.

28.5.7. **Research and Development.**—No expenditure has been specifically incurred for the development of this basic drug but the expenditure on the maintenance of the laboratory has been included under overheads incorporated in conversion charges.

28.5.8. **Royalty.**—No royalty is payable in respect of sulphadiazine.

28.5.9. **Selling expenses.**—Since this basic drug is not sold, the question of providing any selling expenses does not arise.

28.5.10. **Return.**—This has been provided at 15 per cent on the employed capital which works out to Rs. 4.63 per kg.

28.5.11. **Fair selling price.**—Although the company does not market this product, for the purpose of working out the costs of formulations we have decided to adopt the price estimated for this unit, namely Rs. 58.89 per kg.

28.6 **Penicillin**

28.6.1. Four units including I.D.P.L., Rishikesh, have been licensed to manufacture Penicillin in the country. The other three units and the capacities licensed to them are : Hindustan Antibiotics Ltd., Pimpri—84 m.m.u.; Alembic Chemical Works Co. Ltd., Baroda 20 m.m.u.; and Standard Pharmaceuticals Ltd., Calcutta—20 m.m.u. All the three units were originally selected by us for assessment of cost. Subsequently, however on the advice of the Assessors, Standard Pharmaceuticals Ltd., was dropped. Although no orthodox costing system exists in both these units, data were available to develop cost on a fairly reasonable basis. Cost of manufacture were assessed for the year ended

31st March 1967 at Hindustan Antibiotics and the year ended 31st December 1967 at Alembic Chemical.

28.6.2. **Hindustan Antibiotics.**—This is an antibiotic project set up in India under the Joint Plan of Operations between the Government of India and the World Health Organisation (WHO) and the United Nations International Children's Emergency Fund (UNICEF). It was mentioned that the 'Strain' which was developed in its own laboratory and is now being used is very much lower in cost than envisaged ins the original project report. The entire share holdings of the company belong to the Government of India and the present capital amounts to Rs. 247.26 lakhs. It has been paying dividend consistently at 10 per cent. The company has a comparatively larger number of Reserve Accounts than what is normally seen in any private owned concern.

28.6.3. **Alembic Chemical.**—The company, as its name connotes, was originally set up for manufacture of Alcohol. Its Penicillin plant was erected in 1960 and it went into production in the same year. The share capital as on 31st December 1966 stood at Rs. 207.66 lakhs. Out of the total sales turnover in 1966 of Rs. 626.59 lakhs, Penicillin (bulk) accounted for Rs. 78.34 lakhs, representing 12.5 per cent of total sales turnover.

28.6.4. **Production.**—Production at Hindustan Antibiotic during 1966-67 was 65.73 m.m.u., indicating a utilisation capacity of 78 per cent, while in Alembic Chem ical the production during the costed year 1967 was 25.85 m.m.u. with a capacity utilisation of 52 per cent. Future production of these units has been estimated at 72 m.m.u. and 30 m.m.u. per year respectively. Although we are aware that Alembic Chemical produced about 40 m.m.u. in 1966, we have adopted a lower capacity utilisation for future as the company considers it difficult to market Penicillin in excess of 30 m.m.u. annually. According to the company the total capacity for Penicillin licensed in the country is far in excess of domestic requirements and therefore, if the optimum capacity is realised by each of the licensed units, the country will be faced with an over production of this basic drug. As the international prices of Penicillin are comparatively much lower, it will not be possible to find an outlet in the export market for the excess production unless Government subsidise the industry for losses incurred on exports. Further, unlike Hindustan Antibiotics, Alembic Chemical does not produce streptomycin and so it does not have the benefit of tying up sales of penicillin with streptomycin which is said to be the normal trade practice.

28.6.5. **Cost of production.**—Based on the above levels of output, estimates of costs have been prepared for the future and are set out below :

Estimated cost of production and Fair ex-works price of penicillin

	Potassium Pencillin 'G'		Procaine Penicillin		Sodium Penicillin 'G'		Potassium Penicillin 'V'	
	Hindustan Antibiotics	Alembic Chemical	Hindustan Antibiotics	Alembic Chemical	Hindustan Antibiotics	Alembic Chemical	Hindustan Antibiotics	Alembic Chemical
	Rs./mu	Rs./mu	Rs./mu	Rs./mu	Rs./mu	Rs./mu.	Rs./mu	Rs./mu
(a) Materials	0·157	0·180	0·152	0·185	0·201	0·188	0·244	..
(b) Conversion charges . .	0·125	0·242	0·120	0·240	0·121	0·259	0·188	..
(c) Total factory cost . .	0·282	0·422	0·272	0·425	0·322	0·447	0·432	..
(d) Packing	0·001	0·007	0·001	0·007	0·001	0·007	0·001	..
(e) Royalty	..	..	..	..	..	..	..	..
(f) Research	0·011	0·020	0·010	0·021	0·013	0·021	0·012	..
(g) Selling expenses . . .	0·001	0·022	0·001	0·022	0·001	0·021	0·001	..
(h) Total cost	0·295	0·471	0·284	0·475	0·337	0·496	0·446	..
(i) Return	0·056	0·072	0·052	0·070	0·062	0·074	0·091	..
(j) Fair-ex-works price . .	0·351	0·543	0·336	0·545	0·399	0·570	0·537	..
(k) Existing selling price . .	0·500	0·500	0·500	0·500	0·500	0·500	0·800	..

Penicillin bulk is sold in the market under different categories. So far as costed units are concerned, Sodium Pencillin'G', Potassium Penicillin 'G', Procaine Peniccillin are manufactured by both. Potassium Penicillin 'V' is, however, manufactured by only Hindustan Antibiotics.

28.6.6. **Materials**

28.6.6.1. In the case of Hindustan Antibiotics, the cost of materials will remain prac tically the same in future also for each category of Penicillin. This is because the company has fixed standards for quantity per unit of the product and during the actual period very little variation was noticed between the standard and the actual. For the purpose of estimates the total cost of materials has been arrived at on the basis of the standard usage at the latest procurement rate, both for imported and indigenous materials. No additional provision is considered necessary.

28.6.6.2. Alembic Chemical does not have any standard consumption factor and the material usage for the future has been adopted on the basis of actuals because the company has emphasised that there is no further scope for economy over the actual consumption. During the costed period the consumption efficiency was in the range of 80 per cent to 90 per cent related to input.

28.6.7. **Conversion cost**

28.6.7.1. While estimating the future conversion cost for Hindustan Antibiotics, account has been taken of the revision of the scales of wages and salaries. Provision has also been made for planned additions to labour and staff to achieve higher output, as well as other known items of additional expense like 'insurance premia'. Additions to plant and equipment and also replacement of such items as have been approved by the Board of Directors have been admitted for the purpose of depreciation calculation. The overall effect on the total conversion cost is that it does not reflect a substantial economy in Hindustan Antibiotics in spite of the higher output of different items assumed for the next three years.

28.6.7.2. In Alembic Chemical, as the production level is a restrictive factor, no addition to labour, staff or plant and equipment has been admitted. The conversion cost has, therefore shown a decline for the higher level of production adopted for future.

28.6.8. **Packing.**—Cost of packing is slightly higher in Alembic Chemical.

28.6.9. **Royalty and Research.**—No royalty is payable by either of the companies. Expenses on research between the two companies show variation except in the case of Potassium Penicillin. Alembic Chemical has only one basic product, *viz.* Penicillin, and a larger proportion of research expenses has therefore been allocated to Penicillin. But in Hindustan Antibiotics, Penicillin constitutes one of the basic drugs manufactured by the company. It, therefore, bears only the corresponding share of the total research expenses incurred at that unit.

28.6.10. **Selling.**—The selling arrangement of Alembic Chemical has undergone a radical change with effect from 1st January 1967. The company has taken over the sales campaign by setting up 27 branches throughout the country. Necessary adjustments to selling expenses have been made. In Hindustan Antibiotics, however, the selling activities are mainly watched by a department in the Head Office at Pimpri.

28.6.11. **Return.**—This has been provided at 15 per cent on employed capital.

28.6.12. **Bulk Price.**—As regards bulk-price, we consider that the estimated fair price for Hindustan Antibiotics should be adopted.

28.7. **Streptomycin Sulphate**

28.7.1. Licences to undertake manufacture of Streptomycin Sulphate were issued to three companies, namely, I.D.P.L., Rishikesh, Hindustan Antibiotics Ltd., Pimpri and Synbiotics Ltd., Baroda. Of these, I.D.P.L. has only installed the capacity, and is still at the stage of experimental production while the other two have already gone into production and we have selected them for cost study. As stated earlier, Hindustan Antibiotics does not have a proper costing system, but data were available to develop costs on a fairly reasonable basis. On the other hand, Synbiotics has a good system of accounts. Cost data were examined for the year 1966-67 at both the companies.

28.7.2.1. Hindustan Antibiotics has collaboration with Merck and Co. of U.S.A. for setting up the Streptomycin plant. The licensed capacity of the plant is 90,000 kgs. The company has already achieved an output of 7,000 kgs. per month, equivalent to 84,000 kgs. a year. It has applied to Government for expansion

of its capacity to 160,000 kgs. per annum, but Government have postponed consideration of the application for the time being. Production has been estimated at the optimum capacity of 80,000 kgs. per annum.

28.7.2.2. It may be pointed out that even though the company anticipated that its cost of production of Streptomycin Sulhate will not be less than Rs. 300 per kg., it retained the selling price at Rs. 175 per kg. until 1st October 1965, on the expectation that when the plant was doubted up, the resultant economy will bring down the cost of production to around Rs. 175 per kg. This, however, has not been achieved primarily because the cost of materials kept on increasing. Losses incurred on sales of Streptomycin were, however, recovered through sales of Penicillin by loading them on the selling price of the latter. Effective from 24th January 1967, Government increased the selling price of Streptomycin (bulk) to Rs. 295 per kg. after examination of the cost by the Ministry of Finance. Government also paid to the company an amount of Rs. 12.73 lakhs being difference between the fair and actual selling prices of Streptomycin for the period prior to the revision of the selling price.

28.7.3.1. Synbiotics was formed in December 1961 in financial collaboration with Karamchand Premchand Pvt. Ltd. and Olin Mathieson Chemical Corporation of U.S.A. It does not have to pay any royalty to its foreign collaborators as they have a participation in the equity capital. The paid up capital as on 31st March 1967 was Rs. 75·00 lakhs. The total amount of loans outstanding as on the same date was Rs. 149.40 lakhs, of which Rs. 134.40 lakhs was obtained from the Agency for International Development and Rs. 15.00 lakhs from the Chemical Bank New York Trust Co. Total sales realisation during 1966-67 amounted to Rs. 199.27 lakhs which included Rs. 6.79 lakhs on account of subsidy received from Government under Streptomycin account. Sales realisation on account of Streptomycin amounted to Rs. 37.86 lakhs representing about 19 per cent of the total realisation.

28.7.3.2. The installed capacity at Synbiotics is 40,000 kgs. per annum which is also the licensed capacity. During 1966-67, production of Streptomycin Sulphate was 39,090 kgs. Future production has been assumed at 50,000 kgs. *i.e.*, 25 per cent higher than the licensed capacity which, we understand is permissible under the Industries (Development & Regulation) Act, 1951.

28.7.4. A summary of the future costs and prices of Streptomycin in respect of both the companies, estimated on the production levels mentioned above, is given in the following Table :

	Hindustan Antibiotics	Synbiotics
	Rs./Kg.	Rs./Kg.
(a) Materials	182·14	132·72
(b) Conversion charges	110·81	113·79
(c) Total Factory Cost	292·95	246·51
(d) Packing	0·96	..
(e) Royalty	5·60	..
(f) Research	2·18	..
(g) Selling expenses	1·11	..
(h) Total Cost	302·80	246·51
(i) Return	68·84	37·99
(j) Fair *ex*-works price	371·64	284·50
(k) Existing selling price	295·00	295·00

28.7.5. **Materials.**—The total material cost estimated at Rs. 182.14 per kg. for Hindustan antibiotics shows an increase of 29 per cent over the actuals. The costs are not, however, strictly comparable because during the costed period, as a result of processing difficulties, 6929 kgs. of Streptomycin had to be recrystallised. Expenses could not be itemised on a scientific basis. It would be observed that the cost of raw materials in the case of Hindustan Antibiotics is about 37 per cent higher than that of Synbiotics. Since the processes adopted by the two units are dissimilar it was not possible to equate the cost of the higher cost unit with that of the lower cost unit or to pinpoint in the cost analysis items either of usage or rates where higher costs may be evident. We tried with the help of the Assessors to investigate into the scientific basis to the higher material cost of Hindustan Antibiotics but could not reach any satisfactory conclusions. We have therefore shown in the table materials cost as claimed by the unit. These high material costs are however not significant since we have decided to adopt the lower of the two prices in the expectation that Hindustan Antibiotics will try to reduce the cost of materials or that of conversion in order to reach a cost of production at a level similar to that of the other unit. In Synbiotics, increases were evident in the costs of both imported and

indigenous materials as well as in the consumption factor of most of the materials. Although the total material cost will increase in the future by 47 per cent, the proportion of the value of the materials obtained locally and by imports will remain fairly steady.

28.7.6. **Conversion charges**—While for a production increase of 24 per cent in Hindustan Antibiotics, the conversion cost will come down by 0.7 per cent in Synbiotics a production increase of 26 per cent will result in reducing the conversion cost by 15 per cent. During the costed period the latter company obtained its supply of power from Gujarat Electricity Supply Board. Consequent upon the increase in the load of agricultural lift-irrigation as well as some plant difficulties, the Board imposed a cut of 15 per cent in the power load during peak hours. The 'Common Services Department of the company has since set up its own diesel-operated generating set to make up for the shortfall of power requirement. While electricity from grid costs 10 to 11 paise per KWH, the cost of self-generated power works out to 20 paise per KWH. We are informed that the present difficult situation in regard to power supply by the Gujarat Electrcitity Supply Board is likely to continue for the next few years. We have therefore adjusted the cost of power in Synbiotics after taking into account the fact that the bulk power will be purchased and own generated power will be used to the extent the supply falls short of the total requirement.

28.7.7. **Packing.**—The cost of packing material for future has been estimated for Hindustan Antibiotics at Re. 0.96 per Kg. Synbiotics does not incur any expenses under this account as normally it transfers the entire production to its sister concern in returnable containers.

28.7.8. **Royalty.**—Royalty is payable by Hindustan Antibiotics to Merck & Co., U.S.A., on the net sale proceeds of bulk Streptomycin and Streptomycin content in formulations. It is payable at varying rates *viz.*, 2½ per cent on the first 45 tonnes, 2 per cent on the next 25 tonnes and 1½ per cent on the balance of the sales made in India. If any sales are made outside India, royalty would be payable at 5 per cent. In the case of Synbiotics royalty is payable to Sarabhai Chemicals on Streptomycin at 10 per cent of the prevailing selling price, notwithstanding the fact that Olin Mathiesen Chemical Corpn. which is the collaborator for the manufacture of Streptomycin. This organisation alone would be entitled to royalty, if any, but it has equity participation, profits from which take the place of royalty. There is no technical assistance, know-how or other forms of collaboration provided

by Sarabhai Chemicals which may render payment of this royalty justifiable. Though this payment has been termed as "royalty" it is in fact in the nature of a profit sharing arrangement which becomes a discount on sales to the extent these are made to Sarabhai Chemicals. It is open to the unit therefore to make these payments from its own profit and it cannot be considered as an item of cost, since the benefit accruing to the manufacturing unit in return of this payment is not apparent. We have therefore excluded this item from the estimated future cost.

28.7.9. **Research.**—Hindustan Antibiotics maintains a well-equipped and modern research centre. The running cost of the centre is compiled separately. It identifies and allocates the shares of expenses on research and development to the concerned products and then sets off the balance against the profits. The company proposes to allocate a sum of Rs. 11,81,340, *i.e.* Rs. 11.81 per kg. on account of research expenses during the next three years. We have, however, admitted the research expenditure at the rate incurred during the costed period, *i.e.* Rs. 2.18 per kg. No research expenses are incurred by Synbiotics. The unit forms a part of the Sarabhai group of industries, which maintains Central Research Institute for the entire group. No contribution towards research has so far been made by Synbiotics. Nor, does it propose to make any contribution in the future.

28.7.10. **Selling expenses.**—The incidence of selling expenses allocable to Streptomycin at Hindustan Antibiotics has been estimated at Rs. 1.11 per kg. The selling department of the company is being expanded and distinction has been made between the marketing costs and selling overheads. As regards Synbiotics, no selling expenses are involved as its products are transferred to its sister concern Sarabhai Chemicals.

28.7.11. **Return.**—Return has been allowed at 15 per cent on capital employed.

28.7.12. **Bulk Prices.**—We have come to the conclusion that it would be reasonable to adopt the lower price of the two units. The bulk price thus works out to Rs. 284.50 which may be rounded to Rs. 285 per kg.

28.8. Chloramphenicol

28.8.1. Licences for manufacturing Chloramphenicol indigenously were issued to five companies, of which only three have installed capacities. Of these we have selected two companies for cost study, *viz.*, Boehringer-Knoll Ltd. and Parke-Davis (India) Ltd., both of Bombay, as the third company, Mac Laboratories

Ltd., Bombay did not produce this drug during the period January-June 1967. Both these companies have a good system of cost accounting and costs were examined for the year ended 30th April 1967 in respect of Boehringer-Knoll and the year ended 30th November 1966 in respect of Parke-Davis.

28.8.2. Boehringer-Knoll has an installed capacity of 12 tonnes per annum for this drug. During 1966-67 the quantity in processing was 12.885 tonnes and Chloramphenicol produced as a finished product was 9.885 tonnes (*i.e.* 78 per cent of capacity) besides a large quantity in process as semi-finished. The company has since expanded its capacity by additions to plant and machinery, where it proposes to produce 22 tonnes per annum in future. This level has been adopted in our estimates of future cost. The factory does not formulate but on its behalf, formulations are prepared either by Rallies India Ltd. (TCF Division, Bombay) or Capsulation Service Private Ltd., Bombay on loan licences for which Boehringer-Knoll pays service charges for conversion into formulations.

28.8.3. Parke-Davis has an installed capacity of 10 tonnes per annum. During the costed year it manufactured 11.20 tonnes of Chloramphenicol which was 12 per cent higher than the capacity.

28.8.4. The Assessors have advised us that Parke-Davis will be switching over to the process of manufacture adopted by Boehringer-Knoll. We have therefore decided to base the future prices on the working results of Boehringer-Knoll. A summary of our estimates of future costs and prices is given below :

	Rs./Kg.
(a) Materials	146·00
(b) Conversion charges	164·69
(c) Total factory cost	310·69
(d) Packing	—
(e) Royalty	—
(f) Research	—
(g) Selling expenses	—
(h) Total cost	310·69
(i) Return	46·97
(j) Fair ex-works price	357·66
(k) Existing selling price	410·00

28.8.5. **Materials.**—Of the 11 imported chemicals used by Boehringer-Knoll during 1966-67 it expects to procure four from indigenous sources in future. Consequently, in our estimates we have included the costs of seven imported and 32 indigenous materials of the aggregate value of Rs. 146 per kg. Of this total material cost, 34.9 per cent is accounted for by the imported materials and the balance of 65.1 per cent by the indigenous ones.

28.8.6. **Conversion charges.**—They have been provided at Rs. 164.69 per kg. for a production rise of 71 per cent the reduction in the conversion cost is about 12 per cent.

28.8.7. **Packing, Royalty, Research and Selling expenses.**—No expenditure is incurred in respect of these items.

28.8.8. **Return.**—The provision for return has been made at 15 per cent on employed capital which works out to Rs. 46.97 per kg.

28.9. Tetracycline Hydrochloride

28.9.1. In addition to I.D.P.L. four other companies were licensed to manufacture Tetracyclines in the country. These are Cyanamid India Ltd., Pfizer Ltd., Synbiotics Ltd., and Hindustan Antibiotics Ltd. The last named company has suspended production of this drug. Three units *viz.*, Cyanamid, Pfizer and Synbiotics were selected for cost study. All the three companies have good systems of cost accounting. Costs of production have been examined for the year 1965-66 for Cyanamid and Pfizer and for 1966-67 for Synbiotics.

28.9.2. Capacity

28.9.2.1. The installed capacity of Cyanamid is 10 tonnes of Tetracyclines, of which the production of Tetracycline (Hcl) during 1965-66 was 1888.7 kgs. It was mentioned that utilisation of capacity of Tetracyclines is to be reckoned in terms of the number of fermentators harvested during the year. It is understood that during 1965-66, the capacity was fully utilised. Out of 100 fermentators for future production 30 have been allotted for harvesting Tetracycline (Hcl), which will give an estimated output of 2310 kgs. of Tetracycline (Hcl).

28.9.2.2. Pfizer manufactures this product at its Chandigarh plant whose present installed capacity is 10,000 kgs. per annum. It is undergoing expansion raising its capacity to 14,000 kgs.,

by 1968-69. The capacity is for the combined production of Tetracycline and Oxytetracycline. Production during 1965-66 was, however, 8,900 kgs. Future production has been estimated at 12,300 kgs. per annum.

28.9.2.3. As regards Synbiotics, Government have not stipulated any limit for the manufacture of Tetracycline and have left it to the company to produce any quantity without asking for foreign equipment. It raised its Tetracycline capacity from 4,000 to 6,000 kgs. per annum on three shift in April 1967. Production during 1966-67 was 4,701 kgs. The plant of the company is a multi-purpose plant for making antibiotics wherein the production of Tetracycline and other antibiotics like Streptomycin could be adjutsed according to requirement. Actually, during 1967-68 the company expects to manufacture about 948 kgs. of Tetracycline (Hcl) and about 61,000 kgs. of Streptomycin. In the light of anticipated product-mix, future production of Tetracycline (Hcl) has been assumed at 5,100 kgs. per annum.

28.9.3. Estimates of future costs have been developed on the basis of the above levels of production and are set out in the following table :

	Cyanamid Rs./Kg.	Pfizer Rs./Kg.	Synbiotics Rs./Kg.
(a) Materials	313·12	167·59	392·53
(b) Conversion costs	303·28	538·51	348·14
(c) Total factory cost . . .	616·40	706·10	740·67
(d) Packing	..	..	..
(e) Royalty	34·98	..	..
(f) Research	1·04	8·63	..
(g) Selling expenses	—	3·41	..
(h) Total cost	652·42	718·14	740·67
(i) Return	56·83	100·22	79·59
(j) Fair *ex*-works price . . .	709·25	818·36	820·26
(k) Existing selling price . . .	1147·00	1,147·00	1,147·00

28.9.4. **Materials**

28.9.4.1. Cyanamid expects to use six imported materials in future, compared to eight in 1965-66 ; but the total cost of the imported materials will go up by about 34 per cent, mainly because of the devaluation of the Rupee. In the case of indigenous materials also their total cost has increased by about 25 per cent. Consumption factors of many items have also varied and suitable provision has been made for them in consultation with the company and our Assessors.

28.9.4.2. In Pfizer, the same materials will continue to be used in the future as during the costed period. The total cost of materials, both indigenous and imported will go up by 31.3 per cent. In the case of imports, the rise in their value reflects the incidence of the rupee devaluation.

28.9.4.3. As regards Synbiotics, although the total value of materials will remain practically the same in the future also, it is worth while to point out that material cost has been the highest in this unit, although actual usage factors, when compared with the standards did not show any significant variation. The pattern of material usage, however, differs from the other companies. For example, Butonaol, which is imported, has a usage factor of 27.615 kgs. per kg. of Tetracycline in comparison with 7.543 kgs. indigenous in Cyanamid and 2.796 kgs. indigenous in Pfizer. Synbiotics uses imported dried yeast valued at Rs. 19.45 per kg. of Tetracycline ; this material is not used by other companies. Other items of significant value used by Synbiotics only, but not by others, are Dicalite imported at a value of Rs. 40.43 per kg. and Sugar at Rs. 83.00 per kg. of Tetracycline.

28.9.5. **Conversion charges.**—For an enhanced output of 22 per cent at Cyanamid and 8 per cent at Synbiotics, the conversion costs of these units show a reduction of about 15 per cent and 23 per cent respectively. On the other hand the operating charges at Pfizer will go up by about 8 per cent even against an assumed rise of 38 per cent in production, mainly because of its higher depreciation charges and the implementation of an agreement recently concluded with its labour union. The conversion costs were generally regarded as high since the process is similar to that for the manufacture of Streptomycin.

28.9.6. **Royalty.**—Royalty is payable by Cyanamid only at 5 per cent of the value of basic bulk drug manufactured and used

or sold in bulk for manufacturing Tetracycline products, calculated on the basis of the world market price drtermined annually at the beginning of the year by the Government of India. This has been allowed in our estimate.

28.9.7. **Research.**—Cyanamid and Pfizer incur expenses on research. This has been allocated to Tetracycline (Hcl) on the basis of technical estimates furnished by the company. In the case of Synbiotics, research work for all its products is done at the research laboratory maintained centrally for the Sarabhai group of industries. No contribution towards this expenditure is contemplated by Synbiotics.

28.9.8. **Selling expenses.**—Normally, Cyanamid does not sell Tetracyclines (bulk) to outside parties, although a very small quantity of 235 kgs. was sold during 1965-66. Therefore, no selling expense has been included in the future estimate. As regards Synbiotics, although it is free to sell its products to any party, in fact it sells its bulk to its sister concern, Sarabhai Chemicals. As no sales efforts are involved in the transaction, no allocation of selling expenses has been made to Tetracycline. The company does not incur any expense even on packing material because the product is transferred in returnable containers. In the case of Pfizer, however, the expenditure on selling has been restricted at Rs. 3.41 per kg.

28.9.9. **Return.**—A return of 15 per cent on capital employed has been allowed.

28.9.10. **Bulk price.**—For the purpose of bulk sale, we consider that the Cyanamid price of Rs. 709.25 per kg. should be adopted.

28.10. Amodiaquin (Camoquin Hydrochloride)

28.10.1. There are only two units engaged in the manufacture of this basic drug, namely Parke-Davis (India) Ltd., Bombay and Albert David (India) Ltd., Calcutta. Of these, only the former has been selected by us for assessment of cost of Amodiaquin. Parke-Davis produces two basic drugs, Chloramphenicol and Amodiaquin. Costs of both of these basic drugs as well as their formulations have been examined by our Cost Accounts Officer for the year ended 30th September 1966.

28.10.2. The installed capacity of Parke-Davis for the manufacture of Amodiaquin is 36 tonnes a year but the quantity produced during the costed year was only 14.34 tonnes, representing a capacity-utilisation of about 40 per cent. The company has represented that as the drug was mainly purchased by the National Malaria Eradication Project and Government departments, the production is not likely to exceed the level attained in 1965-66. Further, according to the company, the trend of sales in recent months was downward. We are, however, unable to subscribe to the view of the company as we consider that the recent fall in demand cannot be treated as indicative of the trend during the next three years. We feel that it will not be unreasonable to assume an average demand of 20 tonnes for the future. Accordingly, we have adopted a production of 20 tonnes in our estimate.

28.10.3. Our estimates of cost and price for the future are set out below :

	Rs./Kg.
(a) Material	87·00
(b) Conversion charges	12·50
(c) Total factory cost	99·50
(d) Packing	..
(e) Royalty	..
(f) Research	..
(g) Selling expenses	..
(h) Total cost	99·50
(i) Return	7·41
(j) Fair *ex*-works price	106·91
(k) Existing selling price	No price fixed.

28.10.4. **Materials.**—The materials form a major part accounting for as much as 87.4 per cent of the total cost of production, of which the share of one imported material, Dichloroqui-

noline is about 77.1 per cent. Acetylaminophenol is a major indigenous material forming about 12.6 per cent of the total material cost.

28.10.5. **Conversion charges.**—The conversion charges work out to Rs. 12.50 per kg. showing a nominal economy over the actual period.

28.10.6. **Packing, Royalty, Research and Selling expenses.**—These items are not applicable to Amodiaquin as the entire production of this basic drug is consumed by the company itself in producing several formulations.

28.10.7. **Return.**—This has been allowed at 15 per cent on employed capital. It works out to Rs. 7.41 per kg. of Amodiaquin.

28.11. **Chloroquin Phosphate**

28.11.1. Bengal immunity Co. Ltd., Calcutta is one of the units selected by us for examination of costs of three basic drugs, (i) Chloroquin phosphate ; (ii) Tetanus Antitoxin ; and (iii) I. N. H. (Isoniazid). The company produces the first two drugs on a commercial scale, while in respect of the third it has switched over to a new process of manufacture which is under development. In this paragraph we deal with the cost of only Chloroquin Phosphate.

28.11.2. The costs of this company were examined for the year ended 30th April, 1967 and it was found that the company has no system of costing for its products. No clear cut demarcation of production and service departments was available. Stores accounts were not valued for issues to various departments and no data on the time spent in respect of the diverse items were also available. In the circumstances, costs were compiled on the basis of the data furnished by the company in its reply to our questionnaire and discussions on costs held with its representatives.

28.11.3. The plant of the company has a capacity for 3000 kgs. of Chloroquin on double shift and its production during the costed year was 2729 kgs., which is 91 per cent of the capacity. As there is sufficient demand for this basic drug, we have considered it appropriate to adopt a higher production based on triple shift working. Accordingly, the production level of 3,800 kgs. has been adopted for projecting the future costs. Based on this

our estimates of cost and fair price for the future have been calculated as indicated below :

	Rs./Kg.
(a) Materials	158·38
(b) Conversion charges	60·35
(c) Total factory cost	218·73
(d) Packing	3·30
(e) Royalty	..
(f) Research	6·58
(g) Selling expenses	10·94
(h) Total cost	239·55
(i) Return	19·98
(j) Fair *ex*-works price	259·53
(k) existing selling price	275·00

28.11.4. **Materials.**—The company uses 4 imported chemicals and 12 indigenous chemicals in the manufacture of Chloroquin Phosphate. Of the imported chemicals, Diethyl Ethoxymethylene Melonate and Diamine constitute about 66 per cent of the total material cost, while one indigenous chemical, Methachloroaniline accounts for 17 per cent.

28.11.5. **Conversion charges.**—On the assumed higher production of 3800 kgs. the conversion charges have come down to Rs. 60.35 per kg. In estimating these charges, cognisance has been taken of the increase in wages/salaries with reference to grade increments, but no provision has been made for additional hands for working the third shift as the existing staff/labour is considered adequate for the third shift operation also.

28.11.6. **Packing.**—This has been provided at Rs. 3.30 per kg. in the future estimate.

28.11.7. **Royalty.**—The question of payment of royalty does not arise as the company has not entered into any collaboration agreement with other parties.

28.11.8. **Research and Development.**—The company incurred an expenditure of about Rs. 4.65 lakhs during the costed period in respect of (i) standardisation of all products ; (ii) quality control of materials ; (iii) development work ; and (iv) quality control of finished products and intermediates. The share relating to Chloroquin Phosphate has been estimated for the future at Rs. 25,000 per annum or Rs. 6.58 per kg.

28.11.9. **Selling expenses.**—The company's claim under this head amounted to Rs. 52.00 per kg. In our opinion this is very high. We have therefore decided to restrict the incidence to Rs. 10.94 per kg. which will be 5 per cent of total factory cost.

28.11.10. **Return.**—The return has been allowed at 15 per cent on capital employed.

28.12. Iodo-Chlor-Hydroxy-Quinoline

28.12.1. Iodo-chlor-hydroxy-quinoline has been licensed for manufacture under two categories, *viz.*, Iodo-chlor-hydroxy-quinoline and Di-iodo-hydroxy-quinoline. Under the first category, ten companies have been licensed in the large scale sector and 12 in the small scale sector. Of those 16 companies eight each in the large scale and small scale sectors have installed their capacities. As regards Di-iodo-hydroxy-quinoline, licences have been issued to ten units in the large scale sector and six in the small-scale sector and all have utilised capacity. For the purpose of cost assessment we have selected nine units in all. Among them, four units, *viz.*, Bengal Immunity, Biological Evans, Synbiotics and Gujarat Pharmaceutical have not commenced production so far ; two other units, Standard Pharmaceuticals and Bengal Chemical, had to be dropped for the reasons stated in Paragraph 28.1.1. Costs were therefore examined at three units only, East India Pharmaceutical Works, Alliance Trading Corporation and Neogy Laboratories, all of Calcutta. The last two companies belong to the small scale sector. None of the three companies has any costing system. In East India Pharmaceutical and Neogy Labs. records were, however, available from which cost of production could be developed on a fairly reasonable basis. But in Alliance Trading maintenance of records was far from satisfactory.

Even the value accounts for raw materials issued to manufacture were not maintained. Production records were also not available. Accordingly, costs have been calculated on the basis of the data furnished by the company and adjusted, wherever deemed necessary.

28.12.2. East India Pharmaceutical is a public limited company. The share holdings as on 31st December 1966 amounted to Rs. 23.75 lakhs. The company has no borrowings. In addition to Iodo-chlor-hydroxy-quinoline and Di-iodo-hydroxy-quinoline it manufactures other basic drugs also. The company has two plants, one for the manufacture of basic drugs and the other for formulations only. The installed capacity for the manufacture of the two basic drugs is 12,300 kgs. and 4,200 kgs. respectively per annum on single shift. During 1966, the unit worked two shifts for Iodo-chlor-hydroxy-quinoline and a single shift for Di-iodo-hydroxy-quinoline. The production of these two drugs during that year was 22,073 kgs. and 3,011 kgs. respectively. The plants for the manufacture of these two drugs are separate and production for the future has been assumed at 25,000 kgs. for Iodo-chlor-hydroxy-quinoline and 4,500 kgs. for Di-iodo-hydroxy-quinoline.

28.12.3. Alliance Trading manufactures basic drugs and formulations. Its share capital as on 31st December, 1966 was Rs. 93,000. The company produces Iodo-chloro-hydroxy-quinoline along with many other chemicals and drugs. The capacity of the plant for the manufacture of the drugs under examination was not furnished by the company as it is common for all chemicals. A rough indication was, however, given that for drugs the capacity utilisation may be assumed at 20 per cent of the aggregate capacity for all products. Production during 1966 was 7,441 kgs. As against this, the future production has been estimated at 7,470 kgs. per annum.

28.12.4. Neogy Labs. is a three-member partnership concern. The capital account of the partners as on 31st December, 1966 stood at Rs. 1.72 lakhs. The company manufactures both the basic drugs, Iodo-chlor-hydroxy-quinoline and Di-iodo-hydroxy-quinoline besides Bile Salts and Potasssium Iodide. It does not manufacture any formulation. The installed capacity for the basic drugs is stated to be 36,000 kgs. Production during 1966 was 6,538 kgs. of Iodo-chlor-hydroxy-quinoline, and 939 kgs. of Di-iodo-hydroxy-quinoline making a total of 7,477 kgs. The utilisation of capacity was very low at 20.8 per cent only and this has been explained by the company as due to inadequate import licence for Iodine and 8-Hydroxyquinoline. The company expects to get over the raw material difficulty in due course. We have, therefore, assumed in consultation with the representative of the company the future production at 20,000 kgs. of Iodo-chlor-hydroxy-quinoline and 10,000 kgs. of Di-iodo-hydroxy-quinoline.

28.12.5. The estimates of future costs and prices for the costed units, in respect of both the basic drugs are set out in the following Table :

	East India Pharmaceuticals	Alliance Trading	Neogy Labs.
	Rs./Kg.	Rs./Kg.	Rs./Kg.
(a) Materials	34·37	28·10	36·17
(b) Conversion charges . . .	26·24	11·28	4·91
(c) Total factory cost . . .	60·61	39·38	41·08
(d) Packing	..	0·40	0·40
(e) Royalty	..	..	..
(f) Research	..	..	..
(g) Selling expenses	..	1·99	..
(h) Total cost	60·61	41·77	41·48
(i) Return	5·07	3·28	3·70
(j) Fair *ex*-works price . . .	65·68	45·05	45·18
(k) Weighted average fair price of Alliance Trading and Neogy Lbs.			45·16

28.12.6. **Materials.**—The raw material costs for the future show a small fall at East India Pharmaceutical and Alliance Trading. The former uses Phenol as the basic raw material for the manufacture of Iodo-chlor-hydroxy-quinoline and 8-Hydroxyquinoline for Di-iodo-hydroxy-quinoline. Alliance Trading on the other hand uses Oxyquinoline for the manufacture of Iodo-chlor-hydroxy-quinoline. Neogy Laboratories develops both Iodo-chlor-hydroxy-quinoline and Di-iodo-hydroxy-quinoline from the same material, *viz.*, 8-Hydroxyquinoline. The total cost of raw materials at Neogy Labs. shows an increase of about 29 per cent, over the actual period because of higher cost of imported materials.

28.12.7. **Conversion costs.**—Despite an increase of 13 per cent in the level of production assumed for East India Pharmaceutical the conversion cost of Iodo-chlor-hydroxy-quinoline

shows little variation. This is because the economies of larger production have been off-set by increases in dearness allowance and wages of all categories of employees effected last year. In Alliance Trading the conversion cost has remained almost the same. There is no increase in the output of the company either. In Neogy Labs. on the other hand, the operating cost shows a substantial reduction as no addition to staff and labour is envisaged to achieve the higher estimated output.

28.12.8. **Packing.**—Packing expenses are incurred by Alliance Trading and Neogy Labs. only, as East India Pharmaceutical does not sell the product to outside parties. The cost of packing is estimated at Re. 0.40 per kg. both for Alliance Trading and Neogy Laboratories.

28.12.9. **Royalty, Research and Selling expenses.**—There is no expenditure under royalty and research in all the three companies. As regards selling, East India Pharmaceutical consumes the entire output in preparing formulations in its own department. As such, it does not have any selling expenses on the basic drugs. At Alliance Trading, the selling expenses of Iodochlor-hydroxy-quinoline have been restricted to Rs. 1.99 per kg. Neogy Labs. sells its products through a selling agent at varying rates without any commission. The rates are fixed by negotiation. On a few occasions the products are sold direct to consumers on which the company pays a commission not exceeding 10 per cent. No expenses are therefore involved in the marketing of this basic drug.

28.12.10. **Return.**—Provision for return has been made at 15 per cent on the employed capital.

28.12.11. **Bulk Price.**—We would have wished to adopt the cost of the unit which manufactures this drug from the basic raw material *viz.* Phenol or other locally available raw material but this was not possible because the only unit which manufacture this drug from Phenol is East India and it does not market the drug at basic stage. The bulk price has therefore been computed at Rs. 45.16 per kg. by taking the weighted average of the fair selling prices of Alliance Trading and Neogy Labs. East India Pharmaceutical has been excluded as it does not market this basic drug.

28.13. **Chlorpropamide**

28.13.1. This product is manufactured by Pfizer Ltd., at its Chandigarh Plant, Punjab. Besides this drug, the factory also produces other basic drugs, such as, broad spectrum antibiotics

viz., Oxy tetracycline and Tetracycline. Chlorpropamide is marketed under the trade name of 'Diabinese'. This organisation, in addition to these basic drugs also markets several other products such as vitamins, nutritional preparations, diabetic agents, general tonics, tranquilisers, steroid, hormone preparations, animal health products and agro-chemicals. In addition to Pfizer, two other companies also produce Chlorpropamide, *viz.*, Albert David and Bengal Chemicals and the production at these units was only about 0.15 tonne in 1966. Therefore, only Pfizer has been selected for cost study which has a large capacity and should indicate fair production costs.

28.13.2. Pfizer is a public limited company with a share capital of Rs. 266 lakhs, for which Pfizer Corporation of Panama, the parent company, holds shares of the value of Rs. 200 lakhs. The company maintains a good system of costing and cost data were examined for the year ended 30th November, 1966.

28.13.3. **Capacity and production.**—The present installed capacity of Pfizer is 15 tonnes of Chlorpropamide on three shift working. Production commenced in September 1965 and reached 12.2 tonnes in 1965-66. The company has stated that this level could not be maintained in future because in 1965-66 there was an export demand for this product of about 4.6 tonnes, which is not likely to repeat itself. According to the company, the future production would at best be only 7.6 tonnes per annum and it has suggested that estimates of costs to be of any realistic value should be based on this level. We have accepted the Company's estimate of production in calculating the future cost.

28.13.4. Our estimates of cost and price for the future are summarised in the following table :—

	Rs./Kg.
(a) Materials	49·02
(b) Conversion charges	33·51
(c) Total factory cost	82·53
(d) Packing	—
(e) Royalty	—
(f) Research	—

	Rs./Kg.
(g) Selling expenses	..
(h) Total cost	82·53
(i) Return	13·07
(j) Fair *ex*-works price	95·60
(k) Existing Selling Price	No price fixed.

28.13.5. It was observed that Triethylonine (imported) and Acetic Acid (indigenous) were procured by other producers at a lower cost. We have decided to adopt the lower rate for material valuation. The cost of imported components is Rs. 42.46, out of this total material cost of Rs. 49.02. Parachlorobazen sulphamet is imported at Rs. 27.27 per kg. we were advised that it can be produced indigenously from chlorosulphanium acid ammonia at about Rs. 12 per kg. The cost of prophylobymide Rs. 53.36 is also on the high side and it is expected that with judicious selection of sources of supply it could be substantially reduced.

28.13.6. Estimates of conversion charges are, in our opinion, very high as the process of manufacture of this drug is very simple and involves one step in processing. We have similarly adjusted the actual costs suitably to account for grade increments and additional amounts payable to the workmen and staff on account of labour agreement. The revised conversion cost has worked out to Rs. 33.51 per kg.

28.13.7. **Packing, Research and Selling.**—As this drug is not sold outside, and no research is involved, we have not allowed any amount under the heads.

28.13.8. **Return.**—Return has been allowed at 15 per cent on capital employed.

28.14. **Tolbutamide**

28.14.1. Only two units, Hoechst Pharmaceuticals Ltd. and Haffakine Institute, both of Bombay, manufacture this basic drug out of the five units licensed. One unit has surrendered the licence while the other two, Unichem Laboratories, Bombay and Albert David (India) Ltd., Calcutta have suspended production. For the purpose of cost study only Hoechst has been selected by us. The company maintains detailed records of costs which have been examined for the year ended 31st December 1966.

28.14.2. The installed capacity of Hoechst for the Manufacture of Tolbutamide is 36 tonnes per annum on single shift but its production has been far below this level. During the costed period the production attained was 24.5 tonnes the highest ever attained representing about 68 per cent of the capacity. This underutilisation of capacity was mainly due to the closure of the plant for over six months in 1966. We understand that the domestic demand for Tolbutamide is about 25 tonnes a year. As Hoechst is the only company which at present caters to the demand on a large scale the level of production has been adopted at 20 tonnes in working out the future estimates.

28.14.3. The ex-works cost and price for the future which have been developed on the assumed production of 20 tonnes are shown below :—

	Rs./Kg.
(a) Materials	43·56
(b) Conversion charges	23·49
(c) Total factory cost	67·05
(d) Packing	0·48
(e) Royalty	..
(f) Research	..
(g) Selling expenses	..
(h) Total cost	67·53
(i) Return	6·63
(j) Fair *ex*-works selling price	74·16
(k) Existing selling price	No price fixed.

28.14.4. **Materials.**—During the costed period of the chemicals used for the production of the basic drug, two items accounted for about 99.4 per cent of the total cost of the materials. As the materials cost claimed by the company for the future showed an increase of about 41.5 per cent we have, in consultation with the Assessors, restricted the cost of materials to the levels of the actual period.

28.14.5. **Conversion charges.**—On a larger production of 20 tonnes the conversion charges have gone down by about 5

per cent and they have been estimated at Rs. 23.49 per kg. for the future. Even this cost was felt to be high since one step is only needed for the conversion of the raw materials into the finished product.

28.14.6. **Packing.**—Tolbutamide is used exclusively by the manufacturer in his own formulations. Therefore, the cost of packing allowed at Re. 0.48 per kg. is in respect of packing materials used for storage before the chemical is used for formulation.

28.14.7. **Royalty, Research and Selling expenses.**—There has been no expenditure under these heads.

28.14.8. **Return.**—This has been allowed at 15 per cent on capital employed.

28.15. **Insulin**

28.15.1. Boots Pure Drugs Company (India) Ltd., Bombay produces Insulin under a "manufacturing" agreement with Boots Pure Drug Co. Ltd., Nottingham, England. The Indian company has another agreement with its U.K. principals for the supply of "know-how and technical assistance" for the manufacture of crystalline Insulin and its formulations.

28.15.2. The company has a fairly good system of maintaining its data for developing costs of its products. 'Standard Costing' is being evolved and is expected to come into force shortly. Accounts for the year ended 31st December 1966 were examined for determining the actual costs.

28.15.3. The licensed capacity of the plant for crystalline Insulin is 1080 mega units (1500 M.U. strength) on three shift working. During 1966, it achieved a production of 458 M.U. of plain crystalline Insulin. The lower production at 42 per cent was attributed mainly to teething troubles. Since Boots is the only unit manufacturing this vital life saving drug in India, it is essential that the company should exploit its full capacity. But due to non-availability of the basic raw material, *viz.*, pancreas, it had to restrict its output to 820 m.u. only of Plain Crystalline Insulin representing capacity utilisation to the extent of 76 per cent.

28.15.4. Insulin is obtained from pancreas glands of cattle by mincing and processing them in alcohol to extract the hormone. Pancreas glands are obtained from beef canners in America. As secretion of Insulin diminishes with age, cattle is slaughtered

while it is two year old. 1800 animals are required to obtain half a tonne of Pancreas glands and processed with a thousand gallons of alcohol, it will yield only a few ounces of crystalline powder. Further, Pancreas being liable to decomposition by exposure, they have to be shipped as refrigerated cargo and again in refrigerated van from the port of landing to the factory's cold storage. Upto the fifth day of processing, the extent of Insulin content in the pancreas cannot be assessed. It has been brought to our notice by the company that there have been instances when the entire quantity of pancreas set for processing was found to contain no Insulin at all. Further, no scientific or technological tests are stated to have so far been discovered to determine the content of Insulin before the pancreas are put on the processing channel, so that the manufacturer could usefully undertake the venture and avoid the inevitable losses.

28.15.5. Our estimate of future fair ex-works price has been developed as indicated in the following table :—

	Rs./m.u.
(a) Materials	2,778·66
(b) Conversion charges	1,308·16
(c) Total factory cost	4,086·82
(d) Packing	8·54
(e) Royalty	..
(f) Research	109·76
(g) Selling expenses	235·12
(h) Total cost	4440·24
(i) Return	696·32
(j) Fair ex-works price	5,136·56
(k) Existing selling price	5,000·00

28.15.6. **Materials :**

28.15.6.1. Of the raw materials used in the manufacture of Insulin, three are imported and four obtained indigenously. In the total raw material cost of Rs. 2778.66 per m.u., the imported materials account for 90.9% and the balance of 9.1% is represented by the indigenous materials. The cost of raw materials has gone up by 69.5% in the estimate over 1966.

28.15.6.2. During 1966, the entire quantity of pancreas was imported from the United States of America. The world supply of Ox's pancreas is arranged from the U.S.A. according to a distribution plan determined by the suppliers. The Indian quota being a limited one, the company was exploring possibilities of using pancreas from other sources. Although pancreas of Australian origin were found to contain Insulin next best to the U.S.A., their yield is said to be very poor, being only 2300 units per kg. of pancreas as against 4200 units from American pancreas. For achieving the increased production in future, the company proposes to meet the shortfall in the American supplies by supplementing from Australian sources. Supplies of pancreas from America are expected to be of the order of 140,000 kgs. per annum and the balance from Australia. Rise in the cost of indigenous raw materials is ascribed mainly to their prices and, to some extent, also to the higher usage factor.

28.15.6.3. It needs to be mentioned that prices of imported Insulin are about one-third the indigenous price of the finished drug. The cost of pancreas alone is about 47 per cent of the fair ex-works price. The total cost of the imported raw material works out to more than 50 per cent of the total ex-works price and it was suggested to us that it would be cheaper to import all the Insulin needed instead of importing the raw material and processing it at a very heavy cost.

28.15.7. **Conversion Charges.**—The conversion charges have been estimated at Rs. 1308.16 per m.u. which shows an economy of about 15 per cent only for an increase in the estimated production by 79 per cent. A greater economy would be possible if American pancreas which has a higher yield, are available to meet the entire requirements of the company. But as stated earlier, supplies from this source are limited.

28.15.8. **Packing.**—On an increased production the cost of packing has come down and is estimated at Rs. 8.54 per m.u.

28.15.9. **Royalty.**—Although under the manufacturing agreement the Indian company was expected to pay Royalty to the English company on all goods manufactured or packed the operation of this clause was waived in the case of Insulin.

28.15.10. **Research.**—Research contribution upto a maximum of £ 5000 is payable (in Sterling) at Nottingham on the basis of 3 per cent of the sales value of manufactured bulk crystalline Insulin sold or used in its modified form of other Insulin

formulations. After adjusting for the devalued Sterling, the incidence works out to Rs. 109.76 per m.u. of Insulin for the future.

28.15.11. **Selling expenses.**—The incidence of selling expenses per m.u. of Insulin works out to Rs. 235.12 showing an economy of about 31 per cent in the estimate over 1966.

28.15.12. **Return.**—Return at 15 per cent on employed capital has been provided in the estimate for the future price which works out to Rs. 696.32 per m.u.

28.16. Isonicotinic Acid Hydrazide (I.N.H.)

28.16.1. As many as 18 companies, 14 in the large-scale sector and 4 in the small-scale sector, were licensed for manufacture of I.N.H. in the country. By the end of 1967, 9 units in the large scale sector and 2 in the small scale sector had installed their capacities. Of these, the following seven units were selected for cost study, viz., Bengal Chemical, Bengal Immunity, Biological Evans, Pfizer and Synbiotics in the large scale sector and Gujarat Pharmaceuticals and Suneeta Laboratories in the small scale sector. But our cost study had ultimately to be confined to three units only, Biological Evans, Pfizer and Suneeta Laboratories, as the relevant data were not available for the other selected units. While Synbiotics has suspended production, Gujarat Pharmaceuticals is yet to commence manufacture. As stated earlier, data available at Bengal Chemical could not be used for a proper cost analysis. The technique of manufacture was being changed at Bengal Immunity but the full particulars of the modified process were not available to project the future estimates. Biological Evans and Pfizer maintained a good costing system. Although no such accounting system exists in Suneeta Laboratories, data were available to develop costs on a fairly reasonable basis.

28.16.2. I.N.H. can be produced from either Gamma Picoline or 4. Cynopyridine as the basic chemical. Although it will be more expensive to produce from Gamma Picoline, Biological, Evans and Pfizer use this material. In Suneeta Laboratories I.N.H. is developed from 4. Cynopyridine. We are informed that Biological Evans wes contemplating to switch over to the use of 4. Cynopyridine, but this could not be implemented as the Government of India have already set up a plant to manufacture Gamma Picoline in the country.

28.16.3. Cost data at Biological Evans were examined for the half year ended 30th June 1967. While the installed capacity

of this unit is 8,000 kgs. a year, the production during the costed period was very low at 880 kgs. due reportedly to lack of demand for the product. But during the next three years production of I.N.H. is expected to be maintained at 10 tonnes per annum and we have adopted this production level for calculating the future estimate of cost. The company has also approached Government for revising its capacity as its plant is capable of giving a higher output.

28.16.4. The costs at Pfizer were examined for the year ended 30th November 1966. The production of I.N.H. during that year was 23,900 kgs. at the Bombay plant as against its installed capacity of 38 000 kgs. per annum. The unit worked single shift upto August 1966 and double shift thereafter. The future production on I.N.H. has been estimated at 70,000 kgs. for this company.

28.16.5. Production of I.N.H. in Suneeta Laboratories was commenced in January 1967. Compared to its installed capacity of 24,000 kgs. per year it has manufactured only 3,140 kgs. during the 18 months ended 30th September 1967. Even from this small volume of output about 1,700 kgs. could not be disposed of by October 1967. The disproportionately low offtake was attributed by the company to the glut of imported material in the market. The demand is believed to be picking up and the management expects to gear up the production to its capacity level of 24,000 kgs. in 1967-68, stepping it upto 48,000 kgs. by 1969-70. The average annual production of 36,000 kgs. for the next three years has been taken for developing the future costs for this unit.

28.16.6. Our estimates of future costs and prices in respect of the three companies developed on the production levels mentioned above are set out in the following Tables :—

	Biological Evans	Pfizer	Suneeta Labs.
1	2	3	4
	Rs./Kg.	Rs./Kg.	Rs./Kg.
(a) Materials	48·52	57·82	42·09
(b) Conversion costs	27·42	39·62	4·67
(c) Total factory cost . . .	75·94	97·44	46·76

1	2	3	4
(d) Packing	0·34	..	1·10
(e) Royalty	2·67	..	..
(f) Research	0·83	1·51	..
(g) Selling expenses	2·81	..	0·54
(h) Total cost	82·59	98·95	48·40
(i) Return	8·99	8·66	3·39
(j) Fair *ex*-works price . . .	91·58	107·61	51·79
(k) Existing selling price . . .	80·00	..	80·00

28.16.7. **Materials.**—Cost of raw materials showed only marginal variations between the actuals and the future estimates in the case of Pfizer and Suneeta Laboratories, while in the case of Biological Evans no variation is anticipated as the actual cost for the half year was based on the latest purchase prices.

28.16.8. **Conversion Charges.**—While in Suneeta Laboratories the conversion cost will come down steeply in the future it will remain practically unchanged in the case of Biological Evans and will increase slightly in the case of Pfizer despite their higher production levels in future. The reasons are given below. As Suneeta Laboratories had the full complement of staff/labour during the costed period despite its highly restricted output, no major addition under these heads is contemplated for the future although the production is expected to increase several fold. Further, the plant and equipment in this unit were mostly manufactured by its own engineers in its own Works and therefore the incidence of depreciation is comparatively low. In Biological Evans the economies to be gained from fixed and semi-fixed expenses will be offset by the additional expenditure on account of normal grade increments in wages and salaries and the additional personnel required for the assumed higher production. As regards Pfizer, the economies expected from increased production will be more than nullified by the provision of an additional incidence of Rs. 8 per head to be paid under an agreement entered into with the Workers' Union in March 1968. Further, under this new agreement, the company has to provide certain transport facilities to its workers, for which purpose it will have to incur additional expenditure to acquire and maintain additional vehicles.

28.16.9. **Packing.**—Of the three companies, Pfizer does not sell I.N.H. to any outside party. Hence no packing charge is incurred by it. The cost of packing at Biological Evans has been estimated at Re. 0.34 and at Suneeta Laboratories at Rs. 1.10 per kg.

28.16.10. **Royalty.**—Royalty is payable only by Biological Evans which has a collaboration with Bracco Industria Chemica, Milano, Italy, for manufacture of I.N.H. Royalty is payable on the current bulk price at 3.3 per cent and has been allowed in our estimate.

28.16.11. **Research.**—Research expenses have been allocated at Re. 0.83 per kg. at Biological Evans and Rs. 1.51 per kg. at Pfizer. At Suneeta Laboratories it was stated that its research laboratory is maintained essentially for its aromatic products. Whatever experiment has to be done for I.N.H., it is invariably in the nature of quality control. Therefore, no share of research expense incurred by Suneeta Laboratories has been allocated to I.N.H.

28.16.12. **Selling expenses.**—I.N.H. is being sold to other formulators by Biological Evans and Suneeta Laboratories. The quantum of selling expenses amounts to Rs. 2.81 per kg. at the former and Re. 0.54 at the latter. The difference in the proportion of selling expenses between the two companies may be due to the fact that Biological Evans is in the large scale sector while Suneeta Laboratories belongs to the small scale sector. Suneeta Laboratories has a sales office at Bombay which handles sales of all the eight drugs it manufactures. The expenses allocable to I.N.H. has been estimated on the basis of selling effort needed for this product.

28.16.13. **Return :**

28.16.13.1. This has been provided at 15 per cent on the employed capital which works out to Rs. 8.99 for Biological Evans, Rs. 8.66 for Pfizer and Rs. 3.39 for Suneeta Laboratories.

28.16.13.2. In view of the fact that Government have already established capacity for Gamma Picoline and Suneeta Laboratories will have to switch over to the use of this basic chemical in course of time, we have adopted the fair ex-works price estimated for Biological Evans as the bulk price for the industry. This works out to Rs. 91.58 per kg.

28.17. Para-Aminosalicylic Acid (P.A.S.)

28.17.1. Government have issued licences to six companies to manufacture P.A.S., of which four have installed their capacities. They are Bio-Chemical and Synthetic Products Ltd., Hyderabad, Biological Evans Ltd., Hyderabad, Pfizer Ltd., Bombay and Wander Pharmed Ltd., Bombay. All the four companies were selected for cost investigation. Although no regular system of cost accounting exists in both Biosynth and Wander, data were available to develop costs on a fairly reasonable basis. Biological Evans and Pfizer, however, have a good costing system.

28.17.2. Under an agreement entered into by Biochemical and Synthetic with Cilag-Hind Ltd., in 1952, the latter undertook the manufacture of P.A.S. and its salts from November 1966. From 1st January 1968, Biochemical and Synthetic has taken over the production and sales of P.A.S. Against the present capacity of 120,000 kgs. per annum the future average production of Sodium P.A.S. has been estimated at 125,000 kgs. per annum, as the company does not anticipate any difficulty in selling the entire production.

28.17.3. The licensed capacity of Biological Evans is 50,000 kgs. per annum. As the installed plant is capable of yielding a higher output, the company has already approached Government for reviewing its capacity. Therefore, against the actual production of 24,715 kgs. of Sodium P.A.S. during the first half of 1967, the future production has been adopted at 60,000 kgs.

28.17.4. In the case of Pfizer, the present installed capacity is 60,000 kgs. As against this, the production duiring 1965-66 was 74,700 kgs. The factory is undergoing expansion and it was stated that the total licensed capacity after expansion, which will be effective from 1968/69, will be 110,000 kgs. per annum. Against this the estimated production for future has been reckoned at 100,000 kgs. which indicates about 90 per cent utilisation of the capacity.

28.17.5. Wander went into production of Sodium P.A.S. in September 1964. It has realised more than its full installed capacity of 90,000 kgs. by producing 102,717 kgs. in 1965 and 103,959 kgs. in 1966. With the turn of the year, the company's manufacturing activity received a setback due to the glut of imported P.A.S. in the market. The factory had eventually to lay off in July 1967 when its production had reached 44,600 kgs. In the

meantime, the company had approached Government for increasing its capacity. Taking into consideration the achieved production and also the demand for this drug, we have assumed future production at 100,000 kgs. per annum for this unit.

28.17.6. We have developed our estimates of future costs for all the four units as indicated below :—

	Biochemical and Synthetic	Biological	Wander	Pfizer	Weighted average excluding Pfizer
	Rs./Kg.	Rs./Kg.	Rs./Kg.	Rs./Kg.	Rs./Kg.
(a) Materials . .	21·38	20·87	20·92	24·90	21·11
(b) Conversion cost .	4.38	6.70	7·52	9·94	5·97
(c) Total factory cost . . .	25·76	27·57	28·44	34·84	27·08
(d) Packing . .	0·43	0·34	0·03	0·95	0·27
(e) Royalty . .	..	..	1·60	..	0·56
(f) Research . .	0·20	0·28	..	0·51	0·15
(g) Selling expenses .	0·48	1·24	0·41	1·74	0·62
(h) Total cost .	26·87	29·43	30·48	38·04	28·68
(i) Return . .	1·97	2·54	3·45	3·79	2·60
(j) Fair *ex*-works price	28·84	31·97	33·93	41·83	31·28
(k) Existing selling price . .	..	32·00	35·60	48·00	..

The total costs are comparable for three companies, *viz.* Biochemical and Synthetic, Biological Evans and Wander and they vary from Rs. 26.87 to Rs. 30.48 per kg. As against this, the total cost at Pfizer was Rs. 38.04. The reason for variation is attributable to the fact that Pfizer manufactures P.A.S. acid and not Sodium PAS.

28.17.7. **Materials.**—Cost of raw materials in all the units do not show any substantial variation between the actual period and those estimated for future. It was, however, observed that whereas the cost of material increased from Rs. 22.85 to Rs. 24.90

in the case of Pfizer, it came down from Rs. 21.51 to Rs. 20.92 in the case of Wander. The major difference in Pfizer may be attributed to the unit cost of imported Meta-Amino Phenol which was procured at Rs. 15.78 per kg. during 1965-66 in comparison with Rs. 16.15 for the future and the price of indigenous Activated Carbon rose from Rs. 2.41 to Rs. 3.41 per kg. during the same period. Another material which shows a steep rise in the rate of procurement is Calcium Phosphate Diabasic which rose from Rs. 3.33 to Rs. 7.50. It is pertinent to note that the rate of imported Meta-Amino Phenol has varied from company to company ranging from Rs. 16.15 in the case of Pfizer to Rs. 18.58 in the case of Wander.

28.17.8. **Conversion charges.**—While the conversion charges estimated for the future show a fall of 21.8% and 6.0% in the case of Biochemical and Synthetic and Wander respectively, they have remained the same at Biological Evans but have gone up in the case of Pfizer by 6.2%. The economies earned on account of larger production at Pfizer were more than set off by the additional liability becoming due on account of agreement with workers' union.

28.17.9. **Packing and Royalty.**—Packing costs vary from Re. 0.03 per kg. in the case of Wander to Re. 0.95 in the case of Pfizer. The former's packing cost is low because it re-uses the drums in which the raw material *viz.*, Meta-Amino Phenol, is imported for packing the manufactured Sodium P.A.S. Royalty is payable only by Wander to its collaborators at 5 per cent on the amount invoiced by the company to its customers based on factory prices. Appropriate amount has been provided in the cost.

28.17.10. **Research and Selling expenses.**—Research and selling expenses have been suitably included in the costs. No research expenditure is, however, incurred by Wander Pharmed. Wherever selling expense was more than 5 per cent of the factory cost it was restricted to 5 per cent.

28.17.11. **Return.**—Return has been allowed at 15 per cent on capital employed.

28.17.12. **Bulk price.**—As Pfizer does not manufacture Sodium P.A.S., we have decided to exclude its cost and determine the bulk price on the basis of the weighted average of the fair prices of the other three costed units, which have been worked out to Rs. 31.28 per kg.

28.18. Tetanus Anti-toxin (A.T.S.)

28.18.1. Six units were licensed to manufacture Tetanus Anti-Toxin, *viz.*, Bengal Chemical, Bengal Immunity, Dey's Medical, Chowgule & Company, Haffkine Institute, and Biological Evans. Of these, it is understood that Chowgule & Co. has not yet established its factory. Of the remaining five, production was negligible at Bengal Chemical. Costs were therefore studied in respect of three units, *viz.*, (i) Bengal Immunity—the largest producer of this drug; (ii) Biological Evans; and (iii) Haffkine Institute whose installed capacities were stated to be 9449, 1200 and 3000 Mega Units (M.U.) respectively.

28.18.2. The cost of production was found to be excessive at the Haffkine Institute and it presented certain abnormalities. Therefore, the costs at this unit have been excluded from the purview of our study. The costs at Bengal Immunity and Biological Evans have been taken into account for a comparative assessment.

28.18.3. In addition to Tetanus Anti-toxin, Bengal Immunity produces Chloroquin Phosphate and Isoniazid (I.N.H.) as well as formulations from various items. Biological Evans has set up a separate unit at Hyderabad for the production of Anti-Tetanus Serum. While Bengal Immunity has no collaboration with any foreign firm, Biological Evans has a collaboration agreement with Evans Medical Ltd., Liverpool, U.K. and two other agreements with other firms for the development of other products. As far as Anti-Tetanus Serum is concerned, this is not covered by any of the agreements and, therefore, no Royalty is payable in respect of this drug.

28.18.4. **Capacity and production.**—The capacity at Bengal Immunity *viz.*, 9,449 mega units is equivalent to 3200 litres of sera on single shift basis and the production during 1966/67 was 1,324 litres of sera which represented utilisation of capacity of 41%. The low utilisation was attributed to liberal import of finished sera and the limited demand for the domestic product. Biological Evans imported sera in the early part of 1967 and processed it into A.T.S. formulations. However, the company has set up a stable in the meantime for extracting blood for producing the sera. The capacity of 2160 mega units at this plant is equivalent to 720 litres. Production during the half year ended 30th June 1967 was on an experimental scale. In working out our estimates production has been assumed at 7,000 m.u. for Bengal Immunity and 2,160 m.u. for Biological Evans.

28.18.5. Based on the above levels of output, estimates of costs have been prepared for the future and are set out in the following table :—

	Bengal Immunity	Biological Evans
	Rs./m.u.	Rs./m.u.
(a) Materials	404·15	199·97
(b) Conversion charges	124·59	86·75
(c) Total factory cost	528·74	286·72
(d) Packing	..	..
(e) Royalty	..	..
(f) Research	..	..
(g) Selling expenses	..	..
(h) Total cost	528·74	286·72
(i) Return	44·41	37·76
(j) Fair selling price	573·15	324·48
(k) Existing selling price	No price fixed.	

The estimated cost of Anti-Tetanus-toxin for Bengal Immunity is Rs. 528.74 and that for Biological Evans Rs. 286.72 per m.u. This variation is attributable to the fact that Biological Evans has lower costs of material as well as conversion in comparison with the other company. This was possible because of the higher yield factor. The yield at Bengal Immunity was 9.1 m.u. per horse, while in Biological Evans it was 21.6 m.u. During the discussions the representatives of the latter company emphasised that as soon as they were able to fully stabilise their production of A.T.S. on a commercial scale the cost will further come down and the economies achieved thereby will be passed on to the consumers in the shape of reduction in the selling prices of A.T.S. formulation.

28.18.6. **Materials :**

28.18.6.1. Rates of materials both imported and indigenous for Bengal Immunity during 1966-67 and for the future have, by

and large, remained the same except for Pepsin the price of which has fallen by a small margin. But this has been more than off set by an increase in feeding charges.

28.18.6.2. In the case of Biological Evans, while during the costed period, A.T.S. was formulated out of imported serum, the company was trying to develop its own production of A.T.S. during January—June 1967. It expects to use 3 items of imported materials and 28 indigenous materials the costs of which have been provided in our future estimate at Rs. 1.26 and Rs. 21.49 per M.U. of A.T.S. respectively. The company has its own stable of horses. The cost of their maintenance has been estimated at Rs. 135.55 per m.u. against Bengal Immunity's at Rs. 282.63.

28.18.7. **Conversion charges.**—Mainly due to an assumed production increase of 94 per cent over the costed period, the conversion charges of Bengal Immunity show a decrease from Rs. 203.98 to Rs. 124.59 per m. u. In the case of Biological Evans the conversion charges are determined at Rs. 86.75 per m. u. on the basis of technical estimates made by the company.

28.18.8. **Packing, Research, Royalty and Selling expenses.**—These items do not apply. Both Bengal Immunity and Biological Evans do not sell the bulk serum to outside parties.

28.18.9. **Return.**—This has been provided at 15 per cent on capital employed which works out to Rs. 44.41 per m.u. in the case of Bengal Immunity and Rs. 37.76 per m.u. in the case of Biological Evans. No ex-factory price is suggested since this drug is not sold in bulk but only in formulations by all the manufacturing units.

28.19. **Prednisolone :**

28.19.1. Prednisolone is now being manufactured only by Wyeth Laboratories Ltd., Bombay as the other two units which had installed their capacities, namely, Glaxo Laboratories (I) Pvt. Ltd., and Merck Sharp and Dhome of India Ltd., both of Bombay, have since suspended its production. Wyeth Labs. has a collaboration agreement with American Home Products Corporation, New York, which has invested Rs. 55 lakhs in the total share capital of Rs. 75 lakhs (*i.e.* 73.33%). Besides manufacturing the basic drug, the Indian company also formulates Prednisolone tablets and other products in its formulation department. It has a regular system of budgetary control and costs were examined for the year ended 31st October, 1966.

28.19.2. The installed capacity is 600 kgs. of Prednisolone per annum on three shift working. Although the production during 1965-66 was 482.5 kgs. as the plant is capable of giving a higher production than the stated capacity, we have decided to adopt in consultation with the representatives of the company, a higher production level of 650 kgs. per annum for calculating the future fair ex-works price.

28.19.3. Our estimates of future cost and price developed on an annual production of 650 kgs. are summarised as under :—

	Rs./Kg.
(a) Materials	5,166·91
(b) Coversion charges	5,415·38
(c) Total factory cost	10,582·29
(d) Packing	12·63
(e) Royalty	..
(f) Research	..
(g) Selling expenses	..
(h) Total cost	10,594·92
(i) Return	1,351·29
(j) Fair *ex*-works price	11,946·21
(k) Existing selling price	16,800·00

28.19.4. **Materials.**—The company uses 19 imported materials, 27 indigenous materials and roots which account for 56.4 per cent, 25.6 per cent and 18.0 per cent of the total cost of materials respectively. The important imported materials are Acetic Anhydride Chloroform, Activated Carbon, Methylane Chloride, H. Br. gas, Raney Nickel Catalyst, Beef Extract, Iodine and Toluene. Among the indigenous materials mention may be made of Acetic Acid Glacial, Methanol and Bromine. As regards roots, the price claimed by the Company seems to be high in view of the fact that we have evidence of the roots being available at comparatively lower cost. We have, however, allowed the cost of roots at the level obtaining during the actual period, *viz.*, Rs. 2.48 per kg., even though we were provided with evidence to indicate that even this rate is high.

28.19.5. **Conversion charges.**—This element works out to Rs. 5415.38 per kg., showing an economy of 14 per cent for a production increase of 35 per cent over the 1965-66 level.

28.19.6. **Packing.**—The cost of packing has been kept at the same level as in 1965-66 *i.e.*, at Rs. 12.63 per kg.

28.19.7. **Royalty and Research.**—The Company has no liability to pay any Royalty to its collaborators as they have a participation in the company's share capital. No expense has been incurred on research.

28.19.8. **Selling expenses.**—No selling expenses have been allocated to the bulk drug sales as the company has stated that practically no sales effort is involved for Prednisolone as a basic drug.

28.19.9. **Return.**—The return has been allowed at 15 per cent on employed capital.

28.20.1. As a result of the analysis undertaken in the preceding paragraph we have finally arrived at the following fair ex-works prices :—

TABLE 28.2

Fair ex-works selling prices recommended for basic drugs

1.	Vitamin A	Rs. 391·00 per 1000 m.u.
2.	Vitamin B12	Rs. 113·84 per gm.
3.	Vitamin C	Rs. 72·70 per kg.
4.	Sulphadiazine	Rs. 58·89 per kg.
5.	Penicillin Potassium G	Rs. 0·351 per m.u.
6.	Sodium Penicillin G	Rs. 0·399 per m.u.
7.	Procaine Penicillin	Rs. 0·336 per m.u.
8.	Potassium Penicillin V	Rs. 0·537 per m.u.
9.	Streptomycin	Rs. 285·00 per kg.
10.	Chloramphenicol	Rs. 357·66 per kg.
11.	Tetracycline	Rs. 709·25 per kg.
12.	Amodiaquin	Rs. 106·91 per kg.

TABLE 28.2—*Contd.*

13.	Chloroquin Phosphate . . .	Rs. 259·53 per kg.
14.	Iodo-chlor-hydroxyquinoline . .	Rs. 45·14 per kg.
15.	Chlorpropamide	Rs. 95·60 per kg.
16.	Tolbutamide	Rs. 74·16 per kg.
17.	Insulin	Rs. 5,136·56 per m.u.
18.	I.N.H.	Rs. 91·58 per kg.
19.	P.A.S.	Rs. 31·28 per kg.
20.	P.A.S. Acid	Rs. 41·83 per kg.
21.	Tetanus Anti-toxin	No price fixed
22.	Prednisolone	Rs.11,946·21 per kg.

28.20.2. In some cases fair ex-works price of a unit manufacturing the same drug may be higher but we expect that with suitable economies in the cost of material as well as conversion or operational efficiencies of the process the high cost unit will also be able to achieve lower cost of production.

CHAPTER 29

ESTIMATES OF COSTS AND FAIR EX-WORKS PRICES OF FORMULATIONS

29.1. The costs of formulations have been developed more or less on lines similar to those adopted in the case of basic drugs. In assessing costs the usage factor for materials has been allowed as per company's formulae and valued at appropriate prices. The conversion charges have been suitably modified to take into account the variations in the levels of estimated production, grade increments, known increases in labour charges on account of awards, etc. Packing cost has been developed on the basis of the existing packing methods. The incidence of selling expenses varies from company to company and is, in our view, rather on the high side. We have therefore restricted the selling expenses to a level equivalent to 15% of the total factory cost for reasons given in chapter 30.

29.2. In the computation of return, however, a departure has been made. Formulations are manufactured by units both big and small, housed in own buildings or in rented premises or even in a small size laboratories. There are units whose investments are not substantial or commensurate with the volume of work done with manual labour. Any margin of return based on such investments would be unremunerative and also unrealistic. Further, the peculiar features which dominate the marketing activities of formulators warrant consideration for providing return in a different manner so as to cover varying scales of discounts to the trade, the wholesalers, the medical practitioners and the retailers. The margin should be such as would absorb these elements besides leaving a fair profit for a formulator, either in the large scale or the small scale sector of the industry.

29.3. Till 1962, companies were fixing their own consumer prices and were offering varying rates of discounts to different classes of consumers/traders. When price control came into force in April, 1963, the prices of formulations of different companies were frozen at the levels then existing. This resulted in anomalies in the structure of prices for the same make of formulation marketed by the different companies either under generic

names or brand names inasmuch as the cost of production in various companies of the same formulation from a specific drug might marginally fluctuate or be even identical while the corresponding selling prices might differ widely between units. The cost study has thrown up in greater relief such anomalies. Where the existing formulation prices were higher than the assessed cost of production, an endeavour has been made to bring down the differentials to a uniform level by adopting a common approach.

29.4. The future costs and fair ex-works prices of formulations have been developed on the following lines.

29.4.1. **Basic Drug in Formulation.**—For assessing the quantities of basic drug used in the formulations, as stated earlier, the usage factor has been adopted on the basis of company's formula. The prices of these basic drugs have been taken at the levels of the future fair selling prices estimated by us. In the case of formulators who are manufacturers of basic drug also, two alternatives were available, viz., (a) to adopt the cost of the basic drug and then take it over to the cost element of the formulation and (b) to adopt the ex-factory price of the basic drug for working out the cost of the formulation. If the first alternative is adopted the unit would be deprived of the return on the manufacturing cost of the basic drug, since it would be entitled to only a return on the formulation. On the other hand if the second alternative is adopted it would give the unit a greater advantage than other formulators, inasmuch as the element of material cost of the basic drug would in itself be lower than that for other formulators, who purchase basic drug from others. This would not only be unfair to the manufacturer in so far as his activity of basic drug manufacture is concerned but also to other formulators, since they would be placed at a disadvantage in the matter of the pricing of the basic drug. We have therefore adopted the second alternative in order that on the manufacture of the basic drug the rate of return equivalent to what has been allowed will be available to the manufacturer as profit on that portion of the activity which relates to the basic drug manufacture alone. The element of cost of the basic drug in a formulation would also thus be equivalent to those of other formulators. Selling expenses as well as packing charges have however been excluded in all such cases, where the basic drug manufacturer is also the formulator. This course was all the more necessary in view of the fact that the employed capital on the basic drug manufactured has been isolated and return on this capital is available only for basic drug

manufacturing activity; similarly the return on formulating activity has also been isolated and is confined to the formulating activity only. Had the two activities been combined and a single return proposed, it may have been possible to adopt only the cost of basic material used and amalgamate the cost of conversion both for the basic drug and for the formulation. Adoption of a different basis for pricing of the basic drug in the formulation would also have been unfair since the aim is to have as uniform a price for formulations as possible irrespective of the fact whether these are produced by a basic drug manufacturer or mere formulator. In certain cases formulations were being made from imported drugs which were available at a much lower price than the indigenous drugs. Since we have costed basic drugs produced by indigenous units and formulators as based on these drugs we have adopted the price of the indigenous drug and not that of the imported material for arriving at the cost of the corresponding formulation. Our study of the cost of formulations was in relation to that of basic drugs and not in isolation and we have therefore been precluded from adopting material cost of the same basic drugs imported and used in formulations. Should any formulation continue to be manufactured with imported material these cost would not apply and fresh costings for the same would need to be made. Here the basic drug content has been valued at the price arrived at for that unit.

29.4.2. **Other chemicals.**—In addition to basic drugs, certain other chemicals and excipients are used in formulations depending on the formula adopted by each formulator. The costs of these items have been based on the current prices and applied on usages according to the company's formula with modifications, wherever found necessary.

29.4.3. **Conversion charges.**—This element covers labour, salaries, power and fuel, depreciation, factory and administrative overheads, research expenses, etc. It is not large and therefore its detailed break-up was not regarded as essential.

29.4.4. **Packing.**—Many formulators hold the view that to sustain the competition, one practical method is to make packings more attractive in order to help improve sales. A keen competition between formulators has led them to devise distinctive packings which may endue with aesthetic appeal. Under the existing conditions we do not consider it appropriate to make any reduction in the packing costs incurred by the companies,

particularly when their selling expenses have been restricted. Accordingly, packing costs have been allowed as claimed by the companies.

29.4.5. **Royalty.**—Wherever a Royalty Agreement exists, the appropriate quantum has been allowed.

29.4.6. **Selling expenses.**—During the actual period the incidence of selling expenses was worked out on the basis of the amounts spent by each unit under (i) salaries, D.A. etc. of the medical representatives who tour extensively for exploring the market, (ii) advertisement in different media, viz., cinema slides, films, medical journals, magazines, wall-posters, etc., (iii) literature and other printed matters distributed to the doctors, (iv) samples to doctors, hospitals, etc., and (v) other expenses, such as selling department's salaries, and expenses in the sales organisation. The matter has been dealt with in some detail in Chapter 22. We have decided that the selling expenses element in the future estimates should be restricted to 15 per cent of the total factory costs.

29.4.7. **Outward freight.**—Some of the formulators have an arrangement whereby the prices are determined ex-destination and the freight charged is borne by themselves. The incidence of this item is only nominal and has been shown as an item of cost wherever it has been incurred. In cases where freight is not charged as an item of cost it will be covered either by the return allowed to the formulator or from the margin of the wholesaler and the retailer.

29.4.8. **Excise duty.**—Excise duty is leviable only on such formulations as are sold under a "Brand Name" and has been provided for at the existing rates. No excise duty is, however, payable on formulations with "generic" names.

29.4.9. **Return.**—For reasons already mentioned in Chapter 31 we have allowed return in the form of mark up over the total cost of sales. This has been included in the estimates for future prices of formulators.

29.4.10. **Margin.**—The drugs have been distinguished under two categories viz., (i) ethical and (ii) non-ethical drugs. In eithical drugs are included items which are pharmacopoeial and normally administered under medical advice. After examining the evidence before us and in consultation with our Assessors we have provided for commission for ethical drugs

at 25 per cent, i.e., 15 per cent to the retailer and 10 per cent to other intermediaries and for non-ethical drugs at 15 per cent of which 10 per cent is for the retailer and 5 per cent for other intermediaries.

29.4.11. **Overages and overfills.**—Have been allowed depending upon the actual practice obtaining in each company and also the drug source. By and large this is upto 5 per cent in the case of capsules and vials. As regards ampoules this has been allowed upto 10 per cent and somewhat higher in the case of ampoules containing Vitamin B since this drug is said to deteriorate more quickly than others.

29.4.12. It should have been expected that since formulating operations are more or less uniform they would not call for any complicated operations capable of variation in techniques or processes and reactions and that the conversion cost would more or less be uniform but we find that there are sharp disparities owing to the capital and cost structure of different units. In the case of plain tablets weighing upto 100 mg. the cost of tableting varies from Rs. 1.36 to Rs. 4.40 per 1000 tablets. For tablets from 101 to 250 mg. in weight the rate varies from Rs. 4.57 to Rs. 4.69, the range in the former being very high. For capsules of 250 mg. the cost of capsuling for 100 capsules varies from Re. 0.32 to Rs. 4.12. Similar variations have been discovered in the case of ampoules for ampoule of 1 ml. the range is from Re. 0.04 to Re. 0.075; and for those of 5 ml. Re. 0.13 to Re. 0.69. In the case of vials of 5.00 cc, the vialing cost is from Re. 0.02 to Re. 0.08 and for those of 15 cc it is from Re. 0.8 to Re. 0.11. The cost of making dry powder in the form of granules in packs of 500 grams it is from Rs. 1.49 to Rs. 5.08 and the cost of 1000 grams is also within this range. Since the cost structure of each unit is different, it is not possible to apply any single rate for such processes and our estimates have been based on the actual cost for each unit. As we have adopted the lowest cost consistent with the standing and efficiency of the manufacturer we expect that in course of time the higher cost units will achieve a degree of parity with the lower cost units and conversion costs will eventually even out.

29.4.13. Packing costs have been shown separately and the analysis relates only to the material cost since the conversion cost has been already included in the relevant heads for the particular items.

29.5. For the enquiry we selected 39 single drug formulations and 10 multiple drug formulations under 30 brand names for

costing. However, when our Cost Accounts Officers visited the units selected for costing, they discovered that some of the formulations which had originally been suggested to us were either not being manufactured or their manufacture had been given up. It has thus not been possible to cost the following items :—

Single Drug formulations:

Dihydrostreptomycin Sulphate Injection

Chlortetracycline Ointment

Chlortetracycline Supersoid Powder

Chloroquin Sulphate Tablets (contain Chloroquin Sulphate for which no price was fixed.)

P.A.S. Sodium Tablets

Calcium PAS granules

Multiple Drug Formulations:

CRYS-8 Injection (Sarabhai Chemicals) CRYS-12 Injection (Sarabhai Chemicals)	Not being manufactured
Streptoduocin Injection (Hindustan Antibiotics)	Not to be manufactured in future
Duostrep (Merck Sharp) . . .	Contains Di-hydrostreptomycin for which price should not be fixed.
MYSTREPTON Injection (Glaxo) .	Not manufactured
Chlorostrep Suspension (Parke-Davis) .	Not manufactured
Tetrachlore (Gurco Pharma)* . .	Not manufactured
Precin fortified with Opthalmic Ointment (Alembic Chemical) . .	Not manufactured
Tequinopil (OPIL)	The unit was dropped for costing
Dinochlor (Bengal Immunity) . .	Not manufactured
Nivembin (May & Baker) . .	Not manufactured
Diquinate (Martin & Harris) . .	Not manufactured
Combination of I.N.H. and P.A.S. .	Combination differs from company to company

*(We have, however, substituted this item by Enterocycline manufactured by Dey's Medical.)

29.6. Of the 28 units which manufacture formulations, seven are small scale units, viz.,

Neogy Labs.

Sunita Laboratories

Alliance Trading

Khandelwal Laboratories

Cadila Laboratories

Gurco Pharma

Gujarat Pharmaceuticals

In the case of one of these units, namely, Gurco Pharma, the price of formulations were found to be higher than those of others. Being a small scale unit the price of its products ought to have been lower in respect of these. This unit incurred a loss in the year for which it was costed and this is the only one of all the units surveyed by us which has reported a loss. The other unit viz., Gujarat Pharmaceuticals has shown profits out of all proportion to its invested capital. But its cost of production also is generally higher than those of other formulators. We have therefore not taken these units into consideration in arriving at the fair ex-works price or retail price. The disproportion in the costs of these units is apparent from the statements which follow.

29.7. **Fair selling price.**—The ex-works prices for the future worked out on the above lines for the representative formulations in standard pack are exhibited in Table 29.1.

TABLE 29.1

Estimated fair retail prices of formulations

(In Rupees)

Name of Manufacturer / Product	Pack size	Materials	Conversion cost	Total factory cost	Selling expenses	Outward freight	Total cost of sales	Mark up	Margin	Excise duty	Fair retail price	Existing price
1	2	3	4	5	6	7	8	9	10	11	12	13
				1. *Vitamin—A*								
A. INJECTIONS												
1. *Glaxo Labs.*												
PREPALIN AMPOULES 1 lac i.u.	6 × 1ml	0.70	1.10	1.80	0.27	..	2.07	0.31	0.36	0.15	2.89	5.28
II. *Unichem Labs.*												
MASSIVE-A 1 lac i.u./ml . .	6 × 1ml	0.41	0.96	1.37	0.21	0.03	1.61	0.24	0.28	0.12	2.25	4.75
B. TABLETS												
Roche Products												
AROVIT. 50,000 i.u. 200 . .	25 strips of 8 tabs.	6.52	5.92	12.44	1.87	..	14.31	2.15	2.47	1.06	19.99	52.70
				2. (i) *Vitamin B12* (Cyanocobalamin)								
INJECTIONS												
I. *Dey's Medical*												
VITADOUSE 500 mcg/ml . .	5 ml	0.36	0.48	0.84	0.13	0.04	1.01	0.15	0.17	0.07	1.40	4.18

TABLE 29.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
INJECTIONS—(*Contd.*)												
II. *Gurco Pharma*												
VITAMIN B12 500 mcg/ml . .	5ml	0.35	0.93	1.28	0.19	..	1.47	0.22	0.25	..	1.94	1.87
III. *Cadila Labs.*												
COBALMIN 500 mcg/ml . .	5ml	0.43	0.61	1.04	0.16	0.07	1.27	0.19	0.22	0.09	1.77	2.75
IV. *Biological Evans* . .												
CYANACOBALAMIN 500 mcg/ml	5ml	0.38	0.51	0.89	0.13	0.01	1.03	0.16	0.18	..	1.37	3.00
V. *Glaxo Labs.*												
MACRABIN 500 mcg/ml . .	5ml	0.34	0.66	1.00	0.15	..	1.15	0.17	0.20	0.09	1.61	5.28
VI. *Merck Sharp*												
REDISOL 500 mcg/ml . . .	5ml	0.34	0.72	1.06	0.16	..	1.22	0.18	0.21	0.09	1.70	5.28
VII. *Unichem Labs.*												
CYANOCOBALAMIN 500 mcg/ml	5ml	0.44	0.59	1.03	0.15	0.03	1.21	0.18	0.21	..	1.60	4.60
VIII. *Alembic Chemical*												
CYCOBAL 500 mcg/ml . .	5 ml	0.37	0.65	1.02	0.15	0.03	1.20	0.18	0.21	0.09	1.68	5.31
IX. *Zandu*												
VITAMIN B12 500 mcg/ml . .	10ml	0.74	0.63	1.37	0.21	..	1.58	0.24	0.27	..	2.09	3.70
X. *Gujarat Pharmaceuticals*												
VITAMIN B-12 500 mcg/ml . .	10ml	0.74	1.31	2.05	0.31	..	2.36	0.35	0.41	..	3.12	4.35
XI. *Khandelwal Labs.*												
CYNOPLON 500 mcg/ml . .	10ml	0.71	0.94	1.65	0.25	..	1.90	0.29	0.33	0.14	2.66	5.0

			2. (ii) *Vitamin B12*(b)—(Hydroxycobalmin)										
INJECTIONS													
I. *Glaxo Labs.*													
MACRABIN H 500 mcg/ml	.	5ml	0.50	0.67	1.17	0.18	..	1.35	0.20	0.23	0.10	1.88	5.
II. *Merck Sharp*													
REDISOL-H 500 mcg/ml	.	5ml	0.66	1.62	2.28	0.34	..	2.62	0.39	0.45	0.19	3.65	6.0
III. *Unichem*													
UNI-B12 H. 500 mcg/ml	.	5ml	0.50	0.49	0.99	0.15	..	1.14	0.17	0.20	0.08	1.59	4.60
IV. *Gujarat Pharmaceuticals*													
COBIN-H 500 mcg/ml	.	5ml	1.00	0.95	1.95	0.29	..	2.24	0.34	0.39	0.17	3.14	4.37
TABLETS					3. *Vitamin C.*								
I. *Dey's Medical*													
ASCORBIC ACID 100 mg	.	1,000	8.98	2.01	10.99	1.65	0.21	12.85	1.93	2.22	..	17.00	18.0
II. *Gurco Pharma*													
ASCORBIC ACID 100 mg.	.	1,000	8.72	10.19	18.91	2.84	..	21.75	3.26	3.75	..	28.76	15.00
III. *Cadila Labs.*													
ASCORBIC ACID 100 mg.	.	1,000	8.19	3.91	12.10	1.82	0.41	14.33	2.15	2.47	..	18.95	16.10
IV. *Glaxo Labs.*													
CELIN 100 mg.	.	1,000	7.92	3.47	11.39	1.71	..	13.10	1.97	2.26	0.97	18.30	26.41
V. *Zandu*													
VITAMIN C 100 mg	.	1,000	9.87	4.59	14.46	2.17	0.30	16.93	2.54	2.92	..	22.39	24. 44
VI. *Gujarat Pharmaceuticals*													
VITAMIN C 500 mg	.	250	0.09	2.02	11.11	1.67	..	12.78	1.92	2.21	..	16.91	16.

TABLE 29.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
A. TABLETS—(*Contd.*)												
VII. *Alembic Chemical*												
CIVINAL 50 mg . . .	1,000	4.96	7.26	12.22	1.83	..	14.05	2.11	2.42	1.05	19.63	13.62
VIII. *Khandelwal Labs.*												
VITAMIN C 100 mg. . . .	500	4.53	4.91	9.44	1.42	..	10.86	1.63	1.87	..	14.36	9.50
IX. *Roche Products*												
REDOXON 500 mg . . .	10×10	3.86	4.29	8.15	1.22	..	9.37	1.41	1.62	0.70	13.10	23.72
X. *Savabhai Chemicals*												
ASCORBICIN 250 mg . . .	100	2.07	1.44	3.51	0.53	0.15	4.19	0.63	0.72	0.31	5.85	6.60
B. INJECTIONS												
I. *Glaxo Labs.*												
CELIN 100 mg	25×1ml	0.23	3.29	3.52	0.53	..	4.05	0.61	0.70	0.30	5.66	7.92
II. *Roche Products*												
REDOXON 100 mg . . .	50×2ml	0.54	7.86	8.40	1.26	..	9.66	1.45	1.67	0.72	13.50	20.82
TABLETS	4. *Sulphadiazine*											
I. *Dey's Medical*												
SULPHADIAZINE 500 mg . .	500 strips box.	15.13	3.61	18.74	2.81	0.26	21.81	3.27	6.27	..	31.35	20.00
II. *Cadila Labs.*												
SULPHADIAZINE 500 mg . .	500	15.17	2.89	18.06	2.71	0.73	21.50	3.23	6.18	..	30.91	28.75

III. *May & Baker* .												
SULPHADIAZINE 500 mg . .	50 × 10	14.79	4.32	19.11	2.87	0.50	22.48	3.37	6.46	..	32.31	31.69
IV. *Khandelwal Labs.*												
SULPHADIAZINE 500 mg . .	500	15.74	4.36	20.10	3.02	0.43	23.55	3.53	6.78	..	33.86	28.00
				5. *Chloramphenicol*								
CAPSULES												
I. *Dey's Medical*												
ENTEROMYCETIN 250 mg .	100 strips	9.49	7.20	16.69	2.50	0.37	19.56	2.93	5.62	1.58	29.69	44.04
II. *Gurco Pharma*												
GURCOMYCETIN 250 mg . .	100	9.20	9.43	18.63	2.79	..	21.42	3.21	6.16	1.73	32.52	30.00
III. *Boehringer Knoll*												
CHLORAMPHENICOL 250 mg .	100	9.80	4.98	14.78	2.22	..	17.00	2.55	4.88	..	24.43	43.52
IV. *Unichem*												
UNIMYCETIN VF 250 mg . .	100	10.66	6.12	16.78	2.52	0.28	19.58	2.64	5.06	1.53	28.81	32.20
V. *Alembic Chemical*												
ALCOPHENICOL 250 mg .	12	0.92	1.01	1.93	0.29	0.04	2.26	0.34	0.65	0.18	3.43	6.81
VI. *Cadila Labs.*												
CADIMYCITIN 250 mg .	12	1.59	0.80	2.39	0.36	..	2.75	0.41	0.79	0.22	4.17	4.00
VII. *Gujarat Pharmaceuticals*												
PHENICLOR 250 mg . .	125	11.47	10.80	22.27	3.34	..	25.61	3.84	7.36	2.07	38.88	27.50
VIII. *Pfizer*												
CHLORAMEX 250 mg . .	100	10.19	2.52	12.71	1.91	..	14.62	2.19	4.20	1.18	22.19	42.25

TABLE 29.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
					6. *Amodiaquine*							
TABLETS												
Parke-Davis												
CAMOQUINE 0.2 gr. . .	250	7.32	2.48	9.80	1.47	0.38	11.65	1.75	2.01	..	15.41	41.19
					7. *Chloroquine Phosphate*							
TABLETS												
I. *Zandu*												
CHLOKOQUINE PHOSPHATE 250 mg	1000	67.90	5.35	73.25	10.99	0.30	84.54	12.68	14.58	..	111.80	90.00
II. *Bengal Immunity*												
CHLOROQUINE PHOSPHATE 250 mg	1000	64.52	7.81	72.33	10.85	2.57	85.75	12.86	14.79	..	113.40	90.00
III. *Gujarat Pharmaceuticals*												
CHLOROQUIN PHOSPHATE 250 mg	1000	65.50	12.60	78.10	11.72	..	89.82	13.47	15.49	..	118.78	49.50 for 500 tab.
					8. *P.A.S.*							
GRANULES												
I. *Alliance Trading*												
SODIUM PAS 100% . . .	500gr.	15.64	1.99	17.63	2.64	0.26	20.53	3.08	5.90	..	29.51	17.50
II. *Gurco Pharma*												
SODIUM PAS 65% . . .	500gr.	11.90	5.73	17.63	2.64	..	20.27	3.04	5.83	..	29.14	21.87

III. *Biological Evans*												
SODIUM PAS 65% . . .	1000gr.	22.76	5.26	28.02	4.20	0.28	32.50	4.88	9.35	..	46.73	42.87
SODIUM PAS 80% . . .	1000gr.	27.90	5.26	33.16	4.97	0.28	38.41	5.76	11.04	..	55.21	48.00
IV. *Hoechst*												
AMINOX GRANULES 48.7% (Sod. PAS)	250gr.	5.82	3.11	8.93	1.34	0.09	10.36	1.55	2.98	0.28	15.17	11.88
V. *Pfizer*												
(i) P.A.S. ACID 70% . . .	100gr.	3.09	1.35	4.44	0.67	..	5.11	0.77	1.47	..	7.35	6.37
(ii) SOD. P.A.S. 80% . . .	100gr.	2.65	1.42	4.07	0.61	..	4.68	0.70	1.35	..	6.73	6.37

9. (a) *Iodo-Chlor-Hydroxy-Quinoline*

TABLETS

I. *East India Pharmaceutical*												
ENTEROQUINOL 250 mg. . .	500 strips	10.22	4.97	15.19	2.28	1.11	18.58	2.79	3.21	0.46	25.04	43.00
II. *Dey's Medical*												
DEQUINOL 250 mg. . .	500 strips	6.13	3.41	9.54	1.43	0.19	11.16	1.67	1.92	0.28	15.03	27.30
III. *Alliance Trading*												
HALOGENOL 250 mg. . .	500 phial	5.68	2.65	8.33	1.25	0.34	9.92	1.49	1.71	0.25	13.37	22.50
IV. *Unichem*												
IODOCHLOR-HYDROXYQUIN 250 mg.	500	9.09	1.30	10.39	1.56	0.21	12.16	1.82	2.10	..	16.08	28.75
V. *Alembic Chemicals*												
ALCHLOQUIN 250 mg . .	500	7.41	5.43	12.84	1.93	0.74	15.51	2.33	2.68	0.38	20.90	25.00
VI. *Zandu*												
IODOCHLOR-HYDROXYQUIN 250 mg	1000	12.63	5.35	17.98	2.70	0.30	20.98	3.15	3.62	..	27.75	30.00

TABLE 29.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
VII. *Martin & Harris*												
IODOCHLORHYDROXYQUIN 250 mg	1000	12.51	3.38	15.89	2.38	0.61	18.88	2.83	3.26	..	24.97	41.15
				9. (b) *Di-Iodo-Hydroxy-Quinoline*								
TABLETS												
I. *Zandu*												
(HISTOQUIN) (Compound)* .	1000	19.19	4.59	23.78	3.57	..	27.35	4.10	4.72	0.68	36.85	71.50
II. *Cadila Labs.*												
(DIOQUIN) 210 mg	1000	9.00	3.91	12.91	1.94	..	14.85	2.22	2.56	0.37	20.00	23.00
				10. *Insulin*								
INJECTIONS												
I. *Boots*												
(i) INSULIN INJECTION B.P. 40u/ml	10 ml.	2.31	0.92	3.23	0.48	0.12	3.83	0.57	0.66	..	5.06	4.69
(ii) INSULIN ZINC SUSPENSION (Lente) 40 u/ml . .	10 ml.	2.84	1.55	4.39	0.66	0.12	5.17	0.68	0.89	0.13	6.97	7.00
(iii) INSULIN PROTAMINEZINC 40 u/ml.	10 ml.	2.16	1.15	3.31	0.50	0.12	3.93	0.59	0.68	..	5.20	5.62
(iv) INSULIN ISOPHANE (NPH) 40 u/ml.	10 ml.	2.75	1.00	3.75	0.56	0.12	4.43	0.66	0.76	..	5.83	8.12

*Contains both—Iodo-chlor and Di-iodo-hydroxy-quinoline.

II. *Alembic Chemical*												
(i) INSULIN INJ. IP. 40 u/ml.	10 ml.	2.37	0.68	3.05	0.46	0.02	3.53	0.5 3	0.61	..	4.67	5.28
(ii) INSULIN PROTAMIZINC 40 u/ml.	10 ml.	2.57	0.75	3.32	0.50	0.03	3.85	0.58	0.66	..	5.09	5.00
(iii) INSULIN ISOPHANE (NPH) 40 u/ml.	10 ml.	2.55	0.75	3.30	0.50	0.04	3.84	0.58	0.66	..	5.08	7.00
III. *Unichem*												
(i) INSULIN INJ. IP. 40 u/ml .	10 ml.	2.86	0.76	3.62	0.54	0.03	4.19	0.63	0.72	..	5.54	4.15
					11. *I.N.H.*							
TABLETS												
I. *Dey's Medical*												
ISONIAZID 100mg . . .	1000	10.25	2.02	12.27	1.84	0.21	14.32	2.15	4.12	..	20.59	24.00
II. *Cadila Labs.*												
CADIZID 100 mg. . . .	1000	9.17	3.91	13.08	1.96	0.59	15.63	2.34	4.49	0.42	22.88	23.55
III. *Gujarat Pharmaceuticals*												
ISONIAZID 100 mg. . . .	1000	9.68	8.57	18.25	2.74	0.11	21.10	3.17	6.07	..	30.34	22.00
IV. *Biological Evans*												
I.N.H. 100 mg.	1000	10.23	3.48	13.71	2.06	0.05	15.82	2.37	4.55	..	22.74	17.15
V. *Glaxo Labs.*												
PELAZID 100 mg. . . .	1000	9.84	3.22	13.06	1.96	..	15.02	2.25	4.32	0.40	21.99	25.47
VI. *Pfizer*												
ISONEX 100 mg . . .	100 Box × 100	115.93	85.38	201.31	30.20	..	231.51	34.73	66.56	6.24	339.04	25.47 per 1000
VII. *Zandu*												
ISOZIDE 100 mg. . . .	1000	10.92	4.59	15.51	2.33	0.30	18.14	2.72	5.22	0.49	26.57	24.50

TABLE 29.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
VIII. *Sarabhai Chemicals*												
NYDRAZID 100 mg. . . .	1000 Bottles	10.41	6.82	17.23	2.58	0.36	20.17	3.02	5.80	0.54	29.53	25.79
IX. *Alembic Chemical*												
ALZID 100 mg.	100	0.98	1.97	2.95	0.44	0.02	3.41	0.51	0.98	0.09	4.99	3.25
				12. *Prednisolone*								
TABLETS												
I. *Dey's Medical*												
PREDNISOLONE 5mg . .	100 Strips	6.08	0.85	6.93	1.04	0.19	8.16	1.22	2.35	..	11.73	22.20
II. *Cadila Labs.*												
PREDNISOLONE 5mg . .	500	30.51	2.56	33.07	4.96	2.18	40.21	6.03	11.56	..	57.80	23.00 per 100
III. *Gujarat Pharmaceuticals*												
PREDNISOLONE 5mg . .	100 Strips	6.05	6.92	12.97	1.95	0.16	15.08	2.26	4.34	..	21.68	18.70
IV. *Wyeth Labs.*												
WYSOLONE 5mg . .	100	6.12	2.42	8.54	1.28	0.08	9.90	1.49	2.85	0.80	15.04	26.41
V *Hoechst*												
HOSTACORTIN-H 5mg . .	10×10	6.15	2.40	8.55	1.28	0.12	9.95	1.49	2.86	0.80	15.10	24.00
VI. *Glaxo Labs.*												
PELTABECORLIN 5mg . .	100	6.86	1.67	8.53	1.18	..	8.71	1.47	2.82	0.79	14.79	26.59
VII. *Pfizer*												
DELTA CORTRIL 5mg . .	100	6.31	1.09	7.40	1.11	..	8.51	1.28	2.45	0.69	12.93	26.41

VIII. *Unichem*												
UNALGEN-HC 5mg	100	7.07	0.71	7.78	1.17	0.18	9.13	1.37	2.63	0.74	13.87	24.15
IX. *Zandu*												
PREDNISOLONE 5mg	1000	66.90	4.59	71.49	10.72	0.30	82.51	12.38	33.72	..	128.61	15.00 per 100
X. *Alembic Chemical*												
PRECIN 5mg	10	0.61	0.39	1.00	0.15	0.01	1.16	0.17	0.33	0.09	1.75	2.72
				13. *Tolbutamide*								
TABLETS												
I. *Boehringer-Knoll*												
ARTOSIN 500mg	1000	39.20	2.94	42.14	6.32	..	48.46	7.27	8.36	3.61	67.70	219.60
II. *Hoechst*												
RASTINON 500mg	1000(Pack of 100×10)	37.77	36.06	73.83	11.07	1.55	86.45	12.97	14.91	6.43	120.76	219.60
				14. *Titanus Anti-Toxin*								
INJECTIONS												
I. *Bengal Immunity*												
(i) 1500 i.u.	1ml	1.21	0.27	1.48	0.22	0.09	1.79	0.27	0.31	..	2.37	2.88
(ii) 10000 i.u.	1ml	7.49	0.27	7.76	1.16	0.09	9.01	1.33	1.55	..	11.91	15.84
II. *Biological Evans*												
(i) 1500 i.u.	1ml	0.63	0.11	0.74	0.11	0.01	0.86	0.13	0.15	..	1.14	2.10
(ii) 10000 i.u.	1ml	4.22	0.48	4.70	0.71	0.03	5.44	0.82	0.94	..	7.20	12.00
				15. *Chlorpropamide*								
TABLETS												
Pfizer												
DIABENESE 250mg	100	2.53	2.22	4.75	0.71	..	5.46	0.82	0.94	0.41	7.63	39.28

TABLE 29.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
					16. *Pencillin*							
					(i) *Potassium Penicillin-G*							
INJECTIONS												
Hindustan Antibiotics												
POT. PEN. 'G' 10 lacs . .	1 vial	0.48	0.19	0.62	0.09	0.01	0.72	0.11	0.21	..	1.04	1.06
					(ii) *Sodium Penicillin-G*							
INJECTIONS												
I. *Alembic Chemical*												
SOD. PEN. 'G' 5 lacs . .	5 vials	1.77	0.99	2.76	0.41	0.02	3.19	0.48	0.92	..	4.59	3.39
SOD. PEN. 'G' 10 lacs . .	5 vials	3.54	1.30	4.84	0.73	0.04	5.61	0.84	1.61	..	8.06	5.60
II. *Sarabhai Chemicals*												
(i) PENICILLIN G Sodium-Squibbs 5 lacs . .	5 vials	2.22	2.52	4.74	0.71	0.06	5.51	0.83	1.59	0.15	8.08	6.91
(ii) PENICILLIN G Sodium-Squibbs 10 lacs	10 vials	4.39	2.93	7.32	1.10	0.09	8.51	1.28	2.45	0.23	12.47	11.40
III. *Glaxo Labs.*												
(i) CRYSTAPEN 5 lacs . .	5 vials	1.01	1.01	2.02	0.30	..	2.32	0.35	0.67	0.06	3.40	3.46
(ii) CRYSTAPEN 10 lacs .	10 vials	2.01	1.06	3.07	0.46	..	3.53	0.53	1.02	0.10	5.18	5.70
IV. *Dey's Medical*												
(i) SOD. PEN. 'G' 5 lacs .	1 vial	0.21	0.20	0.41	0.06	0.02	0.49	0.07	0.14	..	0.70	0.74
(ii) SOD. PEN 'G' 10 lacs .	1 vial	0.42	0.21	0.63	0.09	0.04	0.76	0.11	0.22	..	1.09	1.14
V. *Merck Sharp*												
(i) SOD. PEN 'G' 5 lacs .	5 vials	1.12	1.20	2.32	0.35	..	2.67	0.40	0.77	0.07	3.91	3.45
(ii) SOD. PEN. 'G' 10 lacs .	5 vials	2.28	1.17	3.45	0.52	..	3.97	0.60	1.14	0.11	5.82	5.72

VI. *Hindustan Antibiotics*												
SOD. PEN. 'G' 10 lacs	1 vials	0.48	0.21	0.69	0.10	0.01	0.80	0.12	0.23	..	1.15	0.94
16 (iii) *Procaine Penicillin-G Fortified with Sodium*												
INJECTION												
I. *Alembic Chemical*												
(i) PROCAINE 3 lacs / SODIUM 1 lac	5 vials	1.33	0.99	2.32	0.35	0.02	2.69	0.40	0.77	..	3.86	2.75
(ii) PROCAINE 15 lacs / SODIUM 5 lacs	5 vials	6.66	1.53	8.19	1.23	0.06	9.48	1.42	2.73	..	13.63	8.10
II. *Sarabhai Chemicals*												
CRYS-4. PROCAINE 3 lacs / SODIUM 1 lac	10 vials	1.66	2.19	3.85	0.58	0.06	4.49	0.67	1.29	0.12	6.57	5.50
III. *Pfizer*												
(i) PPF-4 PROC. 3 lacs / POT. 1 lac	100 vials	15.01	23.96	38.97	5.85	..	44.82	5.72	12.89	1.21	65.64	56.15
(ii) PPF-20 PROC. 15 lacs / POT. 1 lac	100 vials	73.39	36.89	110.28	16.54	..	126.82	19.02	36.46	3.42	185.72	190.00
IV. *Dey's Medical*												
(i) PENACAINE SODIUM 1 lac / PROCAINE 3 lacs	1 vial	0.15	0.20	0.35	0.05	0.02	0.42	0.06	0.12	..	0.60	0.44
(ii) PENACAINE SODIUM 5 lacs / PROCAINE 15 lacs	1 vial	0.74	0.24	0.98	0.15	0.06	1.19	0.18	0.34	..	1.71	1.30
V. *Glaxo Labs.*												
SELCOPEN (i) SODIUM 1 lac / PROCAINE 3 lacs	5 vials	0.79	1.03	1.82	0.27	..	2.09	0.31	0.60	0.06	3.06	3.11
(ii) SODIUM PEN 5 lacs / PROCAINE PEN 15 lacs	5 vials	3.81	1.52	5.33	0.80	..	6.13	0.92	1.76	0.17	8.98	9.17

TABLE 29.1—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
VI. *Hindustan Antibiotics*												
SODIUM PEN 1 lac PROCAINE PEN 3 lacs	1 vial	0.17	0.19	0.36	0.05	0.01	0.42	0.06	0.12	..	0.60	0.58
A. INJECTIONS				16 (iv) *Procaine Penicillin—'G'*								
Hindustan Antibiotics												
PROC. PEN 'G' 15 lacs	1 vial	0.62	0.25	0.87	0.13	0.01	1.01	0.15	0.29	..	1.45	1.51
B. TABLETS												
I. *Hindustan Antibiotics*												
PENICILLIN V 65 mg.	12	0.91	0.13	1.04	0.16	0.01	1.21	0.18	0.35	..	1.74	1.85
II. *May & Baker*												
ORACYN 62.5 mg	10 × 10	6.38	1.73	8.11	1.22	0.10	9.43	1.41	2.71	0.25	13.80	20.78
III. *Zandu*												
SULPHATRACIN 65 mg.	100	9.72	0.73	10.45	1.57	0.20	12.22	1.83	3.51	0.33	17.89	26.00
A. CAPSULES				17 *Tetracycline*								
I. *Dey's Medical*												
SUBAMYCIN 250 mg	100 (25 × 4 box)	17.78	10.79	28.57	4.29	0.92	33.78	5.07	9.71	2.73	51.29	110.21
II. *Gurco Pharma*												
TETRACYCLINE 250 mg	100	18.16	8.86	27.02	4.05	..	31.07	4.66	8.93	..	44.66	75.00
III. *Gujarat Pharmaceutical*												
BIOCYCLINE 250 mg	100	17.73	34.34	52.07	7.81	0.49	60.37	9.06	17.36	4.88	91.67	92.00
IV. *Hoechst*												
HOSTACYCLINE 250 mg	100	20.08	14.69	34.77	5.22	0.58	40.57	6.09	11.67	3.28	61.61	106.98

V. *Pfizer*												
(i) TETRACYN 250 mg (Tetracycline)	4×100	84.41	45.65	130.06	19.51	..	149.57	22.44	43.00	12.09	227.10	115.13
(ii) TERRAMYCIN 250 mg (Oxytetracycline)	4×100	67.46	51.82	119.28	17.89	..	137.17	20.58	39.44	11.09	208.28	115.13
VI. *Khandelwal Labs.*												
TETRACYCLINE 250 mg . .	100	21.62	5.03	26.65	4.00	1.28	31.93	4.79	9.18	..	45.90	88.50
VII. *Cyanamid*												
(i) ACHROMYCIN 250 mg (Tetracycline)	4	0.79	0.49	1.28	0.19	0.14	1.61	0.24	0.46	0.13	2.44	4.82
(ii) AUREOMYCIN 250 mg (Chlortetracycline) . . .	4	0.78	0.48	1.26	0.19	0.14	1.59	0.24	0.46	0.13	2.42	4.82
(iii) LEDERMYCIN 150 mg (Demothyltetracycline) . .	4	1.48	0.50	1.93	0.29	0.15	2.37	0.36	0.68	0.19	3.60	5.24
VIII. *Merck Sharp*												
TRYCIN 250 mg	4	0.75	0.57	1.32	0.20	..	1.52	0.23	0.44	0.12	2.31	4.61
IX. *Alembic Chemical*												
ALCYCLIN 250 mg . . .	4×4	2.85	2.05	4.90	0.74	0.10	5.74	0.86	1.65	0.46	8.71	17.81
B. INJECTION												
Cyanamid												
ACHROMYCIN												
INTRAVENOUS 250 mg . .	Each	0.25	0.81	1.06	0.16	0.22	1.44	0.22	0.42	0.12	2.20	7.13
18. *Streptomycin Sulphate*												
INJECTIONS												
I. *Hindustan Antibiotic*												
STREPTOMYCIN SULPHATE 1.0 gr.	1 vial	0.54	0.02	0.56	0.08	..	0.64	0.10	0.18	..	0.92	0.71

TABLE 29.1 —*Concld.*

1	2	3	4	5	6	7	8	9	10	11	12	13
II. *Surabhai*												
AMBISTRYN—'S' 1.0 gr.	10 vials (Box)	3.64	1.24	4.88	0.73	0.06	5.67	0.85	1.63	0.15	8.30	7.60
III. *Glaxo Labs.*												
COMYCIN Inj. 5.2 *gr.*	5 vials	1.71	1.02	2.73	0.41	..	3.14	0.47	0.90	0.08	4.59	6.60
				19. *Streptomycin with Penicillin*								
INJECTIONS												
I. *Pfizer*												
(i) *Dupenmycin*												
SOD. PEN 5 lacs STREPTOMYCIN ½ gr.	100 vials	34.01	28.51	62.52	9.38	..	71.90	10.79	20.67	1.94	105.30	84.75
(ii) *Combiotic* SOD. PEN. 1 lac PROC. PEN. 3 lacs STREPTOMYCIN ½ gr.	100 vials	29.91	26.52	56.43	8.46	..	64.89	9.73	18.65	1.75	95.02	77.00
II. *Sarabhai Chemicals*												
(i) *Dycrysticin*—'S'—800												
SOD. PEN. 1 lac PROC. PEN. 3 lacs STREPTOMYCIN ½ gr.	10 vials	3.88	2.32	6.20	0.93	0.06	7.19	1.08	2.07	0.19	10.53	9.39
(ii) *Penmyn Fortis*												
SOD. PEN. 5 lacs STREPTOMYCIN ½ gr.	10 vials (Box)	3.13	2.06	5.19	0.78	0.06	6.03	0.90	1.73	0.16	8.82	13.02

III. *Glaxo Labs.*												
Seclomycetin												
SOD. PEN. 1 lac . PROC. PEN. 3 lacs STREPTOMYCIN ½gr.	5 vials	1.56	1.07	2.63	0.3[illegible]	..	3.02	0.45	0.87	0.08	4.42	3.97
IV. *Hindustan Antibiotics*												
STREPTOMYCIN SOD. PEN. 1 lac . PROC. PEN. 3 lacs STREPTOMYCIN ½ gr.	1 vial	0.56	0.03	0.59	0.09	..	0.68	0.10	0.20	..	0.98	0.74
				20. *Streptomycin & chloramphenicol*								
CAPSULES												
I. *Boehriger-Knoll*												
CHLORAMPHYCIN 'S' 250 mg .	100	12.27	2.38	14.65	2.20	..	16.85	2.53	4.85	1.36	25.59	47.21
II. *Dey's Medical*												
(i) ENTEROSTREP 250 mg .	100	12.14	0.62	12.76	1.91	0.43	15.10	2.27	4.34	1.22	22.93	27.80
III. *Parke Davis*												
(i) CHLOROSTREP KAPSEALS 250 mg. . .	12's	1.39	0.57	1.96	0 29	0.07	2.32	0.35	0.67	0.19	3.53	7.92
IV. *Gurco Pharma*												
(i) CHLOROSTREP 250 mg. .	1000	108.38	44.82	153.20	22.98	..	176.18	26.43	50.65	14.25	267.51	137.50
				21. *Chloramphenicol & Tetracycline*								
I. *Dey's Medical*												
ENTEROCYLINE 250 mg . .	100	17.49	0.62	18.11	2.72	0.73	21.56	3.23	6.20	1.74	32.73	27 80

29.8. The formulations costed by us fall into the following forms of packs or applications :

(1) Containers

(2) Capsules

(3) Ampoules

(4) Vials

(5) Granules in containers.

Tablets are either packed in bottles or in strips of aluminium foil or cellophane. Capsules are either in strips or in bottles. Ampoules and vials are individual items of packings which are kept in specified numbers in cardboard boxes. Granules are packed in containers of different sizes. It is not possible to work out separately the cost of each packet and we therefore suggest the following principles for working out the cost of individual items or of numbers smaller than the pack for which the price had been shown.

29.9. Where tablets are packed in strips, the retail price of numbers smaller than those indicated in the table should be arithmetically proportionate. If the tablets are packed in bottles and the bottle is opened in order to dispense a smaller number an additional 5% over the retail price per tablet may be allowed to the retailers.

Capsules.—The same principles may be observed as in the case of tablets.

Vials and ampoules.—The cost may be reckoned in terms of individual ampoules or vials irrespective of the packaging in which it is contained by dividing the cost of the pack by the number of items contained.

Dry powder for granules.—These are not sold loose and the price of packings small or big—should be directly proportionate to the price which we have indicated.

29.10. As a result of the examination of the figures in Table 29.1 we have arrived at fair prices which are the lowest for the same product, provided the formulation is being manufactured by a reputable firm. The following Tables 29.2 and 29.3 show the fair retail price so computed of the various items costed by our Cost Accounts Officers.

TABLE 29.2

Retail prices recommended for single drug formulations

Sl. No.	Formulations of	Application	dosage	Pack	Retail price recommended (exclusive of excise duty)
1	2	3	4	5	6
					Rs.
1	Vitamin A	Vitamin A Inj.	1 lac i.u./ml	6×1ml	2·13
		Vitamin A Tabs.	50,000 i.u.	200(strip)	18·93
2	Vitamin B12	Cyanocobalamin Inj.	500mcg/ml	5ml	1.37
				10ml	2·52
3	Vitamin C	Hydroxycobalamin Inj.	500mcg/ml	5ml	1·51
		Ascorbic Acid Tabs.	100mg	1000 Tabs.	17·00
		Ascrobic Acid Inj.	100mg	25×1ml	5·36
				50×2ml	12·78
4	Sulphadiazine	Sulphadiazine Tabs.	500mg	500 Tabs.	30·91

TABLE 29.2—*Contd.*

1	2	3	4	5	6
					Rs.
5	Penicillin	Potassium Penicillin 'G' Inj.	10 lacs	1 vial	1·04
		Sodium Penicillin 'G' Inj.	5 lacs	5 vials	3·34
			10 lacs	5 vials	5·08
		Procaine Penicillin G Inj.	15 lacs	1 vial	1·45
		Penicillin G Procaine Fortified with Penicillin G Inj.	Sod. 1 lac + Proc. 3 lacs	1 vial	0·60
			Sod. 5lacs + Proc. 15 lacs	1 vial	1·71
		Pencicillin Tabs.	65 mg	12	1·74
6	Streptomycin	Streptomycin Sulphate Inj.	1·0 gr	10 vials	8·15
			2·0 gr	5 vials	4·59
7	Chloramphenicol . . .	Chloramphenicol Caps	250 mg	100	21·01
8	Tetracycline	Tetracycline Caps.	250 mg	100	48·56
				4	2·19
		Oxytetracycline Caps	150 mg	400	197·19
		Chlortetracycline	250 mg	4	2·42
		Demethyl tetracycline Caps	150 mg	4	3·41

9	Amodiaquin	Amodiaquin Hydrochloride Tabs.	0·2 gr	250 Tabs	15·41
10	Chloroquin . . .	Chloroquin Phosphate Tabs.	250 mg	1000 Tabs	113·40
11	Iodo-chlor-hydroxy-quinoline .	Iodo-chlor-hydroxy-quinoline Tabs.	250 mg	500 Tabs	13·12
				1000 Tabs	24·97
		Di-Iodo-hydroxy-quinoline Tabs.	210 mg	1000 Tabs	19·63
12	Chlorpropamide . . .	Chlorpropamide Tabs.	250 mg	100 Tabs	7·22
13	Tolbutamide	Tolbutamide Tabs.	500 mg	1000 Tabs	64·09
14	Insulin	Insulin Inj.	40 u/ml	10 ml	4·67
		Insulin Zinc Suspension Inj.	40 u/ml	10 ml	6·84
		Insulin Protamin Zinc Inj.	40 u/ml	10 ml	5·09
		Isophane Insulin Inj.	40 u/ml	10 ml	5·08
15	I. N. H.	I. N. H. Tabs.	100 mg	1000 Tabs	20·59
16	P. A. S.	Sodium P. A. S. Granules	65%	1000 gr	46·78
			80%	1000 gr	55·21
		PAS Acid Granules	70%	100 gr	7·35
17	Tatanus Anti-toxin . . .	Tatanus Anti-toxin Inj.	1500 i.u.	1 ml	1·14
			10000 i.u.	1 ml	7·20
18	Prednisolone	Prednisolone Tabs.	5 mg	100 (strip)	11·78

TABLE 29.3

Retail prices recommended for multiple drug formulations

Sl. No.	Combination of drugs	Name of formulation	Dosage	Pack	Retail price recommended inclusive of excise
1	2	3	4	5	6
					Rs.
I.	Combination of different forms of Penicillin (Injections)	(i) PPF-4 Injection (of Pfizer)	4 lacs/vial	100 vials	65·64
		(ii) PPF-20 Injection (of Pfizer)	20 lacs/vial	100 vials	185·72
		(iii) CRYS-4 Injection (of Sarabhai)	Procaine 3 lacs Sodium 1 lac	Each vial	0·60
II.	Combination of different forms of Streptomycin (Injection)	Comycin Injection (of Glaxo)	2 gr	5 vials	4·59
III.	Injection of Penicillin and Streptomycin				
	(i) Streptomycin ½ gm. Sodium Penicillin 5 lacs	(i) DUPENMYCIN (Pfizer)		100 vials	105·30
		(ii) PENMYNFORTIS (Sarabhai)		10 vilas	10·53

n. lacs	(i) CAMBIOTIC (Pfizer)		5 vials	4·42
	(ii) DICRYSTICIN-S (Sarabhai)		5 vials	4·42
	(iii) SEGLOMYCETIN (Glaxo)		5 vials	4·42
	(iv) STREPTO PENICILLIN (Hindustan Antibiotics)		5 vials	4·42
enicol lphate	(i) Chloramphycin S (of Boehringer-Knoll)	250 mg.	100 Caps.	22·93
	(ii) Chlorostrep (of Gurco Pharma)	250 mg.	100 Caps.	22·93
	(iii) Chlorostrep Kapseals (of Parke-Davis)	250 mg.	12 Caps.	3·53
enicol	Enterocycline (of Dey's Medical)	250 mg.	100 Caps.	32·73
e and	Achromycin Intravenous Lederle (Cyanamid)	250 mg.	Each	2·20

29.11. The prices at which we have arrived are generally lower than the prevailing market prices shown in Tables 24.4 and 24·5 although in some cases these may appear to be high. Invariably in all such cases the present prices are based on imported materials the prices of which are lower than those of indigenous materials. The prices worked out by us appear therefore to be higher since those are based on indigenous raw materials. If such drugs continue to be formulated by using imported raw material, the prices suggested by us would need to be revised.

29.12. As pointed out earlier drugs sold under brand names attract the central excise duty also while no Central Excise Duty is leviable on pharmaceutical formulations sold under generic names. We do not see any reason to distinguish between brand named and generic named formulations and have therefore not taken into account the element of excise duty in fixing prices for single drug formulations. We also hope that the use of brand names would be discouraged.

CHAPTER 30

COSTS OF PRODUCTION IN SMALL-SCALE UNITS

30.1. One of the terms of reference is to examine the prices at which basic drugs and formulations could be manufactured by small-scale manufacturers who did not come within the purview of the Industries (Development and Regulation) Act. Of the units adopted by us for cost study, three manufacture basic drugs and four formulations. As a result of certain re-classifications made by the D.G.T.D. recently one more unit has been transferred from the large scale to the small scale sector. The total number of units thus is 7 of which two manufacture both basic drugs and formulations and three only formulations. The particulars of these units together with the basic drugs and formulations manufactured by them are given in Table 30.1.

TABLE 30.1

List of small scale units whose costs were examined

Sl. No.	Name of the Unit	Basic drug manufactured	Single drug formulation manufactured with gentic name	Multiple drug formulation manufactured with brand name
1	2	3	4	5
1	Alliance Trading Corpn., Calcutta.	Nil	1 Iodochlorhydroxyquinolene	Combination of I.N.H. Vit. B12
			2 PAS	Calcium PAS
2	Cadilla Labs., Ahmedabad	Nil	1 Vitamin B12 2 Vitamin B12(b) 3 Chloramphenicol	Combination of I.N. H. and PAS
			4 Sulphadiazine	
			5 Vitamin C	

TABLE 30.1—*Contd.*

1	2	3	4	5
			6 I.N.H.	
			7 PAS	
			8 Prednisolone	
			9 Di-iodo hydroxy-quinolone	
3	Gujarat Pharmaceutical & Chemical Works, Ahmedabad.	Nil	1 Tetracycline	Combination of I.N.H. and PAS
			2 Tolbutamide	
			3 Chloramphenicol	
			4 Vit. B 12	
			5 Vit. B 12(L)	
			6 Vit. C	
			7 Chlorpropamide	
			8 Prednisolone	
			9 Chloroquin	
4	Gurco Pharma, Delhi.	Nil	1 Chloramphenicol	Combination of chloramphenicol and dihydrostreptomycin sulphate
			2 Tolbutamide	
5	Khandelwal Labs., Bombay	Nil	1 Tetracycline	Nil
			2 Vit. B12	
			3 Sulphadiazine	
			4 Vit. C	
6	Neogy Laboratories, Calcutta.	Iodo-chlor hydroxy-quinolone	Nil	Nil
7	Suneeta Labs., Indore	I.N.H.	Nil	Nil

30.2. There are only two basic drugs which are being manufactured in the small scale sector *viz.*, INH ,and Iodo-chlor-hydroxy-quinoline. The comparative prices based on the estimates for these are as follows :

Iodo-chlor-hydroxy-quinoline

In the small scale sector this drug is being manufactured only by Neogy Laboratories and Alliance Trading Corpn. Of the large scale units cost of East India Pharmaceutical Works was examined and the comparative figures have been given in paragraph 28.12. The costs of both the small scale units are similar but that of the large scale unit is 50 per cent higher. The main reason for the high cost of the large scale unit is the higher conversion cost. As regards materials costs, those of Neogy Labs. are slighly higher than those of East India and considerably higher than those of Alliance Trading Corporation. What the Alliance Trading gains on material costs is made up by its higher conversion costs which are more than double that of Neogy but less than half that of East India.

I.N.H.

This drug is being manufactured by Suneeta Labs. The costs of Suneeta Labs. were examined along with those of two large scale units. These costs have been shown in paragraph 28.16 and indicate that those of Suneeta Labs. are less than half of that of Pfizer and about 58 per cent those of Biological Evans. In the case of Suneeta Labs. the materials cost is low and conversion cost is very much lower than that of the other two large scale units. Conversion costs of Biological Evans and Pfizer are definitely excessive and what Suneeta can do for Rs. 4.67 per kg. is done by Pfizer for almost 8 times at Rs. 39.62 and by Biological Evans at more than 5 times at Rs. 27.42.

30.3. Coming to formulations we find that the number of formulations made by the small scale units costed by us is fairly large. The following table gives the costs of production of the various single drug formulations as between the large and small scale units.

TABLE 30·2

Comparison of total factory costs and fair retail prices of single drug formulations manufactured by the Small Scale and the Large Scale Units

Sl. No.	Name of Drug and Formulation	SMALL SCALE UNITS				LARGE SCALE UNITS			
		Name of the manufacturing unit (BRAND NAME)	Dosage/pack	Total factory cost Rs.	Fair retail price Rs.	Name of the manufacturing unit (BRAND NAME)	Dosage/pack	Total factory cost Rs.	Fair retail price Rs.
1	2	3	4	5	6	7	8	9	10
1.	*Vitamin B12 Injections.*	(1) Cadila Labs. (COBALMIN)	500 mcg.ml/5ml.	1.04	1.77	(1) Alembic Chemical (CYCOBAL)	500 mcg/ml/5ml.	1.02	1.68
		(2) Gurco Pharma	500 mcg.ml/5ml.	1.28	1.94	(2) Bengal Immunity	500 mcg/ml/5ml.	Not Costed.	
						(3) Biological Evans.	500 mcg/ml/5ml.	0.89	1.37
						(4) CIPLA (CIPLAMIN)		Not Estimated.	
		(3) Gujarat Pharmaceutical.	500 mcg.ml/10ml.	2.05	3.12	(5) Dey's Medical (VITACOUZE)		0.84	1.40
						(6) Glaxo Labs. (MACRABIN)	500 mcg/ml/5ml.	1.00	1.61
		(4) Khandalwal Labs. (CYNOPLON)	500 mcg.ml/10ml.	1.65	2.66	(7) Merck Sharp (REDISOL)	500 mcg/ml/5ml.	1.06	1.70
						(8) Sarabhai Chemicals (RUBRAMIN)		Not Costed.	
						(9) Martin & Harries		Not Costed.	
						(10) Unichem Labs.	500 mcg/ml/5ml.	1.03	1.60
						(11) Zandu	10ml.	1.37	2.09

Vitamin B12(b) Injections	(1) Cadila Labs.	..		Not Costed							
	(2) Gurco Pharma	..		Do.			(1) CIPLA (CIPLAMIN-H	..		Not Estimated.	
	(3) Gujarat Pharmaceutical (COBIN-H)	500 mcg.ml/5ml.		1.95	3.14		(2) Glaxo Labs. (MACRABIN-H)	500 mcg/ml/5ml.		1.17	1.88
							(3) Merck Sharp (REDISOL-H)	500 mcg/ml/5ml.		2.28	3.65
							(4) Sarabhai Chemicals (RUBRAMIN-H)	..		Not Costed.	
							(5) Unichem Labs. (UNIB-12 H)	500 mcg/ml/5ml.		0.99	1.59
2. *Vitamin C Tablets*	(1) Cadila Labs.	100 mg.	1000	12.10	18.95		(1) Alembic Chemical (CIVINAL)	500 mg.	1000	12.22	19.63
							(2) Dey's Medical . .	100 mg.	1000	10.99	17.00
	(2) Gurco Pharma	100 mg.	1000	18.91	28.76		(3) Glaxo Labs. (CELIN)	100 mg.	1000	11.39	18.30
	(3) Gujarat Pharmaceutical.	500 mg.	250	11.11	16.91		(4) Martitny & Harris	..		Not Costed.	
	(4) Khandalwal Labs.	100 mg.	500	9.44	14.36		(5) Roche Product (REDOXIN)	500 mg.	10×10	8.15	13.10
							(6) Sarabhai Chemical (ASCORBICIN).	250 mg.	100	3.51	5.85
							(7) Zandu . . .	100 mg.	1000	14.46	22.39
3. *Sulphadiazine Tablets.*	(1) Cadila Labs.	500 mg.	500	18.06	30.91		(1) Boots . . .		..	Not Costed.	
	(2) Khandalwal Labs.	500 mg.	500	20.10	33.86		(2) Cyanamid . . .		..	Do.	
							(3) Dey's Medical . .	500 mg.	500 strips in Box	18.74	31.35
							(4) May & Baker . .	500 mg.	50×10	19.11	32.31
4. *Chloramphenicol Capsules.*	(1) Cadila Labs. (CADIMYCETIN).	250 mg.	12	2.39	4.17		(1) Alembic Chemical (ALCOPHENICOL).	250 mg.	12	1.93	3.43

TABLE 30.2—(*contd.*)

1	2	3	4		5	6	7	8		9	10
		(2) Gurco Pharma (GURCOMYCETIN)	250 mg.	100	18.63	32.52	(2) Boehringer-knoll (CHLORAMPHYCIN)	250 mg.	100	14.78	24.43
		(3) Gujarat Pharmaceutical (PHENICHLOR).	250 mg.	125	22.27	38.88	(3) CIPLA (CIPLAMYCETIN	..		Not Estimated.	
							(4) Dey's Medical (ENTEROMYCETIN).	250 mg.	100 strips	16.69	29.69
							(5) Parke-Davis (CHLOROMYCETIN).	..		Not Estimated.	
							(6) Pfizer (CHLORAMEX)	250 mg.	100	12.71	22.19
							(7) Unichem Labs. . .	250 mg.	100	16.78	28.81
5.	*Tetracycline Capsules.*	(1) Gurco Pharma	250 mg.	100	27.02	44.66	(1) Alombic Chemical (ALCYLINE).	250 mg.	4×4	4.90	8.71
		(2) Gujarat Pharmaceutical (BIOCYCLINE).	250 mg.	100	52.07	91·67	(2) Cyanamid (ACHROMYCIN).	250 mg.	4	1.28	2.44
		(3) Khandelwal Labs.	250 mg.	100	26.65	45.90	(3) Dey's Medical (SUBAMYCIN).	250 mg. (25×4 Box)	100	28.57	51.29
							(4) Hindustan Antibiotics	..		Not Costed.	
							(5) Hoechst (HOSTACYCLINE).	250 mg.	100	34.77	61.61
							(6) Merck Sharp (TRYCIN).	250 mg.		1.32	2.31
							(7) Pfizer (TETRYCIN) .	250 mg.	4×100	130.06	227.10
	Oxytetracycline Capsules.						Pfizer	4×100		119.28	208.28

	Chlortetracycline Capsuless					Cynamid (AUREOMYCIN)		4	1.26	2.42
	Demethyl Chlortetracycline Capsules.					Cyanamid (LEDERMYCIN).	150 mg.	× 4	1.93	3.60
6.	*CHLOROQUIN PHOSPHATE Tablets.*	(1) Gujarat Pharmaceutical.	250 mg.	1000	78.10 118.78	(1) Bengal Immunity .	250 mg.	1000	72.33	113.40
						(2) Zandu . . .	250 mg.	1000	73.25	111.80
7.	*Iodochlor-hydroxy-quinoline Tablets.*	Alliance Trading (HALOGENOL)	250 mg.	500	8.33 15.37	(1) Alembic Chemiacal (ALCHLOQUIN).	250 mg.	500	12.84	20.90
						(2) Dey's Medical (DEQUINOL).	250 mg.	500 (strips)	9.54	15.03
						(3) East India Pharmaceutical (ENTROPIONOL)	250 mg.	500 (strips)	15.19	25.04
						(4) Martin & Harris. .	250 mg.	1000	15.89	24.97
						(5) Unichem Labs. . .	250 mg.	500	10.39	16.08
						(6) Zandu . . .	250 mg.	1000	17.98	27.75
8.	*Di-iodo-hydroxy-quinoline Tablets.*	Cadila Labs. (DIOQUIN).	210 mg.	1000	12.91 20.00	(1) Alembic Chemical (ALDOQUIN).	..		Not Costed.	
						(2) Bengal Immunity (DINOQUIN).	..		Not Costed.	
						(3) CIPLA (DIODOXYLIN).	..		Not Estimated.	
						(4) May & Baker (EMBEQUIN).			Not Costed.	
						(5) Zandu (HISTOQUIN Comp.).	210 mg.	1000	23.78	36.85

TABLE 30.2—(*cond.*)

1	2	3	4	5	6	7	8	9	10
9.	*CHLORPROPAMIDE Tablets.*	Gujarat Pharmaceutical (CHLORINESE).	..	Not Estimated		(1) Bengal Chemical (DIABINOL).	..	Not Costed.	
						(2) Pfizer (DIABENESE) .	250 mg. 100	4.75	7.63
10.	*Tolbutamide*	Gurco Pharma (GLUCOFREN)	..	Not Estimated		(1) Boehringer-Knoll (ARTOSIN).	500 mg. 1000	42.14	67.70
						(2) Hoechst (RASTINON)	500 mg. 1000 (pack of 100 × 10)	73.83	120.76
						(3) Unichem (UNITOLBID).	..	Not Costed.	
11.	*I.N.H. Tablets*	(1) Cadila Labs. (CADIZIDE)	100 mg. 1000	13.08	22.88	(1) Alembic Chemical (ALZIDE).	100 mg. 100	2.95	4.99
		(2) Gujarat Pharmaceutical.	100 mg. 1000	18.25	30.34	(2) Bengal Immunity .	..	Not Estimated.	
		(3) Gurco Pharma. (GURCOZIDE).	Not Costed.			(3) Biological Evans. .	100 m.g 1000	13.71	22.74
						(4) Dey's Medical . .	100 mg. 1000	12.27	20.59
						(5) Glaxo Labs, (PELAZIDE).	100 mg. 1000	13.06	21.99
						(6) Martin & Harris .	..	Not Costed.	
						(7) Pfizer (ISONEX) .	100 mg. 100 Box 100	201.31	339.04
						(8) Sarabhai Chemicals (NYDRAZIDE).	100 mg. 1000	17.23	29.53
						(9) Unichem (UNIZIDE)	..	Not Costed.	
						(10) Zandu (ISOZIDE) .	100 mg. 1000	15.51	26.57

12. *P.A.S. Granules* .	(1) Alliance Trading 100%.	500 gr.		17.63	29.51	(1) Biological Evans. .	65%—1000 gr.		28.02	46.73
							80%—1000 gr.		33.16	55.21
	(2) Gurco Pharma. 65%	500 gr.		17.63	29.14	(2) Hoechst (AMINOX)	48.70—250 gr.		8.93	15.17
						(3) Pfizer (PAS Acid)	70% Tin of 100 gr.		4.44	7.35
Tablets . .	(1) Cadila Labs.			Not Costed.						
	(2) Gurco Pharma.			Not Costed.		(1) Martin & Harris .	..		Not Costed.	
						(2) Pfizer (Sod PAS)	80%	100 gr.	4.07	6.73
13. *Prednisolone Tablets*	(1) Cadila Labs. .	5 mg.	500	33.07	57.80	(1) Alembic Chemical (PRECIN).	5 mg.	10	1.00	1.75
	(2) Gujarat Pharmaceutical.	5 mg.	100 (strips)	12.97	21.68	(2) Boots . . .	..		Not Costed.	
	(3) Gurco Pharma	..		Not Costed.		(3) Dey's Medical . .	5 mg.	100 (strips)	6.93	11.73
						(4) Glaxo Labs. (PELATA-BECORLIN).	5 mg.	100	8.53	14.79
						(5) Hoechst (HOSTACORTIN-H).	5 mg.	10×10 (strips)	8.55	15.10
						(6) Merck Sharp . .	..		Not Estimated.	
						(7) Pfizer (DELTACORTRILL).	5 mg.	100	7.40	12.93
						(8) Unichem (UNALGEN-HC).	5 mg.	100	7.78	13.87
						(9) Wyeth Labs. (WYSOLONE).	5 mg.	100	8.54	15.04
						(10) Zandu . . .	5 mg.	1000	71.49	128.61

30.4. The above figures would show that for the costed units the range of prices as determined by us is similar in the case of both sectors of the industry. Small Scale units do not therefore afford any particular economy in comparison with those in the organised sector.

30.5. Comparison is not possible in respect of multiple drug formulations as the proportions of the different basic drugs in such formulations vary from manufacturer to manufacturer.

CHAPTER 31

RETURN ON CAPITAL

31.1. Manufacture of drugs is not a uniform activity but differentiated as between production of basic drugs and the manufacture of formulations. The analysis conducted by us in chapter 27 clearly shows that the capital as well as cost structure differs in either of the two cases. In the case of activity related to the manufacture of basic drugs alone, heavy capital investment is needed and return can therefore be related to the capital employed. On the other hand, in the case of formulations, the industry and consequently individual units are not capital intensive and the proprotion of capital employed to the sales turnover is very much smaller than in the other case. It would be quite safe to adopt the capital employed as basis for the formulation of the rate of return in the case of basic drug manufacture. The profit constitutes the difference between the value of sales and the cost of sales. These have in their turn to be related to the capital employed in order to provide a fair rate of return to the shareholder as well as to provide funds for the discharge of other liabilities imposed on the company such as payment of bonus to workers and taxes etc. In the case of formulating activity the rate of profit cannot be so applied to the employed capital since the quantum of net assets is small and the working capital may be high. The determination of the working capital in the case of formulating activity would be difficult and even if it is done it will be more or less tantamount to the cost of sales. We have therefore in the case of formulations adopted the cost of sales as the basis for the determination of the return. Where both basic drugs manufacturing activity as well as that of formulation is being conducted by the same unit. capital employed for basic drugs has been isolated from the rest of the capital employed and the possibility of allowing return twice over on the same activity has been eliminated.

31.2. The industry has suggested that for both activities turnover and not capital employed should be the criterion for the determination of return. For the reasons mentioned above it is not possible to agree with this suggestion.

31.3. Capital employed consists of net assets and working capital. It has been proposed by the industry that the concept

of capital employed as balance sheet total minus accumulated losses is not appropriate and that the market value of the industry's assets should be substituted for the value shown in the balance sheet. This means the revision of the assets from time to time in order to conform to the current market values of the plant and machinery. This plea has been made before us in the past also on the ground that owing to rise in prices the value of the fixed assets also increases and that these should be revalued. Fixed assets of a company develop as a result of certain investments made during different periods of time. These items undergo depreciation as time passes and necessary deductions for depreciation value are made. If the principle for revaluation were to be adopted it would be necessary to determine the value of each item purchased at widely separate intervals and then verify the values so determined with the help of certain definite standards. This cannot for obvious reasons be done. It is therefore not possible to make any revaluation of the fixed assets. Such revaluations are also not made by any industry nor are these countenanced by the various regulatory provisions or Income Tax Law. Another difficulty that would arise is that the paid up capital which is the source from which the block was setup will also need to be correspondingly increased in order to get revaluation of the block. This for obvious reasons cannot be done since the value of money may have fallen in terms of commodities but cannot be considered to be so in terms of money itself. Any attempt at revaluation of assets would lead to intractable problems and complexities. It has also been argued that the basis for working out return on capital should be what is called the total assets and not the net assets. This would mean the inclusion of reserves for depreciation in the block. Since the element for depreciation has been added as an item of cost it cannot be accounted twice over as an item on which return is to be allowed even if it has not been used. Where the amount allowed as depreciation has already been utilised for increasing assets, the company in addition to the advantage of its being reckoned as an item of cost also gets return on the amount or such amount as may have been added to the assets for the purpose of return. Another suggestion made is that research and development expenditure should be capitalised. As we have discussed already the expenditure on this account is nominal and it has invariably been included as an item of cost. If such expenditure were to be excluded from costs and capitalised, the only result would be the deferment of write off and allowing simultaneously a certain quantum of returnon the element of this expenditure so included in the net assets. The expenditure being small, it has, wherever incurred, been shown

as an item of cost and therefore the question of its capitalisation does not arise.

31.4. with regard to working capital the industry has argued that current liability should not be deducted from current assets. Working capital has been defined as excess of current and liquid assets over current liability required in business having regard to reasonable provision for contingencies so as to enable it to conduct its operations normally and free from financial embarrassment at the same time avoiding losses consequent upon incurring commitments beyond its capacity in the ordinary course of events. It may be possible to carry on business with small margins in cases where goods are sold for cash. While raw materials for manufacture of such goods are bought on credit or where the sale-credit period is shorter than purchase-credit period many businesses particularly small ones work from hand to mouth without reserve strength required to meet special circumstances. In many business companies particularly when these are thriving, the tendency is to run the business on its own reserves rather than to rely on borrowings. Financial institutions take into consideration the net worth of the business as a guiding factor for the limits of accommodation offered. On the other hand, a company using a large percentage of borrowing may have to take a larger outlay on the servicing of the loans. The additional return to which it would thus be entitled would constitute a compensation for the risk taken for borrowing money for establishing and running business. These risks are taken on behalf of the equity shareholders and higher earning would compensate them for the risks taken. Again the working capital is devised on principles of an average for a number of units. Any disadvantage accruing to a unit which has a low borrowing rate would be compensated by the increase resulting from the adoption of the principle of averages. On the other hand, units which have to put much greater reliance on such borrowings will have to find ways and means to reduce them in order that their overall profitability may not partly be eaten into by the interest on loans.

31.5. The net result is that capital employed will be constituted of net fixed assets plus working capital on the assets side and the paid-up capital, reserves, borrowings minus current liabilities on the liabilities side. The industry has through its Associations made a few points with regard to the demand of a high rate of return. It has been mentioned repeatedly that it is a high risk industry. There have no doubt been fluctuations in the destinies of a number of firms abroad in relation to whether or not their innovational activity has kept pace with demand of

the times. These fluctuations have resulted mostly in consequence of international competition. The industry in India is not faced with any such problems. There has been almost no innovational activity in this country; our contribution over the last two decades is that of one drug only out of a total of 719 drugs invented and even this drug does not have a very large market. Of the 34 units costed by us and 11 more units of which we have had occasion to examine balance-sheets we found that losses had been shown only in the case of one small-scale unit and even this unit did not maintain its accounts properly ; all other units have prospered with varying degrees of profitability. Only when a high level of production and substantial exports are established is it necessary for a unit to keep on its toes to be able to introduce with a certain degree of regularity new drugs in order that it may not lose its position. We do not find any special element of risk involved in so far as the drug industry is concerned. On the other hand, from the results of the analysis of the balance-sheets we can safely say that this is quite a safe industry for investments. No higher rate of return over and above the generality of industries in India can on this count be admitted in the case of the pharmaceutical industry.

31.6. A factor which has been cited as having distorted the earning pattern of the industry is the application of indiscriminate price freeze in 1963 and the continuance of uneconomic price control since 1966. It has been argued that the pattern of profitability in these years should not be the basis of any conclusions. While not going into the question of the effect of price freeze on the profitability we may state that our determination of the rate of return is not based on the experience of the industry in the past few years but is in consideration of the requirement needed for the discharge of the liabilities of the companies with regard to their duties towards the Government, shareholders and labour. One of the units has argued for a higher rate of return for the foreign investor on account of the investment made at pre-devaluation rates. It says that in the absence of adequate return there would be no enthusiasm to invest in the drug industry and its growth will be impeded ; the annual consumption of drugs is less than Rs. 4 per head while it is much more in other countries and even in developing countries like Spain the *per capita* annual expenditure is Rs. 38, in the case of France it is more than 24 times that of India ; any slight increase in the price of drugs would not therefore constitute any serious or additional burden on the population ; but if the incentive to invest in the drug industry is impaired its growth will be impeded and once the industry is

damaged it will take the Government and the community for more effort to revive it than the slight initial increase if any that may be occasioned now. This approach presumes that even though there is a case for granting increase in price it is being denied for fear of increasing the burden on the commuity. This is not so. If increase were warrnated we would certainly advocate this, irrespective of the additional burden on the consumer. As to differential treatment to foreign investors we find it difficult to agree with this line of argument. No special treatment is proposed to be given to units which have a foreign base. We are satisfied that the return which we have allowed should attract all categories of investors, foreign or Indian. As we have already mentioned the opportunity to set up an industry in a foreign country and to earn profits is in itself a valuable advantage which is available to the foreign investor in addition to the normal return. We find from the Pharmaceutical Industry source book of U.K. that the return is 15 per cent in U.K. for the pharmaceutical industry as against 14 per cent for other industries. The calculations have been made on the basis of total capital employed less current liabilities and the percentage with profits (gross of depreciation and taxes). According to the U.S.A. Pharmaceutical Year Book the return was 18 per cent as average for the years 1957 to 1966 of net worth and 10.3 per cent as percentage of sales.

31.7. Employed capital as we have adopted it is only a base for refernece since the quantum of profits needed has been determined on the basis of the amounts due to the industry for the purposes of meeting its liabilities and commitments. Differing interpretations with regard to what should be regurded as the capital employed is therefore of no particular significance. The dividends earned as percentages of the total paid up capital by 1333 joint stock companies in India for the years 1962-63 to 1965-66 varied between 10.1 to 10.7 per cent. On the other hand, under the provision of the Bonus Act a minimum dividend of 8.5 per cent has been assumed. Adding to the latter the amounts needed for the payment of the minimum compulsory bonus, the amounts required for being set aside as reserves and amount of corporation tax we have made an analysis of 12 units in so far as their manufacturing activity of basic drugs is concerned. The figures at which we have thus arrived when related to the employed capital as worked out by us come to 13.3 to 20.3 per cent of the employed capital. This is the minimum that would be needed by the units for which this examination has been made in order to pay a dividend of 8.5 per cent as against the higher dividends earned by

the shareholders of the pharmaceutical companies. Table 31.1 gives the details of these figures.

31.8. Considering that the drug industry is oriented to humanitarian services it should not hanker after the high profits and we have assumed a low rate of dividend and consider that the stability of the companies as well as higher margins earned on their side activities would be conducive to the attraction of the requisite capital. We have therefore arrived at the figure of 15 per cent on the employed capital as fair return for the industry in respect of its manufacture of basic drugs.

31.9. In the case of formulations calculations have been made on similar lines and are shown for certain selected units in Table 31.2. It is not possible to relate the quantum of profit that is needed by the units which made formulations only or composite units for the formulating activity only, to the employed capital of formulations alone. For, the manufacture of formulations is an activity which does not require heavy deployment of plant and machinery. In a number of cases formulations are manufactured by small units in rented buildings or even in laboratories. In such cases the investments are meagre and not commensurate with the volume of work done with manual labour and the profit needed to run the concern would be unrealistic if related to the employed capital. The peculiar features which exist in the market also warrant consideration for providing a margin of return to cover different scales of discounts, namely to the trade, wholesalers and retailers. The margin should therefore be such as to absorb these elements providing a fair profit for the formulator either in the small scale or large scale sector of the industry. Of the units selected by us for costing there are ten units with exclusive formulating activity. Excluding one which showed a loss of 6.1 per cent and another for which analysis of Balance Sheet could not be done, the rest showed profits ranging from 4.8 per cent to 19.6 per cent on the total cost of sales. Relating the amounts needed by formulators to meet their commitments and liabilities to the cost of the drugs manufactured, we find that the range is from 13.9 to 15.7 per cent and we consider therefore that a mark up of 15 per cent would be reasonable. We have therefore added the amount of 15 per cent on the cost of the drugs as the return on formulations.

TABLE 31.1

Computation of required surplus for basic drug manufacturers

Sl. No. of units	Required surplus Rs./lakhs	Capital employed Rs./lakhs	Required surplus expressed as percentage of capital employed
1	2	3	4
1	3·85	26·03	14·8
2	23·69	178·30	13·3
3	38·75	271·23	14·3
4	0·42	2·03	20·7
5	2·68	19·35	13·9
6	11·97	73·00	16·4
7	55·03	354·80	15·5
8	18·79	114·16	16·5
9	176·93	1,065·99	16·6
10	47·08	245·09	19·2
11	37·94	192·32	19·7
12	0·50	2·46	20·3

TABLE 31.2

Computation of required surplus as percentage of cost of sales for formulators

Sl. No. of units	Required surplus Rs./lakhs	Cost of sales Rs./lakhs	Required surplus as percentage of cost of sales
(1)	(2)	(3)	(4)
(1)	5·91	37·66	15·7
(2)	10·76	77·20	13·9
(3)	3·78	24·55	15·4

CHAPTER 32

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Our conclusions and recommendations are summarised below :—

(1) Though the actual terms of refernece relate to price reduction we have interpreted the reference in terms of the provisions of Section 12(d) of the Tariff Commission Act as an inquiry on prices of drugs.

(Paragraph 1.2)

(2) The scope of the inquiry covers (1) the 18 specified drugs sold in bulk ; (2) single drug formulations of the specified drugs each containing any one of the specified drugs as its major therapeutic ingredient ; and (3) multiple drug formulations of the specified drugs each containing to two or more of the specified drugs only without addition of drugs outside the list.

(Paragraph 2.2)

(3) The difficulties mentioned by the Director, Drugs Control Administration, Maharashtra in the implementation of the Drugs Prices (Display and Control) Order, 1966 may be considered and suitable modifications introduced.

(Paragraphs 4.2.9 and 4.2.10)

(4) There ought to be uniformity of standards of administration, testing, approval and other matters regulating manufacture of drugs. Policies may be devised and implemented in such a way that the present disparity in these standards is removed.

(Paragraph 4.3.5)

(5) Steps may be taken both by Government and by the drugs and pharmaceuticals industry to arrive at uniform classifications and sub-classifications of the basic drugs. Information may be collected and published for these on uniform lines.

(Paragraph 6.1.4)

(6) Steps may be taken to ensure that State Drugs Controllers maintain records of the licences issued by them to manufacturers of drugs and these records should be readily available. It is also desirable that the list of such licences is published periodically on a Central basis for the whole country and it should contain the names of the units with location, year of grant of licence, drugs and formulations specified in the licence, installed capacity and annual production in terms of the quantity of formulations and drugs to be manufactured or suitable aggregates of the same.

(Paragraph 6.3.3)

(7) Even though there are more than 2,000 small scale units and each one functions under a licence, very little information is available in respect of their activities and contribution to the pharmaceutical industry. The State Drugs Controllers should collect information annually in respect of the small scale units on the lines indicated in paragraph 6.3.3.

(Paragraph 6.3.3)

(8) There are cases where the licensed capacities of units for manufacture of basic drugs are substantially higher than the capacities installed. While it is desirable to recognise the higher installed capacities where these have been established, it would be equally advisable to reduce licensed capacities where these have not been set up within the period stipulated for installation. This would be conducive to more healthy growth of the industry and would lead to more scientific assessment of the requirements of the industry particularly in regard to foreign exchange and the size of other supporting industries producing raw materials.

(Paragraph 7.1.6)

(9) In the drugs and pharmaceuticals industry as in many other industries, on the one hand, quite a number of licences issued for installation and expansion have remained dormant, on the other, there are numerous cases where installed capacity has exceeded the licensed capacity and been permitted to so exceed with *ex-post-facto* approval in selected instances on the ground of increased production achieved and refusal in others. There is no uniform or firm policy at work in this regard. It would be opportune to make a thorough review of the working of the Industries (Development and Regulation) Act and the Rules and actual procedures adopted in granting the licences and approval or disapproval of changes in capacity from time to time.

(Paragraph 7.1.7)

(10) Suitable additions may be made to the Drugs and Cosmetics Rules for specifying the capacity of small scale units licensed or approved to manufacture basic drugs.

(Paragraph 7.1.8)

(11) The under-utilisation of capacity for the specified basic drugs does not reveal a healthy picture of the drugs industry. Extensive replanning is needed for achieving greater utilisation of capacities especially in the case of the units manufacturing the specified basic drugs.

(Paragraph 8.2.2)

(12) Steps need to be taken to ensure that the units licensed to manufacture basic drugs set up capacity within a stipulated period of time or the licence should be revoked. In the case of drugs which have to be imported owing to lack of adequate capacity, this principle should be enforced with greater vigour.

(Paragraph 9.4)

(13) Our estimates of consumption of the specified basic drugs for the years 1968, 1969 and 1970 are given in Table 11.4.

(Paragraph 11.5)

(14) For raw materials of which indigenous supplies are available, imports need to be discouraged, even if the cost of the imported material is lower than that of the indigenous one. Where the indigenous supply needs to be supplemented by partial imports, it would be desirable to ensure that some system of pooling is attempted so that the raw materials are available at the same rates to the different manufacturers and there is no unfair advantage to a particular manufacturer which is not available to the rest.

(Paragraph 12.1.5)

(15) It would be desirable to permit imports at concessional rates of customs duty in respect of specific raw materials and intermediates which are needed by the drugs and pharmaceuticals industry, until such time as indigenous capacities for such raw materials and intermediates are set up.

(Paragraph 12.1.5)

(16) A stage has now been reached when slaughter houses have to be used not only for providing meat as an item of food but also as sources of some of the important medicinal and biological raw materials. The State must therefore take in hand the

regulation of large slaughter houses in such a way that the bye-products are not wasted but can be retrieved and utilised for medicinal and therapeutic purposes.

(Paragraph 12.2.8)

(17) The quality of materials like glass containers, rubber stoppers and aluminium strips and the lack of uniformity in size need the close attention not only of the industry but also of Government and its various agencies which control and regulate production and quality in order to ensure that the indigenous industry is not found wanting even in those spheres where self-sufficiency is claimed but has not been achieved owing to lack of quality and conformity to specifications. Attention needs also to be paid very closely to the arrangements for raw materials and intermediates not produced by making their supply certain. Schedules need to be drawn up for this purpose in order to ensure that with a certain degree of vigilance of programme planning uncertainties are eliminated.

(Paragraph 12.2.8)

(18) It would be desirable to emulate the example of many advanced countries of Europe, particularly Denmark where no drugs in the form of capsules are marketed and drugs are sold in the form of tablets so that the use of imported Gelatine may be eliminated and foreign exchange saved.

(Paragraph 12.2.8)

(19) The existing legislation in our country recognises both generic names as well as brand names, but it is incumbent on the manufacturer to enter the generic name also prominently on the container. It would be desirable to revise generic names and introduce an abbreviated nomenclature for the purpose of drug manufacture with short, distinctive and easily spelt out names.

(Paragraph 13.25)

(20) Wherever preparations are prescribed in the form of combinations of two or more ingredients, it should be incumbent on the manufacturers who market such combinations to present to the Drugs Controller, Government of India, pharmacological and clinical data not only to prove the efficacy but also the

superiority of such combinations over the straightforward preparations included in the pharmacopoeia or the National Formulary. When such clinical data are presented the manufacturer should also suggest a generic name for it which, if acceptable, would form a generic name for that product and, if not acceptable, it may be open to the controlling authority to suggest an alternative generic name.

(Paragraph 13.26)

(21) The Patent Law is essentially meant to encourage inventions and in the national interest. Hence, all precautions need to be taken to see that patents which are granted in our country either in respect of indigenous or foreign inventions are not abused, *i.e.*, are not utilised to prevent further development.

(Paragraph 14.10)

(22) In the interests of saving of foreign exchange as well as possible economy of costs Parke-Davis, a manufacturer of the basic drug, Amodiaquin, should manufacture 4 : 7 dichloroquinoline from metachloro aniline, particularly when another unit with lesser facilities can do so and it should not therefore be allowed to import this intermediate. On the other hand, if it is not possible to do so, Bengal Immunity Co. should step up its production of 4 : 7 dichloroquinoline, so that it can meet the demand of other units also.

(Paragraph 15.7.1)

(23) It would be desirable for the other units producing the basic drug chloropropamide to utilise the same process as adopted by Bengal Chemical or alternatively a more efficient one or purchase locally produced intermediates.

(Paragraph 15.7.1)

(24) 8-hydroxyquinoline or dichloronitrobenzene needed for the manufacture of Iodo-chlor-hydroxy-quinoline should be produced locally.

(Paragraph 15.7.1)

(25) It is desirable to go into the reasons for the high cost of production of Vitamin-A by Glaxo Laboratories and if they are due to any process deficiencies, the unit should adopt the more efficient process of Roche Products.

(Paragraphs 15.7.2 and 28.2.2)

(26) Sarabhai Merck should pay serious attention to the reasons for the low yield of Vitamin-C obtained by it.

(Paragraph 15.7.3)

(27) It is relevant to consider whether manufacture of sulphadiazine involving a perpetual drain of foreign exchange for importing raw materials should be continued once the manufacture of sulphadimidine from predominantly indigenous raw materials is established.

(Paragraph 15.7.4)

(28) In order to have a more correct picture of the extent to which sub-standard drugs are being produced in the country it would be desirable to have analyses separately for generic as well as brand name products and also by units in the large scale as well as the small scale sectors.

(Paragraph 17.13)

(29) The anomalies pointed out by the manufacturers' association in the procedures of Central and State Excise Authorities should be removed.

(Paragraph 19.4.4)

(30) Imports of basic drugs should always be related to the requirements of the country. Indian economy has not yet reached a stage and particularly in the chemical and pharmaceutical industries, where it can be exposed to competition from abroad or expected to establish its own market in the international field and compete at the level of international prices which in many cases are much lower than indigenous prices prevailing in the country of origin. This industry, like other Indian industries has been enjoying protection in the form of quantitative restrictions of imports and if such protection is withdrawn all of a sudden and the industry is exposed to foreign competition, disastrous consequences are likely to ensue. These have been amply demonstrated during our inquiry for the 18 drugs, when in the case of not less than six items, the fall in the domestic production and setback to the industry has resulted from unplanned imports based on such estimates of production and demand, which were neither realistic nor helpful to the consolidation and development of the domestic units. Basic manufacture of drugs in the country has been established after considerable efforts and no steps should be taken which may retard the progress already made.

(Paragraph 20.7)

(31) Unless the costs of production of basic durgs are brought down drastically, it is not possible to build up any substantial exports, except at the cost of the internal market and by selling our products at less than half the cost.

(Paragraph 21.7)

(32) Sales promotion may be considered unobjectionable in the case of new drugs provided that no unsubstantiated claims are made but it should not be as relentless as it appears to be at the present moment in the case of already well established drugs and in any case the total expenditure on sales promotion should not exceed ten per cent of the ex-factory cost of the drug.

(Paragraph 22.2.4)

(33) The domestic prices of the selected drugs are generally very much lower in most cases in other countries.

(Paragraph 24.5)

(34) By and large, the prices in the Indian market of formulations compare favourably with the prices of similar formulations in the domestic markets of other countries.

(Paragraph 24.7)

(35) The price disparties of drugs sold under brand names and generic names are not because of these names but because of the units which manufacture them. Price differentials are in the present analysis mor a factor of standing and size of the units than of the brand name itself.

(Paragraph 24.12)

(36) A commission of 25 per cent (15 per cent to the retailer and 10 per cent to other intermediaries) may be allowed for ethical drugs. The commission allowed for non-ethical drugs may be 15 per cent, *i.e.*, 10 per cent for the retailer and 5 per cent for other intermediaries.

(Paragraph 26.4)

(37) The sales turnover is roughly equivalent to the capital employed in the case of manufacturers of basic drugs, very much higher in the case of composite units and the highest for formulators only. Manufacture of basic drugs is a capital-intensive activity and the profitability is to be judged from the point of view of the captial employed. On the other hand, formulating

activity by itself is not capital-intensive and profitability is related to the sales turnover since capital employed is about half of the amount of sales turnover.

(Paragraph 27.4.8)

(38) The fair ex-works selling prices recommended by us or the specified basic drugs are given in Table 28.2.

(Paragraph 28.20.1)

(39) The fair selling prices recommended by us for the selected essential formulations are given in Tables 29.2 and 29.3. Additional charges for dispensing tablets and capsules in loose form may be allowed but no addition is needed in the case of vials, ampoules and tablet strips dispensed from larger packings.

(Paragraphs 29.9 and 29.10)

(40) The selling prices recommended by us for formulations are generally lower than the prevailing market prices, although in some cases these may appear to be high. Invariably in all such cases the present prices are based on imported materials the prices of which are lower than those of indigenous materials. The prices worked out by us appear therefore to be higher since those are based on indigenous raw materials. If such drugs continue to be formulated by using imported raw materials, the prices recommended by us would need to be revised.

(Paragraph 29.11)

(41) The element of excise duty has not been taken into account in fixing prices of single drug formulations sold under generic names or brand names, although excise duty is payable on formulations sold under brand names. We do not see any reason to distinguish between brand name and generic name formulations and hope that the use of brand names would be discouraged.

(Paragraph 29.12)

(42) Our findings on cost of production of basic drugs by small scale units are given in paragraph 30.2.

(Paragraph 30.2)

(43) Small scale formulating units do not afford any particular economy in comparison with those of the organised sector.

(Paragraph 30.4)

CHAPTER 33

ACKNOWLEDGEMENTS

We wish to express our thanks to the representatives of drugs and pharmaceuticals industry, various associations connected with the industry and trade and representatives of Central and State Government departments for furnishing us with information and tendering evidence in connection with this inquiry. Our thanks are also due to the Assessors, Shri S. K. Borkar, Dr. B. Shah, Dr. K. Ganapathy and Dr. S. S. Gothoskar for their valuable suggestions and assistance with their expert knowledge of the industry. We are specially thankful to Dr. Gothoskar who being resident in Bombay, was available for day to day consultations and advice.

M. ZAHEER
CHAIRMAN

K. T. MERCHANT
MEMBER

S. SUBRAMANIAN
MEMBER

P. V. GUNISHASTRI
SECRETARY

Bombay, 26th August, 1968.

APPENDIX I

(*Vide* Paragraph 3.1)

List of firms/bodies/Associations to whom the Commission's questionnaires/letters were issued and those who replied.

*Those who replied.

@Those who replied that they did not come within the purview of the inquiry.

I. *Manufacturers of basic drugs.*

(a) *Large scale units*

*1 Albert David Ltd., 5/11, D. Gupta Lane, *Calcutta*-50.

*2 Alembic Chemical Works Co. Ltd., Alembic Road, *Baroda*-3.

*3 Atul Products Ltd., Atul, *Bulsar*.

*4 Bengal Chemical and Pharmaceutical Works Ltd., 164, Maniktala Main Road, *Calcutta*-54.

*5 Bengal Immunity Co. Ltd., Immunity House, 153, Dharmatala Street., *Calcutta*-13.

*6 Biological Evans Ltd., 18/1 & 3, Azamabad, *Hyderabad*-20.

*7 Bio-Chemical and Synthetic Products Ltd., Sanatnagar, *Hyderabad*.

*8 Boehringer-Knoll Ltd., United India Bldg., P. Mehta Road, *Bombay*-1.

*9 Boots Pure Drug Co. (India) Ltd., 17, Nicol Road, *Bombay*-1.

*10 Brahmachari Research Institute Pvt., Ltd., 82/3A Bidan Sarani, *Calcutta*-4.

*11 Calcutta Chemical Co. Ltd., *Calcutta*.

*12 Chemo-Pharma Laboratories Ltd., Plot No. C. S. 215, Sewri, *Bombay*-15.

*13 Cynamid India Ltd., 254-D2, Dr. Annie Besant Road, P. O. Box 6577., Worli, *Bombay* -18.

*14 Dey's Medical Stores (Mfg.) Pvt. Ltd., 6-D, Lindsey Street., *Calcutta*-16.

*15 East India Pharmaceutical Works, Ltd., 102, Syamaprasad Mukherjee Road, *Calcutta*-26.

*16 Glaxo Laboratories (India) Pvt., Ltd., Dr. Annie Besant Road, Worli, *Bombay*-18.

*17 Haffkine Institute, Parel, *Bombay*-12.

*18 Hind Chemicals Ltd., Harris Ganj, *Kanpur*.

*19 Hindustan Antibiotics Ltd., Pimpri, *Poona*-8.

*20 Hoechst Pharmaceuticals Ltd., Dugal House, Backbay Reclamation, *Bombay*-1.

*21. Mac Laboratories Pvt. Ltd., Vidyavihar, Kirol, *Bombay*-77.

*22 May & Baker Ltd., Bombay Agra Road, Bhandup, *Bombay*-78.

*23 Merck Sharp & Dohme of India Ltd., Dugal House, Backbay Reclamation, *Bombay*-1.

*24 Oriental Pharmaceutical Industries Ltd., 64-66, Tulsi Pipe Road, Mahim, *Bombay*-16.

*25 Parke-Davis (India) Ltd., Kurla Andheri Road, Saki Naka, *Bombay*-70.

*26 Pfizer Ltd., ICICI Bldg., 163, Backbay Reclamation, *Bombay*-1.

*27 Roche Products Ltd., 28, Tardeo Road, *Bombay*-34.

*28 Sarabhai Merck Ltd., P. B. No. 80, Wadi Wadi, *Baroda*.

*29 Synbiotics Ltd., P. Box No. 129. Wadi Wadi, *Baroda*.

*30 Standard Pharmaceuticals Ltd., 67, Dr. Suresh Sarkar Road, *Calcutta*-14.

*31 Themis Pharmaceuticals, 38, Suren Road. Andheri East, *Bombay*-58.

*32 Unichem Laboratories Ltd., 4, 5, 6, Jogeshwari Estate, *Bombay*-60.

*33 Wander Pharmed Ltd., 33-A, New Marine Lines, *Bombay*-1.

*34 Wyath Laboratories Ltd., Steelcrete House, Dinshaw Watcha Road, *Bombay*-1.

(b) *Small scale units*

*1 Alliance Trading Corporation P. Ltd., 15, Suinhoe Lane, Kasba, *Calcutta*-42.

*2 British Medicine & Pharmaceutical Co., 44, Ezra Street, *Calcutta*-1.

*3 Eagle Laboratory, 17, Pollock Street, *Calcutta*-1.

*4 G. D. A. Chemicals Ltd., 36, Panditia Road, *Calcutta*-29.

*5 Dr. Karanth's Pharma-Chemical Industry, B-11, Industrial Estate, Sanatnagar, *Hyderabad*-18.

*6 Navarathna Pharmaceutical Laboratories, P. O. Box No. 13, Mattancheri, *Cochin*-2.

*7 Neogy Laboratories, 205, Netaji Subhas Road, Behala, *Calcutta* 34.

*8 Sunny Industries (P) Ltd., 23/3/1B, Rupnarayan Nandan Lane, *Calcutta*-25.

*9 Syno-Chem Laboaratories, 16/1, Shamsul Huda Road, P. B. No. 16004, *Calcutta*-17.

*10 Saneeta Laboratories, 89B/90 Industrial Estate, Pologround, *Indore*.

*11 Swiss Chemicals, A-7-142/1 Golconda Cross Road, Musheerabad, *Hyderabad*-20.

II. *Prospective manufacturers of basic drugs*

(a) *Large scale units*

*1 Atul Drug House, 85-D, Dr. Annie Besant Road, *Bombay*-18.

*2 Bayer India Ltd., 82, Veer Nariman Road, *Bombay*-1.

*3 Chemical. Industrial and Pharmaceutical Laboratories, Bellass is Road, *Bombay*-8.

*4 Chowgule (Hind) P. Ltd., India House, Fort Sreet, *Bombay*-1.

*5 Indian Drugs and Pharmaceuticals Ltd., 5, Parliament Street, *New Delhi* -1.

*6 Indian Research Institute P. Ltd., 3 Rustomjee Parsee Road, Cossipore *Calcutta*-2.

*7 Kemp & Co. Ltd., 88-C, Old Prabhadevi Road, *Bombay*-28.

*8 New Pharma Industries Private Ltd., Kasturi Building, J. Tata Road, *Bombay*-1.

*9 South India Research Institue, *Vijayawada* (A.P.)

*10 Warner Hindustan Ltd., Sovoy Chambers, Wallace Street, *Bombay*-1.

(b) *Small scale units*

*1 Gujarat Pharmacetuical & Chemical Works, Near Chamundamata, Asarwa, *Ahmedabad*-16.

*2 Qunochem Laboratories, 893/1 Khan Bang, *Sangli* (Maharashtra).

*3 Texdyes Corporation, 127, Mahatma Gandhi Road, *Bombay*-1.

*4 Universal Chemicals, Kothan Building, Arthur Road, *Bombay*-11.

*5 Usan Laboratories P. Ltd., 13, Dattatraya Road, Santa Cruz, *Bombay*-54.

III. *Formulators*

*Those who replied.

@Those who replied that they were not manufacturing formulations of specified drugs.

(a) *Large scale units.*

Sl. Nos. 1-34 of I (a) above.

Sl. Nos. 1-10 of II (a) above.

@45 Aphali Pharmaceuticals Ltd., Station Road, Post Box No. 4, *Ahmednagar.*

*46 The Angle-French Drug Co. (Eastern) Ltd., 28, Tardeo Road, *Bombay*-34.

@47 Alta Laboratories Ltd., P. O. Box No. 5569, Vissonji Park, Naigam Cross Road, Dadar, *Bombay*-14.

48 Amrutanjan Ltd., 14/15, Luzchurch Road, *Madras*-4.

49 Associated Capsules P. Ltd., 131, Kandivili Industrial Estate *Bombay*-67.

*50 Adcco Ltd., Adcco Nagar, *Hooghli Dt.* (W. Bengal).

*51 British Drug House (India) P. Ltd., 18, Graham Road, Ballard Estate, *Bombay*-1.

*52 Burroughs Wellcome & Co. (India) P. Ltd., 16, Bank Street, *Bombay*-1.

*53 Chemical, Industrial & Pharmaceutical Laboratories, Ltd., 289, Bellasis Road, Byculla, *Bombay*-8.

*54 Capsulation Services P. Ltd., Bank of Baroda Building, Apollo Street, *Bombay*-1.

*55 Ciba of India Ltd., 14, J. Tata Road, Box No. 1123, *Bombay*-1.

*56 Cilag-Hind Ltd., Kasturi Building., J. Tata Road, *Bombay*-1.

*57 Crookes Interfran Ltd., 254-D, Dr. Annie Besant Road, Worli, *Bombay*-18.

*58. The Fairdeal Corporation P. Ltd., Laxmi Buildings, Sir P. M. Road, P. Box No. 1925, *Bombay*-1.

*59 Geoffrey Manners & Co. Ltd., Magnet House, Ballard Estate, P. O. Box 976, *Bombay*-1.

@60 German Remedies P. Ltd., P. O. Box No. 1945, *Bombay*.

@61 Gluconate Ltd., 70-A, Prince Street., *Calcutta*-13.

62 Henry S. Clark & Co., Mission Row Extension, *Calcutta*-13.

63 Hyderabad Chemical and Pharmaceutical Works Ltd., P. B. No. 182, Azamabad, *Hyderabad*.

@64 Indian Process Chemical Laboratory, Yeshwantapur P. O., *Bangalore*-22.

*65 Indo-Pharma Pharmaceutical Works P. Ltd., 83, Kelkar Road, Dadar, *Bombay*-14.

*66 Intrac Pharmaceuticals, P. O. Box No. 1464, *Madras*-18.

@67 Johnson & Johnson Ltd., 30, Forjett Street., *Bombay*-2C.

*68 Khandelwal Laboratories, 79/87, Kala Chowki Road, Post Box No. 7808, *Bombay*-33.

*69 Laboratories Grimault Pvt. Ltd., 20, Haines Road, *Bombay*-11.

70 Mehta Pharmaceuticals P. Ltd., G. T. Road, Chennarta, *via*. *Amritsar*.

*71 Martin & Harris (Pvt.) Ltd., 132, Acharya Jagadish Chandra Bose Road, *Calcutta*-14.

@72 The Mysore Industrial & Testing Laboratory Ltd., I. T. L. Buildings, Malleswaram, *Bangalore*-3.

@73 Nila Products Ltd., 98, Dadar Main Road, *Bombay*-14.

74 Prof. Gajjar's Standard Chemical Works Ltd., 2, Masani Lane, Kurla, *Bombay*-70.

@75 Pharmed P. Ltd., 76, C Rafi Ahmed Kidwai Road, *Bombay*-19.

@76 Richardson Hindustan Ltd., Tiecicon House, P. O. Box No. 6276, Haines Road, *Bombay*-11.

*77 Rallis India Ltd., (Pharmaceutical Division). Ralli House 21, Ravelin Street, *Bombay*-1.

@78 Raptakos, Brett & Co. P. Ltd., P. Box No. 6562, 47, Dr. Annie Besant Road, Worli, *Bombay*-18.

@79 Reckitt & Colman of India Ltd., 41, Chowringhee Road, *Calcutta*-16.

*30 Sarabhai Chemicals, (Karamchand Premchand Pvt. Ltd.,) Post Box No. 31, Wadi, Wadi, *Baroda*.

@81 Suhrid Geigy Ltd., P. O. Box No. 48, Wadi, Wadi, *Baroda*.

*82 Sanitex Chemical Industries, Industrial Road, *Baroda*-3.

83 Smith & Nephew (India) Ltd., 'Parijat', Marine Drive, *Bombay*-2.

84 Sandoz India Ltd., Dr. Annie Besant Road, Worli *Bombay*-18.

*85 Smith Stanistreet & Co., Ltd., 18, Convent Road, *Calcutta*-14.

*86 Spencer & Co. Ltd., 153, Mount Road, *Madras*-2.

*87 Stddmed Private Ltd., 84, Chowringhee Road, *Calcutta*-20.

*88 Therapeutic Pharmaceuticals P. Ltd., 54, Procter Road, *Bombay*-1.

@89 Tata Fison Industries Ltd., Union Bank Building.. Dalal St., Fort, *Bombay*-1.

*90 U. S. Vitamin & Pharmaceutical Corporation India Ltd., 43 Forbes Street, Fort, *Bombay*-1.

*91 Zandu Pharmaceutical Works Ltd., Gokhale Road, South *Bombay*-28.

@92 Chesebrugh Pond's Incorporated, 13, Gunbow Street, *Bombay*-1.

@93 Muller & Phipps (India) Pvt. Ltd., Queen's Mansions, Bastion Road, *Bombay*-1.

@94 J. K. Helene Curtis Ltd., J. K. Building, Ballard Estate, *Bombay*-1.

@95 Herbertsons Ltd., Ewart House, Bruce Street, *Bombay*-1.

@96 Schering Asia 73/74, 'Advent', Foreshore Road, *Bombay*-1.

@97 Smith Kline & French (India) Ltd., 25-31 Rope Walk Lane, *Bombay*-1.

@98 Colgate-Palmolive (India) P. Ltd., Steelcrete House, Dinshaw Watcha Road, *Bombay*-1.

@99 Gillanders Arbuthnot & Co. Ltd., Post Box No. 281, *Bombay*-1.

@100 J. L. Morrison, Son & Jones (India) Ltd., 'Crystal' 79, Dr. A. Besant Road, *Bombay*-18.

@101 Vicks Products India, Tiecicen House, Heines Road, *Bombay*-11.

@102 T. T. Krishnamachai & Co, Post Box No. 200, *Madras*-1.

@103 Tata Chemicals Ltd., Bombay House, Bruce Street, *Bombay*-1.

@104 Hindustan Organic Chemicals Ltd., *Rasayani* (Dt. Kolaba).

@105 Indian Shelling Ltd., Mercantile Chambers, Graham Road, Ballard Estate, *Bombay*-1.

@106 Parry & Co. Ltd., Dare House, *Madras*-1.

(b) *Medium and small scale units.*

Sl. Nos.1-11 of I(b) above.

Sl. Nos.1-5 of II(b) above.

*17 Acichem Laboratories, 1, Prabhat Nagar, Jogeshwari (West) *Bombay*-60.

*18 Akin Laboratories, 11-5-8, Nampalli, *Hyderabad*-4. (A.P.).

*19 AMAVA, 2/1, Bidhan Sarani, *Calcutta*.

*20 Amber Research & Pharmaceutical Works, 220, Himalaya House, Phalton Road, Fort, *Bombay*-1.

*21 Atco Pharma Laboratories, 135, Princes Street, *Bombay*-2.

*22 Auxil Pharmaceuticals, 1, Swami Vivekananda Road, Andheri (West), *Bombay*-58.

*23 Beachem India, Pvt. Ltd., Mahim, *Bombay*-16.

*24 Beacon Pharmaceuticals, 135/36, Andheri Kurla Road, *Bombay*-69.

*25 Biochem Pharmaceutical Industries, 'A' Aidun Bldg., 1st Dhobitalao Lane, Post Office Box No. 2217, *Bombay*-2.

*26 Binichem Laboratories, 123/24 Andheri Kurla Road, Old Ashram, *Bombay*-69.

*27 Bengal Health Products Pvt. Ltd., Dehiserampur Road., *Calcutta*-14.

*28 Bronkol Pvt. Ltd., 63, S. K. Dey Road, *Calcutta*-48.

*29 Croydon Chemical Works P. Ltd., Post Box No. 1992, 25, Dalal Street, *Bombay*-1.

*30 Cadila Laboratories, Ghodasar, Maninagar, *Ahmedabad*-8.

*31 Chelsea Chemical Laboratories, Hadapsar Industrial Estate, *Poona*-13.

*32 Comteck Laboratories, 85, Dr. Annie Besant Road, Worli, *Bombay*-18.

*33 Diamond Drugs and Chemical Works, 37, Shri Gopal Mullick Lane, *Calcutta*-12.

*34 Duggan Laboratories (India), Pushpa Housing Society, Daftary Road, Malad (East), *Bombay*-64.

*35 Emsons Pharmaceuticals Pvt. Ltd., 144A, Rashbehari Avenue, *Calcutta*-29.

*36 Eastern-Pharma Products, 45/D/1, Moore Avenue, *Calcutta*-40.

*37 Eisen Pharmaceutical Co. (Pvt.) Ltd., 1246, Apte Road, *Poona*-4.

*38 Edison Continental Laboratories Pvt. Ltd., 135, Annie Besant Road, Worli, *Bombay*-18.

*39 Fleming Pharmaceuticals, 30-A.C. Parsee Panchayat Road, Andheri (East), *Bombay*-69.

*40 Franco-Indian Manufacturers Ltd., Bapnu Char, Hornby Vellard, *Bombay*-18.

*41 Flora Pharma, 58/72, Birhana Road, *Kanpur*.

*42 G. D. A. Chemicals Ltd., Panditia Road, *Calcutta*-29.

*43 Gurco Pharma Pvt. Ltd., 35 M. Block, Connaught Circus, P. O. Box No. 655, *New Delhi*-1.

*44 Glucodex Laboratories (P) Ltd., 22/1/1A, Rajamahindra Road, Paikpara, *Calcutta*-37.

*45 Imperial Pharmaceutical Products, 49, Dockyard Road, Mazgaon, P. O. Box. 16234, *Bombay*-10.

*46 Ipca Laboratories P. Ltd., 95, Morland Road, Byculla, *Bombay*-8.

*47 Indian National Drugs Co. Pvt. Ltd., 5/2 Beleghata Main Road, *Calcutta*-10.

*48 Indo-French Pharmaceutical Co., Catholic Centre, P. O. Box No. 1226, *Madras*-1.

*49 Jaggat Pharma Pvt. Ltd., Plot No. 4, Shantinagar Industrial Estate, Vakola, Santacruz East, *Bombay*-55.

*50 Lyovak Laboratories, 26-Nathoo Industrial Estate, Andheri-Kurla Road, *Bombay*-59.

*51 Lyka Labs., Subhas Road A, Vile Parle (East), *Bombay*-57.

*52 Milnex Laboratories, 9, Sprot Road, Ballard Estate, *Bombay*-1.

*53 Medical Products of India, 101/103, Bhagat Singh Road, Vile Parle West, *Bombay*-56.

*54 Neil Pharmaceuticals, Post Box 7902, Tulsiwadi Post Office, D-4, Commerce Centre, Tardeo Road, *Bombay*-34.

*55 Navarathna Pharmaceutical Laboratories, P. O. Box No. 13, Manthra Road, *Cochin*-2.

*56 Nivea Pharmaceuticals Pvt. Ltd., Post Box No. 174, Gillander House, *Calcutta*-1.

*57 Nymph Laboratories, 164, Tulsi Pipe Road, Opp. Phoenix Mills, Lower Parel, *Bombay*-13.

*58 The Orissa Red Cross Blood Bank, Manglabag, *Cuttack*.

*59 Pharmia Laboratories, Machavaram, *Vijayawada*-4 (A.P.)

*60 Pharma Medico (India) Pvt. Ltd., 1, Prabhat Nagar, Jogeshwari (West), *Bombay*-60.

*61 Pharma-Products Pvt. Ltd., 1, Vallam One Road, Thanjavur, *Madras*.

*62 Pharmaceutical & Research Laboratories, 90, Dr. Guruswamy, Mudaliar Road, *Madras*-10.

*63 Pharm-Chem Manufacturing Corporation, 11, Chakravarthy Ashok Road, Kanjurli East, *Bombay*-67.

*64 Phoenix Drug House Pvt. Ltd., 30 A.K.P. Roy Lane, *Calcutta*-31.

*65 Pharmakon Laboratories, 22/A, G. B. Road, Malad, *Bombay*-64.

*66 The Pharmed Research Laboratory, 39/6, Feeder Road, *Calcutta*-56.

*67 Royal Laboratories, J. Nehru Road, Afzal Gunj, *Hyderabad*-12.

*68 Retort Laboratories, 9-A, McNichols Road, *Madras*-31.

*69 Roc Pharmaceuticals, 808 B, Ambedkar Road, Near Broadway Cinema, Dadar, *Bombay*-14.

*70 Samarth Pharmaceuticals, Ram mandir Road, Oshiwara Bridge, Goregaon (West), *Bombay*-62.

*71 The Syatho Pharma Pvt. Ltd., 80/81, Krishna Bazar, Cloth Market *Delhi*-6.

*72 Shetty's Pharmaceuticals and Biological Ltd., A-7-12. Mushirabad, *Hyderabad*-20(A.P.)

*73 Sarpin Pharmacal, 2, Nanabhoy Lane, Fort, *Bombay*-1.

*74 Surya Chemicals, Daliganj, *Lucknow*-7.

*75 Stamac Products, 103A/108B, Hazra Road, *Calcutta*-56.

*76 Sunways (India) Pvt. Ltd., Wassiamal Bldg., (Block No. 19), Grant, Road, *Bombay*-7.

*77 Trinity Laboratories, Dady Seth House, 44, Cawasji Patel Street, *Bombay*-1.

*78 United Pharma (India) Pvt. Ltd., 95, Nyneappa Naik Street, P. O. Box No. 52, *Madras*-3.

*79 Livite Laboratories (India) P. Ltd., Tamarind House, A/6 Tamarind Lane, *Bombay*-1.

*80 Emson & Co., 266, Jawahar Nagar, Goregaon, *Bombay*-62.

*81 Pelican Pharmaceuticals & Chemical Industries, Maheswar Darshan, Borrement No. 3, 4, S. V. Rao, Santacruz, *Bombay*-54.

@82 Ascepticus Company, Swadeshi Market, Kalbadevi Road, *Bombay*-2.

@83 Bharat Drug House, Devkaran Mansion, 20, Mangaldas Road, P. B. No. 2570, *Bombay*-2.

@84 Dipak Laboratories, 55, Canning Street, Western Portion, 2nd Floor, Room No. 16, *Calcutta*-1.

@85 Great India Industrial & Pharmaceutical Laboratories, 221, Jijibhoy Lane, *Bombay*-12.

@86 Ramco Chemical Works, 661/6, Kanuga Mansion, Kopasis Bazar, Railway Post, *Ahmedabdad*.

@87 Pharmachicals, Kolawalla Bldg. Soneri Road, Vile Parle East, *Bombay*-57.

@88 Ellis & Martyn, Opp. G.P.O. Kothari Mansion, P.O. Box 414, *Bombay*-1.

@89 Incons Industrial & Technical Consultants & Analytical Chemists, Vishweshwar Nagar, Vikas Estate, Off Aarey Road, Goregaon (East), *Bombay*-62.

@90 The Whitehall Pharmacy (Pvt.) Ltd., 131, Lower Circular Road, *Calcutta*-14.

@91 The Carbon Laboratories, 17, Mall Road (Dum-Dum), *Calcutta*-28.

@92 Hofal Chemicals, Ulaipur Distillery Co. P. Ltd., Udaisagar Road, *Ulaipur* (Rajasthan).

@93 C.E. Fulford (India) Pvt. Ltd., Elphin House, 88C, Old Prabhadevi Road, *Bombay*-28.

@94 Jadavpur University, *Calcutta*-32.

@95 Assam Chemical & Pharmaceutical Ltd. Dr. Jyotish Das Road, *Gauhati*-1.

@96 A.K. Dalvi & Co., 167, Netaji Subhas Road, Room No. 1, Rajakotra *Calcutta*-7.

@97 Nicholas of India Ltd., 11/12 Off Haines Road, *Bombay*-18.

@98 Suren Chemicals, Amin Industrial Estate, Sonawala Cross Road, Goregaon (East), *Bombay*-62.

@99 Paramount Labs. Pvt. Ltd., 343, B. B. Road, *Madras*-60.

@100 Bharat Pulverising Mills, Pvt. Ltd., Hexamar House, Sayani Road, *Bombay*-28.

@101 Eagle Pharmaceutical Works, 114, Belgrami Road, Kurla West, *Bombay*.

@102 Pilco Pharma, Parvati Kuti, Pandu Nagar, *Kanpur*.

@103 B. A. & Brothers (Eastern) P. Ltd., 6, Clive Row, P.O. Box 2809, *Calcutta*-1.

@104 Khatau Vallabhadas & Company, Indian Globe Chambers, Fort Street, *Bombay*-1.

@105 Kanchanlal Vadilal & Co., 41-43, Mangaldas Road, P.B. No. 2233, *Bombay*-2.

@106 Daruvala Bros. Pvt. Ltd., 40, Princess Street, *Bombay*-2.

@107 Bahola Pharmaceutical Co., Homeo House, Bakthapuri Street, *Kumbakonam*.

@108 Cama Norton & Co., Cama Chambers, Medows Street, *Bombay*-1.

@109 Dr. Paul Lohmann India Ltd., B/11, Industrial Estate, Sanatnagar, *Hyderabad*.

@110 Eli Lilly & Co. of India Inc., Sadhana Rayon House, Dr. Dadabhai Naoroji Road, *Bombay*-1.

@111 Chudger & Co. Pvt. Ltd., Anand Bhuvan, 2nd Floor, Post Box No 2448, Princess Street, *Bombay*-2.

@112 Baudh Chemical Works, Aska Road, *Berhanpur*.

@113 Free India Impex Agency, Raja Bahadur Compound, 24B, Hamam Street, Fort, *Bombay*-1.

@114 Lumega Corporation, 21, Western India House, Sir Phirozshah Mehta Road, Fort, *Bombay*-1.

@115 Romex Pharmaceuticals, 7, Nawab Building, 325, D. Naoroji Road, *Bombay*-1.

@116 Intercontinental Pharma, Rahimtoola House, 3rd Floor, Homji Street, *Bombay*-1.

@117 Bhattacharyya & Co., 85, Netaji Subhas Road, *Calcutta*-1.

@118 B-Tex Ointment Mfg. Co., B-Tex House, 80, B.C.D. Government Industrial Estate, *Bombay*-67.

@119 Chem-Med Analytical Laboratories, 27-Western India House, Sir P. M. Road, *Bombay*-1.

@120 International Trading Co., Manhar Building, 187, Lohar Chawl, *Bombay*-1.

@121 Amin & Ismail P. Ltd., 80, Colootola Street, *Calcutta*-1.

@122 International Chemical & Biological Institute Pvt. Ltd., 28/1, South End Road, *Bangalore*-4.

@123 Scientific Research Industries (India) Pvt. Ltd., 4, Chitwapur Road, *Lucknow*-1.

@124 Badhwar & Co., Bhagirath Palace, Chandni Chowk, *Delhi*.

@125 G. W. Cornic Co. (Asia) Ltd., Queen's Mansions, Bastion Road, Fort, *Bombay*.

@126 Warden Chenical Works, Bani Park, *Jaipur*.

@127 T. M. Thakore & Co. 43, Churchgate Street, Fort, *Bombay*-1.

@128 Kings & Co. *Allahabad*.

@129 Sapat & Co. 113, Cavel Street., *Bombay*-2.

@130 Emedia Export Co. m.b.h., Commercial House, 87, Dr. Annie Besant Road, Worli, *Bombay*-18.

@131 Abbott Laboratories (India) Private Limited, Jehangir Building, 133, Mahatma Gandhi Road, *Bombay*-1.

@132 Kosmek Private Limited, Cecil Court, Lansdowne Road, Apollo Bunder, P.O. Box No. 680, *Bombay*-1.

@133 Triumph's Products, K.S.A. Building, Bhavani Shankar, Dadar, *Bombay*-28.

@134 Birlab-Pharma Birth-hold Labs., D/Mine Sarvodoy Hospiral Estate, Rly. Crossing, Chembur, *Bombay*-71.

@135 Libra Drugs (India) 92, Mangalwar Peth, *Poona*-11.

@136 India Marine & Food Products (P) Ltd., 8-B, Western India House, Sir P. Mehta Road, *Bombay*-1.

@137 Khettry and Co., 89, Beadon Street, *Calcutta*-18.

@138 Madhusudan Dey and Sons, 13, Bonfield Line, *Calcutta*-18.

@139 Benger Pharmaceutical Division, Union Bank Building., Dalal Street, *Bombay*-1.

@140 Navil Laboratories, Noor Mahal, 117/127, Tardev Road, *Bombay*-34.

@141 Chemosyn Pvt. Ltd., 38, Sures Road., Andheri (East) *Bombay*-34

@142 Cosme Matias Menezes P. Ltd., Rua S. Thome, *Panjim*, (Goa).

@143 Universal Pharmacy, Itwari, *Nagpur*-2.

@144 Mendine Pharmaceutical Works, 36, Alipur Road, *Calcutta*-27.

@145 Chemed Laboratories, "Sadhna", Nowroji Gamadia Road, *Bombay*-26.

@146 Dolphin Laboratories Pvt. Ltd., 1, Allenby Road, *Calcutta*-20.

@147 Orient Pharma Pvt. Ltd., 1/6, Old Trunk Road, Pallavaram, *Madras*-43.

@148 Madon Sons & Co., Devkaran Mansion, 1st Floor, 63, Princess Street, *Bombay*-2.

@149 J. B. Modi & Co., New Bhalia Baug Building, 121, Fort Street, *Bombay*-1.

@150 Government Pharmaceutical Works, Baramulla, *Kashmir*.

@151 Manutex Laboratories, Main Raod, Rayagada, (Koraput Dt.) *Orissa*.

@152 New International Chemicals (P) Ltd., Civil Lines, *Bara Banki*.

@153 Vitamin Labs. of India P. Ltd., Krishna Nagar, *Lucknow*.

@154 Alma Laboratories, Fort House, Behind Handloom House, D. N. Road, *Bombay*-1.

@155 Asli Dawakhana, Tilak Dwar, *Mathura* (U.P.).

@156 Associated Corporation of Industries (India) P. Ltd., Commerce House, Currimbhoy Road, Ballard Estate. *Bombay*-1.

@157 Dr. Balachandra Laboratories, 215, Charni Road, Girgaum, *Bombay*-4.

*158 Bombay Drug House, Pvt. Ltd., Nair Mahal, Tulsipipe Road, *Bombay*-26.

@159 Thera Chem Laboratories, 8/281, Tardeo Road, Prem Bhuvan, *Bombay*-7.

@160 Magna Laboratories, 2nd, Hasanabad Lane, Suman Villa, *Bombay*-54.

@161 KAB Pharma Pvt. Ltd. Sunoo Lodge, Dadar T.T., *Bombay*-14.

@162 Seamless Capsules Pvt. Ltd., 81-82, Kurla Andheri Road, *Bombay*-59.

@163 Sigma Laboratories, Plot No. 43, (South), Wadala, *Bombay*-31.

@164 International Chemical & Biological Institute Pvt. Ltd., 28/1, South End Road, *Bangalore*-4.

@165 The Arpi Chemical Industries, *Kasgani* (U.P.)

@166 Ajmera Chemical Works, 12th Khetwadi Bunglow, *Bombay*-4.

@167 Hindustan Chemists & Druggists Co. Pvt. Ltd., 61, Sovabazar Street, *Calcutta*-5.

@168 Loyds Pharmaceutical Co., 24, Darayaganj, *Delhi*-6.

@169 Antibiotic Stores Pvt. Ltd., 55, Canning Street, G.P.O. Box No. 722 *Calcutta*-1.

@170 Chemi Pharm & Pharmaceutical Products, Vishweshwar Nagar, Vikas Estate, Goregaon, *Bombay*-62.

@171 Narindar S. Uberoi & Bros., National House, Tulloch Road, Appollo Bunder, *Bombay*-1.

@172 Sarvodaya Laboratory, 2/200-A, Station Road, Goregaon (West), *Bombay*-62.

@173 Idomex Chemicals, Miraj, *Sangli*.

@174 Panama Industries & Laboratroies, 45-47, Veer Nariman Road, *Bombay*-1.

@175 Mega Pharma Laboratories, K. Lekhraj Buildings, Carnac Bridge, *Bombay*-3.

@176 Nath Laboratories, Yusufguda Road, Begumpet Post, *Hyderabad*-16.

@177 Ward Blenkin & Co. (India) Ltd., Vikas Estate, Goregaon (East), *Bombay*-62.

@178 Metro Golden Laboratories (India), 292-A, Bellasis Road, *Bombay*-8.

@179 National Drug & Chemical Works, 21-J, Lady Jamshedji Road, Mahim, *Bombay*-16.

@180 Western India Chemical Co., 2, Anand Niwas, Borivli, *Bombay*-92.

@181 Zenith Chemical Works P. Ltd., 4, French Bridge, *Bombay*-7.

@182 Rippen Pharmaceutical Laboratories, No. 2, Princess Street, *Bombay*-2.

*183 Delta Pharma, 11, Homji Street, *Bombay*-1.

@184 Industrial Research Laboratories, Chandni Chowk, *Delhi*-6.

@185 Modern Chemical Works Pvt. Ltd., 1541, Kashmeri Gate, *Delhi*.

*186 Sahib Singh Manufacturing Co. P. Ltd., 7, Okhla Industrial Estate, *New Delhi*-20.

@187 Rajvaidya Shital Prasad & Sons, Chandni Chowk, *Delhi*-6.

@188 Chemical and Pharmaceutical Laboratories, 285 G.T. Road *Delhi*-32.

§189 Swan Surgical Dressings, F-2/25 Model Town, *Delhi*.

@190 H. C. Sen & Co., H. C. Sen Road, *Delhi*-6.

@191 Carbo Laboratories (India), P.B. No. 358, *New Delhi*-21.

@192 Assam Chemical & Pharmaceutical Ltd., Dr. J. C. Das Road, *P.O. Gauhati*.

@193 Doson Chemicals (P) Ltd., Kamarpatty Fancy Bazar, *Gauhati*-1.

@194 Goila Chemical Works, P.O. Rangiya Station Road., *P.O. Rangiya* (Kamrup Dt. Assam).

@195 Indian Oxygen Ltd., 48/1, Diamond Harbour Road, *Calcutta*-27.

@196 United Colours & Chemicals (Assam) P. Ltd., Panbazar, *Gauhati*-1.

@197 Lachit Laboratories P. Ltd., Kamarpatty Road, P.O. *Gauhati*-1.

§198 Galen Pharmaceuticals, Panbazar, *Gauhati*-1.

@199 National Chemical & Perfumery Works, Fatasil, P.O. *Gauhati*-9.

@200 Eastern Assam Chemical Industries P. Ltd., *Dibrugarh* (Assam).

@201 Neo Chemicals, 458, 466, G. T. Road, Sahdara, *Delhi*-32.

@202 Dular Pharmaceutical Works, *Delhi*-5.

@203 Hindustan Insecticides Ltd., Rohtak Road, *Delhi*-15.

@204 Pure Pharmaceutical Works, 18-474, Nai Basti, Kisanganj, *Delhi*-7.

205 Indoco Remedies Ltd., 457, S. V. Patel Road, *Bombay*-4.

206 Kee Pharma, Jaihind Building, Bhagirath Palace, *Delhi*-6.

207 Cochin Pharmacal Co., P.O. Punkunnu, Trichur-2, (*Kerala*).

208 Hebbals Pharmaceutical & Foods, 2nd Floor, 44, Dady Sheth House, Cawasji Patel Street, *Bombay*-1.

@209 Mount Mettur Pharmaceutical Ltd., 3, Greenways Road, Raja Annamlaipuram Post, *Madras*-28.

210 Penta Pharma Laboratories, Evens Fraser Annex, 38, Police Court Lane, *Bombay*-1.

211 Hemmo Pharma, C-6, Bharucha Building, Princess Street, *Bombay*-2.

212 Kim's Laboratories, 11, Pushpa Kunj, 50, Sion Road, *Bombay*-22.

213 Pargaon Laboratories, F-4, Bardanwala Road, *Jamnagar* (Gujarat).

214 Andre Laboratories, Aidur Building, 1st Dhobi Talao Lane, *Bombay*-2.

215 Mepro Laboratories, Ganeshmal Sobhagnmal Building, Sheikh Memon Street, *Bombay*-2.

216 Calico Pharmaceutical Works, 9, Ganguli Para Lane, *Calcutta*-2.

217 The Himalaya Drug House, 251, Dr. D. Naoroji Road, *Bombay*-1.

218 A. K. Dutta & Co. P. Ltd., 115, Canning Street, *Calcutta*-1.

219 Delux Pharma, Municipal Godown Road, *Abu Road* (Rajasthan).

220 The Trinity Pharmaceuticals (India) P. Ltd., Post Box No. 88, *Trichur*-1 (Kerala).

221 Associated Drug Co. P. Ltd., Sampangi Bank Road, *Bangalore*-2.

222 Bipharma Laboratories, 229/230, Hind Rajasthan Industrial Estate, Naigaum Cross Road, *Bombay*-31.

223 Amarchand Sobachand, 95, Nyneappa Naick Street, *Madras*-3.

224 Wilfred Pereira P. Ltd., No. 2, Hunter's Road, Vepery, *Madras*-7.

225 Everest Pharmaceuticals Works, Everest Nagar, *Bhatinda* (Punjab).

226 Atul Pharma & Surgical Dressing Co., 11, New Bhoiguda, *Secunderabad*.

227 Chudgor & Co. P. Ltd., Chemical House, Bombay Agra Road, *Thana* (Maharashtra).

228 Pratap Industries, P.O. Box No. 22, *Tirur* (Kerala).

229 Kopran Chemical Co. P. Ltd., Andheri Kurla Road, Saki Naka, *Bombay*-72.

230 Empire Chemical Works, 11-A, Bombay Agra Road, Vikhroli, *Bombay*-79.

231 Eros Pharma, 2, Mangal, 76, Rafi Ahmed Kidwai Road, *Bombay*-19.

232 Orion Laboratories, 210, Dr. D. Naoroji Road, Taj Building, *Bombay*-1.

233 The Bassein Drug & Pharmaceutical Products P. Ltd., 99-B, Lady Hardinge Road, Mahim, *Bombay*-16.

234 Primco P. Ltd., Lamington Road, *Bombay*-4.

235 Wilson Medicine Co., Kotkar Building, 391, Arthur Road, *Bombay*.

236 Unique Pharmaceutical Laboratories, Mohalta Bhavan, Off Hains Road, Worli, *Bombay*-18.

237 Devens Pharmaceuticals, Fatima Building, Mogal Lane, *Bombay*-16.

238 Elite Laboratories, 122, Himalaya House, Palton Road, *Bombay*-1.

239 Charak Pharmaceuticals, Evergreen Industrial Estate, Shaki Mills Lanes, *Bombay*-12.

240 Bell Pharma, 74, ETC Mantri Building, Gokhale Road, South, *Bombay*-28.

241 Mercury Pharmaceutical Industries, 62, Gurudwara Building, Vincent Road, Dadar, *Bombay*-14.

242 Oriental Research & Chemical Lab. Ltd., Qumaresh House, Salkia, *Howrah*.

243 Treatment Home Products, 36, Creek Road, *Calcutta*-14.

244 Drug Deal Corporation, Baghphul, Rohtak Road, *New Delhi*.

245 Cyper Pharma, Najafgarh Road, *New Delhi*.

246 Delhi Chemicals & Pharmaceuticals Works, Darya Ganj, *Delhi*.

247 Deltas, 59, Daryaganj, *Delhi*.

248 Jhones & Wexoes (India), 3-C/30, Rohtak Road, *New Delhi*.

249 Modern Chemical Works, Kashmeri Gate, *Delhi*.

250 Civil Drugs Labs., D-2/14, Model Town, *Delhi*.

251 Washewa Brothers, 3/C-15, Rohtak Road, *Delhi*.

252 Medicos Products, Ramesh Nagar, *Delhi*.

@253 Gajjar & Co., Manufacturing Chemists, Princess Street, *Bombay*-2.

254 Dacruz Corporation, 44, Cowarji Patel Street, *Bombay*-1.

255 Corrigan Pharmaceuticals, No. 11, Bank Street, Fort, *Bombay*-1.

256 Semit Products P. Ltd., 27, Western India House, Sir P. M. Road, *Bombay*-1.

257 Linkson Pharma, 152, Nyniappa Naick Street, *Madras*-3.

258 Garutman Industries P. Ltd., 86-A, Nyniappa Naick Street, *Madras*-3.

259 Parwal & Sons, 153, Nyniappa Naick Street, *Madras*-3.

260 Orient Pharma P. Ltd., Pallavaram, *Madras*-43.

261 Bharat Salt & Chemical Industries Ltd., Oriya Bazar, *Cuttack*.

262 Bharat Baisajyam, Mathupatna, *Cuttack*-3.

263 Biswanath Ayurved Bhavan, Marwari pura, Dist. *Sambalpur*.

264 Choudhury Chemical Factory, *Bolangir* (Orissa).

265 Hari Surgical Dressings, Banka Bazar, *Cuttack*-2.

266 Indian Shark Products, Industrial Estate, Jagatpur, Dist. *Cuttack*,

267 Jagannath Chemical & Pharmaceuticals Industries, Madhupatna *Cuttack*-3.

268 Jaya Bharat Pharmaceutical Industries, *Bolangir* (Orissa).

269 Madhusudan Chemical Industries, Madhupatna, *Cuttack*.

270 Nova Pharmaceuticals (P) Ltd., Cantonment Road, *Cuttack*.

271 Orissa Fisheries Development Corporation, Tulsipur, *Cuttak*-1.

272 Orissa Chemical Industries, Khariar Road, *Kalahandi.*
273 Orichem Laboratory, Muklipath, Station Road, *Puri.*
274 Pharma Drugs Mfg. Co., 7/8, Industrial Estate, *Jammu Cantt.*
275 Onyx Laboratories P. Ltd., Kidwai Nagar, *Kanpur.*
276 Swastic Pharmaceutials, G. T. Road, *Varanasi.*
277 Allodial Chemical Mfg. Co., 90, Kannon Geyan Street, *Meerut.*
278 Spa Pharma, 120/255, Lajpat Nagar, *Kanpur.*
279 Garga Pharma (P) Ltd., Talkatora Road, *Lucknow.*
280 Drug Research Laboratory, Canal Road, *Jammu.*
281 Harrison Laboratories, Hospital Road, *Kanpur.*
282 U.P. Drug House Pvt. Ltd., 38, Major Banks Road, *Lucknow.*
283 Rashtradeep Laboratories, 78, Purani Mandi, *Firozabad* (Agra).
284 Martand Pharmaceuticals, *Baraut* (Meerut).
285 Narain Chemicals Industries, 117/515, Pandu Nagar, *Kanpur.*
286 Parker Pharma (P) Ltd., 18-A, Fazalganj, *Kanpur.*
287 G. Paraxen & Co. P. Ltd., Tulsi Das Marg, *Lucknow.*
288 Reylite & Co., Western Court Road, *Meerut.*
289 ABM Research Institute, Hapur, Distt. *Meerut.*
290 Northern India Chemical Works, Dettel Village, *Meerut.*
291 King Pharmaceutical Works, Industrial Colony, *Allahabad.*
292 Kanchanlal Maganlal & Co., *Bombay*-2.
293 Boson & Co., 44, Ezra Street, *Calcutta*-1.
294 Jugal & Co., 46-B, Netaji Subhas Road, *Calcutta*-1.
295 Piya Pharmaceuticals, Mohannagar, *Gaziabad* (U.P.)
296 Wootom Pharmacy, Baidyanath, Deoghar, *Bihar.*
297 Bengal Pharmacy, 68-A, Bhupen Bose Avenue, *Calcutta*-4.
298 Nandy Brothers (P) Ltd., 31, A. T. Mukherjee Road, *Calcutta*-20.
299 People's Pharmacy P. Ltd., 90A, S. P. Mukherjee Road, *Calcutta*-26.
300 Papu Products, Tejpal Scheme Road, No. 5, Vile Parle East, *Bombay*-57.
301 Tarachem Laboratories, 8/281, Tardeo Road, Prem Bhuvan, *Bombay*-7.
302 Vilco Laboratories, Subhas Road, Vile Parle East, *Bombay*-57.
303 Alfred Berg & Co. (India) P. Ltd., Gokul Baugh, High Road, Arumbakkam, *Madras*-29.
304 Bena Laboratories, Ambica Terrace, 117, Clive Road, *Bombay*-9.
305 Ashok Bio-Pharma Ltd., 10/12, Swinhoe Lane, *Calcutta.*
306 Bharathi Chemical Works, 67/42, Strand Road, *Calcutta.*
307 Emke Pharmaceutical P. Ltd., 182, Ryabahadas Ambia Charan Roy Road, *Calcutta*-24.
308 Avee Vitamins, Main Street, *Madras.*
309 Capilex Corporation, 13, Greenways Road, *Madras.*

310 St. Sarma Laboratories, Murugesa Mudaliyar Street, *Madras*.

311 James Hill & Co., Ranikutty Tagore Villa, Alambazar, *Calcutta*-35.

312 Jadavpur University, *Calcutta*-32.

313 Tablets Pvt. Ltd., Express Estate, *Madras*-2.

314 Thio-Calcin Co., P.B. 904, *Madras*-20.

315 All India Mission Laboratories, Bengal Pet, *Kolar* (Mysore).

316 King's Institute, Guindy, *Madras*-32.

317 Ruby Laboratories, Jai Hind Society, *Ahmedabad*.

318 Ravi Chemical Pharm, , Hanuman Peth, *Vijayawada* (A.P.)

319 Rintabs Pharm, Vile Parle, *Bombay*.

320 Central Research Institute P. Ltd., *Post Kasauli* (Punjab).

321 Aero Pharma, Shah Baug, 1, Peddar Road, *Bombay*-26.

322 Amortex Agencies Pvt. Ltd., Gowalia Tank, 52, Warden Court, *Bombay*-26.

323 Ancil Pharmaceuticals, Padma Niketan, Goregaon (East), *Bombay*-62.

324 Ar-Ex Laboratories, 21, Sitaladevei Temple Road, *Bombay*-16.

325 Cex-Pharma Pvt. Ltd., 17, Cowasji Patel Road, *Bombay*-1.

326 Diamo Chem Laboratories, B-67, Lokamanya Tilak Road, *Bombay*-92.

327 Eupharma Laboratories, 229-30, Hind Rajasthan Industrial Estate, Naigaum Cross Road, *Bombay*-31.

328 France Italian Co., S. V. Road, Vile Parle, *Bombay*-56.

329 Gowdow Chemical and Pharmaceutical Co., 5, Sir Manikji Road, *Poona*-1.

330 Huxley & Co., 25, Dalal Street, *Bombay*-1.

331 India Pharma Laboratories, 15, Chotani Road. Mahim, *Bombay*-16

332 Kembiotic Laboratories, Juhu Parle Development Scheme, 67, Swastic Society, *Bombay*-56.

333 Koldex Chemical Co., Plot No. 6, Station Road, Goregaon, *Bombay*-63.

334 Mehar Pharma, Vikas Estate, Opp. Aarey Road, Goregaon (East), *Bombay*-62.

335 Nutri Pharma, 5, Khandubhai Desai Road, Vile Parle (West), *Bombay*-62.

336 Pharma Kab Laboratories, Bhaghwat Kirti Mandir, IInd Floor, Morarjee Peth, *Sholapur*.

337 Promojohn Pharmaceutical P. Ltd., 340, Girgaum Road, Atmaram Bldg., *Bombay*-2.

338 Shalg Pharmaceuticals, R. K. Industries House, Wallbhat Road, Goregaon East, *Bombay*-62.

339 Syrup Thio-Kof Manufacturing Co. India, Sharaf Mansion, IInd Floor, Princess Street, *Bombay*-2.

340 Theraped Laboratories, 106, Bazar Ward, Kurla, *Bombay*-70.

341 Thera Search Laboratories, 4, Nanabhai Lane, *Bombay*-1.

342 Vir Pharmaceuticals Ramdas, Bhavan, Shivaji Park Road, No. 3, *Bombay*-28.

343 The Zone Chemical Co., 88-C Prabhadevi Road, *Bombay*-13.

344 Trolan Pharmaceutical Industries, 218, Hind Rajasthan Estate, *Delhi*-14.

345 Pam Laboratories, 350/104, Balram Bhavan, Grant Road, *Bombay*-7.

346 Ramban Patent Depots, 32 Princess Street, *Bombay*-2.

347 Primco Pvt. Ltd., Lamington Chambers, Lamington Road, *Bombay*-4.

348 Romex Pharma, 7, Nabab Bldg., 325, Dr. Navroji Road, *Bombay*-1.

349 Rowti Pharma, 12, Ganesn Peth, Dadar, *Bombay*-28.

350 Ruma Laboratories P. Ltd., 246, Tardeo Road, Karai Estate, *Bombay*-7.

351 Lence Institute of Pharma P. Ltd., 70, Tungway, Sakivihar Road, Andheri East, *Bombay*-57.

352 Magenta Chemicals, 135-36, Paddy Coats, Andheri Kurla Road, *Bombay*-69.

353 Godama Laboratories, Ram Bhag, Ghod Bunder Road, Malad, *Bombay*-64.

354 W. T. Suren & Co. Ltd., Raly House, Raveling Street, *Bombay*-1.

355 Standard Chemical & Pharmaceutical Co., Atlas Mills Compound, Reay Road, *Bombay*-10.

356 Delhi Chemicals & Pharmaceutical Works, Daryaganj, *Delhi*.

@357 Agarwal & Son, Marhatal, *Jabalpur*.

@358 Arvind Chemical Works, Budhapura, *Chhindwara*.

@359 Arun Chemical Industries, 7/49 Chhotapara, *Raipur*.

@360 Amser Pvt. Ltd., 47 Industrial Estate, *Indore*.

@361 Anand Pharmacy, Industrial Cooperative Society Ltd., 159, Tilak Path, *Indore*.

@362 Ashok Thymol Factory, *Indore*.

@363 Alok Lab., Industrial Estate, *Ratlam*.

@364 Anil Pharmaceuticals, 12, Palsikar Colony, *Indore*.

@365 Bharat Pharmaceuticals, 23, Yeshwant Niwas Road, *Indore*.

@366 Bhaijee Pharmaceutical Works, 7, Ram Kishan Ganj, *Khandwa*.

@367 Behari Ayurvedic Pharmacy, 9, Brahmapuri, *Khandwa*.

@368 Binod Mills Co. Ltd., *Ujjain*.

@369 Bairathi Chemical & Pharmaceutical Works, 15 Bairathi Colony, *Indore*.

@370 Boston Industries (India), Station Road, *Bhopal*.

@371 Brite Pharmaceuticals, New Lake View Hotel, *Bhopal*.

@372 Bhagwat Cosmetics Lab., 18/73 Bhagwat Mansion, *Gwalior*-1.

@373 Belu Bell Lab., Narsinghpur Road, *Chhindwara*.

@374 Commercial Paint & Chemical Works, 293, M. G. Road, *Indore*.

@375 C. P. M. Pharmaceuticals Works, Sadar Bazar, *Raipur*.

@376 Cyano Pharma, 9 Palsikar Colony, *Indore.*
@377 Chimco Pharma, 12 Arjun Paltan, *Indore.*
@378 Castles Chemicals Pharma, Panagar, *Jabalpur.*
@379 Chemi Fine, 4 Palasia Street, *Indore.*
@380 Curalab Industries, 4 Palasia, *Indore.*
@381 Digambar Chemical Works, Ward No. 8, Main Road, *Balaghat.*
@382 Deepak Chemical & Pharmaceutical Works, Station Road, *Durg,* (M.P.).
@383 Eros Pharma, Mahatma Gandhi Road, *Burhanpur.*
@384 Earnest & Co., 302 Usha Nagar Colony, *Indore.*
@385 Espee Pharmaceuticals, 158, Palsikar Colony, *Indore.*
@386 Eastern Air Product, Govindpura, Industrial Estate, *Bhopal.*
*387 Fine Pharmaceuticals, 26 Adarsh Nagar, *Indore.*
@388 Gum Corporation Manufacturing Chemists, 111 Victoria Road, (South Civil Lines), *Jabalpur.*
@389 Gupta Ayuredic Pharmacy, 23, Ganjipura, *Jabalpur.*
@390 Ganesh Chikitsa Bhawan, Balarua No. 1, *Damoh.*
@391 Gupta Chemicals, Ratan Bhawan, 7 Simrol Road, *Indore.*
@392 Gandhi Jain Karyalaya Jankpura, Dhar Mandhi Road, *Mandsaur.*
@393 Gul Pharmaceuticals, 172 Palsikar Colony, *Indore.*
@394 Girish Pharmaceuticals, Pendra Road, *Raipur.*
@395 Ginichemi Lab., 116, Katra Bazar, *Sagar.*
@396 Hambar Pharmacy, 4/96 Manakpura, *Ujjain.*
@397 H. B. Chemical Works, 43 Chhatripura, *Indore.*
@398 Harda Soap Co. & House Laboratories, 18, Subhash Road, *Harda.*
@399 Heavy Electricals (India) Ltd., Oxygen Plant, Piplani, *Bhopal.*
@400 H. M. I. & Sons, Phutera Ward 3, *Damoh* (M.P.).
@401 Impha labs., 71, Palsikar Colony, *Indore.*
*402 Indian Pharmaceuticals, 216,Usha Nagar, *Indore.*
*403 IBY Pharma, 5-C Rajedera Nagar, *Indore.*
@404 I. P. Pharma, L-B-10, Tilak Nagar, *Indore.*
@405 Indian Cosmetics Chemical Industrial Estate, *Raipur.*
@406 Imperial Laboratories, Shivaji Nagar, *Indore.*
@407 Jainson Chemicals, 59/1, New Dewas Road, *Indore.*
@408 Jamsons Laboratories 43, Industrial Estate, *Indore.*
@409 Jagat Laboratories, 644, Kotwali, *Jabalpur.*
@410 J. M. Products, 13, Subhash Marg, *Indore.*
@411 Joy Pharmaceuticals Laboratories, 17 Pagnis Paga, *Indore.*
@412 K. L. Chaturvedi & Sons, Dayal Bag, *Bilaspur.*
@413 Kharia Chemical Works, Narbadaganj, *Mandla.*
@414 Kanak Chemical Works, Rajendra Nagar 58-C, *Indore.*
@415 Kamson Lab., Umaria, *Indore.*

@416 K. G. & Co., 50, Malipura Road, *Indore.*
@417 Kwality Chemicals, 7/3, New Palasia, *Indore.*
@418 Krishana Ayurvedic, Pharmacy, Bad Bag, *Rewa.*
@419 Krishna Chemico, Rajaswa Gram, *Indore.*
@420 Lala Ramswaroop & Sons, Lordganj, *Jabalpur.*
@421 Lord Chemical Works, 7 Tukoganj, *Indore.*
@422 Lokesh Chemical Works, *Raipur.*
@423 Malwa Chemical Works, 26 Gautampura, *Indore.*
@424 Macon Drug Lab., 217, Jawahar Marg, *Indore.*
@425 Mahendra Pharma, 269, Shri Nagar Extension, *Indore.*
@426 M. K. Industries, 445-46, Kotwali Ward, *Jabalpur.*
@427 Mantri Mantri & Co., 28/29, Industrial Estate, *Indore.*
@428 M. P. Pharma, 22/23 Sajan Nagar, *Indore.*
@429 Malwa Drugs & Chemicals, 10, Udyogpuri, *Ujjain.*
@430 Neochem Laboratories, Berzolius House, *Shivpuri.*
@431 Navshakti Ayurvedalaya, Pvt. Ltd., *Jabalpur.*
*432 Neo Drugs (India), Kahia's Bungalow, Nagpur Road, *Chhindwara.*
@433 Niroga Pharmaceuticals, *Ratlam.*
@434 Oxygen Plant of Hindustan Steel Ltd., *Bhilai.*
@435 Oriental Chemical Works, Opp. Rly. Station, *Indore.*
*436 Plazma Laboratories, 37 Industrial Estate, *Indore.*
@437 Prabhakar Pharma Works, 64, Rajaswa Gram, *Indore.*
@438 Pure Pharma Products (India), 41-44, Industrial Estate, *Indore.*
@439 Patel Bros., Maharani Road, *Indore.*
@440 Roop Trading & Co., 456, Kotwali Ward, *Jabalpur.*
@441 Regal Chemical Works, 11, Palsikar Colony, *Indore.*
@442 Research Laboratories, Jawahar Nagar, *Raipur.*
@443 Rai Zinc Factory, 91, Industrial Estate, *Indore.*
@444 Sambhare Chemical Works, Pandurna, *Chhinawara.*
@445 Seth Mool Chand Nemichand, 16, Ranipura, *Indore.*
@446 Standard Laboratories, 13, Usha Ganj, *Indore.*
*447 Suneeta Laboratories, 89-B/90, Industrial Estate, *Indore.*
@448 Sharma Ayurvedic Pharmacy, Sadar Bazar, *Raipur.*
@449 Sakti Pharmaceuticals, 241, Rajendra Nagar, *Indore.*
@450 Sandeep Laboratories, 495, Gandhi Chowk, *Damoh.*
@451 S. Jain & Sons, 25, Race Course Road, *Indore.*
@452 Sagar Ayurvedashram, Chakraghat Pharmacy, *Sagar.*
@453 Syner Laboratories, 4, Rajaswagram, *Indore.*
@454 Usha Products, Jawahar Nagar, *Raipur.*
@455 Unique Pharma, 2/2, Maharani Road, *Indore.*
@456 Uma Ayurvedic Pharmacy, 79, Sandhya Road, Piparia, Distt, *Hoshangabad.*

@457 Vadnere Chemical Works, 4, Palasia, *Indore*.
@458 Victoria Chemical Works. 66-67, Ganesh Nagar, *Raipur*,
@459 Venus Laboratories, 27-B, Rajendra Nagar, *Indore*.
@460 Vimal Traders, 348, Jawahar Marg, *Indore*.
@461 Vostok Laboratories, 16, Rajaswa Gram, *Indore*.
@462 Van Pharma, Industrial Estate, *Bilaspur*.
@463 Vijaya Chemical Works, 11, Palsikar Colony, *Indore*.
@464 Vadson Laboratories, West Phaphadia, *Raipur*.
@465 Zodiac Pharma, 16, Maharani Road, *Indore*.
@466 Khandelwal Pharmaceuticals, 356, Jawahar Marg, *Indore*.
@467 State Health Stores, *Patna*-7.
@468 Government Vaccines, Inst. Namkum, *Ranchi*-10.
@469 S. K. Show & Bros., Fraser Road, *Patna*-1.
@470 Dabur (Dr. S. K. Burmah) Pvt. Ltd., P.O. Daburgram, (*S.P.*).
@471 Runa Chemical, Nayatoal, *Patna*-4.
@472 Kunwar Ayurvedic, Hajiganj, *Patna City*.
@473 P.C. Laboratories, Exhibition Road, *Patna*-1.
@474 Barianee Coke Co. Ltd., *Kusemda P.O.* (Dhanbad).
@475 Pharma Chem. Laboratories, Abul Aoos Lane, *Patna*-4.
@476 Shree Baidyanath Ayurved Bhavan P. Ltd., 1, Gupta Lane, *Calcutta*-6.
@477 East India Chemical Works (P) Ltd., 248, Maharaja Nand Kumar Road (South) Ba anagar, *Calcutta*-36.
@478 L. Arther Lyon & Co., 2, Clive Ghat Street, *Calcutta*-1.
*479 N. P. Industries, Ruby Park, *P.O. Haltu, Dt.* 24-*Pargs.*, (West Bengal).
@480 Ramkrishna Mission Seva Pratisthan, 99, Sarta Bose Road, *Calcutta*-26.
@481 Immuno Biological Laboratories, P-91, Lake Road, *Calcutta*-29.
@482 Pasteur Institute, 2, Convent Lane, *Calcutta*-15.
@483 Pharma Remedies Pvt. Ltd., 5/1, Rajchandra Sen Lane, *Calcutta*-9.
@484 Mahesh Laboratories P. Ltd., 30/4, Canal East Road, *Calcutta*-11.
@485 Pearl Chemical Industries, 2, Banamali Chatterjee Street, *Calcutta*-2.
@486 Asiatic Soap Co., 8, Dalhousie Sq. East, *Calcutta*-1.
@487 General Industries Corporation, 11, Rowdon Street, *Calcutta*-16.
@488 G. D. Pharmaceuticals P. Ltd., Baroline House, 9, Girish Avenue, *Calcutta*-3.
@489 Vax Institute Laboratory Ltd., 13, Krittybash Mukherjee Road, *Calcutta*-4.
@490 New Bengal Drug House, 4, Ramhari Ghosh Lane, *Calcutta*-9.
@491 ECZEMA House, 311, Bipin Behari Ganguli Street, *Calcutta*-12.
@492 Chemical Products Corporation, 9-15, Swinhoe Lane, Kashba, *Calcutta*-42.
@493 Eastern Drug Co. Ltd., 75, Buroshibtala Main Road, *Calcutta*-38.
@494 The Indian Yeast Co. Ltd., 4, Bankshall Street, *Calcutta*-1.

@495 S. Dhole & Co., 63, Baguiati Road, P.O. Dum Dum, *Calcutta*-28.

@496 Alkaloid Research Laboratories Ltd., 47, Harish Chatterjee Street. *Calcutta*-26.

@497 Ascharya Malam Chemical Works P. Ltd., 40/2, Lakshmi Narain Chakravarti Lane, Kadamtola, *Howrah*.

@498 Martrik Chemicals, 68/4, Pratapaditya Road, *Calcutta*-26.

@499 Bishahari Chemical Works (P) Ltd., 14A, Gora Chand Road, *Calcutta*-14.

@500 C.S.I. (Chemicals & Pharmaceuticals) P. Ltd., 35A, Kailas Bose Street, *Calcutta*-6.

@501 Eastern Pharma Products, 41B, Padda Pukur Road, *Calcutta*-20.

@502 Kediti Prakash P. Ltd., 17, Rai Bahadur Road, *Calcutta*-34.

@503 Kusum Products Ltd., 9, Brabourne Road, *Calcutta*-1.

@504 Oriental Trading Co., 22, Canning Street, *Calcutta*-1.

*505 Penacea Laboratories, 132-1, Beliaghata Road, *Calcutta*-15.

@506 Mangal Stores, 19, Banstolla Lane, *Calcutta*-7.

@507 S. C. Dutt & Co., 6/1, Marcus Square, *Calcutta*-7.

@508 Eastern Research Laboratory, Ghola Road, *P.O. Agarpara*, 24-Parganas (West Bengal).

@509 S. K. Dass, 16-B, Tagore Castle Street, *Calcutta*-6.

@510 Pasteur Laboratories P. Ltd., 2, Bidhan Sarani, *Calcutta*-6.

@511 D. P. Gupta & Sons, 18/3, Dalimtolla Lane, *Calcutta*-6.

@512 Standard Pharma Remedies, 282, Rabindra Sarani, *Calcutta*-5.

@513 Unique Chemical Laboratory P. Ltd., 2-A, Shib Sankar Mullick Street, *Calcutta*-4.

@514 West Bengal Vaccine Laboratory, Govt. of West Bengal, 2, Convent Lane, *Calcutta*-15.

@515 B. P. Chemical Works, 36, Creek Row, *Calcutta*-14.

@516 Balahari Sardar & Bros., 7, Nalini Sircar Street, *Calcutta*-4.

@517 Govt. Quinine Factory, Govt. of West Bengal, P.O. Mungpoo, Dist. *Darjeeling*.

@518 Sovin Chemicals, Room No. 9, Block 'B', 2nd Floor, 55, Biplabi Rashbehari Basu Road, *Calcutta*-1.

@519 Tibson Pharmaceuticals P. Ltd., 66, Chowringhee Road, *Calcutta*-20.

@520 Hindustan Gas & Industries Ltd., 36, Ganesh Chandra Avenue, *Calcutta*-13.

@521 Apex Products, First Lane, 26, Russa Road East, *Calcutta*-33.

@522 Dist. Blood Bank, Darjeeling, Govt. of West Bengal, Office of the D.M.O., *Darjeeling*.

@523 Basanti Chemical Works & Co., Vill : Gorhbari, P.O. Kajlagarh, Dist. *Midnapur*.

@524 Sankar Medical Stores P. Ltd., 55/100, Biplabi Rash Behari Basu Road, *Calcutta*-1.

@525 Dr. Nag & Sons, 32/1A, Fakir Chand Mitter Street, *Calcutta*-9.

@526 Commercial Enterprises, 71A, Netaji Subhas Road, D/O *Calcutta*-1.

@527 Moti Chemical Industries, 11-D, Balai Mistri Lane, Botanic Garden, *Howrah*.

@528 Indian Surgical Emporium, 12, Indra Biswas Road, *Calcutta*-37.

@529 United Laboratories (India) P. Ltd., 29, Mannapara Road, *Calcutta*-50.

@530 Hindustan Medical Service P. Ltd., 119-A, Bangur Avenue, *Calcutta*-28.

@531 Zenith Laboratory, 4/76, Chanditala Lane, P. O. Regent Park, *Calcutta*-10.

@532 Dr. Bose's Laboratory Ltd., 45, Amherst Street, *Calcutta*-9.

@533 Dr. Paul Lohmann (India) Ltd., East Anglia House, 3, Camac Street, *Calcutta*-16.

@534 Esco Pharma, 11/1/1A, Nayaratna Lane, *Calcutta*-4.

@535 Immuno Chemical Laboratory Ltd., 50, Ezra Street, *Calcutta*-1.

@536 Embiar Laboratory Ltd., 13/1B, Balaram Ghose Street, *Calcutta*-14.

@537 Blood Laboratory P. Ltd., 23-A, Ekdalia Place, *Calcutta*-19.

*538 The Oriental Research & Chemical Lab. Ltd., Qumaresh House, Salkia, *Howrah*.

@539 Bengal Medical Research, 63-3, Mirzapur Street, *Calcutta*-9.

@540 Hindustan Surgical Appliances, 29, Huzuri Mull Lane, *Calcutta*-14.

@541 Eastern Chemical Laboratory, 1, Kali Dutta Street, *Calcutta*-5.

*542 Standard Laboratories P. Ltd., 7, Hastings Street, *Calcutta*-1.

@543 Chemical Supplies (Bengal) Co., 10C, Gurudas Dutt's Garden Lane, *Calcutta*-4.

@544 Sen's Chemical Works P. Ltd., 271, Chittaranjan Avenue, *Calcutta*-6.

@545 Monico Laboratory P. Ltd., 16/1, Radha Bazar Street, *Calcutta*-1.

@546 The Knox Co., 1, Acharya Jagadish Chandra Bose Road, *Calcutta*-20.

@547 S. Bhattacharyya & Co., 14, Upper Strand Road, Serampore, Dist. *Hooghly*.

@548 Chemie-Pharma Industries, 23/1, Guruprasad Chowdhury Lane, *Calcutta*-6.

@549 Indian Oxygen Ltd., 5, Mayurbhanj Road, *Calcutta*-23.

@550 Arora Pharmaceutical Industries, 44, Ezra Street, *Calcutta*-1.

@551 M. L. Burman, 68/D, W.C. Banerjee Street, *Calcutta*-6.

@552 Kaviraj N. N. Sen & Co. P. Ltd., 38 & 40, Rabindra Sarani, *Calcutta*-1.

@553 Sadhana Ausadhalaya Dacca (Pharmaceutical Deptt.), 56, S. K. Deb Road, *Calcutta*-48.

@554 Luxmi Pharmaceutical Works, P-18, Kanungo Park, Garia 24-Parganas, *Calcutta*.

@555 Hooghly Chemical Industries P. Ltd., P.O. Duilaya Via Andul-Mouri, Dist. *Howrah*.

@556 Frank Ross & Co. Ltd., Metropolitan Insurance Building, 7, Chowringhee, *Calcutta*-13.

@557 Jokhu Lall Shaw, 153, Upper Chitpur Road, *Calcutta*-5.

@558 L. M. Saha Saukhanidhi & Co. P. Ltd., 32E, Jackson Lane, *Calcutta*-1.

@559 DABUR (Dr. S. K. Burman) P. Ltd., 142, Rash Behari Avenue, *Calcutta*-29.

@560 Everest Pharmaceuticals P. Ltd., 71, Indra Biswas Road, *Calcutta*-37.

@561 Anakem Laboratories P. Ltd., 68/2, Sikdarbagan Street, *Calcutta*-4.

@562 Chemotherapeutic Laboratories, 13A, Mahendra Bose Lane, *Calcutta*-3.

@563 Chandra Mohan Saha & Co., Prachin Mayapur Road, P.O. Nabadwip, Dist. *Nadia*.

@564 S. S. Research Laboratory, Katadanga Road, P.O. Kakinara, 24, *Parganas*. (W.B.)

@565 Bio-Drug Laboratories P. Ltd., 348, Maharaja Nanda Kumar Road, *Calcutta*-2.

@566 Standard Chemicals Corporation, Barrakpore Road, P.O. Noapara (Barasat), 24-*Parganas*. (W.B.)

@567 Life Pharmaceuticals P. Ltd., P-11, Kanungo Parke, Block 'A' Garia, 24-*Parganas*. (W.B.)

@568 Vaccine Institute Corporation of Calcutta, 36, Ballygunge Circular Road, *Calcutta*-19.

@569 Universal Drug House P. Ltd., 10, Braunfeld Row, *Calcutta*-27.

@570 Tropzon Pharma-Chem, 42, Russa Road, South (1st Lane), *Calcutta*-33.

@571 The Bengal Health & Chemical Works Ltd., Agarpara, 24-*Parganas* (W.B.)

@572 Burma-Shell Oil Storage & Distributing Co. of India Ltd., Hongkong House, 31, Dalhousie Sqr., *Calcutta*-1.

@573 Alphine Industries, 892, Joshi Path, D.B. Gupta Road, *New Delhi*-5.

@574 Dipon Laboratory, R-19, Darga Road, *Calcutta*-17.

@575 Tropical Pharmaceutic Works, Ramrajatala, Santragachi, *Howrah*.

@576 Hindustan Lever Ltd., 63, Garden Reach, *Calcutta*-24.

*577 Oriental Chemical Works P. Ltd., 1/1B, Govinda Addy Road, *Calcutta*-27.

@578 S. A. B. Bakshi & Co., 32, Collootola Street, *Calcutta*-1.

@@579 B. R. & Sons, *Delhi*-8.

@580 Calcutta National Chemical Industries, 21, Bhattacharyya Para Lane, Baranagar, *Calcutta*-36.

@581 The Moriengers Chemical Laboratory, 83A, Bahirsura Road, *Calcutta*-10.

@582 ADERBINE, 1, Fordyce Lane, *Calcutta*-14.

@583 Lucky Chemical Works, 3, Masjid Bari Street, *Calcutta*-6.

@584 Calcutta Surgical Cotton Co., 115, Canning Street, *Calcutta*-1.

@585 United Chemical Industries, 136, Maharaja Nanda Kumar Road, *Calcutta*-36.

@586 Pest Control Corporation, 47, Bentinck Street, *Calcutta*-1.

@587 Krystal Chemicals P. Ltd., 9-15, Swinhoe Lane, *Calcutta*-42.

@588 N. I. Pharmaceutical Works P. Ltd., P-291, C.I.T. Road, *Calcutta*-10.

@589 Waldies Zinc Pigments Ltd., Gillander House, 8, Netaji Subhas. Road, *Calcutta*-1.

@590 The Pharmed Research Laboratory, 39/6, Feeder Road, Belgharia, *Calcutta*-56.

@591 Joy Industries, 14/2, Old China Bazar Street, *Calcutta*-1.

@592 The Knox Co., 1, Acharya Jagadish Chandra Bose Road, *Calcutta*-20.

@593 Union Drug Co. Ltd., 182, Rai Bahadur Road, Behala, *Calcutta*-34.

@594 Hindusthan Steel Ltd., P.O. Durgapur-3, Dist. *Burdwan*.

@595 Commonwealth Trading Corpn. (P) Ltd., 9, Clive Row, *Calcutta*-1.

@596 Bio Pharma Laboratories, 28/9, Library Road, *Calcutta*-26.

@597 Government Fish Technological Station, Junput, Contai (Dt. Midnapore).

@598 C.I. Laboratories, 121/5-D, Mahohar Pukur Road, *Calcutta*-26.

@599 West Bengal Vaccine Institute, 2, Convent Lane, *Calcutta*-15.

@600 Lily Products Corporation, F14/7, Model Town, *Delhi*-9.

*601 Bhatnagars & Co. (P) Ltd., 7/26, Darya Ganj, *Delhi*.

@602 Popular Dressing Industries, 44, Mall Road, Kingsway Camp, *Delhi*-9.

@603 Dr. Mitllesh and Sons, 990, Bazar Sita Ram, *Delhi*-6.

@604 Hamdard (WAKF) Laboratories, Lal Kuan, *Delhi*-6.

@605 Jhones & Wexoes (India) Regd., 1/2, Lady Hardinge Road, *New Delhi*.

@606 Indian Oxygen Ltd., 66, Najafgarh Road, Industrial Area, *New Delhi*-15.

@607 Arora & Co., Rajouri Garden, *New Delhi*-23.

@608 American Surgico Corporation, 17, Beadon Pura, Karol Bagh, *New Delhi*-5.

@609 Pharma Surgicals, 16, School Lane, Babar Road, *Delhi*-1.

@610 Blood Bank Organization, 4, Pusa Road, *New Delhi*.

VII. GOVERNMENT DEPARTMENTS

(a) *General Government Departments*

*1 The Drugs Controller (India), Nirman Bhavan, *New Delhi*.

*2 The Director General of Technical Development, Udyog Bhavan, *New Delhi*.

*3 The Development Commissioner of Small Scale Industries, Udyog Bhavan, *New Delhi*.

*4 The Ministry of Commerce, *New Delhi*.

*5 The Ministry of Health & Family Planning, *New Delhi*.

*6 The Ministry of Petroleum & Chemicals, *New Delhi*.

*7 The Ministry of Defence, Directorate General of Armed Forces DHQ PO, *New Delhi*-11.

*8 The Planning Commission, *New Delhi*.

*9 The Director General of Supplies & Disposals, Parliament Street, *New Delhi*.

*10 The Collector of General Excise, New Central Excise Building, Queen's Road, *Bombay*-1.

11 The Collector of Customs, *Madras*.

12 The Collector of Customs, *Bombay*.

13 The Collector of Customs, *Calcutta*.

14 The Collector of Customs, *Cochin*.

15 The Collector of Customs, *Kandla.*

*16 The Secretary, Basic Chemicals, Pharmaceuticals & Soap Export Promotion Council, *Bombay.*

*17 The Central Drug Laboratory, *Calcutta*-16.

*18 The Council of Scientific and Industrial Research, *New Delhi.*

(b) *State Drugs Controllers*

*1 The Drugs Controller, Government of Andhra Pradesh, *Hyderabad.*

*2 The Drugs Controller, Government of Assam, *Shillong.*

*3 The Drugs Controller, Government of Bihar, *Patna.*

*4 The Drugs Controller, Government of West Bengal, *Calcutta.*

*5 The Drugs Controller, Government of Gujarat, *Ahmedabad.*

*6 The Drugs Controller, Government of Jammu and Kashmir, *Srinagar.*

*7 The Drugs Controller, Government of Kerala, *Trivandrum.*

*8 The Drugs Controller, Government of Madhya Pradesh, *Bhopal.*

*9 The Drugs Controller, Government of Madras, *Madras.*

*10 The Drugs Controller, Government of Maharashtra, *Bombay.*

*11 The Drugs Controller, Government of Mysore, *Bangalore.*

*12 The Drugs Controller, Government of Orissa, *Bhubaneshwar.*

13 The Drugs Controller, Government of Punjab, *Chandigarh.*

*14 The Drugs Controller, Government of Rajasthan, *Jaipur.*

*15 The Drugs Controller, Government of Uttar Pradesh, *Lucknow.*

@16 The Drugs Controller, Government of Himachal Pradesh, *Simla.*

@17 The Drugs Controller, Delhi Administration, *Delhi.*

(c) *Embassies*

*1 High Commission of India in U.K., Aldwych, *London* W.C.2.

*2 First Secretary (Commercial) Embassy of India, No. 2, Rue Codot de manroy, *Paris.*

*3 First Secretary (Commercial), Embassy of India, Via Fransisco, Denze, 36, *Rome.*

*4 Third Secretary (Commercial), Embassy of India, Saldstajnska, 6, Malastrania, *Prague.*

*5 Counsellor (Commercial), Embassy of India, 6 & 8, Ulitisa, Obuka, *Moscow.*

*6 Second Secretary (Commercial), Embassy of India, Buzavirag, Utca, *Budapest.*

*7 First Secretary (Commercial), Embassy of India, 2107, Massachusett Avenue, N-W *Washington* 8 D.C.

8 Counsellor (Commercial) 262, Kob-lenzor Strases, *Bonn.* (W. Germany).

9 First Secretary (Commercial), Embassy of India, 20, Kalcheggweg, Berne, *Switzerland.*

*10 Consul General for India, 36, Kronprinsessogade, *Copenhagen.* (Denmark).

*11 First Secretary (Commercial), Embassy of India, 16, Neigobwskings, *Warsaw* (Poland).

V. DEALERS/DISTRIBUTORS

1 Biological & Chemical Agency, Pan Bazar, *Gauhati.*

2 Drugs India, 15, Lamb Road, *Gauhati.*

3 Andhra Mercantile Agency, C-1-77, Chapel Road, Gun Foundry, *Hyderabad.*

*4 Royal Medical Hall, Jawaharlal Road, Afzal Gunj, *Hyderabad.*

5 Pilepu & Co., 11-25-213, Main Bazar, *Vijayawada.*

6 Badridas Kidarnath Khanna & Co., Amira Kadal, 1st Bridge, *Srinagar.*

7 United Importers (Bombay) Pvt. Ltd., 12329, Cannon Shed Road, *Ernakulam.*

8 Bora & Co., 712, Shukrawar Peth, *Poona*-2.

9 Agrawal Agencies, Hanuman Road, Sita Building, *Nagpur.*

10 N. Chimanlal & Co., Shroff Mansion, 36, Princess Street, *Bombay*-2.

*11 Bhagwan Das & Co., P.O. Box. 1166, *Delhi*-6.

*12 S. V. Rangaswamy & Co., Pvt. Ltd., No. 75, Kalasipalayam New Extension, *Bangalore*-2.

13 Pure Farma Distributors, 82, Jayachamarajendra Road, *Bangalore*-2.

14 Sri Ram Pharmacy, Car Street, *Mangalore*-1.

15 Key Lall & Co., Pokhardas Building, Nicholsan, *Ambala Cantt.*

16 B. A. Brothers (Bombay) P. Ltd., 98, Princess Street, *Bombay*-2.

17 Sahib Singh (Agencies) Pvt. Ltd., 14-A, Asaf Ali Road, *New Delhi.*

18 Bhagwan Das & Co., Station Road, *Jaipur.*

19 Medicine Traders, Bullion Building, Johari Bazar, *Jaipur.*

@20 C. J. Shah & Co., Sankar Chambers, Mirzapur Road, *Ahmedabad.*

21 Drogaria Saleet, *Margao* (Goa).

22 United Friends, Dayton Sahi, *Cuttack*-1.

23 English & Co., Chemists & Druggists, P. O. Box 52, *Allepy* (Kerala State).

24 Central Pharmacy, Chemists, Kallai Road, *Calicut* (Kerala State).

25 Brodway Medical Stores, Chemists & Druggists, *Ernakulam* (Kerala State).

26 C. Kanniah Naidu & Sons, Chemists & Druggists, *Quilon* (Kerala State).

27 City Medical Stores, Chemists, *Trichur* (Kerala State).

28 Kerala Drug House, Chemists, *Trivandrum* (Kerala State).

29 G. Pappiah Naidu & Sons, 68, Big Chetty Street, *P. O. Chingleput* (Madras State).

30 Kasinath & Co., Chemists & Druggists, 638, Big Bazar Street, *Coimbatore* (Madras State).

31 A. S. V. Naygar & Sons, 114, Nainiappa Naick Street, *Madras*-3.

32 Ashok Pharmacy, 540-541, Pyerofts Road, *Madras*-3.

33 Kumar Medicals, Town Hall Road, *Madhurai* (Madras State).

34 Ooty Drug Stores & Pharmacy, Main Bazar, *Ootacamund* (Dt. Nilgiris, Madras State).

35 Meenakshi Medicals, 115-A, First Agraharam, *Salem*-1 (Madras State).

36 Drugs & Chemicals P. Ltd., 15, Big Street, *Kumbakonam* (Madras State).

37 D. S. Abraham & Co., 149, High Road, *Tinnevelly* (Madras State)

38 Murugan Medical Stores, Big Bazar Street, *Trichinopoly*-8 (Madras State).

39 Raja Medical Corporation, 6 & 7, Singarathope, *Tiruchirapalle*-8 (Madras State).

40 Ananda Emporum, General Merchants, 82, Duplex Street, *Pondicherry*.

41 Maffatlal & Co., Old Taragul Fet, *Bangalore*-2 (Mysore State).

42 V. L. Nathan & Co., Chemists & Druggists, Quadrant Road, *Bangalore Cantt*-1 (Mysore State).

43 United Stores, Ramdeo Galli, *Belgaum* (Mysore State).

44 Dwarakanath Medical Sotres, Car Street *Bellary* (Mysore State).

45 Karnatak Pharmacy, Broadway, *Dharwar* (Mysore State).

46 Gopal Medical Stores, Sayaji Road, *Mysore*-1.

47 Totgars' Co-operative Sale Society Medical Stores Ltd., *Sirsi* (Dt. North Kanara), Mysore State.

48 Canara Medical Suppliers (P) Ltd., *Mangalore*-1 (Mysore State).

49 D. Rajaravatnam Chetty, *Chittoor* (Andhra Pradesh).

50 Krishna Medical Sotres, Chemists & Druggists, Main Road, *Rajahmundry* (Andhra Pradesh).

51 Ganesh Medical Hall, Sultan Bazar, *Hyderabad* (Andhra Pradesh).

52 Vijaya Medical Hall, Abid Road, *Hyderabad* (Andhra Pradesh).

53 Arvind Medical Stores, Park Road, *Vijayawada*-1 (Andhra Pradesh).

54 Samadhan Medical Stores, *Nalgonda* (Andhra Pradesh).

*55 Ganapathy Medical Stores, Chemists & Druggists, Trunk Road, *Nellore* (*A.P.*).

56 Vizag Medical Stores, Chemists & Druggists, Main Road, *Vizagapatnam* (Andhra Pradesh).

57 Srinivas Medical & Fancy Mart, Main Road, *Warangal* (Andhra Pradesh).

58 Akberally Ebrahimji, Behramji Mansion, Sir P. M. Road, *Bombay*-1.

59 B. Jayantilal & Co., 15, Mangaldas Road, *Bombay*-2.

60 D. Tatilal & Co., Princess Street Next to Lloyds Bank, *Bombay*-2.

61 Kundan Medical Stores, Juhu Road, Santa Cruz (West), *Bombay*-54.

62 The National General Stores, Ghodbunder Road, Malad (West), *Bombay*-64.

63 Gobind Medical Stores, Camp No. 2, *Kalyan* (Maharashtra).

64 Nava Bharat Medical Stores, Jawahar Road, *Amravati* (Maharashtra).

65 D. Popular Pharmacy, Chemists & Druggists, Old Palace Road, *Kolahpur* (Maharashtra).

66 Maya Medical Stores, Gandhibag, *Nagpur*-2 (Maharashtra).

67 Hiralal Mehta & Co., Chemists & Druggists, 920, Sadhashiv, Laxmi Road, *Poona*-2.

68 The Co-operative Medical Stores, Datta Chowk, *Sholapur* (Maharashtra).

69 A. B. C. Surgical & Medical Stores, Gandhi Road, *Ahmedabad*.

70 Royal Chemists, Ellis Bridge, *Ahmedabad*-6.

71 Central Medical Stores, Chokhandi, *Baroda* (Gujarat State).

72 Shantital Maganlal Shah, Shroff Mansion, Dt. & P. O. *Bulsar* (Gujarat. State).

73 Mahavir Medical Stores, Rajendra Road, *Jamnagar* (Gujarat State).

@74 Tilak Store, Bhavasarvad, *Nadiad* (Dt. Kaira, Gujarat).

75 Ratilal Lallubhai & Brothers, Sir Lakhajiraj Road, *Rajkot* (Gujarat).

76 C. N. Brothers, Chemists & Druggists, Limda Chowk, *Surat* (Gujarat).

77 Melaram Brothers, Chemists, Gole Bazar, *Bilaspur* (Madhya Pradesh).

78 Gwalior Medical Store, Bada, *Gwalior* (Madhya Pradesh).

79 Khunneylal Parasam, Kotwall Bazar, *Jabalpur* (Madhya Pradesh).

80 C. P. Medical Stores, Sardar Bazar, *Raipur* (Madhya Pradesh).

81 Deepchand Medical Stores, Katra Bazar, *Sagar* (Madhya Pradesh).

82 National Medical Hall, Ebrahimpura, *Bhopal* (Madhya Pradesh).

83 National Pharmacy, Ebrahimpura, *Bhopal* (Madhya Pradesh).

84 Kumar Medical Stores, Fountain, *Agra* (Uttar Pradesh).

85 Medico Chemists, *Aligarh* (Uttar Pradesh).

86 Jhajee & Sons, Chemists & Druggists, Chowk, *Allahabad* (Uttar Pradesh).

87 Rama Medical Stores, Leader Road, *Allahabad* (Uttar Pradesh).

88 K. B. Bass & Co., Bara Bazar, *Bareilly City* (Uttar Pradesh).

89 Premi Medicine Co., Pucca Bazar, *Basti* (Uttar Pradesh).

90 R. B. Hamer & Co., Astley Hall, *Dehra Dun* (Uttar Pradesh).

91 Bajrang Aushadi Bhandar, Main Bazar *Gorakhpur* (Uttar Pradesh).

92 Bombay Medical Stores, Birhana Road *Kanpur* (Uttar Pradesh).

93 Allied Drug & Chemical Co., Aminabad *Lucknow* (Uttar Pradesh).

94 Amir Singh Narula, New Gate *Ghaziabad* (Uttar Pradesh).

95 Radhey Shyam & Sons, Chowk *Varanasi* (Uttar Pradesh).

96 Anand Medical Stores, Sector 19-C, *Chandigarh* (Punjab).

97 Bedi Sons, *Chandigarh* (Punjab).

98 Narang Medical Hall, Chemists & Druggists, Nicholson Road, *Ambala Cantt.* (Punjab).

99 Bishambar Lall & Co., Katrasher Singh, *Amritsar* (Punjab).

100 Friends Medical Hall, Rampur Phool, Bhantinda (Punjab).

101 National Medical Hall, Opp. Nagori Gate, Hissar (Punjab).

102 Himalaya Medical Stores, Railway Road, *Hoshiarpur* (Punjab).
103 Janatha Medical Stores, G. T. Road, *Jullunder* (Punjab).
104 Bhagat Singh & Sons, Chemists, Pindi Street *Ludhiana* (Punjab).
105 Balwant Singh & Sons, Sirhindi Bazar, *Patiala* (Punjab).
106 Rohtak Medical Hall, Railway Station Road, *Rohtak* (Punjab).
107 Jammu Medical Stores, Raghunath Bazar, *Jammu* (Jammu & Kashmir).
108 K. L. Dhar & Sons, Dal Gate, *Srinagar* (Jammu & Kashmir).
109 Harishchander Medical Stores, Mortindalee Bridge, *Ajmer* (Rajasthan).
110 G. G. Bhargawa & Bros., Chemists & Druggists, *Alwar* (Rajasthan).
111 Associated Agencies, Haldionka Rasta, *Jaipur* (Ratasthan).
112 Loung Medical Stores, Ghantagarh, *Jodhpur* (Rajasthan).
113 National Medical Agencies, Chemists & Druggists, Surajpole, *Udaipur* (Rajasthan).
114 Sripati Charan Sadhu & Sons, Raniganj Bazar, *Burdwan* (West Bengal).
115 East End Medical Hall, 170, Baithakhana Road, Bow Bazar, *Calcutta.*
116 Anup Traders, 431, Somwar Peth, *Poona*-11.
117 Ganesh Agencies, Sultan Bazar, *Hyderabad.*
118 A. G. Stores, 100, T. H. Road, *Madras*-21.
119 Kemi-kos Traders, 105/146, Chaman Ganj, *Kanpur.*
@120 Alembic Distributors, Ltd., Laxmi Bldg., Sir P. M. Road, *Bombay*-1.
*121 Sivaram & Swamy, 3/153, Broadway, *Madras*-1.
122 Unique Surgical Works, Exhibition Road, *Patna*-1.
123 Voltas Ltd. (Pharmaceutical Division), Graham Road, Ballard Estate, *Bombay*-1.
124 Anand Medicine Co., 79 & 80, Cclootola Street, *Calcutta.*
125 National Pharmacy, Bhagirath Palace, Chandni Chowk, Post Box No. 1004, *Delhi.*
*126 Victoria Medical Hall, 20, Upper Circular Road, *Calcutta*-9.
@127 R. V. Seth & Co., Mehta Bldg., 55, Canning Street, Room No. 69. (3rd Floor), *Calcutta*-1.
*128 Hiron Pharmacy, Kali Bari Road, Siliguri, Darjeeling, *West Bengal.*
129 Niramaya, Municipal Road, Midnapore, *West Bengal.*
130 Laxmi Medical Hall, M. P. Dwivedi Road, Bhagalpur, *Bihar.*
131 Nathubhai Patel & Co., Makhaniakuan, Patna-4, *Bihar.*
132 T. M. Enterprisers, Cantt. Road, *Cuttack*-1 (Orissa).
133 Ramkanai Stores, *Agartala* (Tripura).
134 Hemant Pharmacy, Fancy Bazar, *Gauhati* (Assam).
135 Inland Enterprisers, Akhtokia Road, *Gauhati* (*Assam*).
136 All India Sales Agencies, 24, Jawahar Marg, *Indore City.*

139 Khatau Vallabhadas & Co., India Globe Chambers, Fort Street, *Bombay*-1.

*140 Bharat Drug House, Devkaran Mansion, 20, Mangaldas Road, P. B. No. 2570, *Bombay*-2.

*141 B. A. Brothers (Eastern) P. Ltd., 6, Clive Road, P. O. Box 2809, *Calcutta*-1.

@142 A. K. Dutta & Co. Ltd., 115, Canning Street, P. B. 2482, *Calcutta*.

@143 Suhrid Geigy Trading Ltd., Express Bldg., 14, 'E' Road, *Bombay*-1.

144 Wootam Pharmacy, Baidyanath *Post Deoghar*.

*145 Babubhai & Sons, 98, Princess Street, Mansoor Bldg., *Bombay*-2.

VI CONSUMERS : (HOSPITALS)

*1 Superintendent, J. J. Group of Hospitals, *Bombay*-1.

2 Dean, K. E. M. Hospital, Parel, *Bombay*.

3 Medical-Officer in-charge, Cama & Albless Hospitals, *Bombay*.

*4 Superintendent, St. George's Hospitals, Frere Road, *Bombay*.

*5 Superintendent, Gokuldas Tejpal Hospital, Carnac Road, *Bombay*.

*6 Dean, Sassoon Hospital, *Poona*-1.

*7 Secretary, Medical College Hospitals, 88, College Street, *Calcutta*.

8 Presidency General Hospital, 244, Lower Circular Road, *Calcutta*.

*9 Superintendent, Government General Hospital, *Madras*.

10 Seth Vadilal Sarabhai General Hospital, and Seth Chinai Maternity Home, Ellis Bridge, *Ahmedabad*.

11 The Civil Surgeon, *Sholapur*.

12 The Civil Surgeon, *Surat*.

13 The Medical Superintendent, Ishwari Memorial Hospital, *Banaras*.

14 The Civil Surgeon, *Ballia*.

15 The Director General of Armed Forces (Medical Services), *New Delhi*.

16 The Superintendent, Kamla Nehru Memorial Hospital, *Allahabad* (Uttar Pradesh).

*17 The Superintendent, Mahatma Gandhi Memorial Hospital, Parel, *Bombay*.

18 The Superintendent, Tilak Memorial Hospital, Sion, *Bombay*-22.

19 The Superintendent, Bombay Hospital, Near Liberty Cinema, *Bombay*.

20 The Superintendent, Wellingdon Hospital, *New Delhi*.

*21 The Superintendent, Irwin Hospital, *New Delhi*.

22 The Superintendent, Safdarganj Hospital, *New Delhi*.

*23 The Surgeon General with the Government of Maharashtra, Contractor Building, Ballard Estate, *Bombay*-1.

24 The Superintendent, Government General Hospital, *Bangalore*.

25 The Superintendent, Government General Hospital, *Patna*.

26 The Superintendent, Government General Hospital, *Trivandrum*.

27 The Superintendent, Government General Hospital, *Bhopal*.

28 The Superintendent, Government General Hospital, *Chandigarh.*

29 The Superintendent, Government General Hospital, *Lucknow.*

*30 The Superintendent, Government General Hospital, *Jaipur.*

31 Director General of Supplies & Disposals, N. I. Building, Parliament Street, *New Delhi.*

32 The Director, Central Government Health Scheme, Wellingdon Hospital, *New Delhi.*

33 The Superintendent, Government General Hospital, *Calcutta.*

*34 The Regional Director, Employees State Insurance Scheme, ESIC. Building, Near Strand Cinema, *Bombay*-5.

35 The Dean, Grant Medical College, *Bombay.*

*36 The Dean, B. J. Medical College, *Poona.*

37 The Dean, Medical College, *Nagpur.*

*38 The Dean, Medical College, *Aurangabad.*

39 The Dean, Medical College, *Miraj.*

40 The Civil Surgeon, Vithal Sayanna General Hospital, *Thana.*

41 The Civil Suregon, General Hospital, *Ratnagiri.*

42 The Civil Surgeon, General Hospital, Kolaba, *Alibag.*

*43 The Civil Surgeon, *Jalgaon.*

44 The Civil Surgeon, General Hospital, *Dhulia.*

*45 The Civil Surgeon, Harris General Hospital, *Nasik.*

46 The Medical Officer, In-charge, Cottage Hospital, *Dahanu.*

47 The Medical Officer, In-charge, Cottage Hospital, Mangaon, Distt. *Kolaba.*

48 The Medical Officer-in-Charge, Cottage Hospital, Kalwan, Dist. *Nasik.*

*49 The Medical Officer-in-charge, Cottage Hospital, Chopda Dist. *Jalgaon.*

*50 The Medical Officer in-charge, Central Hospital, Sub-Township No. 3, Ulhasnagar, Dist. *Thana.*

*51 The Civil Surgeon, Ripon General Hospital, Ahmednagar.

52 The Civil Surgeon, General Hospital, *Sholapur.*

*53 The Civil Surgeon, General Hospital, *Sangli.*

54 The Civil Surgeon, General Hospital, *Satara.*

55 The Civil Surgeon, C. P. R. General Hospital, *Kolhapur.*

56 The Superintendent, Hospital for Diseases of Chest, Aundh Camp, *Poona.*

57 The Medical Officer in-charge, Services Hospital, *Kolhapur.*

58 The Civil Surgeon, *Nagpur.*

59 The Superintendent, Mayo General Hospital, *Nagpur.*

60 The Medical Superintendent, Daga Memorial Hospital, *Nagpur.*

61 The Dean, Medical College Hospital, *Nagpur.*

62 The Medical Superintendent, Mental Hospital, *Nagpur.*

63 The Civil Surgeon, King Edward Memorial Hospital, *Wardha.*

64 The Civil Surgeon, General Hospital, *Chanda.*

65 The Civil Surgeon, Dist. Hospital, *Amravati.*

66 The Medical Superintendent, Dufferin Hospital, *Amravati.*

67 The Civil Surgeon, Dist. Hospital, *Yeotmal.*

68 The Civil Surgeon, General Hospital, *Bhandara.*

*69 The Civil Surgeon, Dist. Hospital, *Bhir.*

70 The Civil Surgeon, District Hospital, *Parbhani.*

71 The Civil Surgeon, General Hospital, *Parbhani.*

72 The Civil Surgeon, General Hospital, *Nanded.*

73 The Civil Surgeon, General Hospital, *Osmanabad.*

*74 The Medical Officer in-charge, T. B. Clinic, Sassoon General Hospital, *Poona.*

75 The Medical Officeer In-charge, T. B. Clinic, *Sholapur.*

76 The Medical Officer In-charge, T. B. Clinic, *Akola.*

77 The Medical Officer In-charge, T. B. Clinic, *Chanda.*

78 The Medical Officer In-charge, T. B. Clinic, *Wardha.*

79 The Medical Officer In-charge, T. B. Clinic, *Nagpur.*

80 The Medical Officer In-charge, T. B. Clinic, General Hospital, *Nagpur.*

*81 The Medical Officer In-charge, T. B. Clinic, *Parbhani.*

82 The Medical Officer In-charge T. B. Clinic, *Latur.*

83 The Medical Officer In-charge, T. B. Clinic, *Jalna.*

84 The Medical Officer In-charge, T. B. Clinic, *Aurangabad.*

85 The Medical Officer In-charge, T. B. Clinic, *Nandea.*

86 The Medical Officer In-charge, Cottage Hospital, *Jawahar.*

87 The Medical Officer In-charge, Cottage Hospital, Sawantwadi, Dist. *Ratnagiri.*

88 Director of Medical Services, Government of Andhra Pradesh, *Hyderabad.*

89 Director of Health Services, Government of Assam, *Shillong.*

*90 Director of Health Services, Government of Bihar, *Patna.*

91 Director of Health & Medical Services, Government of Gujarat, *Ahmedabad.*

92 Director of Health Services, Government of Kerala, *Trivandrum.*

93 Director of Health Services, Government of Madhya Pradesh, *Bhopal.*

94 Director of Medical Services, Government of Madras, *Madras.*

*95 Director of Medical Services, Government of Mysore, *Bangalore.*

96 Director of Health Services, Government of Orissa, *Bhubaneswar.*

97 Director of Health Services, Government of Punjab, *Chandigarh.*

*98 Director of Health Services, Government of Rajasthan, *Jaipur.*

99 Director of Medical & Pulbic Health Dept., Government of Uttar Pradesh, *Lucknow.*

100 Director of Health Services, Government of West Bengal, *Calcutta.*

101 Director of Medical Services, Himachal Pradesh, *Simla.*

102 Superintendent, Medical Services, *Delhi*

103 Director of Health Services, Government of Jammu & Kashmir, *Srinagar.*

*104 Government Royapettah Hospital, *Madras*-14.

*105 The Administrative Medical Officer, Employees State Insurance Scheme, "Gamco House" Tulsi Pipe Road, Dadar, *Bomby*-28.

*106 The Superintendent, Central Mental Hospital, *Yeravada.*

VII. RAW MATERIALS MANUFACTURERS

*1 National Organic Chemical Industries Ltd., Mafatlal House, Backbay Reclamation, *Bombay*-1.

*2 Herdilla Chemicals Ltd., United India Buildings, Sir, P. M. Road *Bombay*-1.

*3 Hindustan Organic Chemicals Ltd., Harchandrai House, Queen's Road, *Bombay*-2.

*4 Union Carbide India Ltd., Braborne Road, P. B. No. 2170, *Calcutta.*

*5 Indian Organic Chemicals, 28 Apollo Street, *Bombay*-1.

*6 Indian Drugs & Parmaceuticals Ltd., N. I. Building, 5, Parliament Street, *New Delhi.*

*7 Cibatul Ltd., *Bulsar.*

8 Durgapur Chemicals Ltd., 10, Middleton Row, *Calcutta*-16.

*9 Atul Drug House, 85, Dr. Annie Besant Road, Worli, *Bombay*-18.

*10 Fertilizer Corporation of India Ltd., F-43 South Extension Area Part-1, Ring Road, *New Delhi*-3.

*11 Hindustan Steel Ltd., *Ranchi.*

*12 Capsulation Services P. Ltd., Bank of Baroda Bldg., Apollo Street, *Bombay*-1.

13 Pharmaceutical Capsules Laboratories, Mehta House, Apollo Street, *Bombay*-1.

14 Seraikella Glass Works P. Ltd., P. O. Bandra, S. E. Railway, Dist. *Singhbhum.*

VIII. ASSOCIATIONS

(a) **Producers Associations**

*1 Organisation of Pharmaceutical Producers of India, Cooks Bldg., D. N. Road, *Bombay*-1.

*2 Indian Chemical Manufacturers' Association, India Exhange Place *Calcutta*-1.

*3 The Indian Drug Manufacturers' Association, P.O. Box 7396, *Bombay*-58.

4 The Pharmaceutical and Allied Manufacturers and Distributors Association Ltd., P. O. Box 473, *Bombay*-1.

5 All India Manufacturers' Organisation, Jeevan Sahakar, P. M. Road *Bombay*-1.

(b) **Labour Organisations**

6 All India Trade Union Congress.

7 Indian National Trade Union Congress.

8 Hind Mazdoor Sabha.

(c) **Other Associations**

*9 Indian Medical Association, 16, Hajiali Park, Clerk Road, *Bombay*-34.

*10 Punjab Pharmacists Federation, Pindi Street, *Ludhiana*.

*11 Indian Pharmaceutical Association, Kalina, Santacruz (East), *Bombay*-29.

12 Bengal Chemists & Druggists Association, 10, Bonfield Lane, *Calcutta*-1.

13 The Consumers' Association of India, Kashmere Gate, *Delhi*-6.

14 Poona Chemists & Druggists Association, 90, Budhwar Peth, *Poona*-2.

15 The Retail & Dispensing Chemists, Association, Nazir Building, Calicut Street, *Bombay*-1.

*IX. OTHERS

Major Gen. S. S. Sockey, Council of Scientific and Industrial Research, *New Delhi*.

APPENDIX II

[*Vide* Paragraph 3.1]

Statement showing the extent of response received to the Commissions questionniares/Letters

Sl. No.	Parties addressed	Number addressed	Number replied
1	2	3	4
I	Manufacturers of basic drugs :		
	(a) Large scale units	34	34
	(b) Small scale units	11	11
II	Prospective manufacturers of basic drugs :		
	(a) Large scale units	10	10
	(b) Small scale units	5	5
III	Formulators :		
	(a) Large scale units	108	85
	(b) Medium and small scale units . .	612	463
IV	Government Departments :		
	(a) Central Government Departments . .	18	14
	(b) State Drugs Controllers	17	16
	(c) Embassies abroad	11	9
V	Dealers/Distributors	147	11
VI	Consumers (Hospitals)	106	28
VII	Raw material manufacturers	14	11
VIII	Associations :		
	(a) Producers' Associations	5	3
	(b) Labour Associations	3	Nil
	(c) Other Associations	7	3
IX	Others	1	1

APPENDIX III

[*Vide* Paragraph 3.5]

List of factories visited by the Commission and Officers

Sl. No.	Name of the factory/unit visited	By whom visited	Date of visit
1	2	3	4
	(A) *Visited by the Commission*		
1	Alembic Chemicals Works Limited, Baroda.	Shri M. Zaheer, Chairman	1-9-67
2	Bio-chemical & Synthetic Products Ltd., Hyderabad.	Prof. K. T. Merchant, Member.	24-5-68
3	Biological Evans Ltd., Hyderabad.	Do.	25-5-68
4	Boehringer-Knoll Ltd., Bombay .	Do.	20-3-68
5	Boots Pure Drug Co. ((India) Ltd., Bombay.	Shri M. Zaheer, Chairman	18-3-68
6	CIBA Research Centre, Goregaon, Bombay.	Do.	22-3-68
		Prof. K. T. Merchant, Member.	
		Shri S. Subramanian, Member.	
		Dr. P. V. Gunishastri, Secretary,	
7	Glaxo Laboratories (India) Pvt. Ltd., Bombay.	Shri M. Zaheer, Chairman.	20-3-68
8	Gurco Pharma Pvt. Ltd., New Delhi.	Do.	7-7-67
9	Indian Drugs & Pharmceuticals Ltd., Hyderabad.	Prof. K. T. Merchant, Member.	24-5-68
10	May & Baker Ltd., Bombay .	Do.	18-3-68
11	Merck, Sharp & Dohme India, Pvt. Ltd., Bombay.	Shri S. Subramanian, Member.	18-3-68

1	2	3	4
12	Hoechst Pharmaceuticals Ltd., Bombay.	Shri M. Zaheer, Chairman. Prof. K. T. Merchant, Member. Shri S. Subramanian, Member.	9-5-68
13	Ranbaxy Laboratories Ltd., New Delhi.	Shri M. Zaheer, Chairman.	7-7-67
14	Roche Products Ltd., Bombay .	Shri S. Subramanian, Member.	20-3-68
15	Sarabhai Chemicals, Baroda .	Shri M. Zaheer, Chairman.	1-9-67
16	Sarabhai Merck Ltd., Baroda .	Do.	1-9-67
17	Synbiotics Ltd., Baroda . .	Do.	1-9-67
	(B) *Visited by Officers*		
1	Alembic Chemical Works, Co. Ltd., Baroda.	Shri A. K. Ganguli, Asst. Costs Accounts Officer (A.C.A.O.)	8-1-68
2	Alliance Trading Corporation (P) Ltd., Calcutta.	Shri Gopalakrishnan, A.C.A.O.	Jan. 68
3	Bengal Chemical & Pharmaceutical Works Ltd., Calcutta.	Shri R. Viswanathan, A.C.A.O.	24-11-67
4	Bengal Immunity Co. Ltd., Calcutta.	Shri Gopalakrishnan, A.C.A.O.	Jan. 68
5	Biochemical & Synthetic Products Ltd., Hyderabad	Shri A. K. Ganguli, A.C.A.O.	7-9-67 to 13-9-67
6	Biological Evans Ltd., Hyderabad	Do.	Do.
7	Boehriger-Knoll Ltd., Bombay .	Shri M. V. Ratnam, Cost Accounsts Officer, (C.A.O.)	Dec., 67
8	Boots Pure Drug Co. (India) Ltd., Bombay.	Shri A. K. Ganguli, A.C.A.O.	During the months of August and Sept 1967.
8(a)	Hoechst Pharmaceuticals Ltd., Bombay.	Shri M.V. Ratnam, C.A.O.	Dec., 67

1	2	3	4
9	Cadila Laboratoreis, Ahmedabad	Shri A. K. Ganguli, A.C.A.O.	14th Oct. 1967.
10	Chemical Industrial & Pharmaceutical Works, Ltd., Bombay.	Do.	Do.
11	Cyanamid India, Ltd., Bulsar .	Do.	16-7-67 & 17-7-67
12	Dey's Medical Stores (Mfg.) Pvt. Ltd., Calcutta.	Shri R. Viswanathan, A.C.A.O.	24th Nov. 1967 to 14th Dec., 1967
13	East India Pharmaceuticals Works Ltd., Calcutta.	Do.	Do.
14	Glaxo Laboratories, Bombay .	Shri M. V. Ratnam, C.A.O.	Dec., 67
15	Gujarat Pharmaceutical & Chemical Works, Ahmedabad.	Shri A. K. Ganguli, A.C.A.O.	14th Oct., 1967.
16	Gurco Pharma (P) Ltd., Delhi .	Shri M. V. Ratnam, C.A.O.	Dec., 67
17	Haffkine Institute, Bombay	Shri A. K. Ganguli, A.C.A.O	During the months of August and Sept. 1967.
18	Hindustan Antibiotics Ltd., Poona.	Do.	19-7-67 to 22-7-67
20	Khandelwal Laboratories, Bombay.	Do.	During the months of August and Sept. 1967 and 8th, 9th and 29th Nov., 67
21	Martin & Harris (P) Ltd., Calcutta.	Shri Gopalakrishnan, A.C.A.O.	Jan., 68
22	May & Baker Ltd., Bombay	Shri M. V. Ratnam, C.A.O.	Dec., 67
23	Merck Sharp & Dohme of India Ltd., Bombay.	Shri B. R. Ganapathty, C.A.O.	Nov., 67

1	2	3	4
24	Neogy Laboratories, Calcutta .	Shri R. Viswanathan, A.C.A.O.	24th Nov. 1967 to 14th Dec., 1967,
25	Oriental Pharmaceutical Industries Ltd., Bombay.	Shri A. K. Ganguli, A.C.A.O.	During the months of August and Sept. 1967.
26	Parke Davis (India) Ltd., Bombay.	Shri B. R. Ganapathy, C.A.O.	
27	Pfizer Ltd., Bombay . . .	Do.	Nov., 67
28	Roche Products Ltd., Bombay .	Do.	Nov., 67
29	Sarabhai Chemicals, Baroda .	Shri A. K. Ganguli, A.C.A.O.	8th Jan. 1968 to 13th Jan. 1968.
30	Sarabhai Merck Ltd., Baroda .	Do.	Do.
31	Sunecta Laboratories, Indore .	Do.	22-9-67 to 25-9-67
32	Synbiotics Ltd., Baroda . .	Do.	8th Jan. 1968 to 13th Jan. 1968.
33	Unichem Laboratories, Bombay .	Do.	During the months of August and Sept. 1967.
34	Wander Pharmed Ltd., Bombay	Do.	Do.
35	Wyeth Laboratories, Ltd., Bombay.	Shri M. V. Ratnam, C.A.O.	Nov., 67
36	Zandu Pharmaceuticals, Bombay.	Shri A. K. Ganguli, A.C.A.O.	7-9-67 to 13-9-67.

APPENDIX IV

(*Vide* Paragraph 3·6)

List of persons who attended the public inquiry on 28th February, 1968

Sl. No.	Name of the person		
1	2	3	4
	A. *PRODUCERS*		
1	Shri B. D. Patel .	Representing	Alembic Chemical Works Ltd., Alembic Road, Baroda-3.
2	,, J. K. Gupta Roy .	,,	Bengal Chemical & Pharmaceutical Works Ltd., 164, Maniktala Main Road, Calcutta-54.
3	,, R. P. De . .	,,	Bengal Immunity Co. Ltd., Immunity House, 153 Dharmatala Street, Calcutta-13.
4	Dr. D. A. Padwal .	,,	Biological Evans Ltd., 18/1 & 3, Azamabad, Hyderabad-20.
5	Shri R. V. Rao . .	,,	Biochemical & Synthetic Products Ltd., Sanatnagar Hyderabad.
6	,, G. M. Ponappa .	,,	Boots Pure Drug Co. (India) Ltd., 17, Nicol Road, Bombay-1.
7	,, A. K. Bahl . .	,,	Boehringer-Knoll Ltd., United India Bldg., P. Mehta-Road, Bombay-1.
8	,, S. Mitra	,,	Cyanamid India Ltd., 254-D2, Dr. Annie Besant Road, P. O. Box 6577, Worli, Bombay-18.
9	,, N. M. Palekar		
10	,, Parmal Bardhan .	,,	East India Pharmaceutical Works, 102, Syamaprasad Mukherjee Road, Calcutta-26.

1	2	3	4
11	Shri M. Ramaswamy	Representing	Hindustan Antibiotics Ltd., Pimpri, Poona.
12	,, C. A. Subramanyam		
13	,, V. Bhushan	,,	Hoechst Phramaceuticals Ltd., Dugal House, Backbay Reclamation, Bombay-1.
14	,, Mr. H. B. Richens	,,	Merck Sharp & Dohme. of India Ltd., Dugal House, Backbay Reclamation, Bombay-1.
15	,, S. P. Dadachanji		
16	,, D. Macmaster		
17	Shri T.P. Chatterjee	,,	Parke Davis (India) Ltd., Kurla Andheri Road, Saki Naka, Bombay-70.
18	,, S. V. Pillai	,,	Pfizer Ltd., ICICI Building, 163, Backbay Reclamation, Bombay-1.
19	,, R. W. Leybourne Calaghan.	,,	Roche Products Ltd., 28, Tardeo Road, Bombay-34.
20	,, R.B. Contractor	,,	Sarabhai Merck Ltd., P. B. No. 80, Wadi Wadi, Baroda.
21	,, M. S. Sastry	,,	Synbiotics Ltd., P. Box No. 129, Wadi Wadi, Baroda.
22	,, M. Navaskar	,,	Wander Pharmed Ltd., 33. A New Marine Lines, Bom-, bay-1.
23	,, T. L. Kripalani	,,	Wyeth Laboratories Ltd., Steelcrete House, Dinsha Vachha Road, P.O. Box No. 1423, Bombay-1.
24	,, I. A. Modi	,,	Cadila Laboratories. Ghodsar, Maninagar, Ahmedabad-8.
25	,, B. K. Bhar	,,	Dey's Medical Stores (Mf.) Pvt. Ltd., 6-D, Lindsey St. Calcutta-16.
26	,, B. S. Giri	,,	Khandelwal Laboratories, 79/87, Kala Chowki Road, Post Box No. 7808, Bombay-33.
26(a)	,, Ram Goppal Gupta		

1	2	3	4
27	Shri H. C. Kumar .	Representing	Martin & Harris Pvt. Ltd., 182, Acharya Jagadish Chandra Bose Road, Calcutta-14.
28	,, S. Ramanathan .	,,	Sarabhai Chemicals, Post Box No. 31, Wadi Wadi, Baroda.
29	,, L. N. Godbole .	,,	Unichem Laboratories Ltd., 4, 5, 6, Jogeshwari Estate, Bombay-60.
30	,, J. K. Sheth .	,,	Zandu Pharmaceutical Works Ltd., Gokhale Road South, Bombay-28.
31	,, G. M. Parikh .		
32	,, G. Mukherjee .	,,	Neogy Laboratories, 205, Netaji Subhas Road, Behala, Calcutta-34.
33	,, P. V. Gidwani .	,,	Suneeta Laboratories, 89B/90, Industrial Estate, Pologround, Indore, M.P.
34	,, J. S. Khambata .	,,	Glaxo Laboratories (India) Pvt. Ltd., Dr. Annie Besant Road, Worli, Bombay-18.
35	,, P. K. Godbole .	,,	Haffkine Institute, Parel, Bombay-12.
36	,, P. K. Sholapurwallah.		
37	Dr. I. K. Kakker. .	,,	Indian Drugs & Pharmaceuticals Ltd., National Insurance Building, 5, Parliament St., New Delhi.
38	,, I. K. Bahl . .		
39	Shri C. N. Chari .		
40	,, R. Lal . .		
41	,, V. Varadarajan .		
42	,, N. Sankaran .		
	ASSOCIATIONS :		
43	Mr. Keith C. Roy .	,,	Organisation of Pharmaceutical Producers of India, Cook's Building, Dr. D. N. Road, Bombay-1.
44	Dr. R. N. Majumdar .		
45	,, J. N. Banerjee .		
46	Shri J. N. Chaudhry .		
47	Mr. I. Mackinnon .		
48	Shri K. J. Divatia .		

1	2	3	4
49	Shri V. N. Shah .	Representing	Indian Drug Manufacturers Association, P. O. Box 7396, 185-191, Jaya Prakash Road, Bombay-58.
50	Dr. Y. K. Hameid .		
51	Shri G. P. Nair .		
52	Dr. K. M. Parikh .		
53	Shri A. M. Gadgil .	,,	Indian Chemical Manufacturer Association, India Exchange, India Exchange Place, Calcutta.
54	,, K. N. Deodhar .	,,	Poona Chemists & Druggists Association, 90, Budhwar Peth, Poona-2.
55	,, M. S. Rao .		
56	,, P. R. Shah .	,,	All India Federation of Chemists and Druggists, Block No. 3, Devkaran Mansion, 43, Princess, St., Bombay-2.
57	,, N. J. Bole .		
58	,, D. V. Gandhi .	,,	Chemists & Druggists Association Bombay, Block No. 3, Devkaran Mansion, 43, Princess St., Bombay-2.
	,, L. M. Shah .		
59	Dr. R. V. Sathe .	,,	Indian Medical Association, Shri Nivas, Sardar Vallabhbhai Patel Road, Bombay-4.
60	,, C. L. Jhaveri .		
61	,, M. A. Panwala .		
	DEALERS :		
62	Shri K. V. Shah .	,,	Kanchanlal Vadilal & Co., 41/43, Mangaldas Road, P. B. No. 2223, Bombay-2.
63	,, P. B. Oza .	,,	B. A. Brothers (Bombay) P. Ltd., 98, Princess Street, P. B. No. 2077, Bombay-2.
64	,, G. Dorai .	,,	Voltas Ltd., Marketing Dvn. 19, Graham Road, Ballard Estate, Bombay-1.

1	2	3	4
	HOSPITALS :		
65	Dr. (Smt.) Santofkar .	Representing	K. E. M. Hospital, Parel, Bombay.
66	,, B. B. Gaitonde .	,,	J. J. Group of Hospitals, Bombay-1.
	RAW MATERIALS :		
67	Shri I. M. Mehta .	,,	Union Carbide India Ltd., 1, Middleton Street, Calcutta-16.
68	,, N. M. Mehta .	,,	Atul Drug House Ltd., 36, Dr. Annie Besant Road, Worli, Bombay-18.
69	,, T. R. P. Raman .	,,	National Organic Chemical Industries Ltd., Sandoz House, Dr. Annie Besant Road, Worli, Bombay.
70	,, S. S. Ahluwalia .		
71	,, B. Singh . .	,,	Hindustan Organic Chemicals Ltd., P. O. Rasayani, Kolaba.
72	,, K. K. Jose . .		
73	,, M. Karani . .	,,	Suhrid Geigy, Wadi Wadi, Baroda.
	CENTRAL GOVERNMENT :		
74	Shri L. V. Dharmadhikari.	,,	Director General of Supplies and Disposals, N.I.C. Building, Parliament Street, New Delhi-1.
75	,, V. K. Swamy .	,,	Collector of Customs, New Customs House, Ballard Estate, Bombay-1.
76	,, V. N. Kullarwar .	,,	Cental Excise, New Central Excise Building, P. Box No. 806, Maharshi Karve Road, Bombay-1.
77	,, S. Sundararajan .	,,	Ministry of Petroleum & Chemicals, North Block, New Delhi.

1	2	3	4
78	Shri N.M. Saklani .	Representing	State Trading Corporation of India Ltd., Indian Express Building, Mathura Road, New Delhi.
79	Dr. S. K. Guha . .	,,	The Asstt. Director General of Health Services, Medical Store Depot., Bellasis Road, Bombay-8.
80	Shri Joga Rao . .	,,	Controller General of Patents, Designs & Trade Marks, Bombay-1.
81	Dr. Nityanand . .	,,	Central Drug Research Institute, Chattar Mansil Palace, Lucknow.
	STATE GOVERNMENTS :		
82	Shri M. K. Rangnekar	,,	Directorate of Drugs Control, Govt. of Maharashtra, 127, M.G. Road, Bombay-1.
83	,, V. C. Sane . .		
84	,, P. S. Joshi . .		
85	,, S. M. Shah . .	,,	Drugs Controller, Government of Gujarat, Laldarwaja, Ahmedabad-1.
86	,, A. C. Sengupta .	,,	Drugs Controller, Govt. of West Bengal, College Square West, Calcutta-7.
87	,, C. V. Narasimhan	,,	Drugs Controller, Government of Madras, Madras-6.
	OBSERVERS :		
88	Shri G. Narayanan .	,,	I.C.I.CI., Bombay-1.
89	,, R. Nanabhoy .	,,	Nanabhoy & Co., Bombay.
90	,, Natvar Dhruv .	,,	Economic Times, Bombay.
91	,, K. S. S. Raghavan	,,	Chemical Weekly, Bombay.
92	,, D. P. Sharma .	,,	'Capital', Calcutta.
93	,, R. Chandrasekhar	,,	The Financial Express.

1	2	3	4
94	Shri H. D. Bhutt.	Representing	'Vyapar', Bombay.
95	,, P. L. Mathai	,,	Share-holders' representative.
	ASSESSORS :		
	Shri S. K. Borkar	,,	Drugs Controller, Govt. of India, New Delhi.
	Dr. B. Shah	,,	Industrial Adviser, Directorate General of Technical Development, New Delhi.
	Dr. K. Ganapathy	,,	Director, Regional Research Laboratory (CSIR), JAMMU-TAWI
	Dr. S. S. Gothoskar	,,	Dy. Drugs Controller, Govt. of India, Western Region, Bombay.

(The representatives of the All India Retail Chemists Association met the Commission separately on 27th May 1968.)

APPENDIX V-A

(*Vide* paragraph 5.2.5)

Recommendations of the Pharmaceutical Enquiry Committee (1954)

(1) **Licensing.**—Licence under the Industries (Development and Regulation) Act should be granted subject to the factory obtaining a licence under the Drugs and Cosmetics Act. There should be co-ordination between licensing under the Drugs and Cosmetics Act and licensing under the Industries (D and R) Act.

A large number of firms should not be permitted to carryout almost identical type of work without due regard to the requirements of the country or the existing capacity.

It would be economical to extend the activities of the penicillin factory at Pimpri to include the production of synthetic antimalrials, sulpha drugs, other chemotherapeutic products and vitamins. This would also help to establish a centre for the manufacture of several essential chemicals at one place.

Firms not having processing departments of their own but getting such work done at others' factories should be given permission to put their own departments for the purpose, provided that some of the drugs are of an essential nature and they undertake to produce these, starting from basic chemicals and/or intermediates as near to the basic chemicals as possible, within a reasonable time.

The small scale manufacturers should be induced to get together, and by polling their resources, put up properly equipped co-operative units. In the alternative, each small scale manufacturer should try to specialise in a particular type of product, after properly equipping himself for its manufacture instead of all of them trying to make a number of products without proper equipment supervision and control.

(2) **Policy towards foreign firm in India.**—New foreign concerns should not be permitted to set up factories, unless they undertake to manufacture products that have not been manufactured in adequate quantities by other factories, starting from basis chemicals and/or intermediates as near to the basic chemicals as possible, within a reasonable time.

Firms with 100 per cent foreign capital the so-called "India Ltd."—and branches of foreign firms should not be permitted to be established except under special circumstances for the manufacture of basic chemicals and drugs, which the Indian managed factories are not able to take up. The desirability of insisting on participation of Indian capital in cases where the manufacturing process is completed might be considered with a provision for repatriation of foreign capital from the sixth to the fifteenth year thereafter.

(3) **Collaboration with foreign firms.**—Tie-ups with foreign firms including participation in capital should be preferred to "tie-ups" with no foreign participation in capital. In the pharmaceutical industry however foreign capital participation should not generally exceed 49 per cent.

For foreign collaboration, preference should be given only to products manufactured wholly in India from indigenous basic raw materials and/or intermediates nearer to the basis chemicals or with imported basic chemicals and/or intermediates nearer to the basic chemicals.

Arrangement made by certain manufacturers, whether Indian or foreign forbiding the selling of bulk chemicals to other producers based on agreements entered into with foreign firms should be discouraged.

The existing collaboration agreements should be revised at the earliest opportunity and the future collaboration with foreign firms should be allowed by Government to firms in India on the basis of the following guiding principles :—

(i) Foreign collaboration should not be entertained in respect of items like cosmetics, tooth pastes, etc. ;

(ii) Permission may be granted for the compounding of selected drugs on the basis of essentiality, provided the firm agrees to complete its programme of manufacture of basic drugs within a specified period ;

(iii) Foreign collaboration should be allowed only when a firm is agreeable to commence with the manufacture of at least a few basic drugs from primary raw materials ;

(iv) The scheme of licensing should be so evolved as not to give monopoly to any one firm but keep competition alive. In approving schemes for the manufacture of basic drugs, care should, however, be taken to see that the production of the same drug is not taken up by too many firms.

(4) **Basic drugs production and co-operation between the drugs producers and formulators.**—Each manufacturing concern should endeavour to produce as many fine chemicals and drugs starting from basic chemicals, and/or intermediates as close to the basic chemicals as practicable for the time being, in quantities sufficient to meet, not only its own requirements, but also of other firms which process them.

Some processing firms prefer to import their supplies of fine chemicals or intermediates then purchase from firms which have undertaken their production in the country. On the other hand, certain firms which are endeavouring to produce these fine chemicals and intermediates do not wish to supply them to others for processing. Such lack of co-operation between the firms should be thoroughly discouraged and a radical change in outlook brought about for fostering a healthy development of the industry. Government should actively encourage co-operation between the two sections of the industry and, wherever required, even sponsor the manufacture of fine chemicals and drugs to bring about a co-ordinated development of the industry.

(5) **Imports, Exports and Customs duties.**—In such cases, where imports of finished products like synthetic drugs, antibiotics, vitamins and hormones have to be maintained in view of their importance the practice of modern medcine, such imports should be gradually reduced and the existing processing capacity of the country shoud be utilised fully by importing them in bulk and processing them until their production develops in the country.

Imports of vitamin preparations under the O.G.L. should be stopped and put on a separate quota basis which should be gradually reduced as the indigenous production increases. Only the import of vitamins in bulk should be allowed on the O.G.L. till such time as their manufacture develops in the country.

Dumping of foreign quinine into the country should be prevented and customs duties should be imposed on synthetic antimalarial and foreign quinine.

Assistance should be given in the form of reduction, remission or rebate of import duties on raw materials and intermediates required by the industry. The rebate or reduction scould be so adjust as to amount to a total incidence which would be less than the duty levied on the finished products.

Consistent with meeting local demand, foreign markets should be expanded for pharmaceutical preparations by permitting their liberal exports and including them while negotiating trade agreements.

(6) **Sales Selling Systems, Selling Prices and Margins.**—Commercial methods af marketing the different products of the factory should be adopted. The product should be advertised in Indian and forign scientific and Trade Journals, for developing wider markets and thus ensure its economic production.

Arrangements made by certain manufacturers, whether Indian or foreign forbiding the selling of bulk chemicals to other producers based on agreements entered into with foreign firms should be discouraged.

The practice of making available the vaccines and sera made by Government institutions, only to Government hospitals should be revised and the products made available to the general public through the retail trade by adopting commercial methods of marketing.

Certain manufacturers and importers supply drugs and pharmaceuticals direct to the hospitals in consumer packs at prices lower by as much as 15 per cent than the prices to the trade. Such supplies may have a way of finding themselves into the open market and disrupt the trade. Concessional rates to hospitals should be given for special hospital packs only and not for supplies made in the ordinary packs. As far as possible, even supplies to the hospital should be made through recognised trade channels.

While arriving at the consumer's price, the discount to the trade should be fixed at a reasonable figures of say 25 per cent of price at which the goods are sold to the trade namely, the retailer or wholesaler, with an extra 1½ to 2 per cent to cover packing, etc.

The general wholesaler should sell at a price which gives him profit of 10 per cent and pass on the balance to the retailer.

(7) **Quality.**—The quality of crude drugs used as raw materials should be ensured. To improve the qulity of the crude drugs available in the market dealers of such drugs and their premises should be licensed and limited to those who are in a position to guarantee their quality to the manufacturers and exporters.

The equipment and staff employed by the firms should be scrutinised and wherever the required minimum enquipment and staff do not exist, the licence under the Drugs and Cosmetics Act should be withdrawn.

A group of firms may be encouraged to join together and put up well-equipped testing laboratories for keeping a control on their raw materials and finished products.

(8) **Research.**—Research in pharmacology in this country is lagging behind chemical research and this is one of the reasons which prevents the development of chemical research in the field of drug industry. Adequate personnel, equipment and finances for research work in medical colleges should be provided for research in pharmacology.

A well-equipped research laboratory, and a pilot plant should be set up for carrying out investigations side by side with manufacture to keep pace with the rapid developments in the field of anti-biotics. The pilot plant will help to work out the optimum conditions for operating the main plant, without having to carry out large scale trials on the main plant itself which will be expensive.

A research unit and a pilot plant should be provided in the Hindustan Antibiotics Ltd., to carry out investigations on the production of new type of insecticides and conduct experiments on their production.

(9) **Patents and Royalty.**—The Patent Laws of the country should be amended to secure effective utilisation of all developments in the field of science and medicine, wherever necessary in the interest of the country.

No royalty should be paid on any product unless it has been included in the list furnished to and certified by the Ministry of Commerce and Industry that there is no current production of these items in the country and they would not become available except under a royalty payment.

The manufacturing operations should be divided into two categories : (1) Essential—(drugs like hormones, vitamins and antibiotics and also those used in the treatment and prevention of diseases), and (2) No tessential—(products like patents and proprietary medicines of a general nature and household remedies). Royalty rates should be worked as under :

Essential—Not exceeding 5 per cent, Not essential—Not exceeding 2 per cent.

Payment of rates of royalty for "pure know-how" as agreed by some firms is excessive and this should be reduced to reasonable figure, when current agreements come up for revision.

Generally speking, agreements should be revised every five years, although in special cases, Government may permit agreement for a longer period initially.

(10) **Raw materials.**—The difficulty likely to be experienced by firms in obtaining raw materials in manufacturing bulk pharmaceuticals from basic chemicals, or intermediates nearer, to basic chemicals, should be overcome by allowing their imports freely until such time as the production capacity for those raw materials develops within the country.

Government themselves should take up the manufacture of essential coal-tar products if sufficient response from the private sector is not forthcoming.

Government should take immediate steps to organise the cultivation of medicinal plants in a scientific manner and sponsor agencies for their proper collection, storage and marketing.

Modern slaughter houses with facilities for proper collection and storage of glands and organs should be established to start with, in cities such as Bombay, Madras, Calcutta and Delhi. Collection and preservation of those glands and organs should be supervised by qualified personnel and not left to the butchers.

To enable the pharmactucial manufacturers to adopt more automatic filling and sealing, the production of machinemade tubing and ampoules should be expended. Production of neutral glass tubing and its use in ampoule making should be encouraged.

Standards for the quality of the glass and/or alternative containers required for different purposes should be drawn up with the help of the Central Glass and Ceramic Institute and the Indian Standards Institution.

The pharmaceutical concerns and pharmacies while indenting their requirements of glass containers from glass manufacturers, should insist on standard specifications and decline to purchase cheap goods that do not conform to them.

(11) **Administration of Drugs and Cosmetics Act.**—To overcome the defects in the operation of the drugs control and to bring about a uniformity in the Standard of products manufactured, the administration of Drugs Control should be centralised by bringing the control on manufacture, sale and distribution (exercised by the State Drugs Controllers) under the Drugs Controller (India).

Rule 109 (1)(a) relating to labelling, applicable to Schedule C drugs should be made applicable to all drugs and rigidly enforced. It should apply, in addition, to the labels, on the containers, to advertisement in Medical, Scientific and Trade Journals and the literature distributed to the medical profession and chemists and druggists.

The existing laboratory facilities for testing samples of drugs are inadequate in all the States. In every State or group of small States a well-equipped independent laboratory should be set up which should not form an appendege to any of the existing Public Health, Food or Chemical Laboratories.

APPENDIX V-B

[*Vide* paragraph 5·3·2]

Recommendations of the Drugs and Equipment Standards Committee (1965)

Control on spurious and sub-standard drugs.—Central Intelligence Bureau may be associated with the task of tracking down unlicensed manufacturers. The Central as well as State Drugs Control Authorities should act in liaison with countrywide uniform standards of enforcement. The Staff both at the Centre as sell as in the States should be strengthened and regional offices of the Central Drugs Control Organization should be established in order to co-ordinate activities with the States. The number of inspectors should be increased to 600 by the end of Fourth Five Year Plan and the aim should be to have one inspector for each district and more where the manufacturing activity is intensive. Frequent checking of manufacturing processes, examination of suitability studies and quality of finished products should be made. The Government of India should provide from 50 to 100 per cent assistance to the States for the employment of the staff. The Drugs Inspectors may be empowered also to enter and search premises and also make arrests in cases of manufacture of spurious drugs, but these powers may not be exercised in the case of the inspection of premises of licensed manufacturers. Offences under the Drugs and Cosmetics Act and related Acts should be tried in special courts so that the latter may become conversant with the objectives of the legislation and the technical aspects of the cases. State analytical laboratories should be set up with financial assistance from the Centre and further testing facilities should be provided at the Central Drugs Laboratory, Calcutta. The Drugs and Cosmetics Act may be uniformly extended to the Jammu and Kashmir State. Qualifications and duties of licensing authorities under the Drugs and Cosmetics Act should be laid down in the Act itself and these authorities should function directly under the State Goverments and not be attached to any department.

Self-sufficiency.—Where licensed units in the large scale sector had not been able to implement the phased programme of production their licences may be cancelled.

High priority for the production of raw materials and intermediates should be given and the achievement of self-sufficiency in these and other essential drugs should be arrived at. A portion of the basic drugs must compulsorily be sold and handed over to the formulators even if the basic drug manufacturer is also a formulator. Costs should be pre-determined by Government and the rates should be maintained. If necessary occasion examination of the costs may be made by Government.

Legislation.—The opium and the Dangerous Drugs Act may be consolidated. Drugs and Magic Remedies Objectionable Act, 1954 and the relevant provisions of the Poisons Act of 1919 may be combined with the Drugs Act. The enforcement of the Medicinal and Toilet Preparation (Excise Duties) Act should continue to remain with the Excise Authorities and Medicinal and Toilet and other Alcoholic Preparations should not be misused for potable purposes. Pharmacy Act may be left as it is.

APPENDIX V-C

[*Vide* paragraph 5.3.3]

Important findings and Recommendations of the West Bengal Drugs Enquiry Commission (1964)

(1) Supply of raw materials from indigenous sources should be developed.

(2) Indigenous manufacture of plants and equipments should be encouraged by the State with foreign collaboration, if necessary.

(3) The Government should improve following conditions which created difficulties to the manufacturers : (a) varying and inadequate pressure of the city's gas supply ; (b) fluctuation voltage in the city's electric supply ; (c) high maintenance cost of airconditioning; (d) unavailability of refrigerant; (e) transport difficulties ; and (f) inclusion of basic raw materials in item 28 of Tariff Schedule which made prices high.

(4) The State Government should create a cadre of scientific personnel and adequate testing facilities to enable the State Drug Control Laboratories to test drugs to ensure quality control.

(5) The State Drug Control Laboratory should be an independent unit. The existing state of affairs of the laboratory should be enquired into by Government.

(6) The State Drug Control Administration should be under a full-time Drug Controller, assisted by Assistant Controller, Senior Inspectors and Junior Inspectors, who should be adequate in number.

(7) Malpractice in sale was due sometimes to artificial shortage created by stockists and this should be controlled by strict enforement of the provisions of the West Bengal Drug Control Act, 1950.

(8) Tapper-proof seals, with the manufacturers name and name of drug in the case of capsules will prevent misuse. The standards for packing of drugs should be specified immediately. There should be statutory compulsion on perforation of strips separating individual tablets.

(9) In the case of all chemists and durggists snops, the minimum standards requires under the Drugs and Cosmetics Act and Rules should be strictly enforced without exception.

(10) The present Drugs and Cosmetics Act should be further amended for (a) simplification of the definition of the term 'drug'; (b) re-definining the terms "Misbranded", "Spurious", "Substandard" and "Adulterated" in relation to drugs ; (c) substituting I. P. for B.P. or B.P.C. in Entry 4 of the Schedule to the Act; and (d) omitting Schedule F.

(11) Life-saving drugs, not manufactured in the country, should be freely imported by Government.

APPENDIX V-D

[*Vide* paragraph 5.3.4.]

Important Recommendations of the Committee on Drugs Control (1966)

(1) *Formulations :*

(a) Multiplicity of formulations should be checked and prevented by requiring prior approval of the formula.

(b) National Formula of India should be uniformly adopted throughout the country.

(c) Irrational formulations of vitamins should be stopped and their stability ensured before being allowed to market them.

(d) The generic name should precede the proprietary name and necessary provisions be made in the Drugs and Cosmatics Rules.

(2) *Licensing system of sales :*

(a) No new Schedule C manufacturing units should be licensed without associating an officer of the Central Drug Control Organisation in the inspection of such premises.

(b) Sale licences should be automatically renewed on the lines of Radio licences.

(c) Licensing system of sales licenses should be rationalised.

(d) Wholesale and retail trade should be separated, except Sale by wholesale by one retailer to another retailer.

(e) Inspection fees should be laid down for non-schedule C and C(1) products. There should be only one licence for both Biological and Non-biological products. License system should be rationalised and made very rigid.

(3) *Amendments to Drugs and Cosmetics Act and Rules :*

(a) Definition of the term "Drug" should be enlarged so as to include substances such as components of drugs.

(b) Schedules G. H., and L of the Drugs and Cosmetics Rules should be recast.

(c) Sulpha drugs should be reclassified based on safety margins.

(4) *Drugs Control Administration :*

(a) State Governments should be asked to appoint fulltime Inspectors.

(b) Zonal organisations of the Central Drugs Control organisation should be set up immediately.

(c) Manufacturers indulging in fake records should be eliminated by joint inspection of State and Central authorities.

(5) *Production of Pharmaceutical Equipment :*

(a) Encouragement should be given to the manufacture of glass lined and high vacuum equipment including other Pharmaceutical equipment.

APPENDIX V-E

[*Vide* paragraph 5.3.5]

Recommendations of the earlier Committees on testing of drugs and Drugs Acts as Endorsed by the Mukhopadhay Committee (1966)

(1) A high degree of priority should be given to the setting up of State Analytical Laboratories in order that the tone of Drugs Standard Control may be raised quickly. Central Government should extend financial assistance to the State for this purpose.

(2) National sampling programme should be drawn up for testing of drugs.

(3) Prescription form should be standardised.

(4) The question of laying down standards for packing and containers should be referred to the Indian Pharmacopoiea Committee.

(5) The National Formulary of India should be uniformally adopted throughout the country. As an immediate measure Government Departments should as far as possible purchase only such drugs as are included in the National Formulary of India. Government (both Central and State) should also examine the question of disallowing reimbursement of the cost of drugs not included in the National Formulary of India. The Committee was of the considered view that in order to save the Nation's Drugs Bill and to conserve its resources it would be necessary to so regulate the Drug industry as to permit manufacture of only such drugs as are included in the National Formularly of India. It would also be desirable to market such drugs only under their Pharmacopoeial or Formularly names. The National Formulary of India should be kept up to date.

(6) The Drugs and Cosmetics Act which is operative in all the States except the State of Jammu & Kashmir should be extended to the State of Jammu & Kashmir in the interest of uniform enforcement of legislation throughout the country.

(7) The codification of the Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954, the Drugs and Cosmetics Act, 1940 and the Poisons Act, 1919 is a feasible proposition and should be attempted.

(8) The provisions of the Drugs and Magic Remedies (Objectionable Advertisements) Act should be amended to control advertisements by quacks on their promises.

(9) The Opium Act and the Dangerous Drugs Act might be consolidated into a single Act.

(10) The enforcements of the Medicinal and Toilet preparations (Excise Duties) Act should continue to remain with the Excise authorities as heretofore.

(11) The Pharmacy Act would aim at regulating the education and profession of pharmacists should be left as an independent statute.

APPENDIX V-F

(*Vide* paragraph 5.3.7]

Important Recommendations of the Indian Pharmaceutical Delegation (1964)

(1) The sites for chemical plants in India should be chosen not merely for the sake of regional distribution of industries but by taking into account essential technical considerations such as an assured continuous source of water supply for use in manufacture as well as for the dilution and discharge of effluents.

(2) The installation of multi-purpose plants has special significant for India, and they should be encouraged.

(3) Each factory should maintain liberal stocks of spares and replacements of essential items such as glass and glass-lined equipment, instruments, etc.

(4) It is desirable for industrial units in India to set up pilot plants so as to enable them to evaluate the processes developed in their own laboratories as well as those emanating from other research institutes.

(5) The Government also should encourage setting up of pilot plant facilities by consulting organisations so as to enable them to undertake development work on benalf of the industry, particularly to assist those units that do not have such facilities.

(6) Very close liaison between the engineering industries and the pharmaceutical manufacturers should be energetically developed.

(7) The importance and essentiality of product development laboratories should be better appreciated by the Indian Industry. Even medium and small firms should fruitfully organize development laboratories and build up their own engineering facilities.

(8) Close collaboration between the Atomic Energy Authorities and the pharmaceutical Industry in India should be promoted.

(9) As research effort similar to that existing in the leading pharmaceutical concerns of the West is extremely expensive in terms of capital investment and recurring costs, suitable tax reliefs are essential as incentive specially to enable the industry to build up funds for creation of research facilities.

(10) The Drug Control administrations in various States should insist upon adequate staff and equipment for quality control being provided before granting manufacturing licences.

(11) To prevent some of the abuses observed during recent years in the working of the patent system, the law should be amended, substantially as recommended in the Ayyengar Committee Report.

(12) The establishment of major projects in the public sector for essential drugs will also provide salutary effect on the price levels.

(13) Price regulation may be done by negotiation with the manufacturer on the lines obtaining in U.K.

(14) Foreign firms requiring Indian raw materials may be encouraged to set up processing plants in India for the purpose of converting these raw materials into semi-finished concentrates or finished basic drugs etc. suitable for export.

APPENDIX V-G

[*Vide* paragraph 5.3.9]

Important Recommendations Made so Far by the Committee on Essential Drugs (1966)

(a) Topical use of Penicillin, Sulpha drug and Antihistaminic ointments should be discouraged and no antibiotic which is intended for systematic use should be allowed to be marketed in formulations meant for topical use. Opthalmic use of antibiotics other than Penicillin and Sulphacetamide ointments and drops would however be necessary especially for the treatment of trachoma and other infections.

(b) The manufacturers should be asked to furnish data to justify the rationable and clinical efficacy of formulations which are not included in the National Formulary.

(c) Efforts should be made to manufacture in the public sector units drug which are essential and which could be manufactured in the public sector with the facilities available with them.

(d) In the case of the essential drugs which have to be imprated, the foreign exchange implications, the position regarding their patents and data regarding the cost of their manufacture should be studied before decisions are taken for developing their manufacture. The medical profession should also be appraised of these aspects so that they could always prescribe substitutes wherever necessary.

APPENDIX VI

(*Vide* Paragraph 6·2·1)

(A) Names of the Units licensed to manufacture the specified basic drugs and abbreviations used for them in the Report

Sl. No.	Name of the Unit	Abbreviation
1	2	3
	(i) *Large Scale Units*	
1	Albert David Ltd., Calcutta-50. .	Albert David
2	Alembic Chemical Works Co. Ltd., Baroda.	Alembic Chemical
3	Atul Drug House, Bulsar . . .	Atul Drug House
4	Atul Products Ltd., Bulsar . . .	Atul Products
5	Bayer (India) Ltd., Bombay-1. . .	Bayer
6	Bengal Chemical & Pharmaceutical Works Ltd., Calcutta-54.	Bengal Chemical
7	Bengal Immunity Co. Ltd., Calcutta-13 .	Bengal Immunity
8	Bio-Chemical & Synthetic Products Ltd., Hyderabad.	Bio-Chemicals
9	Biological Evans Ltd., Hyderabad-20 . .	Biological Evans
10	Boehringer-Knoll Ltd., Bombay-1 . .	Boehringer-Knoll
11	Boots Pure Drug Co. (India) Ltd., Bombay-1	Boots
12	Calcutta Chemical Co. Ltd., Calcutta-29	Calcutta Chemical
13	Chemical, Industrial & Pharmaceutical Laboratories Ltd., Bombay-8.	CIPLA
14	Chemo-Pharma Laboratories Ltd., Bombay-15.	Chemo Pharma.
15	Chowgule & Co. (Hind) Pvt. Ltd., Bombay-1	Chowgule

1	2	3
16	Cynamid India Ltd., Bombay-18 . .	Cyanamid
17	Dey's Medical Stores (Mfg.) Pvt. Ltd., Calcutta-16.	Dey's Medical
18	East India Pharmaceutical Works Ltd., Calcutta-26.	East India Pharmaceutical
19	Glaxo Laboratories (India) Pvt. Ltd., Bombay-18.	Glaxo Labs.
20	Haffkine Institute, Bombay-12 . .	Haffkine
21	Hind Chemicals Ltd., Kanpur . .	Hind Chemicals
22	Hindustan Antibiotics Ltd., Poona-8 .	Hindustan Antibiotics
23	Hoechst Pharmaceuticals Ltd., Bombay-1.	Hoechst
24	Indian Drugs & Pharmaceuticals Ltd., New Delhi.	IDPL
25	Indian Research Institute (Pvt.) Ltd., Calcutta-2.	Indian Research Institute
26	Kemp & Co., Bombay-28 . . .	Kemp & Co.
27	Mac Laboratoies Pvt. Ltd., Bombay-77 .	Mac Labs.
28	May & Baker Ltd., Bombay-78 . . .	May &Baker
29	Merck, Sharp & Dohme of India Ltd., Bombay-1.	Merck Sharp
30	Neo Pharma Private Ltd., Bombay-1 . .	Neo Pharma
31	Oriental Pharmaceutical Industries Ltd., Bombay-16.	OPIL
32	Parke-Davis (India) Ltd., Bombay-70 .	Parke-Davis
33	Pfizer Ltd., Bombay-1	Pfizer
34	Roche Products Ltd., Bombay-34 WB .	Roche Products
35	Sarabhai Merck Ltd., Baroda . .	Sarabhai Merck
36	Standard Pharmaceuticals Ltd., Calcutta-14	Standard Pharmaceuticals
37	South India Research Institute Pvt. Ltd., Vijayawada-7 (A.P.).	South India Res. Inst.

1	2	3
38	Synbiotics Ltd., Baroda	Synbiotics
39	Themis Phramaceuticals, Bombay-58 .	Themis Pharmaceuticals
40	Unichem Laboratories Ltd., Bombay-60 .	Unichem Labs.
41	Wander Pharmed Ltd., Bombay-1 . .	Wander Pharmed
42	Warner Hindustan Ltd., Bombay-1 . .	Warner
43	Wyeth Laboratories Ltd., Bombay-1 .	Wyeth Labs.
	(ii) *Small Scale Units*	
1	Alliance Trading Corporation Pvt. Ltd., Calcutta.	Alliance Trading
2	British Medicine & Pharmaceutical Co., Calcutta.	British Medicine
3	Dr. Karanth's Pharma-Chemical Industry, Hyderabad.	Dr. Karanth's Pharmaceutical.
4	Eagle Laboratory, Calcutta . . .	Eagle Lab.
5	G.D.A. Chemicals, Calcutta . . .	G.D.A. Chemicals
6	Gujarat Pharmaceutical & Chemical Works, Ahmedabad.	Gujarat Pharmaceuticals
7	Navarathna Pharmaceutical Laboratories, Cochin.	Navarathna Pharmaceutical.
8	Neogy Laboratories, Calcutta . .	Neogy Labs.
9	Quinochem Laboratories, Sangli (Maharashtra).	Quinochem
10	Suneeta Laboratories, Indore . .	Suneeta Labs.
11	Sunny Industries (P) Ltd., Calcutta .	Sunny Industries
12	Swiss Chemicals, Hyderabad . . .	Swiss Chemicals
13	Syno-Chem Laboratories, Calcutta . .	Syno-Chem
14	Texdyes Corporation, Bombay. . .	Texdyes
15	Universal Chemicals, Bombay-11 . .	Universal Chemicals
16	Usan Laboratories, Bombay . . .	Usan Labs.

APPENDIX VI—(*Contd.*)

(B) List of formulators (who are not manufacturers of the specified basic drugs) and the abbreviations used for them in the Report

Sl. No.	Name of the formulator	Abbreviation used
1	2	3
	(i) *Large Scale Sector*	
1	Anglo-French Drug Co. (Eastern) Ltd., Bombay.	Anglo-French
2	British Drug House (India) Private Ltd., Bombay.	BDH
3	Burroughs Wellcome & Co. (India) Pvt. Ltd., Bombay.	Burroughs Welcome
4	Ciba of India Ltd., Bombay . . .	Ciba
5	Cilag-Hind, Bombay	Cilag-Hind
6	Crookes-Interfran Ltd., Bombay . .	Crookes
7	Fairdeal Corporation Private Ltd., Bombay	Fairdeal Corpn.
8	Geoffrey Manners & Co. Ltd., Bombay .	Geoffrey Manners
9	Indo-Pharma Pharmaceutical Works Pvt. Ltd., Bombay.	Indo-Phrma
10	Indian Health Institute & Laboratory Ltd., Calcutta.	Indian Health Instt.
11	Khandelwal Laboratories, Bombay . .	Khandelwal Labs.
12	Laboratories Grimault Pvt. Ltd., Bombay .	Labs. Grimault
13	Martin & Harris Pvt. Ltd., Calcutta .	Martin & Harris
14	Rallis India Ltd., Bombay . . .	Rallis
15	Smith Stanistreet & Co. Ltd., Calcutta .	Smith Stanistreet
16	Spencer & Co. Ltd., Madras . .	Spencer
17	Stadmed Private Ltd., Calcutta . .	Stadmed
18	Therapeutic Pharmaceuticals Pvt. Ltd., Bombay.	Therapeutic Pharmaceuticals
19	U. S. Vitamins & Pharmaceutical Company India Ltd., Bombay.	U. S. Vitamins
20	Zandu Pharmaceutical Works Pvt. Ltd., Bombay.	Zandu
21	Sanitex Chemical Industries Ltd., Bombay .	Sanitex

1	2	3
	(ii) *Small Scale Sector*	
1	AMAVA, Calcutta	AMAVA
2	Beacon Pharmaceuticals, Bombay . .	Beacon
3	Biochem Pharm Industries, Bombay . .	Biochem
4	Binichem Laboratories, Bombay . .	Binichem
5	Bronkol Private Ltd., Calcutta . . .	Bronkol
6	Cadila Laboratories, Ahmedabad . .	Cadila Labs.
7	Duggan Laboratories (India) Bombay .	Duggan Labs.
8	Emsons Pharmaceutials Co. Pvt. Ltd., Poona.	Emsons Pharmaceuticals
9	Flora-Pharma, Kanpur	Flora-Pharma
10	Gurco Pharma Private Ltd., New Delhi .	Gurco Pharma
11	Imperial Pharmaceutical Products, Bombay.	Imperial Pharmaceutical
12	Lyovak Laboratories, Bombay .	Lyovak Labs.
13	Lyka Laboratories, Bombay . . .	Lyka Labs.
14	Orissa Redcross Blood Bank, Calcutta .	Orissa Redcross
15	Pharma-Chem Manufacturing Company, Bombay.	Pharma-Chem
16	Pharma-Medico (India) Pvt. Ltd., Bombay.	Pharma-Medico
17	Roc Pharmaceuticals, Bombay . . .	Roc Pharmaceuticals
18	Royal Laboratories, Hyderabad . .	Royal Labs.
19	Sarpin Pharmaceutical, Bombay . .	Sarpin Pharmaceutical
20	Shetty's Pharmaceutical & Biological Ltd., Hyderabad.	Shetty Pharmaceutical
21	Standard Laboratories Private Ltd., Calcutta.	Standard Labs.
22	Syntho Pharma Private Ltd., Delhi .	Syntho Pharma.

APPENDIX VII

(*Vide* Paragraph 7·27)

(A) Names of the formulators and the formulations manufactured by them

Sl. No.	Name of the formulator	Specified drugs single drug formulations of which are manufactured	Specified drugs multiple drugs formulations of which are manufactured
1	2	3	4
	(A) *Large Scale units*		
	Manufacturers-*cum*-formulators of specified basic drugs		
1	Albert David Ltd., Calcutta.	Vitamin-B12 Vitamin C Amodiaquin Iodo-chlor-hydroxy-quinoline Chlorpropamide Tolbutamide I.N.H. P.A.S. Prednisolone	I.N.H. and P.A.S.
2	Alembic Chemical Works Co. Ltd., Baroda.	Vitamin-A Vitamin-B-12 Vitamin-C Sulphadiazine Penicillin Streptomycin Chloramphenicol Tetracycline Chloroquine Iodo-chlor-hydroxy-quinoline Tolbutamide Insulin Prednisolone	Penicillin and Streptomycin
3	Bengal Chemical and Pharmaceutical Works Ltd., Calcutta.	Vitamin B-12 Vitamin-C Iodo-chlor-hydroxy-quinoline Chlorpropamide I.N.H. Tetanus Anti-toxin	I.N.H. and P.A.S.

1	2	3	4
4	Bengal Immunity Co. Ltd., Calcutta.	Vitamin-B12 Vitamin-C Chloroquin Iodo-chlor-hydroxy-quinoline Insulin I.N.H. Tetanus Anti-toxin	Tetracycline, Chloroquine and iodo-chlor-hydroxy-quinoline
5	Biological Evans Ltd., Hyderabad.	Vitamin-C P.A.S Tetanus Anti-toxin	I.N.H. and P.A.S.
6	Boehringer-Knoll Ltd., Bombay.	Chloramphenicol Tolbutamide	..
7	Boots Pure Drug Co. (India) Ltd., Bombay.	Sulphadizine Insulin Prednisolone	..
8	Brahmachari Research Institute Pvt. Ltd., Calcutta.	Vitamin-B12 Vitamin-C Iodo-chlor-hydroxy-quinoline Prednisolone	..
9	Calcutta Chemical Co. Ltd., Calcutta.	I.N.H.	..
10	Chemo-Pharma Laboratories Ltd.	I.N.H.	..
11	Cyanamid India Ltd., Bombay.	Sulphadiazine Tetracycline	..
12	Dey's Medical Stores (Mfg.) Co. Ltd., Calcutta.	Vitamin-B12 Vitamin-C Sulphadiazine Penicillin Streptomycin Chloramphenicol Tetracycline Iodo-chlor-hydroxy-quinoline Prednisolone	..
13	East India Pharmaceutical Works Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline	..

1	2	3	4
14	Glaxo Laboratories (India) Pvt. Ltd., Bombay.	Vitamin-A Vitamin-B12 Vitamin-C Penicillin Streptomycin Insulin I.N.H. Prednisolone	Streptomycin and Penicillin
15	Haffkine Institute, Bombay.	Tolbutamide Tetanus Anti-toxin	Penicillin and Streptomycin
16	Hind Chemicals Ltd. Kanpur.	Iodo-chlor-hydroxy-quinoline	..
17	Hindustan Antibiotics, Poona.	Penicillin Streptomycin Tetracycline	..
18	Hoechst Pharmaceutical Ltd., Bombay.	Penicillin Tetracycline Tolbutamide P.A.S. Tetanus Anti-toxin Prednisolone	Penicillin and Streptomycin.
19	Mac Laboratories Pvt. Ltd., Bombay.	Vitamin-B12 Vitamin-C Sulphadiazine Chloramphenicol Tetracycline I.N.H.	Streptomycin, Chloramphenicol and Tetracycline
20	May & Baker Ltd., Bombay.	Sulphadiazine Penicillin Chloroquin Iodo-chlor-hydroxy-quinoline	..
21	Merck Sharp & Dohme of India Ltd., Bombay.	Vitamin-B12 Penicillin Streptomycin Tetracycline Prednisolone	Penicillin and Streptomycin
22	Oriental Pharmaceutical Industries, Ltd. Bombay.	Vitamin-B12 Vitamin-C Chloramphenicol Tetracycline Tolbutamide I.N.H. Prednisolone	

1	2	3	4
23	Parke Davis (India) Ltd., Bombay	Chloramphenicol Amodiaquin	Streptomycin and Chloramphenicol
24	Pfizer Ltd., Bombay .	Penicillin Streptomycin Chloramphenicol Tetracycline Chlorpropamide Insulin I.N.H. P.A.S. Prednisolone	Penicillin and Streptomycin
25	Roche Products Ltd., Bombay.	Vitamin-A Vitamin-C	..
26	Standard Pharmaceutical Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline	Chloramphenicol and Tetracycline
27	Themis Pharmaceuticals Ltd., Bombay.	Vitamin-B12	..
28	Unichem Laboratories Ltd., Bombay.	Vitamin-C Sulphadiazine Chloramphenicol Tetracycline Chloroquin Prednisolone	Streptomycin and Chloramphenicol
29	Wander-Pharmed Ltd., Bombay.	P.A.S.	..
30	Wyeth Laboratories, Bombay.	Prednisolone	..
		(B) *Large Scale units* (Formulators only)	
31	Anglo-French Drug Co., (Eastern) Ltd., Bombay.	Vitamin-B12 Vitamin-C Sulphadiazine	..
32	Bayer (India) Ltd., Bombay.	Chloroquin	..
33	British Drug House (India) Pvt. Ltd., Bombay.	Vitamin-B12 Insulin	..
34	Burroughs Wellcome & Co., (India) Pvt. Ltd., Bombay.	Insulin Tetanus Anti-toxin	..

1	2	3	4
35	Chemical Industrial & Pharmaceutical Labs. Ltd., Bombay.	Vitamin-B12 Vitamin-C Chloramphenicol Tolbutamide Prednisoline	Vitamin-A and Vitamin-C
36	Ciba of India Ltd., Bombay.	Iodochlor-hydroxy-quinoline	..
37	Cilag-Hind Ltd., Bombay.	P.A.S.	..
38	Crookes-Interfran Ltd., Bombay.	I.N.H. P.A.S.	..
39	Fairdeal Corporation Pvt. Ltd., Bombay.	Vitamin-B12 Chloramphenicol Tetracycline P.A.S.	..
40	Geoffrey Manners & Co. Ltd., Bombay	Vitamin-B12 Penicillin Chloramphenicol	..
41	Indo-Pharma Pharmaceutical Works Ltd., Bombay.	Vitamin-A Vitamin-C Iodo-chlor-hydroxy-quinoline I.N.H.	I.N.H. and P.A.S.
42	Indian Health Institute & Lab. Ltd., Calcutta.	Vitamin-A Vitamin-B12 Vitamin-C Iodo-chlor-hydroxy-quinoline I.N.H.	Vitamin-A, Vitamin-B12 and Vitamin-C I.N.H. and P.A.S.
43	Indian Research Institute (Pvt.) Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline	..
44	Kemp & Co. Ltd., Bombay	Vitamin-C Sulphadiazine Chlorpropamide Insulin	..
45	Khandelwal Laboratories, Bombay.	Vitamin-B12 Vitamin-C Sulphadiazine Tetracycline	Streptomycin and Chloramphenicol I.N.H. and P.A.S.

1	2	3	4
46	Laboratories Grimault, Pvt. Ltd., Bombay.	Vitamin-B12	Tetracycline, Chloroquin, and Iodo-chlor-hydroxy-quinoline
47	Martin & Harris Pvt. Ltd., Calcutta.	Vitamin-C Sulphadiazine Chloroquin Iodo-chlor-hydroxy-quinoline P.A.S.	Tetracycline Chloroquine and Iodo-chlor-hydroxy-quinoline
48	Neo-Pharma Industries Pvt. Ltd., Bombay.	P.A.S.	..
49	Rallis India Ltd., Bombay.	Vitamin-B12	..
50	Sarabhai Chemicals, Baroda.	Vitamin-B12 Vitamin-C Penicillin Streptomycin Tetracycline I.N.H.	Vitamin-C Penicillin, Streptomycin and Tetracycline
51	Smith, Stanistreet & Co. Ltd., Calcutta.	Vitamin-B12 Iodochlor-hydroxy-quinoline	Sulphadiazine and Penicillin I.N.H. and P.A.S.
52	South India Research Institute Pvt. Ltd., Vijayawada	Vitamin-B12 Sulphadiazine I.N.H.	..
53	Spencer & Co. Ltd., Madras	Vitamin-C Sulphaidazine Iodo-chlor-hydroxy-quinoline Prednisolone	..
54	Stadmed Private Ltd., Calcutta	Vitamin-C I.N.H.	..
55	Therapeutic Pharmaceuticals Pvt. Ltd., Bombay	Vitamin-A Vitamin-C Sulphadiazine Chloroquin I.N.H. P.A.S.	..

1	2	3	4
56	U.S. Vitamins & Pharmaceutical Co. of India Ltd., Bombay	Vitamin-A Vitamin-C	..
57	Zandu Pharmaceutical Works Ltd., Bombay	Vitamin-B12 Chloramphenicol Tolbutamide I.N.H. P.A.S. Prednisolone	I.N.H. and P.A.S.
58	Sanitex Chemical Industries Ltd., Bombay.	Vitamin-C Sulphadiazine Prednisolone	..
	(C) *Medium and small scale formulators*		
	Name of State : ANDHRA PRADESH		
1	Akin Laboratories, Hyderabad.	Vitamin-B12 Vitamin-C I.N.H. Sulphadiazine	..
2	Pharma Laboratories, Vijaywada.	Streptomycin	Combinations of Streptomycin
3	Royal Laboratories, Hyderabad.	Vitamin-B12 Vitamin-C	..
4	Shetty's Pharmaceutical & Biological Ltd., Hyderabad	Vitamin-B12 Vitamin-C P.A.S. Sulphadiazine Prednisolone Iodo-chlor-hydroxy-quinoline Chloroquin	..
	Name of State : ASSAM		
1	Assam Chemical & Pharmaceutical Ltd., Gauhati.	Iodo-chlor-hydroxy-quinoline Tabs	..
2	Doson Chemical (Private) Ltd., Gauhati.	Vitamin C formulation	..
	Name of State : BIHAR		
1	National Chemcal and Pharmaceutical Works, Patna.	Vitamin-A, Vitamin-B12, Vitamin-C, I.N.H., P.A.S., Sulphadiazine.	..

1	2	3	4
2	Winner Pharmaceuticals, Patna.	Vitamin-B12, Vitamin-C, Sulphadiazine.	..
3	Liberty Mfg. Co. (India), Ranchi.	Vitamin-C, P.A.S., Sulphadiazine.	..
4	The Bihar Chemical Industries Private Ltd., Monghyr.	Vitamin-C.	..
		Name of State : DELHI	
1	Ranbaxy Laboratories, New Delhi.	Penicillin, Streptomycin, Chloramphenicol, Tetracyclines, Vitamin-B12, Vitamin-C, I.N.H. and P.A.S.	..
2	La Medica, New Delhi	Penicillin Streptomycin, Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, I.N.H., P.A.S.	..
3	Gurco Pharma Pvt. Ltd., New Delhi.	Chloramphenicol, Tetracycline, Vitamin-C I.N.H., Vitamin-B12, P.A.S., Sulphadiazine.	Chloramphenicol and Tetracycline Chloramphenicol and Streptomycin.
4	Syntho Pharma Pvt. Ltd., Delhi.	Chloramphenicol, I.N.H., Sulphadiazine	..
5	Bhatnagars & Co., Delhi.	P.A.S., Sulphadiazine, Chloroquin.	..
6	Sahib Singh Mfg. Co. Pvt. Ltd., New Delhi.	Vitamin-B12	..
7	Cyper Pharma, New Delhi.	Chloramphenicol Capsules Vitamin-C, Capsules Tetracycline Capsules.	1. Chloramphenicol and Streptomycin Caps. 2. Chloramphenicol and Tetracycline Caps. 3. Combinations of Vitamins
8	Hamdard (Wakf) Laboratories (India), Delhi.	Vitamin-C, Vitamin-A.	..

1	2	3	4
	Name of State : GUJARAT		
1	Arcon Pharmaceuticals, Ahmedabad.	Chloramphenicol, Tetracycline, Vitamin-C, Vitamin-B12.	
2	Allied Pharmaceuticals Baroda.	Chloramphenicol, Tetracyclines, Vitamin-B-12, Vitamin-C, I.N.H., P.A.S., Sulphadiazine, Prednisolone, Tolbutamide, Iodochlorhydroxyquinoline, Chlorpropamide, Vitamin-A.	
3	Astral Pharmaceutical Industries, Baroda.	Sulphadiazine	
4	Alar Laboratories, Ahmedabad.	Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone, Iodo-chlorhydroxyquinoline, Chloroquin, Vitamin-A.	
5	Alpha Chemicals, Ahmedabad.	Vitamin-C, I.N.H., Sulphadiazine, Prednisolone.	
6	Cadila Laboratories, Ahmedabad.	Chloramphenicol, Vitamin-B12, Vitamin-C, I.N.H., Sulphadiazine, Prednisolone, Tolbutamide.	
7	Everest Chemical Industries, Ahmedabd.	Vitamin-B12, Vitamin-C, I.N.H., Sulphadiazine, Prednisolone, Iodochlorhydroxyquinoline, Vitamin-A, Chloramphenicol.	
8	Gujarat Pharmaceutical & Chemical Works, Ahmedabad.	Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, I.N.H., P.A.S., Sulphadizine, Prednisolone, Chloroquin, Vitamin-A, Chlorpropamide.	

1	2	3	4
9	Lunik Pharma, Ahmedabad.	Vitamin-A.	
10	Mercury Pharmaceutical Industries, Baroda.	Streptomycin, Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, I.N.H., P.A.S. Sulphadiazine, Prednisolone, Iodochlorhydroxiquinoline, Chloroquin and Vitamin-A.	Vitamin-B12 and Vitamin-A.
11	Nibin Pharmaceuticals, Ahmedabad.	Sulphadiazine and Prednisolone.	
12	The Ratrieve Pharmaceuticals, Ahmedabad	Vitamin-B12, I.N.H., Iodochlor-hydroxiquinoline and Vitamin-A	
13	Radiant Pharmaceuticals, Ahmedabad.	Vitamin-B12, Vitamin-A, Vitamin-C, I.N.H., Sulphadiazine and Prednisolone.	Vitamin-B12 and Vitamin-A.
14	Ruby Laboratories, Ahmedabad.	Vitamin-B12, and Vitamin-C, INH Prednisolone Iodochor-hydroxy-quinoline, Chloroquin, Vitamin-A.	
15	Stan-Rel Private Ltd., Baroda.	Vitamin-B12, Vitamin-C, INH, Sulphadiazine, Prednisolone, Iodo-chlorhydroxyquinoline, Chloroquin and Vitamin-A.	
16	Sanitex Chemical Industries Ltd., Baroda	Vitamin-C, Sulphadiazine and Prednisolone.	INH and PAS
17	Sims Laboratories, Ahmedabad.	Chloramphenicol, Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone.	Vitamin-B12 and Vitamin-A.
18	Tutor Pharmaceuticals, Ahmedabad.	Prednisolone, Vitamin A	

1	2	3	4
		Name of State : HIMACHAL PRADESH	
19	Pharma Chemco Laboratory, Solan.	Vitamin-B12	
		Name of State : JAMMU & KASHMIR	
1	Drug Research Laboratory, Jammu.	Vitamin-C, Sulphadiazine	Vitamin-A and Vitamin-C.
2	Government Pharmaceutical Works, Baramulla.	Nil	Nil
3	Pharma Drugs Mfg. Co., Jammu Cantt.	Vitamin-B12, Vitamin-A, Iodo-chlor-hydroxy-quinoline, Tolbutamide, Tetracycline, PAS, Sulphadiazine, INH.	Vitamin-A and Vitamin-C.
4	Ephursum Pharmaceuticals, Jammu.	Vitamin-B12	Vitamin-A and Vitamin-C.
5	Caulson Laboratories, Jammu.	INH, Sulphadiazine, Iodo-chlor-hydroxy-quinoline.	
		Name of State : KERALA	
	Navarathna Pharmaceutical Laboratories, Cochin.	INH, Iodo-chlor-hydroxyquinoline.	Iodo-chlor-hydroxy-quinoline, Chloramphenicol, INH and PAS.
		Name of State : MADHYA PRADESH	
1	Fine Pharmaceuticals, Indore.	Chloramphenicol, Tetracycline.	
2	Indian Pharmaceutical, Indore.	Vitamin Caps, Chloramphenicol, Tetracycline.	
3	IB Pharma, Indore.	Prednisolone	
4	Neo Drugs (India), Chindwara.	Chloramphenicol, Tetracycline, Vitamin-A.	
5	Plazma Laboratories, Indore.	Chloramphenicol, Tetracycline, Vitamin Preparations.	

1	2	3	4
6	Bombay Ideal Products, Indore.	Penicillin, Chloramphenicol, Tetracycline, Vitamin-C, Vitamin-A.	
7	Brite Pharmaceuticals, Bhopal.	Chloramphenicol Tetracycline, Vitamin-B12.	
8	Khandelwal Pharmaceuticals, Indore.	Preparation of Vitamins.	
9	Bharat Pharmaceuticals, Indore.	Vitamin Preparations, Antibiotics preparations.	
10	Cyano Pharma, Indore.	Vitamin-A, Vitamin-B 12.	
11	Chimco Pharma, Indore	Preparations of Vitamin.	
12	Earnest & Co., Indore.	Vitamin Preparations	
13	Impha labs., Indore	Vitamin Preparations.	
14	Jamsons Laboratories, Indore.	Vitamin Preparations	
15	Kamsor Laboratories, Indore.	Antibiotics Preparations, Vitamin Preparations.	
16	Macon Drug Laboratories, Indore.	Vitamin Preparations.	
17	Mahendra Pharma, Indore.	Vitamin Preparations.	
18	Pure Pharma Products (India), Indore.	Vitamin Preparations, Antibiotics Preparations.	
19	Usha Products, Raipur	Preparations of Vitamins, Preparations of Antibiotics.	
20	Uneque Pharma, Indore.	INH.	
21	Vostok Laboratories, Indore.	Vitamin Preparations, Antibiotic Preparations.	

1	2	3	4
	Name of State : MADRAS		
1	Indo-French Pharmaceutical Co., Madras.	Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A, Prednisolone, INH, PAS, Penicillin, Streptomycin.	Vitaimn-A, Vitamin-C and Vitamin-B12.
2	Pharma Products P. Ltd., Madras.	Vitamin-B12	Vitamin-B12 and Vitamin-A.
3	Retort Labs., Madras.	Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C IHN.	
4	United Pharma (India) P. Ltd., Madras.	Vitamin-B12, Tetracycline, Vitamin-C, PAS, INH, Penicillin, Chloramphenicol, Sulphadiazine.	INH and PAS Streptomycin and Chloramphenicol.
5	Amarchand Sobachand, Madras.	Chloramphenicol, Sulphadiazinel, INH, Tolbutamide, Vitamin-C.	Streptomycin and Chloramphenicol.
6	T.T. Krishnamachary Co., Madras.	Vitamin-A, Vitamin-C, Vitamin-B12.	Vitamin-A, Vitamin-C and Vitamin-B12.
7	Intercem, Madras.	INH, Tolbutamide, Sulphadiazine, Vitamin-C.	
8	Linkson Pharma, Madras.	Sulphadiazine, PAS.	
9	Garutman Industries P. Ltd., Madras.	Vitamin-B12, Vitamin-C, INH, PAS, Sulphadiazine.	PAS and INH PAS and Vitamin-A.
10	Parwal & Sons, Madras	PAS, INH, Vitamin-C, Iodo-chlor-hydroxy-quinoline, Sulphadizaine.	
11	The South India Mfg. Co., Madurai.	Vitamin-B12, Sulphadiazine, Vitamin-A, Vitamin-C.	
12	Shakthi Remedies, Madurai.	Vitamin-C.	
13	Orient Pharma P. Ltd., Madras.	Vitamin-B12, Vitamin-C	

1	2	3	4
	Name of State : MAHARASHTRA		
1	Acichem Labs., Bombay.	Chloramphenicol, Tetracycline.	Streptomycin and Chloramphenicol.
2	Amber Research & Pharmaceutical Works, Bombay.	Chloramphenical, Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone,	
3	Atco Pharma Labs., Bombay.	Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, INH, Prednisolone.	
4	Auxil Pharmaceuticals, Bombay.	Vitamin-B12, INH, Vitamin-A.	
5	Beacon Pharmaceuticals, Bombay.	Chloramphenicol, Vitamin-B12, INH and Prednisolone.	
6	Biochem Pharmaceutical Industries, Bombay.	Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone Vitamin-A, Chlorpropamide, Tetanus Anti-toxin.	
7	Binichem Laboratories, Bombay.	Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Iodochlor-hydroxy-quinoline, Vitamin-A, Chlorpropamide, Tetanus Anti-toxin.	
8	Croydan Chemical Works Pvt. Ltd., Bombay.	Chloramphenicol, Tetracycline, INH and PAS.	
9	Chelsea Chemical Laboratories, Poona.	INH.	
10	Comtex Laboratories, Bombay.	Chloramphenicol, Vitamin-B12, Vitamin-C, Sulphadiazine.	
11	Duggan Labs. (India), Bombay.	Vitamin-B12, Iodochlor-hydroxy-quinoline.	

1	2	3	4
12	Emsons Pharmaceuticals Co. P. Ltd., Poona.	INH.	
13	Emsons & Co., Bombay	INH, Sulphadiazine, Prednisolone, Insulin, Chloroquin.	
14	Eisen Pharmaceutical Co. P. Ltd., Poona.	Vitamin-C.	
15	Eddison Continental Labs. P. Ltd., Bombay.	Vitamin-B12, Vitamin-A	
16	Fleming Pharmaceuticals, Bombay.	INH, Sulphadiazine, Prednisolone.	
17	Franco-Indian Mfg. Ltd., Bombay.	Vitamin-B12, Sulphadiazine, Prednisolone.	
18	Imperial Pharmaceutical Products, Bombay.	Vitamin-C, INH, PAS, Sulphadiazine, Prednisolone, Iodochlor-hydroxy-quinoline, Chloroquin.	
19	Ipca Labs. Ltd., Bombay.	Vitamin-B12, Vitamin-C, INH, PAS, Sulphadiazine, Prednisolone, Iodochlor-hydroxy-quinoline, Chloroquin, Vitamin-A.	
20	Jaggat Pharma P. Ltd., Bombay.	Chloramphenicol, Tetracycline, Prednisolone.	
21	Lyovak Laboratories, Bombay.	Chloramphenicol, Tetracyline.	
22	Livite Labs. (India) Ltd., Bombay.	INH.	
23	Lyka Labs., Bombay.	Chloramphenicol, Vitamin-C, INH, Chloroquin.	
24	Milnex Labs., Bombay.	Chloramphenicol, Vitamin-B12.	

1	2	3	4
25	Medical Products of India, Bombay.	Sulphadiazine, Iodo-chlor-hydroxy-quinoline.	
26	Neil Pharmaceuticals Bombay.	..	INH and PAS.
27	Nymph Laboratories, Bombay.	Chloramphenicol, Tetracycline, Vitamin-A, Sulphadiazine, Prednisolone, Chloroquin.	
28	Pharma-Medico (India) Pvt. Ltd., Bombay.	Chloramphenicol, Tetracycline.	
29	Pharma-Chem. Mfg. Corpn., Bombay.	Vitamin-B12.	
30	Pharmakon Laboratories, Bombay.	Chloramphenicol, Tetracycline, Vitamin-C, INH, PAS, Sulphadiazine, Iodo-chlor-hydroxy-quinoline.	INH and PAS.
31	Penicon Pharmaceutical & Chemical Industries, Bombay.	Vitamin-B12.	
32	Roc Pharmaceuticals, Bombay.	Vitamin-B12, Vitamin-C, Iodo-chlor-hydroxy-quinoline, Chloroquin, Vitamin-A.	
33	Retort Laboratories, Bombay.	Chloramphenicol, Tetracycline, Prednisolone, Sylphadiazine, INH & Vitamin-B12.	Streptomycin and Chloramphenicol Vitamin-A and Vitamin-C, Vitamin A and Vitamin-B12, Vitamin-C, INH and Vitamin-B12.
34	Samarth Pharmaceutical, Bombay.	Chloramphenicol, Tetracycline, Vitamin-C, Sulphadiazine, Prednisolone, Iodo-chlor-hydroxy-quinoline.	Chloramphenicol and Streptomycin.
35	Sarpin Pharmaceutical, Bombay.	Prednisolone.	

1	2	3	4
36	Sunways (India) P. Ltd., Bombay.	Chloramphenicol, Tetracycline, Vitamin-B12.	
37	Trinity Laboratories, Bombay.	..	INH and PAS

Note.— Of the 184 units who are stated to be manufacturers of formulations of specified drugs in Maharashtra only 37 had furnished particulars.

Name of State : **Mysore**

1	Medicaids, Bangalore.	Tetracycline, Vitamin-A, Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone.
2	All India Mission's Tablet Industries, Bangarpet.	Iodo-chlor-hydroxy-quinoline, Chloroquin.
3	Associated Drug Co., Bangalore.	Vitamin-B12, INH.
4	Bangalore Pharmaceuticals & Research Lab. Bangalore.	Vitamin-B12, Sulphadiazine.
5	Indian Process & Chemical Laboratory, Bangalore.	Vitamin-B12.
6	Indian Pharmaceuticals, Bangalore.	Vitamin-B12, Vitamin-A.
7	International Chemical & Biological Institute, Bangalore.	Vitamin-B12.
8	Madras Chemicals & Pharmaceuticals Ltd., Bangalore.	Vitamin-B12, Vitamin-C.
9	Medichem Laboratories, Bangalore.	Vitamin-B12, Vitamin-C.
10	Mysore Industrial & Testing Laboratories, Bangalore.	Vitamin-B12, Vitamin-C, Vitamin-A.

1	2	3	4
11	Pharma Aids, Bangalore.	Vitamin-B12, Vitamin-C, Prednisolone, Iodo-chlorhydroxy-quinoline.	
12	Alex Laboratories, Bijapur.	Vitamin-B12, Vitamin-C.	
13	Rampen Private Ltd., Bangalore.	Vitamin-B12, Vitamin-A.	
14	Capri Pharma, Bangalore.	Vitamin-B12, Vitamin-C.	
		Name of State : ORISSA	
1	Orissa Red Cross Blood Bank, Cuttack.	Vitamin-C, PAS, Sulphadiazine.	
2	Novo Pharmaceuticals P. Ltd., Cuttack.	Vitamin-B12, Vitamin-C, Sulphadiazine, Iodo-chlorhydroxy-quinoline, Vitamin-A.	
3	Bharat Salt and Chemical Industries Ltd., Cuttack.	Ditto.	
4	Orichem Laboratory Puri.	Ditto.	
5	Jagannath Chemical and Pharmaceutical Industries, Cuttack.	Ditto.	
6	Orissa Fisheries Development Corporation Ltd., Cuttack.	Ditto.	
7	Paras Pharmaceuticals, Sambalpur.	Ditto.	
8	Radiant Pharmaceuticals, Sambalpur.	Ditto.	
9	Soloace Drugs Pvt. Ltd., Cuttack.	Ditto.	

1	2	3	4
	Name of State : RAJASTHAN		
1	Allied Chemical & Pharmaceutical Works, Jaipur.	INH, Vitamin-B12, Chloramphenicol, Sulphadiazine.	Chloramphenicol and Streptomycin.
2	Aspha Lab. Pvt. Ltd., Jaipur.	Vitamin-C, Vitamin-B12, Chloramphenicol, Tetracycline, Chloroquin.	
3	Bynechem Laboratories, Jaipur.	Vitamin-B12.	
4	Dueful Laboratory, Jaipur.	Tetracycline, Chloramphenicol, Vitamin-B12.	Chloramphenicol and Streptomycin.
5	Delux Pharma, Abu Road.	Iodo-chlor-hydroxy-quinoline, INH, Sulphadiazine, Vitamin-C, Prednisolone.	
6	Macsen Laboratories, Udaipur.	Sulphadiazine, Iodo-chlor-hydroxy-quinoline, Chloroquin.	
7	Relief Drug House, Abu Road.	Vitamin-C, Iodo-chlor-hydroxy-quinoline.	
8	Stanley Laboratories, Jaipur.	Vitamin-B12, Vitamin-C, Iodo-chlor-hydroxy-quinoline, INH, Prednisolone, Sulphadiazine.	
9	Wander Chemical Works, Jaipur.	Chloramphenicol, Tetracycline, Iodo-chlor-hydroxy-quinoline, Sulphadiazine.	Chloramphenicol and Streptomycin.
10	Thio Pharma, Falur	Sulphadiazine, Iodo-chlor-hydroxy-quinoline, INH, Vitamin-C, Chloramphenicol, Tetracycline, Prednisolone.	
11	Rajasthan Pharmaceutical Laboratories, Jaipur.	Sulphadiazine, Vitamin-C.	

1	2	3	4
	Name of State : UTTAR PRADESH		
1	Pilco Pharma, Kanpur	Penicillin, Chloramphenicol.	
2	Flora-Pharma, Kanpur	Penicillin, Chloramphenicol, Tetracycline.	
3	Onyx Laboratories (P) Ltd., Kanpur.	Penicillin, Streptomycin, Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, Vitamin-A.	
4	Swastik Pharmaceuticals, Varanasi.	Penicillin, Streptomycin, Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	
5	Allodial Chemical Mfg. Co., Meerut.	Penicillin, Streptomycin, Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	
6	Spa Pharma, Kanpur.	Streptomycin, Chloramphenicol, Vitamin-B12, Vitamin-C, Vitamin-A.	
7	Piya Pharmaceutical Works, Kanpur.	Streptomycin, Chloramphenicol, Tetracycline, Sulphadiazine.	
8	Garga Pharma (P) Ltd., Lucknow.	Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Iodochlor-hydroxy-quinoline, Vitamin-A.	
9	Harison Laboratories Kanpur.	Cholramphenicol Tetracycline Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	

1	2	3	4
10	U.P. Drug House Pvt. Ltd. Lucknow.	Chloramphenicol Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	
11	Rashtradeep Laboratory, Firozabad (Agra).	Tetracycline, Vitamin-B12, Vitamin-C, Vitamin-A.	
12	Martand Pharmaceuticals, Barant (Meerut).	Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	
13	National Chemical & Pharmaceutical Works Ghaziabad.	Tetracycline Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	
14	Narain Chemical Industries Kanpur.	Tetracycline.	
15	Parker Pharma (P) Ltd., Kanpur.	Tetracycline, Vitamin-B12, Vitamin C, Sulphadiazine, Vitamin-A.	
16	G. Praxen & Co. (P) Ltd., Lucknow.	Vitamin-B12, Vitamin-C, Vitamin-A.	
17	Arpi Chemical Industries Ltd., Kasganj.	Vitamin-B12, Vitamin-C, Vitamin-A.	
18	King Pharmaceutical Works, Allahabad.	Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	
19	New International Chemical P. Ltd., Bara Banki.	Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	
20	Reylite & Co., Meerut	Vitamin-B12, Vitamin-C, Vitamin-A.	
21	Vitamin Labs. of India P. Ltd., Lucknow.	Vitamin-B12, Vitamin-C., Vitamin-A.	
22	A.B.M. Research Institute, Lucknow.	Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A.	

1	2	3	4
23	Northern India Chemical Works, Dattal Village, Meerut.	Vitamin-B12, Vitamin-C, Vitamin-A.	
24	Scientific Research Industries, Lucknow.	Vitamin-B12, Vitamin-C, Iodo-chlor-hydroxy-quinoline, Vitamin-A.	
25	Premier Laboratories, Allahabad.	Vitamin-B12, Vitamin-C, Vitamin-A.	
26	Farmex Laboratories, Mathura.	Sulphadiazine.	
27	Asli Dwakhana, Mathura.	Sulphadiazine.	
28	Surya Chemical, Lucknow.	Sulphadiazine, Iodo-chlo-hydroxy-quinoline.	
29	Medical Pharma, Gohur.	Sulphadiazine.	
30	Super Standard Chemicals Co., Aligarh.	Sulphadiazine.	
31	Stalchem of India, Aligarh.	Shlphadiazine.	
	Name of State : West Bengal		
1	Sadhana Ausadalaya-Dacca, Calcutta.	Iodo-chlor-hydroxy-quinoline.	Vitamin-A, Vitamin-C and Vitamin-B12.
2	Stamac Products, Calcutta.	Iodo-chlor-hydroxy-quinoline, Chloroquin, INH. Sulphadiazine, Vitamin-C, Vitamin B-12.	Vitamin-B12 and Vitamin-A.
3	G. D. Pharmceuticals P. Ltd., Calcutta.	Di-iodo hydroxy-quinoline, Chloroquin.	
4	Life Pharmaceuticals P. Ltd., Garia.	Vitamin C, Vitamin-B12.	Vitamin-B12 and Vitamin-A.
5	Ray Laboratories Pvt. Ltd., Calcutta.	Chloroquin.	

1	2	3	4
6	Bronkol Pvt. Ltd., Calcutta.	INH, Sulphadiazine, Iodo-chloro-hydroxy-quinoline.	
7	Calcutta Chemical Research, Association Ltd., Calcutta.	Vitamin-B12	Vitamin-C and Vitamin-A.
8	Moti Chemical Industries, Howrah.	Vitamin-A.	
9	Mahesh Laboratories Pvt. Ltd., Calcutta.	Vitamin-B12.	
10	The Ashok Bio-Pharma Ltd., Calcutta.	Vitamin-C, Vitamin-B12, Vitamin-A.	Vitamin-A and Vitamin-C, Vitamin-A, Vitamin-B12 and Vitamin-C.
11	Alliance Trading Corpn. P. Ltd., Calcutta.	Iodo-chloro-hydroxy-quinoline, Vitamin-B12 and PAS.	INH and PAS.
12	Immuno Chemical Laboratory, Calcutta.	Vitamin-B12.	Vitamin-C and Vitamin-A.
13	Ensand Pharmaceuticals Pvt. Ltd., Calcutta.	Vitamin-B12, INH.	
14	Dr. Bose's Laboratory, Calcutta.	Vitamin-B12, Vitamin-C.	Di-iodo-hydroxy-quinoline and Chloroquin.
15	International Remedies Pvt. Ltd., Calcutta.	Vitamin-B12, Vitamin-C.	
16	Modern Drug House, Calcutta.	Vitamin-C, Vitamin-A	
17	G.D.A. Chemicals, Calcutta.	Vitamin-B12, Vitamin-A, INH. PAS, Iodo-chlor-hydroxy-quinoline	Vitamin C and Vitamin A PAS and INH.
18	Frank Ross & Co. Ltd., Calcutta.	Sulphadiazine.	
19	Bengal Health Products Pvt. Ltd., Calcutta	Iodo-chloro-hydroxy-quinoline, Vitamin-B12	Vitamin-C, INH and PAS.

1	2	3	4
20	Indian National Drug Co., Calcutta.	Vitamin-B12, Vitamin-C, PAS, Iodo-chlor-hydroxy-quinoline.	Vitamin-B12 and Vitamin-A.
21	Glucodex Laboratories, Calcutta.	Vitamin-C, Vitamin-B12.	Vitamin-B12 and Vitamin-A.
22	Standard Chemical & Pharmaceutical Works Calcutta.	Vitamin-A, Vitamin-C, Vitamin-B12.	
23	Hindusthan Medical Service P. Ltd., Calcutta.	Vitamin-B12	
24	Bio-Pharma Laboratories, Calcutta.	Vitamin-B12	Vitamin-C and Vitamin-B12.
25	East India Chemical Works, Calcutta.	Vitamin-B12, Vitamin-A.	
26	Sunny Drugs & Chemical Works, Calcutta.	Vitamin-A.	
27	Diamond Drugs & Chemical Works, Calcutta.	Sulphadiazine.	
28	The Orient Research and Chemical Lab., Howrah.	Vitamin-B12, Iodo-chlor-hydroxy-quinoline.	
29	Eastern Pharma Products, Calcutta.	Sulphadiazine, Iodo-chlor-hydroxy-quinoline.	
30	Mendine Pharmaceutical Works, Calcutta.	Vitamin-A.	
31	Pastur Laboratories P. Ltd., Calcutta.	Vitamin-B12, Vitamin-C.	
32	Bharat Immunity Lab., Calcutta.	Vitamin-A, Vitamin-B12.	Vitamin-A and INH
33	The Pharmed Research Laboratory, Calcutta.	Sulphadiazine.	
34	Calcutta National Chemical Industries P. Ltd. Calcutta.	Vitamin-B12, Iodo-chlor-hydroxy-quinoline, Chloroquin.	Vitamin-A, Vitamin-B12 and Vitamin-C.

1	2	3	4
35	AMAVA, Calcutta.	Vitamin-C, Iodo-chlor-hydroxy-quinoline, Vitamin-A.	Vitamin-C and Vitamin-A, Vitamin-C, INH and PAS.
36	N.I. Pharmaceutical Works, Calcutta.	Vitamin-B12, Vitamin-C.	
37	Standard Pharma Remidies, Calcutta.	Vitamin-B12, Vitamin-A.	Vitamin-B12, and Vitamin-A Vitamin-B12, Vitamin-A and Vitamin-C.
38	C. S. I. Chemicals and Pharmaceuticals P. Ltd., Calcutta.	Vitamin-B12, Vitamin-A, Iodo-chlor-hydroxy-quinoline.	Vitamin-A and Vitamin-C.
39	Nivea Pharmaceuticals Ltd., Calcutta.	PAS.	INH and PAS.
40	Phoenix Drug House P. Ltd., Calcutta.	Vitamin-C, Vitamin-B12.	Vitamin-C and Vitamin-A.
41	Bharati Chemical Works, Calcutta.	Vitamin-B12, Iodo-chlor-hydroxy-quinoline, Vitamin-C.	Vitamin-A and Vitamin-B12.
42	N. P. Industries.	Iodo-chlor-hydroxy-quinoline, Sulphadiazine, Vitamin-C.	
43	Pearl Chemical Industries P. Ltd., Calcutta.	Vitamin-B12.	
44	Vax Institute Laboratory Ltd., Calcutta.	Vitamin-B12, Vitamin-A.	
45	Sunny Industries P. Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline, and Di-iodo-hydroxy-quinoline.	
46	Panceea Laboratories, Calcutta.	Sulphadiazine.	
47	Indo-Pharama Laboratory, Calcutta.	Di-iodo-hydroxy-quinoline.	
48	The Oriental Research & Chemical Laboratory Ltd., Howrah.	Iodo-chlor-hydroxy-quinoline, Vitamin-B-12, Vitamin-A.	

1	2	3	4
49	Eastern Chemical Laboratory, Calcutta.	Vitamin-A.	
50	Standard Laboratories P. Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline.	
51	Treatment Home Products, Calcutta.	Iodo-chlor-hydroxy-quinoline, INH, Vitamin-C.	
52	Indian National Drug P. Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline.	
53	Chemotherapeutic Laboratories, Calcutta.	Vitamin-B12.	
54	The Carbon Laboratories, Calcutta.	Vitamin-C.	
55	Dipon Laboratory, Calcutta.	Vitamin-A, Vitamin-B12.	
56	Oriental Chemical Works P. Ltd., Calcutta.	Vitamin-B12, Vitamin-C, Iodo-chlor-hydroxy-quinoline, INH, PAS.	Vitamin-A and Vitamin-C.
57	Addco Ltd., Calcutta.	Vitamin-C, Sulphadiazine, Iodo-chlor-hydroxy-quinoline.	
58	Dolphin Laboratories P. Ltd., Calcutta.	Iodo-chlor-hydroxy-quinoline, Vitamin-A.	
59	Nivea Pharmaceuticals Ltd., Konnagar.	INH, PAS.	PAS and INH.
60	Syno-Chem Laboratories, Calcutta.	Iodo-chlor-hydroxy-quinoline.	

APPENDIX VIII

(*Vide* Paragraph 10·4)

Unit-wise statement of production, self-consumption, sales and exports of the specified basic drugs

Sl. No.	Name of the basic drug	Name of the manufacturer	Unit of measurement	Year	Production	Self consumption	Sales	Exports
1	2	3	4	5	6	7	8	9
1	*Vitamin-A* . . .	(1) Roche Products	MMU	1964	16·02	10·79	4·53	..
				1965	15·75	9·76	4·69	..
				1966	14·33	9·24	5·17	..
				1967	14·60	9·19	5·13	Nil
		(2) Glaxo Labs.	MMU	1964	6·70	1·69	1·14	..
				1965	8·80	1·73	1·47	..
				1966	7·10	1·84	3·10	1·09
				1967	9·25	1·79	3·26	Nil
2	*Vitamin-B12*							
	(A) Vitamin-B12 . .	(1) Merck Sharp	Kgs.	1964	21·30	4·90	17·80	..
				1965	27·20	6·80	22·00	—
				1966	41·80	13·40	28·00	Nil
				1967	43·40	11·00	33·00	Nil

		(2) Themis Pharmaceutical.	Kgs.	1964	..	..	..	..
				1965	..	..	..	..
				1966	..	..	..	..
				1967	10·35	10·35	..	..
	(B) Vitamin B12(b) .	(1) Glaxo Labs.	Kgs.	1964	Nil	0·60	..	..
				1965	0·50	0·80	..	..
				1966	2·10	1·30	0·46	..
				1967	1·47	1·74	0·12	Nil
		(2) Merck Sharp	Kgs.	1964	8·50	8·50	Nil	..
				1965	7·90	8·40	Nil	..
				1966	10·30	9·30	Nil	Nil
				1967	10·20	9·30	Nil	Nil
3	*Vitamin C* . . .	Sarabhai Merck	M.T.	1964	78·00	..	71·18	..
				1965	90·00	..	102·35	..
				1966	131·00	..	112·00	..
				1967	77·00	..	37·84	..
4	*Sulphadiazine* . .	(1) Atul Products	M.T.	1964	52·46	Nil	58·44	..
				1965	63·84	Nil	62·37	..
				1966	12·44	Nil	14·26	Nil
				1967	Nil	Nil	Nil	Nil

1	2	3	4	5	6	7	8	9
4	*Sulphadiazine*—Contd.	(2) May & Baker	M.T.	1964	24·21	23·49	..	Nil
				1965	43·87	40·13	..	Nil
				1966	64·97	57·62	1·15	Nil
				1967	43·86	49·21	5·05	Nil
5	*Penicillin* . . .	(1) Hindustan Antibiotics.	MMU	1964	50·68	18·01	35·15	..
				1965	58·48	18·53	49·99	..
				1966	68·21	18·33	54·26	Nil
				1967	59·55	22·66	36·25	Nil
		(2) Alembic	MMU	1964	20·37	9·12	11·70	..
				1965	28·05	11·86	18·30	..
				1966	51·00	16·59	16·10	0·30
				1967	25·85	15·45	10·40	Nil
		(3) Standard Pharmaceuticals.	MMU	1964	14·03	0·44	13·75	..
				1965	16·08	1·71	15·66	..
				1966	26·66	3·32	22·32	Nil
				1967	33·11	4·55	7·07	Nil
6	*Streptomycin* . . .	(1) Hindustan Antibiotics	M.T.	1964	32·51	8·92	25·15	..
				1965	55·24	19·86	42·52	..
				1966	68·59	20·21	46·81	Nil
				1967	64·59	35·71	29·12	Nil

	(2) Synbiotics	M.T.	1964	25·16	..	32·99	..
			1965	36·28	..	37·56	..
			1966	35·75	..	36·81	0·20
			1967	60·60	..	60·81	Nil
7 *Chloramphenicol* . .	(1) Parke-Davis	M.T.	1964	8·79	8·78	Nil	..
			1965	11·81	8·99	Nil	1·00
			1966	11·01	9·38	Nil	3·00
			1967	11·86	9·87	Nil	2·50
	(2) Boehringer-knoll	M.T.	1964	10·00	2·40	3·50	..
			1965	13·40	4·70	7·70	..
			1966	12·91	7·00	4·54	Nil
			1967	9·71	8·41	0·82	Nil
	(3) Mac Labs.	M.T.	1964	0·90	0·90	..	..
			1965	0·40	0·40	..	..
			1966	0·30	0·30	..	..
			1967	Nil	0·30	..	..
8 *Tetracyclines* . . .	(1) Pfizer	M.T.	1964	8·80	4·50	2·80	..
			1965	8·50	7·10	2·00	..
			1966	8·87	7·70	0·12	Nil
			1967	8·00	9·62	0·21	Nil
	(2) Cyanamid	M.T.	1964	8·92	4·34	0·40	..
			1965	8·58	4·30	0·70	..
			1966	6·25	5·49	0·24	Nil
			1967	4·99	4·53	..	Nil

1	2	3	4	5	6	7	8	9
8	*Tetracyclines*—Contd.	(3) Hindustan Antibiotics	M.T.	1964	0·16	0·17	..	..
				1965	0·14	0·25	..	..
				1966	0·12	0·15	Nil	Nil
				1967	0·02	0·15	Nil	Nil
		(4) Synbiotics	M.T.	1964	1·90	...	1·50	..
				1965	3·40	...	3·90	...
				1966	4·50	...	4·30	..
				1967	2·60	...	0·20	..
9	*Amodiaquin*	Albert David	M.T.	1964	0·08	0·08	Nil	..
				1965	0·02	0·02	Nil	..
				1966	0·07	0·07	Nil	..
				1967	0·08	0·08	Nil	Nil
		Parke-Davis	M.T.	1964	9·93	9·69	Nil	Nil
				1965	10·69	11·65	Nil	Nil
				1966	14·85	14·94	Nil	Nil
				1967	11·51	9·71	Nil	Nil
10	*Chloroquin*	Bengal Immunity	M.T.	1964	1·21	1·05	0·15	..
				1965	2·42	0·99	0·47	..
				1966	2·79	2·68	0·87	..
				1967	3·43	3·35	0·07	Nil

11	*A. Iodo-chlor-hydroxy-quinoline.*	(i) *Large scale units*						
		Albert David	M.T.	1964	0·24	0·24	..	..
				1965	0·28	0·28	..	..
				1966	0·92	0·92	..	..
				1967	0·70	0·70	..	..
		Alembic Chemical	M.T.	1964	3·66	1·21	2·04	..
				1965	4·66	1·55	1·14	..
				1966	1·91	1·65	Nil	Nil
				1967	Nil	0·91	Nil	Nil
		Atul Products	M.T.	1964	25·94	Nil	19·60	..
				1965	23·99	Nil	30·30	..
				1966	41·17	Nil	35·19	Nil
				1967	19·20	Nil	17·60	..
		Bengal Chemical	M.T.	1964	0·87	0·95	Nil	Nil
				1965	0·69	0·67	Nil	Nil
				1966	0·59	0·69	Nil	Nil
				1967	0·27	0·15	Nil	Nil
		Brahmachari Research Institute.	M.T.	1964	0·70	0·70	..	..
				1965	0·30	0·30	..	..
				1966	0·60	0·30	..	..
				1967	0·38	0·38	Nil	..

1	2	3	4	5	6	7	8	9
		East India Pharmaceutical.	M.T.	1964	19·30	19·19	..	..
				1965	21·30	21·24	..	..
				1966	23·00	22·06	Nil	..
				1967	24·70	24·70	Nil	..
11.	*A—Iodo-chlor-hydroxy-quinoline*—Contd.	Hind Chemicals	M.T.	1964	0·40	0·40	..	..
				1965	0·30	0·30	..	..
				1966	0·40	0·40	..	..
				1967	0·53	0·39	..	..
		Standard Pharmaceuticals.	M.T.	1964	1·50	1·50	Nil	..
				1965	1·60	1·60	Nil	..
				1966	1·10	1·10	Nil	..
				1967	1·61	1·17	Nil	..
		Small scale units						
		Alliance Trading	M.T.	1964	5·10	0·30	4·80	..
				1965	6·20	0·30	5·90	..
				1966	7·40	0·30	10·00	..
				1967	10·17	0·32	9·80	..
		British Medicine	M.T.	1964	..	..	..	..
				1965	0·20	..	..	..
				1966	0·70	..	..	..
				1967	0·89	0·39	0·30	..

Eagle Lab.	M.T.	1964	0·80	..	..	..
		1965	0·50	..	..	..
		1966	1·86	0·06	1·66	..
		1967	1·29	1·23	0·17	..
G.D.A. Chemicals	M.T.	1964	0·19	0·16	..	..
		1965	0·20	0·18	..	..
		1966	0·21	0·21	Nil	Nil
		1967	0·25	0·22	..	..
Neogy Labs.	M.T.	1964	5·46	Nil	5·50	..
		1965	5·83	Nil	5·80	..
		1966	6·54	Nil	6·50	..
		1967	8·93	Nil	8·90	..
Sunny Industries	M.T.	1964	..	..	..	..
		1965	1·10	..	1·1	..
		1966	0·41	Nil	0·41	..
		1967	1·33	Nil	1·33	..
Swiss Chemicals	M.T.	1964	..	..	..	..
		1965	0·30	..	0·30	..
		1966	0·50	..	..	..
		1967	0·50	Nil	1·45	..

1	2	3	4	5	6	7	8	9
		Synd-Chem	M.T.	1964	0·10	0·10	0·10	..
				1965	1·10	1·10	1·10	..
				1966	1·60	1·60	1·60	..
				1967	1·08	Nil	0·92	..
11. *B—Di-iodo-hydroxy-quinoline*		*Large scale sector*						
		Albert David	M.T.	1964	0·70	0·70	..	..
				1965	1·70	1·70	..	..
				1966	1·50	1·50	..	..
				1967	1·35	1·19	..	..
		Alembic Chemical	M.T.	1964	0·05	0·07	Nil	Nil
				1965	0·09	0·06	Nil	Nil
				1966	0·48	0·13	Nil	Nil
				1967	Nil	0·20	Nil	Nil
		Bengal Chemical	M.T.	1964	Nil	Nil	Nil	..
				1965	Nil	Nil	Nil	..
				1966	0·04	0·04	Nil	Nil
				1967	0·03	0·23	Nil	Nil
		Bengal Immunity	M.T.	1964	3·92	3·58	0·01	Nil
				1965	2·23	1·62	0·01	Nil
				1966	1·74	2·59	0·01	Nil
				1967	3·18	2·77	Nil	Nil

Brahmachari Research	M.T.	1964	0·04	0·04	Nil	Nil
		1965	0·07	0·07	Nil	Nil
		1966	0·04	0·04	Nil	Nil
		1967	0·01	0·02	Nil	Nil
Biological Evans	M.T.	1964	..	..	..	..
		1965	..	..	..	..
		1966	0·60	..	1·17	..
		1967	0·10	0·10	0·10	..
East India Pharmaceutical	M.T.	1964	1·40	1·38	..	..
		1965	1·70	1·73	..	..
		1966	3·01	3·01	Nil	Nil
		1967	3·88	3·88	Nil	Nil
May & Baker	M.T.	1964	3·91	3·45	Nil	..
		1965	4·55	4·01	Nil	..
		1966	0·41	1·99	Nil	..
		1967	4·50	3·78	Nil	..
Standard Pharmaceutical	M.T.	1964	0·20	0·20	..	..
		1965	Nil	..	..	..
		1966	Nil	..	..	..
		1967	Nil	..	..	..
Synbiotics	M.T.	1964	8·77	Nil	7·96	Nil
		1965	9·09	Nil	8·84	Nil
		1966	6·39	Nil	5·77	Nil
		1967	1·48	Nil	1·50	..

1	2	3	4	5	6	7	8	9
		Small scale sector						
11.	*B—Iodo-chlor-hydroxy-quinoline*(contd.)	British Medicine	M.T.	1964	..	..	..	..
				1965	0·10	..	..	..
				1966	0·10	..	..	..
				1967	0·13	0·19	..	..
		Eagle Lab.	M.T.	1964	1·80	..	..	..
				1965	1·40	..	..	..
				1966	0·81	0.03	0·77	..
				1967	0·32	0·08	0·24	..
		Navarathna Pharmaceuticals	M.T.	1964	..	..	..	..
				1965	..	..	..	..
				1966	0·10	..	..	..
				1967	0·08	0·09	Nil	..
		Neogy Labs.	M.T.	1964	2·50	..	2·50	..
				1965	0·30	..	0·39	..
				1966	0·94	Nil	0·94	..
				1967	3·62	Nil	3·62	..
		Swiss Chemicals	M.T.	1964	..	..	..	..
				1965	0·40	..	0·40	..
				1966	0·50	..	..	..
				1967	0·90	Nil	0·87	..

		Sunny Industries	M.T.	1964	..	..	..	..
				1965	0·40	..	0·40	..
				1966	0·63	Nil	0·60	..
				1967	0·38	Nil	0·40	..
12	*Chlorpropamide*	Albert David	M.T.	1964	0·02	0·02	..	..
				1965	0·07	0·07	..	..
				1966	0·05	0·05	..	..
				1967	0·06	0·06	..	..
		Bengal Chemical	M.T.	1964	0·05	0·05	..	..
				1965	0·06	0·06	..	..
				1966	0·09	0·09	..	Nil
				1967	0·12	0·09	Nil	Nil
		Pfizer	M.T.	1964	..	..	..	..
				1965	1·82	0·58	..	..
				1966	12·21	5·01	4·90	4·90
				1967	2·15	3·96	..	..
13	*Tolbutamide*	Albert David	M.T.	1964	Nil	..	..	..
				1965	Nil	..	..	..
				1966	0·43	0·43	..	..
				1967	Nil	Nil	..	..
		Hoechst Pharmaceutical	M.T.	1964	10·60	11·30	..	..
				1965	16·40	12·50	..	..
				1966	24·50	17·00	2·00	Nil
				1967	12·00	18·50	0·35	Nil

1	2	3	4	5	6	7	8	9
		Unichem Labs.	M.T.	1964	0·40	..	0·20	..
				1965	0·05	..	0·03	..
				1966	0·08	..	0·07	..
				1967	0·49	Nil	0·03	..
14	*Insulin* . . .	Boots	M. U.	1964	Nil	Nil	Nil	Nil
				1965	439	105	89	Nil
				1966	458	311	199	Nil
				1967	410	393	166	Nil
		Large scale sector						
15	*I.N.H.* . . .	Albert David	M.T.	1964	0·795	0·795	..	..
				1965	0·617	0·617	..	..
				1966	1·010	1·010	..	..
				1967	0·192	0·192	..	..
		Bengal Chemical	M.T.	1964	0·422	0·090	0·20	..
				1965	0·222	0·058	0·04	..
				1966	0·133	0·125	0·01	Nil
				1967	0·0405	0·0726	Nil	Nil
		Bengal Immunity	M.T.	1964	5·584	3·098	0·10	..
				1965	6·135	5·80	0·60	..
				1966	5·297	4·599	5·29	Nil
				1967	4·506	5·446	Nil	..

Biological Evans	M.T.	1964	7·836	0·250	7·70	..
		1965	11·236	1·566	9·30	..
		1966	7·724	1·213	0·40	..
		1967	2·391	1·210	1·50	..
Calcutta Chemical	M.T.	1964	0·03	0·03	..	..
		1965	0·08	0·10	..	..
		1966	Nil	..	..	..
		1967	Nil	..	..	..
Chemo-Pharma	M.T.	1964	Nil	Nil	Nil	Nil
		1965	0·073	0·073	Nil	Nil
		1966	1·777	0·234	0·58	Nil
		1967	6·415	1·849	5·27	Nil
OPIL	M.T.	1964	0·02	0·02	..	..
		1965	Nil	..	..	..
		1966	Nil	..	..	..
		1967	Nil	..	..	..
Pfizer	M.T.	1964	17·90	15·60	..	..
		1965	21·70	21·00	..	0·50
		1966	25·86	28·00	..	..
		1967	28·88	28·59	..	..
Synbiotics	M.T.	1964	27·76	..	15·40	..
		1965	17·52	..	33·80	..
		1966	16·18	..	11·33	..
		1967	Nil	..	2·05	Nil

1	2	3	4	5	6	7	8	9
		Small Scale Sector						
		Dr. Karanth's Pharmaceutical	M.T.	1964	1·60	..	1·60	..
				1965	5·20	..	5·20	..
				1966	4·50	..	4·50	..
				1967	5·82	Nil	5·50	..
		Suneeta Labs.	M.T.	1964	..	..	..	..
				1965	..	..	..	..
				1966	..	..	..	..
				1967	4·21	Nil	4·04	..
16	*P.A.S.* . . .	Biochemical & Synthetic	M.T.	1964	90·50	..	90·50	..
				1965	89·10	..	89·10	..
				1966	74·32	Nil	75·00	..
				1967	74·37	Nil	74·37	..
		Biological Evans	M.T.	1964	68·68	17·64	51·60	..
				1965	63·68	36·85	29·20	..
				1966	60·50	17·54	44·83	..
				1967	54·31	34·69	22·20	..
		Wander Pharmed	M.T.	1964	19·91	Nil	9·90	..
				1965	102·72	9·85	99·10	..
				1966	103·96	6·16	48·40	Nil
				1967	44·60	5·06	74·12	Nil

	Pfizer	M. T.	1964	62·60	60·50	..	..
			1965	75·60	77·50	..	1·00
			1966	81·56	68·50	4·09	Nil
			1967	82·60	50·66	50·55	Nil
17 *Tetanus Anti-toxin* . .	Bengal Chemical	M.U.	1964	8·00	8·00	..	14·75
			1965	12·00	12·00	..	Nil
			1966	15·00	15·00	..	Nil
			1967	88·10	88·00	..	Nil
	Bengal Immunity	M.U.	1964	6629	6629	..	..
			1965	3495	3495	..	..
			1966	2993	2993	Nil	Nil
			1967	3562	3462	Nil	Nil
	Biological Evans	M.U.	1964	..	..	..	..
			1965	..	..	..	..
			1966	526	526	..	..
			1967	1128	768	..	..
	Dey's Medical	M.U.	1964	..	..	..	..
			1965	..	..	..	..
			1966	56	56	..	..
			1967	240	284	..	..
	Haffkine	M.U.	1964	1786	1786	Nil	..
			1965	1365	1365	Nil	..
			1966	1876	1876	Nil	Nil
			1967	1880	1880	Nil	Nil

1	2	3	4	5	6	7	8	9
18	*Prednisolone* . . .	Glaxo Labs	Kg.	1964	99·50	26·00	69·00	..
				1965	77·60	17·70	49·00	..
				1966	16·00	20·70	7·61	..
				1967	2·20	17·70	2·17	Nil
		Merck Sharp	Kg.	1964	88·00	17·40	82·00	..
				1965	12·00	8·40	9·00	..
				1966	8·00	6·20	1·00	..
				1967	1·90	4·20	0·40	..
		Wyeth Labs.	Kg.	1964	111·05	37·42	89·00	..
				1965	269·99	65·20	209·00	..
				1966	564·03	85·75	403·00	..
				1967	480·00	78·01	346·00	75

APPENDIX IX

(*Vide* paragraph 20·1)

Import licensing policy for the specified basic drugs and formulations

Sl. No.	Item	1965-66		1966-67	
		Quota percentage	Remarks	Quota percentage	Remarks
1	2	3	4	5	6
1.	Vitamin A & its Ester and their preparations.	Not permitted to be imported.	..	Not permitted to be imported.	..
2.	Vitamin B12, (Cyanocobalamin) excluding preparations thereof.	Nil	A. U. applications will be considered in consultation with the D. G. T. D. and Drugs Controller, (India), New Delhi.	Nil	(Same remarks as for '65-66) (Also includes hydroxocobalamin).
3.	Vitamin C (Ascorbic Acid & its Salts) excluding preparations thereof.	Nil	A. U. applications will be considered in consultation with the D.G.T.D. and Drugs Controller (India), New Delhi.		(Same remarks as for '65-66).

1	2	3	4	5	6
4.	Sulfadiazine excluding preparations thereof.	7½%	Quota licence will be valid for the import in bulk only.	7½%	(Same as under remarks for 1965-66).
5.	(a) Penicillin including Phenoxy-methyl Penicillin in bulk but excluding all forms of bottled penicillin and preparations.	Nil	Applications from approved manufacturers will be considered by port licensing authorities in consultation with Drugs Controller (India), New Delhi.	Nil	Applications from approved manufacturers will be considered by the Regional Licensing authorities in consultation with Drug Controller (India) New Delhi.
5.	(b) Bottled Penicillin and its preparations the following only :—				
	(i) Crystalline Penicillin G. Calcium		Licences will be valid for import of 'Procaine penicillin G in Oil with Aluminium Monostearat' in bulk only.		(Same as under remarks for 1965-66).
	(ii) Procaine Penicillin G. with crystalline penicillin G. only injection.				
	(iii) Penicillin G. diethylaminoethylester hydroiodide.	5%	..	5%	..
	(iv) Procaine Penicillin G. in oil with Aluminium monostearate.				

	(v) Procaine Penicillin in oil.				
	(vi) Penicillin dressings				
	(vii) Dibenzyl ethylene diamine dipenicillin G.				
5.	(c) Penicillin tablets Penicillin lozenges Penicillin ointments Bottled penicillin, the following only :—	Nil	..	Nil	..
	(i) Crystalline Penicillin Sodium, Crystalline Penicillin Potassium.				
	(ii) Crystalline Penicillin procaine and	Nil	..	Nil	.
	(iii) Procaine Penicillin G. fortified with crystalline Penicillin G. (Sodium or Potassium) aqueous.				
6.	Streptomycin and its salts .	Nil	Imports will be canalised through an agency approved by Government and distribution to Actual Users will be made in accordance with the directions of the Directorate General of Technical Development.	Nil	(Same as under remarks for 1965-66).

1	2	3	4	5	6
7.	Chloramphenicol . . .	Nil	A. U. application from manufacturers will be considered by the Port Licensing authorities in consultation with Drugs Controller (India), New Delhi, and D.G. T.D. upto a maximum of 20% of their certified requirements provided the applicants have shown proof of having purchased 80% from indigenous sources.	Nil	A. U. application from manufacturers will be considered by the Regional Licensing Authorities in consultation with Drugs Controller (India), New Delhi and D.G.T.D. upto a maximum of 20% of their certified past consumption.
8.	(a) Chlortetracycline . .	Nil	(i) A.U. applications from manufacturers will be considered by port Licensing Authorities in consultation with Drugs Controller (India), New Delhi. (ii) Applications for import of this item from non-traditional sources of supply will be considered by the port licensing authorities. The application should be made by 15-8-1965.	Nil	

8.	(b) Oxytetracycline and Tetracycline.	Nil	..	Nil	..
9.	Amodiaquin	No specific policy laid down for this item.	..	Same as for 1965-1966.	..
10.	Chloroquin Salt . . .	2½%	Licences will be valid for import in bulk only.	2½%	Licences will be valid for import in bulk only.
11.	Iodochlorohydroxy-quinoline .		Included in List II (Banned List) of Appendix 19.		Same as per 1965-66.
12.	Chlor-propamide . . .		Included in List I of Appendix 19 and as such import allowed without any restriction.	..	Not permitted.
13.	Tolbutamide excluding preparations thereof.		Included in List I (Essential List) of Appendix 19 and as such imports allowed without any restriction.		Same as for 1965-66.
14.	Insulin, all sorts excluding Injections of Insulin (Plain) Injection of Protamine Zinc Insulin and Injection of Globulin Insulin.		Included in List I of Appendix 19 and as such imports allowed without any restriction.	Not permitted to be imported.	—
15.	I. N. H.	Nil	—	Nil	—

1	2	3	4	5	6
16.	Para Amino Salicylic Acid, Sodium Para Amino Salicylate, and Calcium Amino Salicylate excluding preparation thereof.	2½%	A. U. applications will be considered in consultation with the D.G.T.D. Actual Users should approach the indigenous manufacturers for the requirements of Sodium P.A.S.	2½%	Same as under remarks for 1965-66.
17.	Tetanus antitoxin . . .	5%	Basic period will be upto 1958-60.	Nil	..
18.	Prednisolone excluding preparations thereof.	Nil	--	Nil	..

Important Control Policy for the specified drugs as announced in Red Book for 1967-68 and as amended by subsequent Import Trade Control Notifications issued from time to time

1. Practice of giving quotas for individual items was discontinued for 1967-68 and instead established importers were allowed a general quota of 23 per cent of the best years' imports. The method of calculation of quotas are explained in a separate Public Notice dated 11th August 1967 given herein as annexure.

2. Actual user applications from pharmaceutical industry will be considered for import of essential basic general drugs and medicines required by them. Applications from the units not borne on the books of D.G.T.D. will be considered by the regional licensing authotiries on the recommendation of the State Drugs authorities.

3. Import of free samples of drugs and medicines—In order to minimise delay and inconvenience to bona-fide sole representatives of manufacturers abroad in importing consignments of free samples of drugs and medicines, Customs Clearance Permits will be issued by the regional licensing authorities to cover import of free samples of drugs and medicines covered by List I of this Appendix, subject to the following conditions.

(i) No remittance of foreign exchange is involved.

(ii) The c.i.f. value of the consignment is reasonably small and does not in any case exceed Rs. 8000 (Rupees eight thousand only).

(iii) The samples are imported in packings which are distinctly different from regular trade packings; and

(iv) Each packing is clearly marked "Physician's samples not to be sold."

Applications are to be made to the regional licensing authorities in the prescribed form and manner. Only one Customs Clearance Permit will be issued to the firm whenever necessary and for this purpose only the Head Office of the firm should apply.

4. Customs clearance permits for *new drugs* will be considered by the C.C.I. & E., New Delhi but such applications should be made through the D.G.H.S., New Delhi.

Policy for each of the specified drugs is extracted and given below :

Sl. No.	Drug (Including preparations thereof)	Import licensing policy for Established importers (General Quota)	Import licensing Policy for Actual users
1	2	3	4
1.	Vitamin A	Originally allowed but banned from 23-8-1967.	Originally allowed but banned from 23-8-1967.

1	2	3	4
2.	Vitamin B12	Banned	Allowed.
3.	Vitamin C	Banned	Originally allowed but banned from 23-8-1967.
4.	Sulphadiazine	Allowed	Allowed.
5.	Penicillin	Originally allowed but banned from 23-8-1967.	Originally allowed but banned from 23-8-1967.
6.	Streptomycin	Allowed	Allowed.
7.	Chloramphenicol	Banned	Originally allowed but banned from 23-8-1967.
8.	Tetracyclines	Allowed	Allowed.
9.	Amodiaquin	Allowed	Allowed.
10.	Chloroquine	Chloroquin and its salts (but not preparations) allowed under general quota. Combined imports of these items should not exceed 2% of the face value of licences.	
11.	Iodo-chlor-hydroxy-quinoline.	Banned	Allowed.
12.	Chlorpropamide	Allowed	Allowed.
13.	Tolbutamide.	Allowed but preparations not allowed.	Allowed.
14.	Insulin	Allowed but preparations not allowed.	Allowed (not preparations).
15.	I.N.H.	Banned	Originally allowed but banned from 23-8-1967.
16.	P.A.S.	Originally allowed but banned from 2-6-1967.	Sodium PAS, Calcium PAS and PAS acid were banned from 23-8-1967.
17.	Tetanus Anti-toxin	Allowed	Allowed.
18.	Prednisolone	Banned	Allowed.

ANNEXURE

Public Notice No. 79-ITC(PN)/67 dated the 11th August, 1967 issued by the Government of India in the Ministry of Commerce

Attention is invited to the import policy for the grant of quota licences for drugs and Medicines and Pharmaceutical Chemicals (S. No. 87, 109/IV) to established importers, as laid down in Appendix 19 of the Import Trade Control Policy (Red Book) for the period April 1967-March 1968.

2. Enquiries have been received in regard to the manner for the calculation of quotas for established importers for the item under the policy mentioned above. Accordingly the position is clarified as under :

(i) List III appearing in Appendix 19 in the Red Book for the previous periods has been deleted during April 1967-March 1968 period. With the deletion of List III, all drugs and medicines are to be termed as 'general drugs medicines', excepting Homoeopathic medicines which are licensable to established importers separately on quota basis.

(ii) During April 1967-March 1968 import licences will be issued to established importers on the basis of a joint quota of general drugs and medicines; falling under S. Nos. 87, 109/IV. The basic period for establishment of joint quota is from 1961-62 to 1965-66. For the purpose of establishment of quota, the past imports of all the items of drugs and medicines classified under S. No. 87, 109/IV and falling within the prescribed basic year selected by the applicant, will be taken into account, with the exception of Homoeopathic medicines and crude drugs for Ayurvedic and Unani medicines.

(iii) In terms of the policy indicated in (ii) above, the importers having past imports within the prescribed basic period, namely, 1961-62 to 1965-66 can have their joint quotas established in accordance with the procedure laid down for establishment/refixation of quotas.

(iv) If an established importer is not desirous of having a fresh joint quota for general drugs and medicines in the manner indicated in (iii) above, the quota certificate already held by him for drugs and medicines will also be valid for the grant of quota licences for April 1967-March 1968, to the extent given below :—

(a) The consolidated quota certificates for drugs and medicines will be valid for the grant of joint quota for general drugs and medicines.

(b) Quota certificates in respect of items figuring in List III of Appendix 19 of the Red Book for April 1966-March 1967 period will also be valid for the grant of joint quota provided the List III item or items for which the applicant holds a quota certificate(s) was/were licensable to established importers during April 1966-March 1967 period. If an applicant holds consolidated quota certificate as well as quota certificates for such items of List III, the value of such quota certificates will be combined for calculating the applicant's quota entitlement for a joint quota for general drugs and medicines for April 1967-March 1968.

(c) If the basic year of the consolidated quota certificate and the quota certificate of List III item referred to in (b) above, is common, even then the combined past imports of both the quota certificates will be taken into account for calculating the entitlement of the applicant for joint quota, provided the past imports on which the quota certificate for List III item has been issued are not includued in the consolidated quota certificate. If they are included, the licensing authorities will have to exclude them while taking the combined values of quota certificates for calculating the quota entitlement of the applicant. For the purpose of such checking, the applicant is required to produce documentary evidences to the licensing authority to prove whether the past imports on which a quota certificate is held by him for any List III items have also been included in the consolidated quota certificate for general drugs and medicines or not. Documentary evidence required for this purpose will be the Bill of Entry and the invoice on the basis of which the quota certificate for List III item was issued.

3. Some of the parties have represented that they are not in a position to produce the documentry evidence required as indicated in sub-clause (iv) (c) above. The matter has deen considered and it has been decided that if the party is unable to produce the required documentary evidence, the licensing authority will, on the request of the party, reduce the aggregate value of the quota certificate for drugs and medicines (consolidated quota certificate and quota certificates for List III permissible items) held by the applicant by 20 per cent. In such cases the entitlement of the applicant for joint quota of drugs and medicines will be calculated on the balance combined value of consolidated quota certificate and quota certificates of List III permissible items held by the applicant.

Salient features of Import licensing policy for the year 1968-69

1. Established importers are given an import quota of 18 per cent of past year's imports for general Drugs and Medicines. This quota licences are valid for import of the following specified drugs (among others) :—

(i) Chloroquin and its salts.

(ii) Procaine Penicillin G in oil with Aluminium monostearate (Import should not exceed 2 per cent of the face value of the licence).

(iii) Sulphadiazine.

(iv) Tolbutamide.

2. The drug industry is a priority industry for licensing of raw materials. Actual user licences are not valid for the following specified drugs (among others) :—

(i) Chloramphenicol

(ii) Halogenated derivatives of Hydroxyquinoline.

(iii) Insulin—all types.

(iv) I.N.H.

(v) P.A.S. and its salts.

(vi) Penicillin G (Sodium/Potassium/Procaine) with Phenoxy Methyl Penicillin.

(vii) Prednisolone.

(viii) Vitamin A.

(ix) Vitamin of B-12 group (Cyanocobalamin and Hydroxocobalamin).

(x) Vitamin C (Ascorbic acid) and its salts and esters.

3. The following items are allowed to be imported by actual users on a respected scale subject to endorsement by the regional licensing authorities:—

(i) Chloramphenicol palmitate.

(ii) Chlorpropamide.

(iii) Tetracyclines and their salts.

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