

REPORT
OF THE
Indian Tariff Board
REGARDING THE
GRANT OF PROTECTION
TO THE
MATCH INDUSTRY.



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Part. I.—Preliminary.



सत्यमेव जयते

PRELIMINARY.

The Indian Tariff Board was directed to hold an enquiry into the circumstances of the Match industry in India by the following Resolution of the Government of India in the Commerce Department, No. 235-T. (14), dated the 2nd October, 1926 :—

“ The present rate of duty on matches imported from abroad is Re. 1-8-0 per gross, which represents a duty of more than 100 per cent. *ad valorem*. The duty was raised to the above figure purely as a revenue measure, and the Government of India have consistently rejected requests from manufacturers in India that the duty should be declared a protective duty. Nevertheless, a high revenue duty naturally has a protective effect, and since 1922, when the present duty was imposed, numerous match factories have been established in India, some of them using indigenous woods, and others wood imported in the log from abroad. Concurrently, there has been a progressive decline in the customs revenue derived from matches. This revenue amounted to Rs. 154 lakhs in 1922-23 and Rs. 138 lakhs in 1923-24, but in 1925-26 it amounted (inclusive of the revenue from splints and veneers) only to Rs. 118 lakhs. As the Indian factories overcome technical difficulties and attain their full production, the decrease in customs revenue is likely to become more serious.

2. In these circumstances, the Government of India consider that the whole position requires investigation, and they have decided to entrust this task to the Tariff Board. The first point for enquiry is whether the three conditions laid down in paragraph 97 of the Report of the Indian Fiscal Commission are satisfied in the case of the match industry in India, and whether the industry should be protected. If the answer to this question is in the affirmative, the Tariff Board will report at what rate the import duty should be fixed in order to give the industry the protection it requires and whether alternative measures of protection could suitably be adopted. If the answer is in the negative, the Government of India theoretically will be free to lower the import duty on matches in the interests both of the consumer and their own revenue from this source. But the Tariff Board will report to what extent vested interests have been created in India as the result of the present rate of duty, how far those vested interests require consideration and what prospect there is of the match industry in India establishing itself, if the present rate of duty is maintained. If the Tariff Board decides that consideration must be paid to the industry brought into existence by the present rate of duty and that the duty should be maintained at the present figure, or approximately at the present figure, it will further report whether the loss of customs revenue can be made up in whole or in part by any other appropriate form of taxation of the industry. In this connection, the attention of the Board is drawn to the remarks of the Honourable Commerce Member on the 24th March 1924, in the Council of State. Generally the Tariff Board will investigate the whole

question and make such recommendations as seem germane to the subject."

2. On receipt of this Resolution, the Board issued on the 29th November, 1926, the Press Communiqué reproduced below which

The Board's Com-
muniqué. the representations of firms or persons who

desired to claim protection for the industry. The communiqué drew particular notice to the unusual nature of the enquiry inasmuch as the industry under reference had been called into existence owing to the imposition in 1921 and 1922 of high revenue duties upon imported matches. This factor complicated the enquiry to the extent that even if it were to disclose that the industry did not qualify for protection when judged by the usual standards, it might still be necessary to consider whether vested interests had been created which might reasonably claim the continuance of the help afforded by the duty.

" In the Resolution of the Government of India in the Commerce Department No. 235-T. (14), dated the 2nd October, 1926, the Indian Tariff Board was directed to investigate the question of granting protection to the Match Industry in India.

2. The Board has been instructed to examine the whole position of the industry but its attention has been specially drawn to the following points. Firstly, whether the three conditions laid down in paragraph 97 of the Report of the Indian Fiscal Commission are satisfied in the case of the Match Industry in India, and whether the industry should be protected. Secondly, if the industry satisfies these conditions and is to be protected, the amount of protection required and the methods by which such protection should be given. Thirdly, if the Board finds that the industry does not satisfy the conditions laid down in the Fiscal Commission's Report, whether it is necessary, in view of any vested interests which may have been created as a result of the present revenue duty, to maintain the duty at the present figure or at approximately the present figure; and if so, whether the loss of customs revenue, which is likely to result from the expansion of the industry in India, can be made up in whole or in part by any other appropriate form of taxation of the industry.

3. Any persons or firms who desire to claim protection for the industry in India or who consider that the present rate of duty *qua* revenue duty should be maintained, are requested to submit to the Tariff Board a full statement of the grounds on which they do so. Persons or firms who claim protection should state *inter alia* the grounds on which the industry can be considered to fulfil the conditions laid down by the Fiscal Commission, and whether any protection which may be found necessary should be given by means of protective duties or in any other form. In the case of those who desire that the present rate of duty should be maintained in view of any vested interests which may have been created, the nature and extent of such interests and their grounds for thinking that the

match industry has a fair prospect of establishing itself in India, should be fully set forth.

4. All representations (with six spare copies) must be addressed to the Secretary and reach the office of the Board at No. 1, Council House Street, Calcutta, not later than the 31st December, 1926. After their receipt, the Board will, if necessary, issue questionnaires. The representations, the questionnaires and the replies thereto will then be printed and published, and the opinions, in writing, of those who wish to support or oppose the claims made will be invited. The dates for the oral examination of witnesses who wish to appear before the Board for that purpose will be subsequently fixed."

3. At the time of the publication of the above communiqué, and for some two months later, the Board was fully occupied with the Statutory enquiry then being conducted. The Board's procedure. in connection with the Steel industry and it was not until January, 1927, that the investigation dealt with in this report could be commenced. Early in that month, after a number of the Calcutta match factories had been visited, a questionnaire was prepared and sent to all Local Governments asking for information regarding the condition of the industry in each province and the situation in respect of the existing supplies of raw materials. The Board then decided to begin its enquiry in Burma as the replies from the Local Governments indicated that from the point of view of forest resources that province appeared to offer the best field for investigation. Accordingly, the headquarters of the Board were removed to Rangoon during the last week in February. After considering the representations received up to that time from manufacturers whose factories were located all over India, the Board issued a questionnaire covering, as far as could then be seen, the most important points connected with the manufacture of matches, and, following a preliminary conference with the Forest Department of Burma, proceeded to inspect the local factories and forest areas in the vicinity of Rangoon and Mandalay and to record the oral evidence of the various Government officers concerned and of the owners of the factories. The Board returned to Calcutta early in April. A combination of circumstances rendered it necessary to suspend the proceedings in connection with this enquiry until the following October. At the time of his preliminary oral examination in Calcutta just before going on leave, Mr. Schele, the General Manager of the Swedish Match Company, had not received the permission of the Company to disclose its costs. While on leave he was able to explain the nature of the Board's enquiry to Mr. Ivar Kreuger, the Chairman, and the Company very courteously agreed to place all the information regarding the Company's costs in India at the disposal of the Board. It was, however, not until his return to India in December last that the Board was able to resume the unfinished examination of Mr. Schele, the principal witness in the present enquiry. Further, about this time the President went on leave out of India and although this

circumstance would not ordinarily have involved the suspension of an enquiry in progress, in view of the impossibility of making further progress until the Swedish Match Company had placed their cost figures at our disposal, and also of the fact that it was proposed that the President should take the opportunity, while in Europe, of visiting a number of match factories in England, Sweden and Belgium, it was decided to suspend work on this enquiry until his return. When the enquiry was recommenced the Board was still in Calcutta. After the oral evidence of the owners of certain factories in Calcutta had been taken, the Board moved to Bombay. From the beginning of November to the middle of February the Board was occupied in recording further evidence of Local Government officers, local factories and of the representatives of the various commercial bodies such as Chambers of Commerce, etc., in Bombay, Calcutta and Dehra Dun and in visiting match factories in the Presidencies of Bombay and Bengal, in the United Provinces and the Punjab. The details of the Board's movements and inspections will be found in Appendix J. In addition the Board found it necessary, in view of the presence in India of a number of factories operated by the Swedish Match Company, to send in December, 1927, a circular letter to the various Chambers of Commerce and Match Manufacturers' Associations asking the opinions of these bodies upon the situation created by the activities of that Company and upon various methods by which they could be met. This letter which has been printed as an appendix* to the report deals in detail with the allegations made by the Indian manufacturers against the Company and puts forward for consideration suggestions for the future control of the industry.

4. The Board desires to acknowledge the assistance which it has received in the course of its enquiry from Chambers of Commerce,

Acknowledgments. Associations and individual firms of match manufacturers. In particular, the Board's thanks are due to Mr. Schele, the General Manager of the Swedish Match Company in India and Ceylon, and to the managers of other large Indian factories. Heavy demands have been made on their time and these have been met often at the cost of much personal inconvenience. When the President was on leave in Europe last summer he was placed on deputation for a month by the Government of India. The Board's thanks are due to Sir William Clark, Controller General of His Majesty's Overseas Trade Department, Mr. H. A. F. Lindsay, Trade Commissioner, and Mr. J. Picton Bagge, His Britannic Majesty's Commercial Secretary at Brussels, for their assistance in obtaining access for the President to various factories and for useful information supplied. The acknowledgments of the Board are due in a large measure to Mr. Ivar Kreuger, Chairman of the Swedish Match Company and his colleagues. At the sacrifice of much time and personal convenience they supplied the President during his visit to Sweden with information which has proved of great assistance to the Board.

* Appendix A.

Part II.—Report.



सत्यमेव जयते

Report on the Match Industry in India.

CHAPTER I.

Progress of Industry: Main features.

Our terms of reference require us to consider to what extent the Match industry fulfils the conditions for protection laid down by the Fiscal Commission, and logically it might appear that some conclusion should be reached as to the suitability of the industry for protection, before any attempt is made to estimate the measure of assistance required. But as the industry is at present organized in India, the raw material used is not always the same in every factory. This will be apparent from the different classes of wood used in the industry, which is the chief raw material in the manufacture both of splints and of boxes. The following kinds of matches are made in India, often in the same factory:—

- (1) Matches with aspen splints and boxes;
- (2) Matches with Indian wood splints and boxes;
- (3) Matches with aspen splints and Indian wood boxes.

Clearly, therefore, we must first determine which class of match can best be manufactured in India, and for this purpose an examination of the works costs and overhead charges is essential. Further, the degree of importance which must be attached to each of the conditions laid down by the Fiscal Commission varies for each class of match. It is a peculiarity of the Match industry that no country in which matches are made is self-supporting in regard to all or most of the raw materials required. Consequently, when aspen, which is not grown in India, is used for match manufacture, if the claim to protection is to be established, it is essential that the industry should fulfil the third condition laid down by the Fiscal Commission, namely, that it will eventually be able to stand without protection. No final conclusion can be arrived at as to the class of matches for the manufacture of which India offers a reasonable scope unless an estimate is framed of the future fair selling price of Indian matches and of the future landed price (without duty) of imported matches. An examination of the costs in Indian factories and of the course of prices of imported matches must, therefore, precede any attempt to determine whether the industry fulfils the conditions laid down by the Fiscal Commission.

2. We propose, therefore, to commence our report with an introductory chapter in which the processes of manufacture are described, a brief history of the industry set forth and the main distinguishing features of match manufacture in India explained. We shall then, on an

Plan of report.

examination of the costs in Indian factories, frame our estimate of a fair selling price for the industry. Having determined the level of prices of matches, we shall be in a position to consider whether the conditions of the Fiscal Commission are fulfilled and, if so, what should be the measure of protection. In the succeeding chapters we shall consider Government's revenue requirements, and the special measures (if any) which are needed to ensure the future development of the industry, to minimise the danger of monopolistic control and to encourage match manufacture as a cottage industry.

3. The raw materials required for the manufacture of matches are wood of suitable quality, paper, paste or glue, and various chemicals, of which amorphous phosphorus and chlorate of potash are the most important. With the exception of paraffin wax and red oxide, both of which are produced in India, the chemicals required have to be imported. Matches are manufactured in a large variety of sizes, but in India three sizes only are at present made, *viz.* :—

	<i>Dimensions of box.</i>
Full size	$2\frac{1}{4}" \times 1\frac{1}{2}" \times \frac{3}{4}"$
Three quarter size	$2\frac{1}{4}" \times 1\frac{3}{4}" \times \frac{5}{8}"$
Half size	$1\frac{5}{8}" \times 1\frac{3}{4}" \times \frac{3}{8}"$

Two kinds of matches are made, *viz.*, safety matches and sulphur matches. The former, which form by far the largest portion of the total output, ignite by friction on the specially prepared surfaces of the sides of the box. The latter ignite by friction on any uneven surface and to assist ignition the splints are dipped in melted sulphur. Whatever the size or kind of match, the processes of manufacture are substantially the same, though the methods employed are often different. In many factories hand labour is still used to a very large extent for work performed in the more modern factories by machinery. The types of machines also vary somewhat according as they are obtained from Sweden, Germany or Japan. In some factories each process is carried out by means of a separate machine, while in others a single machine is used for several operations. Thus the Simplex machine, by means of a continuous band pierced with holes in which the splints are held, performs the operations not only of paraffining, but also of dipping the splints in chemical composition and drying them. The following description relates to the methods employed at the Swedish Match Company's factory at Ambernath.

4. The logs are first sawn into convenient lengths by means of a circular saw; they are then stripped of their bark in a machine designed for this purpose, and are taken to the rotary lathes. Each lathe is adjusted according as the veneer is required for the manufacture of outer or inner boxes or splints. The veneer required for the manufacture of boxes is scored by means of spur knives attached to the lathe, so that it may be readily bent into the required shape. After being fixed in

the lathe, the logs are rotated against a fixed knife blade and the veneer flows out in a continuous sheet. The veneer for box making is then cut into the required size by means of a cutting machine of the guillotine type, and taken to the box making department. Separate machines are employed for the manufacture of outer and inner boxes. Both machines are entirely automatic and beyond occasional adjustment require only to be fed with the veneer, glue and paper out of which match boxes are constructed. After being dried in a drying chamber, the boxes are closed and labelled in a separate automatic machine. They are now ready to be filled with matches.

5. Veneer for the manufacture of match sticks is chopped into splints in a power driven guillotine chopper. The splints are then immersed in an impregnating solution

Splint making. to prevent them glowing after ignition, dried and polished in a circular revolving drying machine. From this machine the splints are blown by an air blower on to an inclined grating to which is imparted a sideways motion. Defective splints fall through the grating to the floor while the remainder are straightened into rows in a receptacle provided for this purpose. The remaining processes are filling into frames, paraffining, dipping into composition and drying. Frame filling is the necessary preliminary to the other processes. Frames are square in shape, the top and bottom being of wood and the sides of iron rods. Within the frame are a series of thin movable lathes which when compressed together grip the end of the splints. Between these lathes the splints are shaken by means of an oscillating perforated container. The frames are then tightened up, placed on racks within an iron receptacle fitted on wheels and taken to the paraffining machine. Here they are passed over a hot plate to increase the facility of absorption of the splints and immersed to a depth of about $\frac{1}{2}$ " in melted paraffin wax. They are then again placed in the racks and taken to the dipping machine. The frame after insertion in the machine is moved in such a way that the ends of the splints are pressed down into a thin layer of igniting composition. After removal from the machine the frames are taken in racks to the drying chamber, where the heads are allowed to dry. The match sticks are then removed from the frames and are ready to be filled into the boxes.

6. Box filling is carried out by a separate automatic machine, the boxes being opened, filled with the requisite number of matches and closed mechanically. The machine requires

Box filling, painting and packetting. considerable supervision and the boxes have to be carefully examined and occasionally further closed by hand on leaving the machine. Side painting is effected by passing the boxes between revolving brushes by means of a moving band. The brushes are fed with the paint by rollers circulating in a basin of the mixture to be applied. After the paint has been applied, the boxes travel through a covered way heated by steam pipes, on emerging from which they are ready to

be packetted. A special machine is used for dozen packetting and labelling though a considerable proportion of this work is still done by hand at Ambernath. Gross packetting and labelling is carried out entirely by hand. Packing is in wooden cases, each containing 50 gross matches. The cases in the monsoon are lined with zinc and at other seasons of the year with tarred paper.

7. The growth of the Match industry in India dates from the year 1922 when a revenue duty was imposed on imported matches

at so high a level as to afford substantial protection to the home industry. Up to 1916 the duty on imported matches was 5 per cent. *ad valorem*. In March of that year it was increased to $7\frac{1}{2}$ per cent. *ad valorem* and subsequently in March 1921 was fixed at 12 annas per gross. This duty was again raised to Rs. 1-8-0 per gross in March, 1922. Before the year 1921, the number of match factories was inconsiderable. From time to time factories on a small scale were established, but these soon closed down either because they were situated in unsuitable localities or on account of insufficient capital or faulty management. The only match factory in India which was successful in maintaining its position was the Gujerat Islam Match Factory in Ahmedabad. Founded in 1895 under Indian management, this Company though faced with severe competition continued to show a small profit, but it was not until the duty was raised in 1921 that its position became secure. With this exception there appears to be no case of successful manufacture of matches on a commercial scale in India before the year 1921.

8. With the imposition of a duty on imported matches varying between 100 and 200 per cent. *ad valorem* the position changed rapidly. At first undipped splints and

Expansion as a result of imposition of high revenue duty.

veneers on which no increased duty was leviable were imported from Japan, and dipped or made into boxes mainly in Bombay.

On matches thus manufactured large profits were secured. From 1st March, 1924, however, with a view to protect Government revenues, an import duty of 4 annas 6 pies per pound on undipped splints, and 6 annas per pound on veneers was imposed. Some experience in match manufacture had now been gained and a further step forward was taken. Machinery for the manufacture of splints, veneers and boxes was obtained and erected, and aspen wood, on which a 15 per cent. *ad valorem* duty is leviable, was imported from Japan or Sweden. A genuine industry was thus established. For the manufacture of veneers for boxes, Indian wood gradually supplanted aspen, but for the manufacture of splints, aspen wood continues to be used to a very large extent, especially in the factories round Bombay. Meanwhile in other parts of the country also the increase in the duty stimulated the establishment of match factories working on a large scale. In 1923, the Esavi India Match Manufacturing Company with an output of 3,000 gross matches a day was established in Calcutta. Early in 1924, Messrs. Adamjee

Hajee Dawood and Company commenced manufacture in Rangoon with a capacity of 6,000 gross a day, while many other factories of smaller capacity were started in other parts of the country. In 1925-26, the Mahalakshmi Match Factory at Lahore and the Bareilly Match Works, equipped with the most up to date machinery, commenced work. With the home production so rapidly increased, the imports of matches showed a corresponding decrease, declining from 13.68 million gross in 1921-22 to 6.13 million gross in 1926-27, while in 1927-28 the figures for the first nine months indicate that imports will not exceed four million gross. As the largest importers of matches into India, the Swedish Match Company could not afford to stand aside and risk the loss of the whole of the Indian market. Accordingly it decided to establish factories in India. The dates when operations started at its factories, and the approximate capacity of each are shown below:—

	<i>Gross per diem.</i>
Swedish Match Company, Ambernath, July, 1924 .	10,000
Swedish Match Company, Calcutta, September, 1924	5,250
Swedish Match Company, Parel, September, 1926 .	750
Assam Match Company, July, 1926	1,750
Burma Match Company, August, 1925	2,000
Mandalay Match Company, October, 1925	750
	<hr/> 20,500

Of these the Parel and Mandalay factories are now closed. The approximate capacity of the factories belonging to or under the control of the Swedish Match Company may be taken at about 6 million gross a year. It has not been possible to obtain an exhaustive list of all the match making concerns in India, particularly in Calcutta, where match manufacture is carried on as a cottage industry. We estimate, however, that approximately 27 factories exist in India with an outturn capacity of 500 gross a day or over and that their total capacity amounts to about 18 million gross of matches annually.

9. With the increase in the total number of factories and of the output, there has also been a large reduction in the works costs.

Thus in the Swedish Match Company's factory at Ambernath, the works cost of half size matches has fallen from Rs. 1-12-2 per gross in 1924 to Rs. 1-0-2 per gross in 1927. In the National Match Works, Bombay, the works costs which in 1924-25 stood at Rs. 1-7-8 per gross, had fallen in the following year to Rs. 1-2-5 per gross. The Bombay Match Works similarly have reduced their works costs from Rs. 1-3-6 per gross in 1925 to their present figure of Re. 1-0-0 per gross. As regards factories producing full size matches, Messrs. Adamjee Hajee Dawood and Company, Rangoon, have reduced their costs from Rs. 1-10-11 per gross in 1924-25 to Rs. 1-6-2 per gross in 1925-26 and Rs. 1-4-0 in 1927, while the works costs of the Swedish

Match Company's factory at Calcutta have fallen from Rs. 2-0-10 in 1924 to Rs. 1-3-11 in 1927.

10. These reductions have been rendered possible in part by an increase in production and to some extent also by a fall in the price of chemicals. But the largest decreases occur under two heads, *viz.*, wood and labour, and may be attributed to two causes, namely, the introduction of modern machinery and the improved efficiency of labour. Savings from the former are set off to some extent but not entirely by an enhanced capital cost. The improved efficiency of labour, however, represents the largest factor in the reduction of costs. Both in factories where the processes are still largely carried out by hand and in those in which the most modern machinery is employed, the improvement in efficiency is remarkable. Not only is the labour force now capable of producing a much larger outturn in a given time, but the greater skill displayed in the various processes and in particular in handling the delicate machinery used has much reduced the wastage of materials in the course of manufacture. Thus it has been stated in evidence before us that in Messrs. Adamjee Hajee Dawood's factory the wastage of paper and veneers in the box making machine amounted to 40 per cent. in the first year of manufacture (1924). By the commencement of 1927 this had been reduced to between 15 and 18 per cent. and it was expected that finally the wastage would not exceed 5 per cent. Taking veneers for boxes alone, of the total reduction in costs of 4 annas 9 pies per gross between the years 1924-25 and 1925-26, reduced wastage resulting from improved efficiency in box making accounts for nearly one quarter.

11. During the period under review, there has also been a very great improvement in the quality of Indian matches. We should here explain that matches manufactured of Indian wood are of a somewhat darker colour than those manufactured of aspen wood and that there exists a distinct prejudice against dark coloured matches. The reason of this is not far to seek. The products of the earlier match factories in India were very inferior in quality. Not only was the manufacture poor, but the composition of the heads was defective, while the wood of which the splints were made was frequently of unsuitable quality. The matches, therefore, frequently broke in striking or failed to ignite, particularly in the monsoon months. Inferiority in quality has, therefore, come to be associated in the public mind with splints of a darker colour. This prejudice tends to be perpetuated by the manufacture in so-called cottage factories of matches from splints rejected in the larger factories. We have made exhaustive tests of Indian matches, particularly in the monsoon months, and so far as we are able to judge, the matches manufactured of Indian wood in the most up-to-date factories, though less finished in appearance than imported matches, are for practical purposes little inferior.

12. The most important advantages which the Indian industry enjoys are the existence of cheap and efficient labour and the possession of a large home market. Although labour charges form one of the largest items in the cost of production, the labour force required judged by the standard in other industries is not excessive. Those factories which for the present employ hand labour in box making, labelling and packetting, require a larger labour force than the more modern factories utilizing the latest labour saving machinery. Box making is, however, carried out largely as a cottage industry, the factory supplying the veneers and paper, which are taken to the houses of the workers and made into boxes largely by female and child labour. In the better equipped factories, the number employed (though in some instances capable of reduction) is not large in comparison with the output and it is probable that, were the industry properly organised, the whole Indian demand could be met by a few large factories employing not more than 9,000 workers in all. We are satisfied, therefore, that the supply of labour is ample for the needs of the industry. The processes of manufacture are simple and readily learnt by Indian labourers. The evidence of the expert German Manager of the Bareilly Match Company shows that the number of employees in an Indian factory does not much exceed the standard prevailing in European countries, and it is probable that in the immediate future the number will be still further reduced. The remarkable progress in the efficiency of Indian labour has already been pointed out and, bearing in mind the relatively low scale of wages as compared with European countries, there is reason to believe that in a well organized Indian factory labour charges form a smaller item in the cost of manufacturing matches than is the case in other countries.

13. In the case of inexpensive commodities in daily use among all sections of the community, it is self evident that in a country of the size of India the demand must be both large and continuous. Between the years 1900 and 1910, there was a steady increase in the imports of matches into India, the value* rising from about Rs. 40 lakhs to Rs. 81 lakhs. Since in these years the value of matches showed no very large fluctuations, it is reasonable to suppose that in this period the demand was approximately doubled. By 1913-14 the value of imported matches had risen to approximately Rs. 90 lakhs. In the succeeding years the disorganization consequent on the war renders the figures somewhat unreliable as a guide to the normal increase in the use of matches. The average annual import during these years amounted to about 145 lakhs of gross boxes. As we have already pointed out, before the year 1921-22 match manufacture in India was on a very small scale and the imports in that year (13.68 million gross) represent the bulk of the consumption of the country. Allowing for manufacture in India, we think the

* Quantities for these years not available.

CHAPTER I.

consumption in 1921-22 may be taken at about $14\frac{1}{2}$ million gross. In the years 1921 to 1927, this figure must have largely increased, partly on account of the improvement in the standard of living and partly also as a result of the substantial decrease in the price of matches. Though during and immediately after the war there was no increase in the market for matches in India, this was probably due to the high level of prices. In more normal circumstances a moderate expansion may be expected and though the very rapid increase in demand which occurred between 1902 and 1912 is not a safe guide in attempting to estimate the market at the present time, it appears reasonably safe to assume that during the years 1921 to 1927 an increase of at least 20 per cent. occurred. If this assumption is correct, the market for matches in India may be taken at about 17 million gross. During the year 1926-27, the import of matches amounted to 6.13 million gross. From the replies received from the various factories in India, it appears that their outturn of matches for the last complete year 1926-27 was about 10 million gross boxes. This represents the bulk of the production in India. Allowing for the outturn of factories from which no reply has been received which is not likely to exceed half a million gross, the output of matches in India in 1926-27 may be placed at about $10\frac{1}{2}$ million gross boxes. Assuming that a market has been found for all matches produced in India and allowing for an import of 6.13 million gross, the demand for matches in this country may be taken to be about 17 million gross per annum. On the basis of production the world's annual consumption of matches is estimated at about 150 million gross boxes. It is clear, therefore, that India constitutes an important market for the sale of matches and in this respect the Indian manufacturer has a distinct advantage over foreign competitors. Of these the most important is Sweden—and we have been informed that in that country the market for matches is so small as to form a negligible factor in the operations of the Swedish match companies. Notwithstanding the size of the Indian demand it can readily be met by Indian manufacturers. Recently the capacity of Indian factories has been much increased and we estimate that at the present time about 18 million gross of boxes could be produced annually in the country. Owing, therefore, to the operation of the high revenue duty, the stage has already been reached where the price to the consumer is limited by effective internal competition.

CHAPTER II.

Wood: Wastage in different processes: Economic limit of price.

14. Before entering on a critical examination of the cost of manufacture of matches in India at present, it is necessary to consider separately certain problems affecting the use of Indian and foreign wood in the different processes of manufacture. This course will both simplify our exposition of the costs and facilitate an appreciation of the present situation of the industry. The cost of wood represents from one quarter to one-third of the total cost of the finished box of matches, and since the difference in price between Indian and foreign wood is marked, it is a matter of considerable importance to determine the kind of wood which it is advisable to use and the price at which, allowing for wastage, its use is economic. At present, as we have already noted, three classes of matches are manufactured in India:—*i.e.*, matches made from

- (1) aspen splints and packed in Indian wood boxes,
- (2) aspen splints and packed in aspen boxes,
- (3) Indian wood splints and packed in Indian wood boxes.

The question whether it is more economic to use aspen or Indian wood is conditioned by the price at works and the quantity required of either kind. The price of aspen is very much higher per ton, but all manufacturers agree that the quantity of aspen required per unit of production is very much less than that of Indian wood. Our first step, therefore, must be to attempt to ascertain the relative wastage in the course of manufacture of Indian wood and imported aspen.

15. The Swedish Match Company has supplied us with the following figures for the quantity of wood required for the manufacture of 100 gross of half size matches—
 Figures supplied by the Swedish Match Company.

	Fresh wood.	Old wood.
	c. ft.	c. ft.
(a) Aspen for splints	6.6	8
Aspen for boxes	6.6	8
	<hr/> 13.2	<hr/> 16
Average of fresh and old wood for splints		7.3
Average of fresh and old wood for boxes		7.3
		<hr/> 14.6 c. ft.
(b) Aspen for splints	6.6	8
Indian wood for boxes	9	12
	<hr/> 15.6	<hr/> 20

	Fresh wood. c. ft.	Old wood. c. ft.
Average of fresh and old wood for splints	7.3	
Average of fresh and old wood for boxes	10.5	
	<hr/>	
	17.8 c. ft.	
(c) Indian wood for splints	9	12
Indian wood for boxes	9	12
	<hr/>	<hr/>
	18	24
Average of fresh and old wood for splints	10.5	
Average of fresh and old wood for boxes	10.5	
	<hr/>	
	21 c. ft.	

16. We have now to consider whether these figures as to the quantity required may be accepted as correct. Matches have been manufactured in India on a large scale for

How far the figures can be accepted. the last three or four years only and imported and Indian wood of different kinds have

been used singly or in combination for splints and boxes. Two factors, lack of experience on the part of most of the manufacturers and want of trained labour, have combined to increase the wastage in the process of manufacture. The higher management of the Swedish Match Company has experience of match-making both in Europe and elsewhere, but whilst its labour was being trained—and indeed it must still be regarded as under training—the amount of wastage must have been greater than would be considered reasonable in an established industry. Further, such data as the Company has been able to furnish from its Indian experience, have lost much of their value owing to the abnormal conditions of working to which we shall refer presently in greater detail. It will be sufficient here to state that partly as a result of the rapidly increasing output and partly owing to want of organization of the aspen supply it became necessary to store large quantities of Indian wood. No water storage facilities exist at the Swedish Match Company's factory at Ambernath. The Indian wood in store became infected with borers, and the infection spread to the aspen in stock. It is indeed unfortunate that in a year when labour was better trained than in any previous year and when better results might have been expected such abnormal conditions should have prevailed. But it is clear that conclusions based on these results require to be carefully scrutinized before we can assume their accuracy. This is all the more necessary in view of the fact that the consumption figures of the Swedish Match Company appear to be higher than those of most of the Indian factories.

17. The task of ascertaining the precise wastage of a raw material in the processes of manufacture is at all times one of difficulty.

This difficulty is still greater in the case of a raw material as variable as wood in respect of the shape of the log, consistency of fibre and formation.

The difference between the quantity of wood in the log used per unit of production, and the cubical contents of the finished article manufactured from that quantity represents theoretically the waste during the processes of manufacture and the results obtained by such a calculation may be accepted as approximately correct. The cubical contents of the wood in 100 gross of finished half size splints and boxes are as follows:—

		Cubic feet.
Splints	. . . . .	3.82
Boxes	. . . . .	2.64
		<hr/> 6.46

Comparing these figures with the quantity of wood in the log used for 100 gross of splints and boxes, as given by the Swedish Match Company, the following percentages of waste for the different classes of wood are obtained:—

Wastage percentage tables.

	Percentage of wastage.
1. <i>Fresh Aspen</i> —	
(a) Splints	42.1
(b) Boxes	60.0
(c) Splints and boxes	51.0
2. <i>Old Aspen</i> —	
(a) Splints	52.2
(b) Boxes	67.0
(c) Splints and boxes	59.6
3. <i>Average of fresh and old aspen</i> —	
(a) Splints	47.6
(b) Boxes	63.8
(c) Splints and boxes	55.7
1. <i>Fresh Indian wood</i> —	
(a) Splints	57.5
(b) Boxes	70.6
(c) Splints and boxes	64.1
2. <i>Old Indian wood</i> —	
(a) Splints	68.1
(b) Boxes	78.0
(c) Splints and boxes	73.0
3. <i>Average of fresh and old Indian wood</i> —	
(a) Splints	63.6
(b) Boxes	74.8
(c) Splints and boxes	69.2

It will be observed that the amount of wastage involved in the manufacture of boxes is higher than in that of splints. The veneer

for boxes has to be peeled slightly thinner than that for splints and in the box-making processes the percentage of wastage is greater. The figures show that the average wastage on splints and boxes is in the case of aspen more than half, and in that of Indian wood more than two-thirds of the wood in the log used. The average wastage on boxes alone is in the case of aspen a little below two-thirds and in that of Indian wood just under three-quarters of the wood used in the log.

18. For reasons which we have already explained we had some hesitation in accepting these figures. It was accordingly arranged

Tests carried out under
Board's supervision.

that some tests should be carried out in the presence of one of the members of the Board at Ambernath works on the 3rd and 4th of January, 1928. In Appendix B is the report submitted to us by the Swedish Match Company upon the results of three of the tests thus carried out. The stock of wood at Ambernath was, at the time, very short, and most of it was old and of poor quality. The shembat (*Odina Fodier*) which had to be selected was of average size and shape, but it had been stored for six months and was in consequence dry and in poor condition. But a good specimen of fresh simul (*Bombar malabaricum*) was secured as also a log of Polish aspen from a consignment which had just arrived. This aspen had, however, been in store in Europe and at least 10 months had elapsed since cutting. The results obtained were as follows:—

	Wastage.
	Per cent.
Shembat	87
Simul	72
Aspen	31·5

Experiments were carried out in respect of boxes only but the theoretical contents of both the splints and boxes are known, and applying the same ratio as is shown in the wastage percentage tables the percentage of wood required for splints can be calculated from the percentage of wood required for boxes. On the basis of this experiment the wood required for 100 gross will be:—

	Splints	Boxes	Splints and boxes
	c. ft.	c. ft.	c. ft.
Shembat	15·9	20·3	36·2
Simul	9·1	9·4	18·5
Aspen	4·8	3·9	8·7

19. A comparison of these figures with those given to us by the Swedish Match Company in paragraph 15 brings out certain points of interest. First, in the case of aspen, the

Result of comparison. practice of the Swedish Match Company has not yet approached the results which by a careful selection of aspen it is possible to attain even with Indian labour. Secondly, in practice fresh simul has yielded to the Swedish Match Company fairly uniform results. Thirdly, shembat if stored for six months or more deteriorates so rapidly that the results obtained from this experi-

ment can throw no light on the suitability of other Indian wood for making boxes; and further shembat of this description cannot be used economically for match manufacture. Our conclusions, therefore, are that as simul is a species of wood in very general use throughout India, we should be safe in accepting the wastage figures relating to it as typical of Indian wood. As regards aspen, though we feel that some reduction in the quantity used might reasonably be made we have refrained from adopting such course, partly because the material available is not sufficient to enable us to determine an exact figure, but mainly because we consider it important in estimating the future position of the industry and in particular whether it will be able finally to stand without protection, to adopt the less favourable figures. Whether such a course will result in a somewhat higher estimate of the measure of protection necessary is a point which we shall consider later.

20. Since the percentage of wastage varies considerably, if the wood used in manufacture has been stored for any considerable time,

it is necessary to consider the proportions in which fresh and stored wood respectively are used for match making in India. Climatic conditions in Europe prevent the export of aspen in the winter to any considerable extent, and there is a period of about five months during which the regular import of aspen into India is impossible except from stock. Save in the provinces of Burma and Bengal, the extraction and transport of Indian wood from the forest to the factory cannot be undertaken during the monsoon. For a considerable portion of the year, therefore, both aspen and Indian wood have to be stored. We think it safe, therefore, to take as our standard figure for wastage the average of the figures for new and old wood. At the same time, it must be pointed out that this standard leaves a considerable margin for improved practice. If reference is made to paragraph 38, it will be seen that the quantities of wood used by the Swedish Match Company per 100 gross of half sized matches in 1927 were approximately those which are given above as representing the normal average consumption. Since in 1927 the wood used by the Swedish Match Company was distinctly below the normal in point of quality, it is obvious that better results than these can be obtained. This is an aspect of the question which we propose to discuss in a subsequent chapter. In the meantime it is desirable to proceed cautiously, and to base our conclusions on results which have actually been obtained. Accepting then the aspen figures supplied to us by the Swedish Match Company and taking simul as typical of all Indian wood, the amount of wood in the log required for the manufacture of 100 gross of matches is as follows:—

	Cubic feet.
(a) (1) Aspen for splints	7.3
(2) Indian wood for boxes	10.5
	<hr/>
	17.8
(b) Aspen for splints and boxes	14.6
(c) All Indian wood for splints and boxes	21

21. The limit at which it will be profitable to use Indian wood rather than aspen depends on two considerations, *viz.*, the respective wastage of the two classes of wood in the course of manufacture and the average price at which aspen can be delivered at the factory. We have already investigated the question of wastage and it remains now to ascertain the price of aspen. In 1927 the Swedish Match Company purchased some Japanese aspen. Partly owing to a rise in exchange it cost them about Rs. 2-13-8 per cubic foot or about Rs. 142-11-4 per ton delivered at the works. The average price of Finnish aspen, however, was Rs. 2-5-0 per cubic foot or about Rs. 115 per ton. Mr. Schele, the General Manager for India, Burma and Ceylon of the Swedish Match Company, states that he foresees in the immediate future no great fluctuations in the future price of aspen and that it may be taken at about Rs. 120 per ton. We shall adopt this figure for our calculations.

22. In estimating the economic price of Indian wood for the manufacture of splints, there is one circumstance which must not be overlooked. Splints of half size manufactured of aspen wood realize a price of from 2 to 4 annas per gross higher than those made of Indian wood according to quality and reputation, and for full size splints the premium is proportionately higher. This difference in price may disappear or be reduced in future, and even at present it does not remain constant in all localities or in regard to all brands. But so long as the difference remains, it must be taken into account and we think it will facilitate comparison if it is allowed for by deduction from the costs.

23. Adopting the consumption figures which we have already set forth, we obtain the following result:—

	Rs. A. P.
Aspen 7·3 cubic feet per 100 gross of boxes of splints at Rs. 120 per ton	17 8 3·84
Less 2 annas per gross	12 8 0
	<hr/>
	5 0 3·84

If Indian wood is used, 10·5 cubic feet are required to make 100 gross boxes of splints, and as the cost of this quantity must not exceed Rs. 5-0-3·84, the economic price of Indian wood for splints per ton of 50 cubic feet is Rs. 23-14-5·7. We have found that in India generally the price of local wood varies between Rs. 35 and Rs. 40 and it would thus appear that the use of Indian wood for splints is at present prices not economically sound. This however is only partially true. The railway freight of aspen to upcountry factories is prohibitive, while the railway freight on matches from the ports affords additional protection to the local markets. Such factories can afford the use of Indian woods for splints at a very much higher figure. Again, it must not be forgotten that in Rangoon and Calcutta Indian wood can be obtained fresh during most of the year

and storage for lengthy periods is unnecessary. In consequence the output is greater and the quality better, while where the supply of Indian wood is more regular and dependable its use for splints at about the level of Rs. 40 may be justified. But in Bombay where the supply of Indian wood is irregular and the quality comparatively unsuitable for splint manufacture, its use is clearly uneconomical at a price above Rs. 24 per ton. The lowest price at which Indian manufacturers have obtained local wood in the vicinity of Bombay is about Rs. 40 per ton. It follows, therefore, that in the interest of manufacturers themselves aspen rather than Indian wood should be used for splints in the vicinity of Bombay. We understand that recently the Swedish Match Company at Ambernath has completely discontinued the use of Indian wood for splint manufacture.

24. As regards the wood required for making boxes, the point at which substitution of aspen for Indian wood will begin is much higher. We have no definite evidence that, as in the case of aspen splints, the consumer will pay any higher price for matches packed in aspen boxes. In fact, if boxes made out

Points of substitution of aspen for Indian wood in box making.

of Indian wood show a reasonable amount of finish, the consumer is not likely to notice any difference, and the evidence suggests that he will pay about the same price for them as he would for matches packed in aspen boxes. This being the case, the choice of the manufacturer will be governed entirely by the comparative cost of the two kinds of wood. As we have stated, the quantity of aspen required for 100 gross is 7.3 cubic feet, which at the rate of Rs. 120 per ton will cost Rs. 17-8-3-84. The quantity of Indian wood required is 10.5 cubic feet. If he were to purchase that quantity for Rs. 17-8-3-84 the price would be in the neighbourhood of Rs. 83 per ton. In other words, at any point above this limit, he would begin to find Indian wood less economic than aspen. There are, however, other reasons which would prevent the price from being pushed up to its full economic limit. The quantity of aspen used in producing any given quantity of matches is, as we have shown, much less than the quantity of Indian wood and this must to some extent affect the charges for sawing, storing, handling and veneering. Further, in certain processes, particularly in box making, box labelling and box filling, the wastage is on the whole slightly higher when Indian wood is used. It follows that in any given time the output is smaller when Indian wood is used, and the labour, power and supervision charges are higher per unit produced. We mention these matters because there is a difference between Indian wood and aspen in these respects, though the total additional expenditure thereby incurred is not considerable. At the same time, the price being equal (after allowing for wastage) the manufacturer would probably prefer to use aspen since the quality is less variable and the outturn more dependable. For these reasons we consider that the actual point at which the substitution of aspen for Indian wood for box making will begin will be at a price of about Rs. 75 per ton. Equal quantities of Indian wood being used for splints and veneers for the manufacture of half size matches the average

between economic price for splints and veneers, namely Rs. 49. represents the limit at which it is economic to use Indian wood rather than aspen for both splints and veneers.

25. Before drawing our conclusions regarding the use of Indian and imported wood at present and in the future, it is necessary to

consider the price at which Indian wood can be obtained and whether it is probable that any increase in that price will occur in the

immediate future. Our investigations lead us to believe that except in Bombay the price of Indian wood for match manufacture stands at between Rs. 35 and Rs. 40 per ton. Since, speaking generally, the supply may be increased without further increase in cost, there appears no reason why the price should rise in the future. It is reasonable, therefore, to assume Rs. 40 per ton as the present and future price of Indian wood delivered at a representative factory outside the Bombay Presidency. The position is, however, different as regards the factories situated on the outskirts of Bombay. It is true that some of these factories have been obtaining their Indian wood at as low a price as Rs. 40 per ton, but supplies have been irregular and insufficient. The Swedish Match Company informed us that in December, 1927, the cost of wood to them was as much as Rs. 62-8-0 per ton. We think that although at the moment it may be possible for a factory equipped on an economic scale, but not so large as the Ambernath factory, to obtain its requirements of wood at Rs. 40 per ton, this condition of affairs cannot last for long, and it would not therefore be safe to adopt that figure as representing the average future price of wood, especially for the larger units. For the present output of the Bombay factories, some 10,000 or 15,000 tons of Indian wood is required for boxes alone. At the present price of Rs. 40 per ton, an assured annual supply of some 4,000 tons is available from Government forests. As the price rises, the distance from Bombay at which extraction is profitable is increased. In view of the present deficiency and irregularity of supply, it appears probable that in the future the price of Indian wood will approach the limit at which the substitution of aspen for box making begins, viz., Rs. 75 per ton. We think, therefore, that for future calculations, it would not be safe to take a figure of less than Rs. 75 as the price of Indian wood in Bombay.

26. It is now possible to formulate certain general conclusions regarding the use of Indian wood in match manufacture. In Bom-

bay so long as the difference in price between matches made of aspen and Indian wood splints remains even at 2 annas, it will not be profitable to use Indian wood for splints,

and as the Bombay market shows a very marked preference for aspen splints, it is unlikely that in the future splints of Indian wood will be produced on any considerable scale. On the other hand, so long as the price of aspen continues at its present level and the price of Indian wood does not exceed Rs. 75 per ton, the use of Indian wood for boxes will be the more profitable. It appears,

therefore, that as far as possible in Bombay boxes will be manufactured of Indian wood and splints of aspen.

27. In Calcutta and Rangoon also the price at which it is economic to replace Indian wood by aspen for splint manufacture is

Use of Indian wood elsewhere. Rs. 23-14-5·7 per ton, while we have found that the present and probable future price of Indian wood is Rs. 40 per ton. Here too

it would appear that the use of Indian wood for splints is unprofitable. But, as we have already explained, special circumstances exist which render any such conclusion of doubtful validity. In these towns wood is obtainable fresh almost throughout the year and the necessity for storage for long periods is avoided. The quality of the wood also is better and the colour whiter than in Bombay. We doubt, therefore, whether save in times of exceptional competition, the difference in the price of aspen and Indian wood splints (half size) would remain as high as 2 annas. The advantages of regular supply may well make it desirable to use Indian wood, while in Burma in particular a careful selection of the logs for splint making should lead to improved results. We think, therefore, that in Calcutta and Rangoon it may be found advantageous to use Indian wood for splints at a price of Rs. 40 per ton, while in upcountry factories a considerably higher figure will be justified.

28. For convenience of reference we give below the costs of wood for different classes of half size matches manufactured in Bombay on the basis of the figures of consumption of wood per gross of matches which have

Wood costs.
already been explained—

Estimate of wood costs in Bombay, (half size).

	Present costs.			Future costs.		
	Cost of wood per ton.	Wood cost per gross of matches.		Cost of wood per ton.	Wood cost per gross of matches.	
	Rs.	A. P.		Rs.	A. P.	
1. Aspen splints (average old and fresh wood)	120	2	9 63	120	2	9 63
Indian wood boxes, (average of old and fresh wood)	40	1	4 12	75	2	6 24
		4	1 75		5	3 87
2. Aspen splints (average of old and fresh wood)	120	2	9 63	120	2	9 63
Aspen boxes (average of old and fresh wood)	120	2	9 63	120	2	9 63
		5	7 26		5	7 26
3. Indian wood splints (average of old and fresh wood)	40	1	4 12	75	2	6 24
Indian wood boxes (average of old and fresh wood)	40	1	4 12	75	2	6 24
		2	8 24		5	0 48

CHAPTER III.

Fair Selling Price.

SECTION I.

General Principles.

29. The two ports of Bombay and Calcutta have been the principal centres of competition between the Indian and the foreign manufacturer. Of the productive capacity of about 18 million gross, excluding the cottage factories, Bombay accounts for 8½ millions, i.e., nearly half, and Bengal for about 5 millions or just over a quarter.*

Prices in Bombay of half size safety matches to be taken as typical of foreign competition.

Practically the whole of the Bombay production, which in 1927 amounted to 7 million gross, if we accept the manufacturers' estimates as correct, is of the half size safety match, though a very small percentage of the full size safety and a small quantity of both sizes of sulphur matches were also manufactured. The only factory in Assam also specializes in this size. In Calcutta the Swedish Match Company manufactures only the full size, but two large factories produce a percentage of the half size also. In Burma also the half size is produced though only to a very small extent. The total productive capacity of the two factories in the United Provinces and the Punjab, and of one factory in the Bombay Presidency which specializes in the three quarter size is about 1 million. Moreover half size matches constitute the bulk of the total imports of foreign matches into India. In these circumstances, we think that we should be justified in taking the half size as representative of the whole industry and the price of that size without duty as the governing price of the foreign matches against which the Indian manufacturers have to compete. The c.i.f. prices in Bombay of imported matches are lower than those at any other port and it is obvious that any scheme of protection must be based on the lowest import prices. Further the present cost of production in Bombay, on which our fair selling price is based, is probably lower than in other parts of India while our future fair selling price, owing to the estimated increase in the cost of wood in the vicinity of Bombay, exceeds the level which could be justified for factories situated in localities where the wood supply is more plentiful. Both in considering whether the industry satisfies the third condition of the Fiscal Commission, viz., whether it will eventually be able to stand without protection and also in estimating the measure of protection required, if the Bombay figures serve us as a guide, our conclusions will be of a most conservative nature. We propose therefore to consider the present costs of making full size matches for the purpose of comparison only. An additional reason for this course is

* *Vide* Appendix D.

furnished by the fact that while the full size match is more expensive to manufacture, it sells by the box at any rate at about the same price as the half size. Its sale is therefore less remunerative than that of the half size and its manufacture is likely to give way gradually to that of the half size.

30. Both in order to enable us to satisfy ourselves that the industry will eventually be able to stand without assistance and also to decide on the measure of protection (if any) to be granted, it is necessary for us to determine the selling price which we consider reasonable for an Indian manufacturer. We propose therefore to estimate the present and future fair selling price of Indian made matches of half size, and since these are manufactured almost entirely in Bombay, we shall base our estimates on Bombay costs. By the present fair selling price we mean the total works costs, overhead charges and manufacturer's profit, which we consider reasonable for a representative, well equipped factory with a production which experience shows can be attained with the present level of competition. By the future fair selling price we mean the total of these charges estimated on the assumption that full economic output has been attained and other possible economies have been effected.

31. Now the fair selling price may be considered either for goods delivered at the railway station nearest to the factory, in which case further charges of transit are borne by the purchaser, or for goods delivered to the purchaser at a point selected by him. In many of our previous enquiries we have found it necessary in determining the measure of protection on a comparison of the fair selling price of Indian goods with the landed price of imported goods, to take into consideration the cost of transit to market. For where the main market for the goods produced is located near the centres of production, the cost of transport of foreign goods from the sea ports acts as an indirect protection to the home industry. Where production is confined to one or two factories and the market is either local or restricted mainly to the larger industrial centres, the effect of transit charges can be calculated with some degree of accuracy and cannot therefore be ignored in framing proposals regarding the measure of assistance required. In the case of the Match industry, however, the market is so diffuse, the areas of competition so variable and the number of factories so large that any attempt to estimate the average cost of transit for the home industry and for imported goods must clearly fail to yield any reliable result. Nor is there a guarantee that if such an estimate was made, it would hold good for any definite period. For the areas and extent of competition might, through the operation of economic forces or their deliberate control by a combination among manufacturers, be completely changed. We propose, therefore, in this enquiry to adopt the fair selling price f.o.r. works including the dealers' commission as the basis for our estimates.

32. In attempting to frame an estimate of a fair selling price which may be considered representative of the industry as a whole, we are faced with very serious difficulties.

Varying conditions in different factories render comparison difficult.

The number of factories is large, while the units of production differ greatly both in size and methods of manufacture. Apart from the smaller factories, there are 27 concerns producing 500 gross boxes of matches or more daily from 18 of which we have received representations. At one extreme are the cottage factories, the smallest of which is said to have a capacity of a gross a day and at the other the Swedish Match Company's factory at Ambernath with a capacity of 10,000 gross a day. It is one of the peculiarities of match manufacture that with the possible exception of peeling the wood for splints and box veneer, all the other processes of which there are many can be performed either by hand or almost entirely by machinery. There are only two factories in India, the Mahalakshmi factory at Shahadara and the Bareilly Match Factory, where all the processes are performed by machinery. But the former has only a capacity of 1,000 gross per day and has been working for only two years, whilst the latter with a capacity of 1,500 gross per day commenced operations less than a year ago and neither of them has attained full output. In other factories machinery is used to a varying extent. Even in the largest of the factories, that of the Swedish Match Company at Ambernath, the splint is not finished into a match on a continuous machine but is subjected to many separate processes which involve more expenditure than should be necessary in a first rate modern factory. These different methods of manufacture make any comparison of costs not only very difficult but of little value for our purposes.

33. The accounts of a well conducted modern works are generally kept so as to show not merely the profit and loss on the whole business, but also the cost of each unit in the process of manufacture. But with the exception of those received from the factories

Indian factories have no fixed costing system.

owned by the Swedish Match Company, we have not received from any match factory in India cost sheets maintained on a cost accounting system. Indeed it has been admitted that such accounts are not kept. It is doubtful whether many of the proprietors know what their actual costs are with any degree of precision. As most of the factories are owned by individuals singly or in partnership or by private companies, the accounts have not been subjected even to the ordinary scrutiny of chartered accountants. We have thus little or no means of checking or verifying their accuracy. A further circumstance which will in any case import into their costs a serious element of inaccuracy is that many of the larger factories manufacture different sizes and different qualities of matches. Some factories on the Bombay side have recently commenced the manufacture of sulphur as well as safety matches. The manufacture of two different sizes of matches is in itself uneconomic and the Swedish Match Company has, for that reason, confined manufacture in each factory to one size. At the Ambernath factory and at the

Assam Match Company's works only half size and in the Swedish Match Company's Calcutta factory only full size matches are manufactured. The costs, therefore, of those Indian factories which manufacture more than one size, will necessarily be higher than the cost of those which confine themselves to one size. It is true that two Indian factories in Northern India and one at Ahmedabad make only one size, *viz.*, the three quarters size, but these factories have a very small capacity and the two former, as we have stated, have not yet reached their maximum output. Even if we disregard the fact that the manufacture of different sizes and qualities of matches in the same factory tends to increase the costs, we are still faced by the difficulty that the costs submitted to us represent the average costs of all sizes, and in no case have they been kept in such a way as to enable us to ascertain the cost of each size separately. Nor would it be easy, in our opinion, for any factory which, working as a single unit, produces different sizes to maintain separate cost sheets for each. The only item which could be accurately shewn would be the total amount produced of each size, but as there is no ratio which can confidently be accepted and applied to the allocation of costs of material, labour, power, overheads and the like, between the various sizes, no conclusion could be drawn from the relative production of each size of match.

34. The question of costs is complicated by the fact that some factories use in manufacture aspen only, others Indian wood only, while matches are also made with aspen splints and Indian wood boxes. Further, any conclusion as to the output of matches per cubic foot of wood in any particular factory has proved a matter of great difficulty, as results appear to vary considerably in each factory and no accurate records are kept. The price of Indian wood also varies considerably according to the distance from the sources of supply and the annual requirements of the factory. Ordinarily we should have attempted to base our estimate of a fair selling price for matches, on an examination of the costs furnished by typical undertakings in different parts of the country, our final estimate representing an average of such costs. But the absence of any reliable costing system, the inequality of units, the combination of manual and mechanical processes of manufacture, the simultaneous production of different sizes and qualities of matches and such other factors, debar us from adopting this course.

35. The only other alternative left to us is to select for examination the costs of those factories which represent reasonable units as to size, have attained or have very nearly attained their maximum output, are equipped with reasonably up-to-date machinery, confine their manufacture to one size and above all maintain, and have supplied to us, costs kept on a regular cost accounting system. None of the factories except those of the Swedish Match Company fulfil these requirements. The smallest unit which under modern conditions of manufacture can be considered economic is one of the capacity of 5,000 gross per day and the largest of the

capacity of about 10,000 gross per day. The Swedish Match Company's Calcutta factory has a capacity of about 5,250 gross per day and has already attained an output of 4,794 gross. But only full size matches are manufactured at this factory. The capacity of its Ambernath works, where half size matches are being manufactured, is 10,000 gross per day and has already attained an output of 9,584 gross. We propose then to investigate the present works cost at the Swedish Match Company's factory at Ambernath. On this basis we shall determine the present and future fair selling prices for half size matches manufactured in the vicinity of Bombay by an economically managed factory. Having ascertained these prices we shall proceed to consider how far they may be taken as applicable to the industry as a whole or otherwise supply a reasonable basis for our recommendations.



SECTION II.

Present works costs and estimate of present fair selling price: Half size.

36. As we have already stated we are taking the Ambernath costs as typical of the whole industry. There are, however, certain respects in which the Ambernath costs vary widely from those in other factories, particularly in regard to the cost of wood and supervision. There are also, as we shall explain later, special reasons why we base our recommendations of the measure of protection on the present rather than the future costs. It is, therefore, necessary to frame our own estimate of what the works costs should be in a well equipped factory in present circumstances. We have been placed in possession of the average works costs* at the Ambernath factory from 1924 towards the end of which manufacture commenced, up to the end of 1927. Separate costs for November and December 1927 were subsequently supplied. As the costs were gradually falling, the average costs were higher than the best costs attained during the year. At our request, therefore, the Company supplied us with the costs for August, 1927, which was in their opinion, having regard to all the circumstances, their best month and their costs in that month were lower by Rs. 0-1-2 than the average costs for 1927. The costs for both periods are set out below:—

	Average for 1927.			August 1927.		
	Rs.	A.	P.	Rs.	A.	P.
Cost of wood			0 5 9			0 5 3
Cost of materials other than wood—						
Cost of paper	0	0	9			0 0 9
Cost of chemicals	0	1	11½			0 2 0
Cost of other raw materials	0	0	8			0 0 8
Cost of packing cases	0	1	6½			0 1 9
			0 4 11½			0 5 2
Factory labour	0	2	6			0 2 1
Power and fuel	0	0	4			0 0 4
Ordinary current repairs and maintenance of buildings, plant and machinery	0	1	2			0 1 0
General services, supervision and local office charges	0	1	4			0 1 1
Miscellaneous, e.g., rent, muni- cipal taxes, insurance, etc.	0	0	2½			0 0 2
			0 5 6½			0 4 8
GRAND TOTAL			1 0 3			0 15 1

* By "works costs" we mean the costs incurred during the process of manufacture on wood and other raw materials, labour, power and supervision.

37. The August figures provide some indication of the economies possible in the future, especially with increased output. To these

we shall refer in our discussion of future costs. But in determining the present costs, Cost of materials other than wood.

we propose to base our estimates on the average costs during 1927 rather than on the August costs. It will be seen from the foregoing Table that as regards materials other than wood, the average costs for 1927 were lower than August under chemicals and packing cases, while the cost of paper and other raw materials was the same in both periods. As regards costs above materials, it would be unreasonable to regard the August figures under labour and supervision as typical since the production in August was considerably above the average production of the year, while miscellaneous charges such as rent, taxes and insurance, etc., necessarily vary from month to month and no single month's results can be accepted as sufficiently representative. We think the costs of materials other than wood at Ambernath may be regarded as fairly representative of the costs in a well equipped factory in present circumstances.

38. As regards charges for wood, however, the position is different. Production at Ambernath in 1927 was of an unusually mixed nature as the following figures show :—

Wood charges.

Cases of 50 gross.

1. Entirely aspen wood	9,248
2. Entirely Indian wood	6,259
3. Aspen for splints and Indian wood for boxes .	29,649
4. Matches of imported aspen and skillets from stock	771
5. Matches from stock and boxes of Indian wood .	1,542
<hr/>	
TOTAL .	47,469
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Clearly in order to decide whether the wood costs may be regarded as typical, it is necessary to determine what those costs were for each class of matches. The quantity of wood used and the cost of the wood purchased have been given as follows :—

	Quantity used.	Price.
	c. ft.	Rs.
Aspen	180,572	4,80,597
Indian wood	238,801	3,16,003

The figures for Indian wood include about 10 per cent. of a Chinese wood (*chinanoki*) the price of which delivered at factory is between

Rs. 90 and Rs. 100 per ton. Allowing for this the price of wood works out as follows:—

	Per cubic foot.	Per ton.
	Rs.	Rs. a. p.
Aspen	2.66	133 0 0
Indian wood	1.25	62 8 0

Taking equal quantities of wood in the log for splints and boxes we reduce the above figures to the following results:—

	Quantity for 100 gross.	Price for 100 gross.	Cost per gross.
	c. f.	Rs.	Annas.
Aspen for splints	7.38	19.63	3.14
Indian wood for boxes	10.92	13.63	2.18
Indian wood for splints and boxes	21.84	27.30	4.36
Aspen for splints and boxes	14.76	39.26	6.28

The high price paid for aspen is mainly accounted for by the fact that some Japanese aspen was imported, which, largely as a result of variation in exchange, cost approximately Rs. 143 per ton delivered at works as against the present cost of Rs. 120 per ton. The figure for Indian wood, *viz.*, Rs. 62-8-0 per ton also calls for some explanation.

39. According to the evidence tendered by the Swedish Match Company, the price of Indian wood in 1927 was between Rs. 45 and Rs. 52-8-0 per ton. The Company, however, obtains its wood partly from contractors and partly by extraction from Government forests carried out by their own agency. Fellings were undertaken during the year at Khopoli in the Colaba district some 45 miles from Ambernath and at Honavar in Kanara District which is 371 miles distant from their factory. The heavy freight in addition to the cost of felling and extraction has raised the average cost throughout the year to a level much in excess of that at which other factories have been able to obtain their wood.

40. The main cause of the high expenditure on wood has been the anxiety of the Swedish Match Company to increase their output as rapidly as possible. It has obviously been part of the policy of the Company to subordinate the question of costs to production. Owing to the high revenue duty and the steady growth of internal competition, there has been a continual decline in the

imports of the Swedish Match Company. In 1923 the total imports of Swedish half size matches into Bombay was 1.93 million: by 1927 this had fallen to .35 million gross. If they were successfully to maintain their position, it became necessary either to import larger quantities or to increase their Indian production. Importation in larger quantities was only possible if prices were further reduced by a substantial amount, which would have resulted in decreased profits or even a loss to the Company. The only alternative, therefore, for the Swedish Match Company was to increase production in India and every effort was made to do so. In 1925 the production at Ambernath stood at 785,950 gross. In the following year this increased to 1,997,000 gross and in 1927 to 2,296,350. The anxiety to increase the output was so great that little or no attention was paid to the quality of the wood, and matches of very inferior quality were produced at a higher cost than the better quality matches as the following figures show:—

Per case of 50 gross.

	Rs.
1st quality (aspen splints)	54.67
Good 2nd quality (Indian wood splints)	54.40
2nd quality produced in July, 1927	59.74

800 cases of matches of the last quality were produced in four days. The quality was so poor that they could not be sold save at a discount of about 5 annas per gross. It is unfortunate that these matches were put on the market in as much as the low price at which they were sold has given rise to considerable criticism of the Company's policy. But the mistake has now been realized and the Company has ceased to produce this quality.

41. We have received evidence that Indian wood was obtainable by most factories in the vicinity of Bombay at about Rs. 40 per ton and though we think that this price is likely to rise in the near future, we should not be justified in taking a higher figure than Rs. 40 per ton for Indian wood in estimating the costs of a reasonably efficient match factory near Bombay in 1927. The cost of wood per gross of matches would then be as follows:—

	Price per ton.	Cost per gross.
	Rs.	Rs. A. P.
(i) Aspen splints	120	0 2 9.63
Indian wood boxes	40	0 1 4.12
		<hr/>
TOTAL		0 4 1.75
		<hr/>
(ii) Aspen splints and boxes	120	0 5 7.26
(iii) Indian wood splints and boxes	40	0 2 8.24

42. The following Table gives a comparison between the actual costs for 1927, and our estimate of the costs which might reasonably have been attained in a representative factory:—

	Swedish Match Company's actuals for 1927.*			Board's estimate.†		
	Rs. A. P.			Rs. A. P.		
(1) Aspen splints and Indian wood boxes—						
Cost of wood	0	5	3.84	0	4	1.75
Cost of other materials‡	0	4	11.25	0	4	11.25
Cost above materials‡	0	5	6.75	0	5	6.75
TOTAL	0	15	9.84	0	14	7.75
(2) Aspen splints and boxes—						
Cost of wood	0	6	3.36	0	5	7.26
Cost of other materials‡	0	4	11.25	0	4	11.25
Cost above materials‡	0	5	6.75	0	5	6.75
TOTAL	1	0	9.36	1	0	1.26
(3) Indian wood splints and boxes—						
Cost of wood	0	4	4.32	0	2	8.24
Cost of other materials‡	0	4	11.25	0	4	11.25
Cost above materials‡	0	5	6.75	0	5	6.75
TOTAL	0	14	10.32	0	13	2.24

43. In order to ascertain the fair selling price of Indian matches in the present organization of the industry, it is necessary to determine the overhead charges and manufacturer's profit. Overhead charges include:—

- (a) depreciation;
- (b) interest on working capital;
- (c) agent's commission and selling expenses, and
- (d) head office expenditure.

We base our estimate again on the figures for the Swedish Match Company's factory at Ambernath. In Supplementary Statement

* The 1927 actuals are calculated from the figures given by the Swedish Match Company for total quantity of wood used during 1927 and the price paid for it.

† The Board's estimate takes aspen at Rs. 120 per ton and Indian wood at Rs. 40 per ton.

‡ The figures for "Cost of other materials" and "Cost above materials" are the Swedish Match Company's actuals for 1927.

No. 3, dated the 12th December, 1927, the Swedish Match Company supplied us with their account of the following charges:—

	Per gross.
	As. p.
Depreciation	0 9
Head Office expenses	1 1½
Selling expenses including dealers' and agents' commissions	2 7½
TOTAL	4 6

44. Since we are here dealing with present costs, we base our estimate of the amount required for depreciation on the total capital cost as shown in the books of the Company, namely Rs. 23.38 lakhs.

45. In our enquiry into the rolled steel industry we allowed for depreciation an all round rate of 6½ per cent. on the capital value. In that industry, however, the machines were worked continuously, whereas in the Match industry night work is not as a rule carried on. But account must also be taken of the fact that the machinery in match works is more delicate and requires more constant replacement than is the case in the Steel industry. The rate specially laid down for plant and machinery in this industry under section 10 (2) (vi) of the Income-Tax Act is 6½ per cent. The Swedish Match Company claims that 11 per cent. on machinery is reasonable or an all round rate of 8 per cent. on the block value. If we were to accept these rates, we should be disposed to make some reduction on account of interest on the depreciation fund, the bulk of which will not be spent on replacements for some time and in this case the difference between the two rates will be very slight. On the whole, therefore, we think that an all round rate of 6½ per cent. is sufficient. At this rate the annual depreciation is Rs. 1,46,000 which on the present annual production of 2.29 million gross of boxes, gives an incidence of 1.02 annas.

46. As regards working capital, we take into account the fact that owing to the difficulty of extraction at certain seasons of the year, large stocks of wood have to be carried. In the course of the oral examination, most manufacturers appeared to consider that four months production at estimated works cost was a fair allowance. We accept this as reasonable. On this basis about Rs. 7 lakhs per annum would be required for a factory producing about 2.29 million gross boxes. Allowing interest at 7 per cent. the incidence stands at 4.1 pies per gross.

47. Head Office expenses have been claimed at 1 anna 1½ pie per gross of present production. On an annual output of 2.29 million gross, this means an annual expenditure of Rs. 1,58,034 which is equivalent to 41 per cent. of gross profit (i.e., profit and depreciation) allowing a rate of

10 per cent. for profit and $6\frac{1}{4}$ per cent. for depreciation on the capital value. The charge appears to us extraordinarily high even though it covers the expenditure on technical advice and supervision. According to the rate which we have allowed in other industries, we thought that approximately Rs. 60,000 should be sufficient and we asked for further information. We were informed that the total expenditure on this account for ten months in 1927 was Rs. 3.71 lakhs. This includes leave salaries of the European staff and covers not only the management of all the Indian offices (except that of the Assam Match Company) but also the costs of distribution of a considerable proportion of the imported Swedish matches. We have no means of judging what is a fair allocation of these charges between the different companies under the control of the Swedish Match Company and it may well be that the international character of the Swedish Match Trust involving the consideration of complex world problems connected with the trade, may necessitate this very high expenditure. We have not overlooked the fact that the Swedish Match Company unlike many firms is not the managing agent for a large number of businesses, and that a somewhat higher scale of charges may therefore be necessary. On the other hand; we are making a full allowance for selling charges and office expenses of agents. We believe, however, that for a representative Indian factory in present conditions charges on so high a scale under this head are unnecessary. We think the allowance on this account should not exceed Rs. 60,000 which on an output of 2.29 million gross per annum would give an incidence of 5 pies per gross.

48. An analysis of the selling charges as stated by the Swedish Match Company yields the following figures:—

	As. P.
Commission to agent	0 4 $\frac{1}{2}$
Office allowance to agent	0 6
Dealers' commission and allowance	1 1 $\frac{1}{2}$
Freight and transport charges	0 7 $\frac{1}{2}$
TOTAL	2 7$\frac{1}{2}$

The agents' commission and allowance is paid to Messrs. Forbes, Forbes, Campbell and Company. This firm has been for many years the sole agent in Western India of the Swedish Match Company for imported matches, and since the Company started manufacture in India, it has retained them in their capacity as agents, though a considerable amount of distribution is now done directly by the Head Office. The Swedish Match Company feel that on moral grounds Messrs. Forbes, Forbes, Campbell and Company are entitled to this commission and though the agreement with them is terminable, the long standing ties of business will not permit its cancellation. We are unable to accept the force of this argument, and under ordinary circumstances we should have made no

allowance for this payment in our estimates. But we are influenced by the fact that at present, while the Indian Match industry is striving to maintain and extend its market in India, the employment of a special selling organization is perhaps an advantage. Some of the Indian manufacturers also employ a dealer and a sub-dealer and it is in evidence that at present the matches manufactured by the Indian companies realize one anna to one anna and a half less for similar qualities, a circumstance which we should attribute among other causes to a less elaborate and therefore a less expensive system of distribution. The costs in both cases thus come approximately to the same amount, and we would therefore recognise this payment for the present as a legitimate charge on the business. We, therefore, consider that our fair selling price f.o.r. works should include this charge. Since we are framing our estimates of a fair selling price for matches f.o.r., factory, charges on account of freight and transport ($7\frac{1}{2}$ pies) must be excluded. The total selling charges thus amount to 2 annas $\frac{1}{4}$ pie per gross.

49. The Swedish Match Company claims that in India where the rates of interest are ordinarily high, a rate of 15 per cent. Manufacturers' profit. profit on match manufacture is reasonable. We have taken this fact into account and, although in the special circumstances of the Match industry a somewhat higher rate may be necessary than we have allowed in other industries, we think a rate of 10 per cent. should suffice. On a block value of Rs. 23.38 lakhs, this will amount to Rs. 2,33,800 which on a production of 2.29 million gross per annum gives an incidence of 1 anna 7.6 pies.

50. Overhead charges and manufacturers' profit may now be stated as follows:—
Present fair selling price.

	As. P.
Overhead charges—	
Depreciation	1 0.24
Working capital	0 4.1
Head Office expenses and agents' commission	0 5
Selling charges	2 0.25
TOTAL	3 9.59
Manufacturers' profit	1 7.6

Adding this to the works costs we obtain the following estimate of the fair selling price of matches manufactured by a representative factory in the vicinity of Bombay in present conditions—

Estimated fair selling price per gross.

	Aspen splints and Indian wood boxes.	Aspen splints and boxes.	Indian wood splints and boxes.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
(a) Works costs	0 14 7.75	1 0 1.26	0 13 2.24
(b) Overhead charges	0 3 9.59	0 3 9.59	0 3 9.59
(c) Manufacturers' profit	0 1 7.6	0 1 7.6	0 1 7.6
TOTAL	1 4 0.94	1 5 6.45	1 2 7.43

SECTION III.

Future Fair Selling Price of Indian Matches.

51. We have now to consider what variations in the fair selling price may reasonably be expected in the future. . The first item

Cost of wood.

which calls for notice is the cost of wood^d
The average price of Indian match wood has been taken at Rs. 40 a ton in 1927. It is possible that some factories, the requirements of which are not large, may continue to obtain their wood at about this rate, but for the reasons stated in paragraph 25, it is probable that the price of match wood in the vicinity of Bombay will steadily rise, and it does not appear safe to postulate a lower level than Rs. 75 a ton. At this rate the wood cost per gross of matches, made of aspen splints and packed in Indian wood boxes, calculated on the figures of consumption given in paragraph 20 is 5 annas 3·87 pies.

52. The cost of materials (excluding wood) amounted to 4 annas 11½ pies in 1927. It might appear at first sight that in view of the

Cost of materials excluding wood.

probable increase in the cost of wood some rise in the cost of packing cases is likely.

This, however, is not the case. Many kinds of wood are used for packing cases and the Swedish Match Company, has no difficulty in obtaining its supplies from the Cochin State in South India. Further there is always a considerable supply of second hand packing cases in a large commercial centre like Bombay. We anticipate, therefore, no further increase under this head. Cost of chemicals (1 anna 11½ pies) has been steadily falling in recent years partly as a result of a decline in price, but partly also as a result of the improved efficiency of Indian labour. In December, 1927, the charge under this head stood at 1 anna 9 pies and we believe in the future this figure should not be exceeded. Indeed with the better training of labour and improvement in the quality of Indian wood leading to less wastage of semi-finished material, it is possible that it may fall to an even lower level. For similar reasons we should expect a reduction of about a pie in the charges for other raw materials. The total costs under these heads should then amount to about 4 annas 8 pies per gross.

53. The average costs above materials amounted in 1927 to 5 annas 6¼ pies per gross. In August, however, when production

Cost above materials. was at a rate somewhat above the average

for the year, namely 210,950 gross or at the rate of 2·53 million gross per year, against the actual production of 2·29 million gross for the year, cost above materials declined to 4 annas 8 pies. The cost is spread over the following items:—

	As.	P.
Factory labour	2	1
General services, supervision, etc.	1	1
Ordinary current repairs	1	0
Miscellaneous	0	2
Power and fuel	0	4
TOTAL	4	8

The reductions occur under the heads 'factory labour', 'supervision' and 'miscellaneous' and are accounted for mainly by the increase in production. This fall in costs affords us an indication of the probable decrease in costs in future. Production is expected to rise from 2.29 million gross in 1927 to 3 million gross in the future and with this increase there should be a proportionate reduction under the above heads. It can hardly be contended that there will be any increase in expenditure owing to an increased output in respect of general services and supervision and in the miscellaneous items. Labour charges may increase somewhat by reason of a little more handling of materials, and also owing to the fact that some of the labour is paid at piece work rates. On the other hand we cannot overlook the fact that a number of processes which should be performed by machinery are now performed by hand and actually the factory has to work extra time to obtain its present production. With the contemplated additions to the plant and better balancing of the machinery the number of workers employed should admit of reduction. Further, the labour force at present employed appears to us to be larger than the normal requirements of the works justify, partly owing to the necessity of training more labour and partly owing to the Company's anxiety for rapid increase of output. On the whole, therefore, we think that there should be no increase in the expenditure on labour on account of increased output. The charges for current repairs and maintenance of building will not be affected. As regards repairs to the machinery there should not be any increase here either, for under this head are included major repairs which would ordinarily be classed as replacements and be covered by the rate of depreciation which we have allowed. Payment for power is on a sliding scale and the costs therefore should be reduced. Charges for fuel are almost negligible since the waste wood from the various processes of manufacture provides nearly all the fuel required. We think, therefore, that when the factory is working to full capacity the charges per gross of matches under these heads will decline proportionately, and on the basis of the expenditure in 1927 and on attainment of full production, we consider that the future cost above materials should not exceed 4 annas 3 pies per gross. Our estimate of future works costs may thus be stated as follows:—

Estimate of future works costs.

	As. p.
1. (a) Aspen splints and Indian wood boxes	5 3.87
(b) Other raw materials	4 8
(c) Costs above materials	4 3
TOTAL	14 2.87
2. (a) Aspen splints and boxes	5 7.26
(b) Other raw materials	4 8
(c) Costs above materials	4 3
TOTAL	14 6.26

	As. P.
8. (a) Indian wood splints and boxes	5 0.48
(b) Other raw materials	4 8
(c) Costs above materials	4 3
TOTAL	13 11.48

54. We turn now to the question of overhead charges and manufacturers' profit. Following the practice adopted by us in other enquiries we base our estimate of the amount required for depreciation on the present cost of constructing a factory with a well balanced plant of a maximum capacity of 10,000 gross boxes per diem. The Swedish Match Company has at our request supplied us with a statement of the present value of their property which stands as follows:—

	Rs. lakhs.	Rs. lakhs.
1. Land		1.40
2. Factory	5.32	
Bungalows	1.02	
Workmen's quarters	1.35	7.69
3. Plant and machinery, 1927		13.96
TOTAL	23.05	

The estimate shows a reduction over the book value of some Rs. 33,000 under item 2 and is based on the report of Messrs. W. A. Chambers and Company, Chartered Accountants. The reduction is mainly on account of the fall in the cost of bricks and of corrugated sheets and we accept it as reasonable. As regards plant and machinery, more than half was imported in 1925 and subsequent years. About Rs. 6 lakhs was expended on this account in 1924. There has been some reduction in the cost of match machinery during these years, and recently the duty of $2\frac{1}{2}$ per cent. on machinery has been abolished. On the whole we think a reduction of at least Rs. 60,000 under this head is justified. On this basis we arrive at a cost of replacement of Rs. 22.45 lakhs. In order to obtain maximum production and to improve the balance of the plant, certain additions are necessary. The estimated cost of these additions is Rs. 1.63 lakhs and the total cost will thus come up to about Rs. 24 lakhs. Allowing depreciation at $6\frac{1}{4}$ per cent., the annual amount to be set aside on this account is Rs. $1\frac{1}{2}$ lakhs which on an output of 3 million gross boxes per annum gives an incidence of 9.6 pies per gross.

55. Estimating working capital at about 4 months output at works cost, we arrive at the figure of Rs. 9 lakhs. Interest at 7 per cent. per annum on this amounts to Rs. 63,000 which on an output of 3 million gross per annum gives an incidence of 4.03 pies per gross.

56. For reasons which we have already stated we consider that for the management of a well equipped factory in India with an yearly output of 3 million gross boxes, the Head Office expenses. charge under this head should not exceed Rs. 60,000 per annum giving an incidence on future production of 3·8 pies.

57. Owing to the special circumstances of the industry at present to which we have referred, we have allowed in the estimate of the present fair selling price as reasonable a charge of As. 2-0½ for selling charges and dealers' commission. But when the industry is better organized we should regard a charge of As. 1-6 per gross as ample remuneration for the selling charges and dealers' profit.

58. At 10 per cent. per annum on a replacement value of Rs. 24 lakhs, manufacturers' profit amounts to Rs. 2·4 lakhs. The incidence of this on an annual output of 3 million gross is As. 1-3-3. Our estimate of the total overhead charges and manufacturers' profit is, therefore, as follows:—

	As. P.
<i>Overhead charges—</i>	
Depreciation	0 9-6
Interest on working capital	0 4-03
Head office expenses	0 3-8
Selling charges	1 6
TOTAL	2 11-43
<i>Manufacturers' profit</i>	1 3-3
TOTAL	4 2-73

For convenience of reference we compare our estimates of present and future fair selling price below:—

	Swedish Match Company's actuals for 1927.	Board's estimate of present fair selling price.	Board's estimate of future fair selling price.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1. <i>Aspen splints and Indian wood boxes.</i>			
(a) Works costs	0 15 9-84	0 14 7-75	0 14 2-87
(b) Overhead charges	0 4 6	0 3 9-59	0 2 11-43
(c) Profit	0 1 7-6*	0 1 7-6*	0 1 3-3
Total	1 5 11-44	1 4 0-94	1 2 5-60
2. <i>Aspen splints and boxes.</i>			
(a) Works costs	1 0 9-36	1 0 1-26	0 14 6-26
(b) Overhead charges	0 4 6	0 3 9-59	0 2 11-43
(c) Profit	0 1 7-6*	0 1 7-6*	0 1 3-3
Total	1 6 10-96	1 5 6-45	1 2 8-99
3. <i>Indian wood splints and boxes.</i>			
(a) Works costs	0 14 10-32	0 13 2-24	0 13 11-48
(b) Overhead charges	0 4 6	0 3 9-59	0 2 11-43
(c) Profit	0 1 7-6*	0 1 7-6*	0 1 3-3
Total	1 4 11-92	1 2 7-43	1 2 2-21

* Calculated at 10 per cent. on the Company's block value figure of Rs. 23·38 lakhs.

SECTION IV.

Full size matches.

59. The nature of the material at our disposal renders the determination of the fair selling price of full size matches a matter of great difficulty. We have already referred

Difficulties of estimating costs for full size matches.

to the fact that save in the Swedish Match Company's factories, no accurate system of costing is observed. The Company's factory at Calcutta is also the only factory in which full size matches are manufactured exclusively. It would be natural, therefore, to base our estimate on the costs in this factory. Unfortunately, however, the lay out of this factory is unsuited to economical production. A considerable amount of material has to be handled during the various processes of manufacture and unless the building is specially constructed and the distances between machines so arranged as to make it easy for the workmen to pass on the material from one stage to another, the labour costs will necessarily be higher. The Calcutta works of the Swedish Match Company are housed in a rented building which, in our opinion, is entirely unsuitable from this point of view and its defects are reflected in the high labour costs. Further, the building being a rented one, the rent and incidental expenses have increased the works costs and reduced the capitalization, depreciation and manufacturers' fair profit as compared with the Ambernath factory. An estimate of the fair selling price of full size matches based on present costs at the Calcutta works might well be misleading. Since also the cubical contents of full size splints and boxes are greater than those of half size, our estimate of costs for the half size match cannot be applied to the full sized match without considerable modification.

60. We are satisfied that substantial reductions can be made in the present works costs of the Swedish Match Company's factory at Calcutta. The difficulties to which we

Present costs accepted for purpose of comparison.

have referred prevent us from estimating such reductions with any great precision, and since we consider the costs of manufacture of the half size match as typical of the Match industry in India and are basing our conclusions and recommendations thereon, it appears to us unnecessary to consider in any great detail the costs of manufacture of full size matches. We propose, therefore, merely to set forth the present works costs and estimate what we consider reasonable overhead charges and profit at present and in the future. These figures we shall use merely for the purpose of comparison and to satisfy ourselves that our conclusions based on an examination of the costs of manufacturing half size matches are generally appli-

cable to the industry as a whole. The following Table gives the average works costs for the year 1927 per gross:—

	Rs. A. P.	Rs. A. P.
Cost of wood		0 5 8
Cost of other materials—		
Paper	0 0 11	
Chemicals	0 2 9	
Other raw materials	0 1 0	
Packing cases	0 2 2	0 6 10
		<hr/>
		0 12 6
Cost above materials—		
Factory labour	0 3 5	
Power and fuel	0 0 3	
Ordinary current repairs, etc.	0 1 2	
General services, etc.—		
Local office	0 1 9	
Miscellaneous—		
Rent, etc.	0 0 10	0 7 5
		<hr/>
		1 3 11
		<hr/>

Production—1,217,550 gross.

Maximum capacity—5,250 gross per day=1,575,000 gross.

On the basis of the figures of wood consumption supplied by the Swedish Match factory the works costs for the different classes of matches may be expressed as follows:—

	Aspen.	Indian wood.	Aspen splints, Indian wood boxes.
	A. P.	A. P.	A. P.
Wood costs	8 4 77	4 7 42	6 9 89
Other costs	14 3	14 3	14 3
	<hr/>	<hr/>	<hr/>
Rs.	1 6 7 77	1 2 10 42	1 5 0 89

61. The Swedish Match Company has supplied us with the following figures for overhead charges:—

	As. p.
Depreciation	1 0
Head office expenses	1 1 14
Selling expenses	4 0

Taking depreciation at $6\frac{1}{4}$ per cent. on the block capital (Rs. 8 lakhs) we obtain an incidence of 8 pies per gross. Manufacturers' profit at 10 per cent. on the same capital gives an incidence of 1.05 annas per gross on a production of 1,217,550 gross per annum. We have already explained in our chapter on the cost of production

of half size matches that we consider the head office expenses excessive and we are not prepared to allow on this account an incidence in excess of that which we have taken for the Ambernath factory, viz., 3·8 pies per gross. Taking working capital at four months production at estimated works cost, we obtain a sum of about Rs. 5 lakhs and on this interest at 7 per cent. gives an incidence per gross. of about 5·6 pies.

62. The charges for selling expenses may be analysed as follows:—

Commission to agent.	Office allowance to agent.	Dealers' commission and allowance.	Freight and transport charges.
A. P.	A. P.	A. P.	A. P.
0 4½	0 8½	1 7½	1 3½

Of these items that for freight and transport charges must be omitted, since we are estimating the f.o.r. costs. The balance 2 annas 8½ pies may be regarded as a fair charge in the present state of competition. Present overhead charges and manufacturers' profit will, therefore, stand as follows:—

	As. P.
Depreciation	0 8
Interest on working capital	0 5·6
Selling expenses	2 8·25
Head Office expenses	0 3·8
TOTAL	4 1·65
Manufacturers' profit	1 0·6
GRAND TOTAL	5 2·25

63. It is estimated that in the future production will increase from 1,217,550 gross to 1,575,000 gross per annum and on this account the incidence of the following Future overhead charges. charges will stand as stated below:—

	Pies.
Depreciation	6·2
Interest on working capital	4·3
Manufacturers' profit	9·7
TOTAL	As. 1·8·2

Head Office expenses will remain unchanged at 3·8 pies, while for reasons which we have already given in dealing with the costs of half size matches, we believe that in future selling charges will be reduced to 1 anna 6 pies. The total future overhead charges and manufacturers' profit will thus be 3 annas 6 pies.

Total works costs.

64. We thus obtain the following totals:—

	Aspen.	Indian wood.	Aspen and Indian wood.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Present works cost	1 6 7.77	1 2 10.42	1 5 0.89
Present overhead charges	0 5 2.25	0 5 2.25	0 5 2.25
	<u>1 11 10.02</u>	<u>1 8 0.67</u>	<u>1 10 3.14</u>
Present works cost	1 6 7.77	1 2 10.42	1 5 0.89
Future overhead charges	0 3 6	0 3 6	0 3 6
	<u>1 10 1.77</u>	<u>1 6 4.42</u>	<u>1 8 6.89</u>

We wish to make it quite clear that these figures do not represent our estimate of the fair selling price for full size Indian matches. But they give a fair idea of the price which with present practice and lay out would give manufacturers a fair return on their money according as they were or were not working to full production. A fair selling price for a well equipped and well planned factory would be substantially below these figures.



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SECTION V.

Applicability of present fair selling price to factories under Indian management.

65. We have now to consider whether the present fair selling price of Rs. 1-4-0-94 at which we have arrived on the basis of the Present fair selling prices adequate also for Indian factories. Andheri Match Works. Ambernath costs will suffice for factories under Indian control. The Andheri Match Works, the Santa Cruz Match Works and the Bombay Match Works are three of the principal Indian factories in Bombay. Their accounts though not maintained so accurately as to form a basis for our estimates, yet give a reasonable general idea of their costs, and have been carefully tested by us in the course of our examination. The Andheri Match Works has a capacity of 3,500 gross per diem or 1,050,000 gross per annum. Its block value is stated to be about Rs. 2,50,000 and its working capital Rs. 3,00,000. Taking the two together the capitalization is equal to 8 annas 4-57 pies per gross which is very much less than that of the Swedish Match Company, viz., over Re. 1 per gross. This is due to the fact that at Andheri important processes are performed by hand while the factory building is less substantial. At Andheri the capitalization on machinery is 1 anna 8 pies per gross and that on land and buildings 1 anna 10 pies per gross against 8 annas and 5 annas 4 pies respectively for the Swedish Match Company. Seventy-five to eighty per cent. of the production is of the half size including a small quantity of sulphur matches. Aspen is used for splints and Indian wood for boxes. The costs* for half size safety matches including all charges, other than head office allowance, the interest on working capital and profit, were as follows in 1927:—

	Rs.	A.	P.
Works costs	0	14	5-87
Depreciation†	0	0	4
Selling commission	0	1	0
Allowance to buyers of quantities	0	0	6
	1	0	3-87

The present fair selling price estimated by us is Rs. 1-4-0-94 per gross. The average price realized by the Andheri Match Works was between Rs. 1-3-0 and Rs. 1-4-0 per gross. There is, therefore, a margin between the costs and the selling price of between 3 and 4 annas per gross which on a capitalization of 8 annas 4-57 pies per gross is equal to a return of between 30 and 40 per cent. As this is a private firm, no separate head office allowance has been included.

* Vide Appendix H, Statement 3.

† This has been calculated by the firm at 15 per cent. on machinery and is approximately equivalent to 6½ per cent. on the block value.

ed, and the return will include the personal remuneration of the proprietor. If we were to make the same office allowance as in the case of the Swedish Match Company, *viz.*, 5 pies per gross, the return on capital alone would be between 25 and 35 per cent. per annum.

66. The Santa Cruz Match Works manufacture mainly half size safety matches using aspen only. Its production is equal to its capacity of 2,500 gross. It has written down the bulk of its block value, and its capital now amounts to about Rs. 3,00,000 which is equal to a capitalization of 6 annas 5 pies per gross. Its costs, excluding head office allowance, interest on working capital and profit in 1927, were as follows:

	Rs.	A.	P.
† Works costs (Rs. 101-10-11 per 100 gross)	1	0	3-23
Selling commission	0	0	6½
	<u>1</u>	<u>0</u>	<u>9-23</u>

The price realized by this firm was about Rs. 1-4-0 to Rs. 1-5-0 which leaves a margin of 3 to 4 annas per gross and is the equivalent of a return on a capitalization of 6 annas 5 pies per gross of between 45 and 60 per cent. on the investment including the personal remuneration of the proprietor in lieu of a separate head office allowance.

67. The Bombay Match Works has a nominal capacity of 1,500,000 gross, while its actual production for 1927 on the figures of the first ten months will amount to about 1,000,000 gross. Aspen only is used for manufacture and about two-thirds of the production is of sulphur matches. The block value is Rs. 2-75 lakhs and working capital amounts to 4-75 lakhs. The capitalization per gross on its present output is thus about 12 annas and on the maximum 8 annas per gross. In 1927, the costs per gross of sulphur and safety matches including all charges except head office allowance, interest on working capital and profit, were as follows:—

	Sulphur.			Safety.		
	Rs.	A.	P.	Rs.	A.	P.
Works costs and depreciation	1	1	11-65	1	0	0-81
Selling commission	0	1	6	0	1	6
	<u>1</u>	<u>3</u>	<u>5-65</u>	<u>1</u>	<u>1</u>	<u>6-81</u>

The price realized for sulphur matches was Rs. 1-9-0 to Rs. 1-10-0 and for safeties Rs. 1-4-6, which in the former case left a margin.

† The works costs as given by this firm include depreciation.

‡ This is smaller than in other cases because apparently the bulk of the sales are effected by the firm itself.

of between 5 annas 6 pies and 6 annas 6 pies and in the case of the latter of 3 annas, and as the proportion of the one to the other was about 2 to 1, the average margin was 5 annas per gross. On a capitalization of 12 annas per gross on the present and 8 annas on the future output, this represents a return of about 40 per cent. in the one case and about 60 per cent. in the other, including, in lieu of head office allowance, the personal remuneration of the proprietors.

68. As regards the future, we have reduced the fair selling price to Rs. 1-2-5-60 per gross. It must be recollected, however, that at

Future prices also adequate.

the Indian factories some of the most important and expensive processes, such as box making and box filling, are performed by hand, and for that reason the labour charges are very heavy. By the use of more machinery and more economy in the use of wood, the costs should come down at least by the difference between our estimate of the present and future fair selling prices, and the financial position should not be worse than it is at present.

69. The average quality of impregnated matches of the three Indian factories compares well with that of the products of the

Judged by costs efficiency of Swedish Match Company less than of Indian factories.

Swedish Match Company, but there is a marked divergence in the costs. The following Table is of considerable interest from this point of view:—

	Swedish Match Company's Works at Ambernath.		Andheri Match Company.	Santa Cruz Match Works.	Bombay Match Works.
	Aspen for splints, Indian wood for boxes.	All aspen.	Aspen for splints, Indian wood for boxes.	All aspen.	All aspen.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Wood	0 5 3-84	0 6 3-36	0 3 3-69	0 5 0-6	0 6 0
Cost above wood	0 10 6	0 10 6	0 11 6-18	0 11 8-63	0 9 9-65
Total works cost	0 15 9-84	1 0 9-36	0 14 9-87	1 0 9-23	0 15 9-65

These cost figures are as given to us by the Indian manufacturers themselves. So far as their system of accounts permitted, we have carefully tested the figures. Within these limitations the above figures show that, inspite of the acknowledged experience and the superiority of equipment of the Swedish Match Company, in so far as the cost figures may be considered a test of efficiency, no higher degree of efficiency has been displayed by the Swedish Match Company than by the smaller factories under Indian management. In fact, an analysis of the results would appear to indicate that Indian management has so far proved both more efficient and economical. Where aspen is used for splints and Indian wood for boxes, the wood costs of the Swedish Match Company are higher than those of the Indian factory by about 60 per cent. Where all

CHAPTER IV.

Estimate of the present and future price of imported matches.

71. In order to arrive at a decision as to the measure of protection required by the industry, it is necessary for us to determine the prices at which foreign matches against which Indian matches have to compete are, and are likely in the near future, to be imported into the country. Before the War matches were imported from Japan, Sweden and other European countries and if the industry had then been started in India, it would have met with foreign competition from many quarters. About the time the revenue duties were imposed, the principal competitor was Japan but now the only serious foreign competitor is Sweden. This change in the source of foreign competition has not been brought about without severe competition and in order to facilitate a study of the course of prices and of the reasons for their present level some explanation is required.

72. Prior to 1912-13 no figures are available to show the quantities of matches imported from foreign countries, but in that year* the total imports from all countries amounted to 15.12 million gross of boxes. Of these Japan's dominant position. 7.29 millions, that is to say, just under a half, came from Japan, 4.22 millions, or about 28 per cent. from Sweden and 1.41 millions from Norway, 1.15 millions from Austria-Hungary and the remainder from Germany, Belgium and other countries. Japan thus practically held the field against the rest of the world before the War. During the War and the years immediately following the termination of hostilities practically all the European countries ceased to compete and Japan had a virtual monopoly in India. In 1918-19, out of a total of 11.11 millions, Japan claimed 10.74 millions and Sweden's share had fallen to 118,080 gross.

73. In 1917, the Swedish Match Company came into existence as a combine consisting of several Swedish companies, and a sustained struggle for the recapture by Sweden of its lost market and of the retention of the captured market by Japan, commenced in that year and continued until very recently. By 1923-24 Sweden had more than recovered its pre-war market and Japan had not only lost the market acquired during the War, but had fallen substantially below its pre-war level, for whilst the imports from Sweden had risen to 5.16 millions, those from Japan had been reduced to 5.55 million gross. As the total imports only amounted to 11.24 millions, the field was approximately evenly divided between the two countries. The imposition of a duty of 12 annas per gross in 1921 and then of Rs. 1-8-0 per gross in 1922 led to the beginning of the manufacture of matches in India on a

* Vide Import Table 1, Appendix F.

commercial scale, and in a short while created by its expansion a powerful rival against which both Sweden and Japan found it necessary to contend. In order to meet the internal competition the Swedish Match Company, following the procedure commonly employed by manufacturers exporting to countries the industries of which are protected against foreign competition, commenced to manufacture within the tariff wall by purchasing or erecting match factories in Bombay, Calcutta, Assam and Burma. It was intended that the products of these factories should combat the home manufacturer and the cheapest kind of imported Japanese matches, whilst imported matches were to wrest the remainder of the market for superior matches from Japan.

74. Between the years 1923-24 and 1926-27 Japan was faced by competition both from the imported Swedish matches and also from those manufactured within India by Swedish and Indian manufacturers. Imports from Sweden though reduced still amounted in 1926-27 to 4.52 million gross, whilst her production in India had reached 3.58 million gross. The total market secured by Sweden in India in 1926-27 was thus 8.1 millions, or about 50 per cent. of the demand, and Japan's trade was reduced to .95 million or about 6 per cent. of the demand. The difference between that amount and her former share of the import trade which in 1923-24 was almost 50 per cent. was absorbed by the Swedish Match Company in India and the other Indian manufacturers. During 1927 Japan's imports fell to .42 million gross, and the recent amalgamation of the Swedish Match Company with powerful Japanese interests has practically removed Japan as a rival from the Indian market, and no other European competition of any importance is now in the field.

75. With the virtual cessation of Japanese imports in 1926-27, the competition in India entered on a new and more acute phase.

Competition now only between Sweden and India: Sweden's dominant position. Production in India rose rapidly between 1923-24 and 1926-27, and may be estimated in 1927 at about 13½ million gross. The total productive capacity is about 18 million gross, excluding the cottage factories, and the demand is in the neighbourhood of 17 million gross. The Swedish Match Company has made no secret of its aim of securing at least one half of the Indian market with either locally manufactured or imported matches. In order to achieve this purpose, it has had not only to increase its production* but also to reduce the prices both of its

* *Production of the Swedish Match Company's factories in India (million gross).*

	1924.	1925.	1926.	1927.
Bombay	1.182	.785	1.997	2.296
Calcutta . . . .	.054	.443	.947	1.217
Burma	—	.080	.221	.384
Assam	—	—	.081	.269
	<u>.236</u>	<u>1.308</u>	<u>3.196</u>	<u>4.166</u>

Indian and imported matches, especially on the Bombay side. In pursuance of this policy at the end of the calendar year 1927 it had brought up its Indian production to 4.16 millions while its imports amounted to 3.59 million gross. It thus commanded a market of 7.75 millions out of an estimated demand of about 17 millions in 1927.

76. Before the War the three quarter size was the principal one in demand, both in safety and sulphur matches; the full size being imported at the same time in small quantities.

History of prices. Between 1908 and 1913, the prices remained substantially the same. Swedish matches were sold* at 13 annas to 14 annas 6 pies per gross and Japanese between 10 annas to 11 annas, the difference between the two thus varying between 3 and 4 annas per gross. About 1917 half size safety matches were introduced by Japan at about Re. 1 to Rs. 1-1-0 per gross. They found a ready demand, especially on the Bombay market, and when Sweden re-entered the Indian market, after the War, they began to be imported from that country. The difference between the Swedish and Japanese prices which before the War was about 4 annas per gross, rose in 1924 to about 6 annas. But even with this difference Japanese matches were unable to maintain their position since they had to face competition not only from imported Swedish matches but also from the products of Indian factories. The only foreign country, therefore, from which the Indian manufacturer has now to face competition is Sweden, the imports from other countries being negligible.

Swedish Match Company's figures of c.i.f. landed price ex wharf without duty: average for all ports.

77. The Swedish Match Company has supplied us with the following c.i.f. prices per gross for December, 1927:—

	½ size.		1/1 size.	
	s.	d.	s.	d.
Bombay	0	10½	1	8
Calcutta	0	11	1	10
Madras	1	2	1	7
Karachi	1	2	—	—
Rangoon	1	0	1	5
Tuticorin	1	2	—	—
Weighted average for all ports	1	0	1	7.2

There is a large difference, as will be seen, between the highest and the lowest prices. The above Table shows that the prices differ considerably in the various ports and we understand that the landing, clearing and commission charges also vary. The Swedish Match Company has stated that the average invoice price for half size matches in Bombay in December was 10½d. that is 9 annas 8 pies.

* See Appendix I.

To obtain the landed price comparable to our fair selling price, we must add the following charges:—

	As. p.
London House Commission	0 3
Importer's commission	0 9
Landing and clearing charges	1 2½
Dealers' commission	1 0
	—
	3 2½
	—

The landed price would then be 12 annas 10½ pies per gross. We find, however, that half size Swedish matches were selling ex-godown in Bombay as low as Rs. 2-3-0 per gross. This figure includes a sum of 2 pies carting charges from the wharf to the godown, and also the duty Rs. 1-8-0. Deducting these sums and adding one anna on account of dealers' commission, we obtain a figure of 11 annas 10 pies which we consider should be taken as the landed price for the purpose of estimating the protection which the industry at present requires against foreign competition.

78. It is not possible to make any reliable estimate of the volume of future imports. Practically all avenues of imports from countries other than Sweden have been closed by

No reliable estimate possible of future imports.

the disappearance of Japan and by the dominant position secured by the Swedish Match Company in the import market. The resources of the Company are such that its imports may be increased, reduced or kept stationary according to the general policy of the Company for the time being, which may be guided partly in accordance with the economic conditions of a particular market, and partly by other considerations such as the effect of a particular course upon the factories in Sweden or upon the Company's exports to other countries. A remarkable illustration of this policy is to be found in the history of the Company's competition against Japan. In 1922, the Swedish factories were working only three days a week. A powerful campaign which had already been opened against Japan was intensified. A year later the Swedish factories were working four and a half days a week and in India alone the Company's imports which were 2.06 million gross in 1922, rose to 5.21 million gross, while imports from Japan during the same period fell from 9.83 millions to 7.16 millions. The power of Japanese competition was eventually destroyed not so much by increasing the Company's imports into Japan and lowering of prices in that country, but by the export of larger and larger quantities at lower prices to other countries, thereby destroying the Japanese markets wherever possible. India, as we have said, was one of those countries. In the same way, the future conditions of competition elsewhere may affect imports into India. Or again, as the Company has acquired a controlling interest in Japan since we commenced our enquiry, it may find it more convenient to export from Japan instead of from

Sweden matches of the same or of a different class or quality. It is not impossible also that imports may be entirely stopped if it suited the Company to demonstrate that the duty was really too high or that the Indian industry had nothing to fear from Swedish competition.

79. The future import prices will also depend upon uncertain circumstances similar to those we have discussed in the preceding paragraph. They may be raised, decreased or kept at their present level, according to the general policy of the Company for the time being. Import prices, moreover, are not necessarily determined by the works costs or the fair selling price in Sweden, but by the economic conditions of the local market and the nature of local or foreign competition in that market. This is the principle ordinarily followed by the Company. It has been stated, however, that if the present duty is declared a protective one, the present price policy will not be continued, but we have no definite assurance as to the level at which the future price will be fixed. The resources of the Company will permit it to fix the price at any level at any rate for a time, and no Indian manufacturer is in a position, nor can he reasonably be expected, to compete against the Company if the price were so determined. It is idle, therefore, to attempt to make any forecast as to the future course of prices.

80. The only alternative left to us is to ascertain upon such data as we have the price at which foreign matches are likely to enter the country on the assumption that the manufacturer aims at receiving a fair selling price including all the works costs and a reasonable margin for overhead charges and profits. For this purpose we must first of all ascertain what the ex-godown price of Rs. 2-3-0 in Bombay represents f.o.r. works Sweden. We must first deduct the following charges:—

	Rs.	A.	P.
Duty	1	8	0
London House commission	0	0	3
Importers commission	0	0	9
Landing and clearing charges	0	1	2½
Transport to godown	0	0	2
	<hr/>		
	1	10	4½
	<hr/>		

This leaves a nett c. i. f. price of 8 annas 7½ pies or 9¼ d. We have been informed by Mr. Schele that the railway freight from the works to the port, the sea freight from the port to India, insurance and home charges which are included in the c. i. f. price amount to 2d. per gross. The nett price, therefore, received by the Swedish Match Company for the matches imported into Bombay f. o. r. works is 7½d. per gross or about 6 annas 6 pies per gross. Though we

have asked for the figures of the costs in Sweden the Company has not showed them to us even in confidence. A price of $7\frac{1}{2}$ d. or 6 annas 6 pies per gross at the works appears abnormally low, even if we make every possible allowance for the experience and other advantages possessed by the Swedish Match Company. From a comparison of the prices of material and the quantities required and an estimate of the labour charges, it is doubtful whether the figure covers all the works costs, and it is certain that it cannot leave for the Company a sufficient margin to cover full depreciation, interest on working capital and other overhead charges and profit on investment at the rates we have allowed in the fair selling price.

81. Competition based on a price such as that of $7\frac{1}{2}$ d. f.o.r. works may be regarded under the law of some countries as 'unfair' and

Competition from Sweden unfair.

penalized by the imposition of what are usually described as 'anti-dumping' duties. These duties, if imposed, are in addition to the ordinary customs duties and are generally equivalent to the difference between the fair market value of the goods in the country of origin and the export price f.o.b. In our fiscal law, however, there is no express provision which recognizes this method of penalizing 'unfair' competition except where such competition arises from the payment of bounties and for that reason we refrain from pursuing this aspect of the question which might otherwise be of some importance.

82. If we are unable to accept a price of 11 annas 10 pies per gross as a reasonable estimate of the future fair foreign price, we

Board's estimate of fair import price.

must arrive at some other figure which may approximately represent it. In 1922 the c.i.f. price of the full size was 1s. 10d. and that of the half size 1s. 4d. per gross. The difference in the prices of the two sizes is approximately in the ratio which the works costs and the depreciation charges of the full size bear to those of the half size. It has been stated that since 1922 there has been no substantial reduction in the costs, and though there have been variations in the meantime the present invoice price in Calcutta is 1s. 10d. per gross. The competition in Calcutta though severe is not so abnormal as in Bombay and it appears to us that over a considerable period 1s. 10d. is the price which will give the foreign manufacturer a fair measure of profit. Applying the same ratio as the half size bore to the full size in 1922, we obtain a figure of 1s. 4d. for the half size. This figure is also obtained by applying the conversion figures adopted by the Swedish Match Company, viz., 73 : 100 for half and full size matches. Mr. Kreuger has stated in his memorandum that the average c.i.f. price of 1 shilling leaves a nominal or 'extremely small' margin of profit. But it is not explained what the term 'profit' precisely means. Sometimes the whole difference between the works costs and the realized price is described as 'profit'. At other times the whole difference after allowing for depreciation is described as 'profit'. Whatever the sense in which the term is used, some allowance has to be made in

order to bring up the present price to what may be regarded as the fair selling price. On the whole, therefore, we think that the reasonable future c. i. f. price excluding all commissions and landing charges, etc., for half size matches is 1s. 4d. or 14 annas $2\frac{1}{2}$ pies. This figure has also been admitted by Mr. Schele as the level at which approximately future prices will be stabilized. Adding the charges incidental to importation and landing of 3 annas $2\frac{1}{4}$ pies per gross, the future price of half size matches comparable with our estimate of the fair selling price for Indian matches may be estimated at not less than Rs. 1-1-4 $\frac{3}{4}$ per gross. We propose to take this figure for the purpose of estimating whether the industry will eventually be able to face foreign competition without protection. We estimate that the c. i. f. price for full size matches will remain at its present level of 1s. 10d., or allowing for importation, landing charges, etc., Rs. 1-6-0.



CHAPTER V.

Suitability of Match industry for protection.

83. It is now possible to determine whether the industry will eventually be able to dispense with protection as required by the third condition laid down by the Fiscal Commission. There is in the interpretation of this condition a difficulty to which we have referred in our earlier reports. It is not explained either by the Fiscal Commission or by the Government of India whether in considering the question account should be taken of the General Revenue Tariff, which is now 15 per cent. If we are to leave the duty on the competing imported article entirely out of consideration, we should be putting the foreign industry on a more favourable footing than the home industry, the raw materials of which are subject to the revenue duty. The anomaly is so obvious that the Government of India have directed an enquiry by this Board into several cases where such inequality exists. If imported aspen is used, the Match industry must pay a 15 per cent. duty on the wood, chemicals and other raw materials, the cost of which amounts to about 10 annas and constitutes nearly two-thirds of the works costs. The duty payable on these raw materials would be 1 anna 6 pies per gross. In the remaining one-third of the costs are included charges for repairs and maintenance, necessitating the use of imported stores which are also liable to a revenue duty, but the amount of which cannot be measured with precision. It is also difficult to estimate with any accuracy how the depreciation and other items of overhead expenses are affected by the revenue duty on steel, building material, cement and other articles used by the industry in equipment or manufacture. It is clear, however, that a substantial burden is imposed on the industry by the revenue duty and that in order to place the Indian manufacturer on a footing of substantial equality with the foreign manufacturer, it is necessary to take this into account in considering whether the industry satisfies the third condition laid down by the Fiscal Commission.

84. With the addition of a revenue duty of 15 per cent. the price at which foreign matches (half size) will enter the country in future would amount to Rs. 1-4-0. The future fair selling prices estimated by us for Indian matches (half size) per gross are as follows:—

Industry's ability to fulfil condition established.

	Rs.	A.	P.
1. Aspen for splints, Indian wood for boxes	1	2	5-6
2. Aspen splints and boxes	1	2	8-99
3. Indian wood splints and boxes	1	2	2-21

It will be seen that provided that matches are imported at a price which gives a fair return to the foreign manufacturer, the Indian industry will be able to dispense with protection, even if it has to depend entirely on imported aspen for its wood.

85. From the outset the Swedish Match Company's representative in India has contended that it is 'out of the question' that the industry can ever dispense with protection. Swedish Match Company's persistent opinion. Throughout the proceedings there was no departure from this view, and Mr. Ivar Kreuger in his memorandum, which was received by us on the 16th of December, 1927, re-affirmed the contention*. Several Chambers of Commerce and other commercial bodies, representing largely European interests, have accepted the opinion of the Swedish Match Company and opposed the grant of protection mainly on this ground. The Swedish Match Company holds a unique position in the Match industry throughout the world and its opinion thus strongly and persistently expressed demanded careful investigation. We believe we may fairly claim to have investigated the question of costs and import prices with the utmost care and the figures given by us in paragraphs 58 and 82 are a sufficient answer to the contention of the Company. The position, however, is more satisfactory than it appears from the above figures, for, while in our future estimate of the works costs we have taken a less favourable view than might be justified of the position and progress of the industry in some essential respects, we have refrained from taking into account the substantial economies which may reasonably be expected from the healthy expansion of a protected industry. Further our estimate of what should be taken as the economic price of imported matches, has been fixed at the level at which the Swedish Match Company itself expects the prices to be stabilized. A short discussion of these features of our investigation, even if it may involve some repetition is, in our opinion, necessary to establish the conservative nature of our conclusions.

86. Lack of adequate equipment and of manufacturing experience, failure in the attainment or maintenance of a good standard of quality, the unreliability of costs, are some of the grounds for criticism on which any proposals based entirely on the conditions of the industry in Indian hands would have been exposed. Such criticism could not reasonably be advanced against the Indian factories of the Swedish Match Company and it is partly for this reason that we have selected the Ambernath factory as the type whose standards in these respects were by implication to be applied to the rest of the industry. In dealing with the works costs

Future estimate of fair selling price justified by results of Swedish Match Company.

* *Vide Appendix C.*

"If, as a condition of protection, it is maintained that the Indian Match industry would ultimately be able to exist without protection, it must be stated that this condition is not fulfilled. The cost of manufacturing matches in India is at present considerably higher than the cost of manufacturing matches in Sweden including freight from Sweden to India, and it is hardly probable that this difference can be materially reduced.

Furthermore, the wood problem and the question of deterioration of both Indian and imported wood during storage has not yet been satisfactorily solved."

we have accepted the figures supplied by the Company as to the quantity of wood required, though for reasons already explained, they were higher than those of any other large scale manufacturer. In our future estimates we have assumed both for aspen and for Indian wood the highest prices which, in the opinion of the Swedish Match Company, they are likely to reach. The price assumed for Indian wood on the Bombay side is Rs. 75 per ton, which is Rs. 35 per ton, or 85 per cent. higher than the present market rate. Mr. Kreuger has laid emphasis on the question of supply of Indian wood. We have, therefore, adopted a figure for the price of Indian wood, which if it is exceeded will make the substitution of aspen at the world price more economic and yet leave the future fair selling price of Indian matches below that of the imported matches. As regards the costs above wood, we have made only those reductions which are expected to follow automatically on the increased production and are justified, on the whole, by previous results. A reference to Appendix H will show that in 1927 the costs of materials other than wood amounted on an average to 4 annas 11.25 pies per gross. These have been reduced in our future estimate by 3.25 pies to 4 annas 8 pies per gross. The reduction is slight and smaller than the actual results of November and December, 1927*, would have justified, for in November the costs under this head amounted to 4 annas 7 pies and in December to 4 annas 7½ pies per gross. The costs above all materials amounted in 1927 on an average to 5 annas 6.75 pies which we have reduced in our future estimate by 1 anna 3.75 pies per gross to 4 annas 3 pies. The reduction at first sight appears rather large, but that it is not excessive is shown by the fact that the costs in August, which were described by Mr. Schele as being indicative of the future, were under this head 4 annas 8 pies. In November they amounted only to 4 annas 6 pies, which is 3 pies short of the future estimate. The total costs above wood amounted in 1927 on an average to 10 annas 6 pies per gross, while our estimate of future costs is 8 annas 11 pies per gross. In November, 1927, they had dropped to 9 annas 1 pie per gross which is only 2 pies per gross above our estimate. There should be no difficulty, in our opinion, in realizing this further reduction. If we were to be guided by actual results, the total reduction should be even greater than that which we have assumed possible. The labour costs, for instance, in November were 2 annas 1 pie per gross, but in December, 1927, they amounted to 1 anna 6 pies only. If the improvement obtained in December under labour could be maintained the total costs over all material should be well below our estimate. The allowances for overhead and profit are also in accordance with the increased production. They are based, respectively, on the rates customary in the trade and on a fair assessment of the capital required. Finally, in order that the general standards of quality may be maintained, we have not based our estimates on the lower costs which prevail for inferior quality matches but on those of the Swedish Match Company.

* Appendix H; Statement I.

87. It is unnecessary for us to repeat the reasons which we have given in paragraph 79 for our opinion that no accurate estimate of the future course of c. i. f. prices can be

Estimate of future
foreign prices reasonable.

made. It is impossible to foresee the considerations by which the price policy of the Swedish Match Company may be governed at any given time. We have in the circumstances made no attempt at any forecast, but on grounds which we have explained, we have adopted the figure of 1s. 4d. per gross as the future fair price (c. i. f.) of imported half size matches. The price assumed by us is higher than the present price, but we do not think that our figure is higher than that which would represent the fair selling price of the Company's product, if all those charges which we have taken into account in arriving at the corresponding price of the Indian made match were included. Nor is it any higher in our opinion than it would be if there were no indigenous industry to compete against the Swedish Match Company, or if the latter acquired an interest in the Match industry sufficient to enable it to fix the level of prices. The Swedish Match Company adjusts its price to suit the conditions of different markets except where the prices are fixed under arrangement with Government. Where the Company is free from internal competition by reason of its having obtained a controlling interest, or has entered into a working arrangement with companies having a dominant interest in particular centres, prices are fixed at a level which, though relatively high, are not high enough to make it safe for any competitor to enter the field against a powerful monopoly and challenge its supremacy. On the other hand, where the Company has to face internal or foreign competition, its prices are fixed at a comparatively low level, and continuously lowered until the market is brought under its control. When this object is accomplished, there is nothing to prevent the Company from raising prices to the limit which the market can economically bear without creating fresh competition or seriously affecting the demand. The price which we have estimated as economic for imported half size matches, while higher than the prices charged in certain markets, appears to us distinctly lower than the prices charged in most of the countries where the Company has a free hand.

88. There are many directions in which more economies than we have taken into consideration are possible and can be reasonably

Some possible economies not taken into account.

expected when the industry is definitely declared protected. The manufacturer will then be able safely to undertake the erection of new factories, or re-equipment of existing factories with up to date labour saving machinery and to concentrate attention on the reduction of the works costs and on improving the quality of matches. The future fair selling price, based on the actual results, has been found to be sufficient to establish the ability of the industry to dispense with protection eventually. It is not necessary for us, therefore, to estimate precisely the future economies for this purpose. We merely propose to indicate the general lines on which economies may be expected.

89. We have taken Ambernath as representing the best type of works yet erected in India. But in more than one respect the selection of Ambernath for the site of the factory was unfortunate. The storage of Indian wood there has proved to be a difficult problem. Owing to climatic conditions the wood if stored for any length of time dries quickly and, as we have stated, in 1927 large quantities of Indian wood became infected with borers and the infection was communicated to the aspen in stock. According to the evidence of the officers of the Forest Research Institute, Dehra Dun, an effective remedy is the storage of the wood under water. Some of the Indian manufacturers have successfully tried this method, but the management of the Swedish Match Company appear not to share this opinion. We have also been informed by the Company that there is difficulty in obtaining a perennial supply of water in the neighbourhood and that for this reason no water storage is possible without undertaking a large outlay of capital. Mr. Kreuger has referred to the difficulty of storage in his memorandum as one which has not yet been satisfactorily solved and, in our opinion, rightly, in view of the Company's own experience. We believe, however, that the problem involved by the difficulty of storage, which is by no means universal in India, has not been fully investigated by the Company and that further experiments should help in finding a solution.

90. Further, Ambernath was selected as a site for the factory because the Municipal Corporation of the City of Bombay would not permit the erection of a match factory within its limits. It was also part of one of the development schemes of Bombay to relieve the industrial congestion in the city by developing Ambernath into a large industrial area. These hopes, however, have not so far materialized to any large extent. The area has not attracted more than one or two factories besides the Ambernath works and little or no industrial labour is locally available. To a large extent, therefore, it is necessary to recruit and train unskilled labour. During the process of training the output of the factory is low and costs are high and, if it were possible, it would probably be more economical in the long run to employ on somewhat higher wages the trained industrial labour which is found in or around the larger ports.

91. An important respect in which we consider the equipment of the Ambernath works inadequate is its lack, as compared with an up to date modern works, of labour saving appliances and machinery. A good deal of raw, semi-finished and finished material which can be, and is in some works, handled by machinery is at present handled by manual labour. Cheapness of labour is often regarded by manufacturers as a reason for not taking steps to reduce the amount of labour employed and for preferring in many cases manual labour to machinery. The employment of manual labour in preference to the use of machinery not merely involves a larger wages bill but also results in less output in the same amount of

time. It often follows that full use cannot be made of such machinery as is employed and the incidence of overhead charges per unit of production is very much increased. The most striking omission of this kind at the Ambernath works is that of what is generally known as the continuous or 'Simplex' machine. It ensures the continuous performance of five or six distinct operations which are necessary before a splint becomes a finished match and which are generally carried out as separate processes by several groups of labourers. We consider that the employment of the Simplex machine, though its adjustment to local climatic conditions may require special attention, is on the whole conducive to economy. The explanation given by the Swedish Match Company for this omission is that Indian labour will not be able to operate this machine efficiently, that if a breakdown occurs, other processes may have to be held up until the machine has been repaired and that in any event taking the extra capital charges into account, the costs will not be appreciably lower than those of the ordinary frame filling, dipping and other auxiliary machines. We do not regard these arguments as convincing. The machine is simpler than many others we have seen in charge of moderately trained Indian workmen in other industries. We saw two of these very machines at work in Upper India and we are satisfied that Indian mechanics of average training and experience can operate them without elaborate European supervision. There is no greater risk of a breakdown on this machine than is involved in the use of any essential machinery in a process on which other processes are dependent. The occasional breakdown, moreover, of one out of 8 or 10 similar machines working simultaneously can result in no appreciable loss compared to the possible economy. As regards the initial and operating costs including depreciation, we asked the Company to furnish us with comparative estimates. We have carefully examined and compared these figures with those we have received from the two factories in Upper India. The estimates show a saving of a little less than 3 pies per gross, which though small, is not insignificant. But we believe that the estimates are too conservative. The possible economy in costs should, in our opinion, be considerably larger in practice than is suggested by the Swedish Match Company.

92. In earlier paragraphs we have discussed at some length the reasons why we have adopted the figures supplied to us by the Swedish Match Company, for the quantity of aspen and Indian wood required for 100 gross of matches. We do not, however, consider that these figures represent good practice even in India where aspen may deteriorate more quickly than in Europe, and where the local wood involves more wastage than aspen. We have allowed 13·2 c. ft. for fresh, 16 c. ft. for old and an average of 14·6 c. ft. for old and new aspen per 100 gross—figures which to our minds are excessive—for reasons which we have already given. One of the tests carried out in January of this year, to which we have referred, showed that it was possible to make 100 gross of splints and boxes

Consumption of wood
too high.

with 8.7 c. ft. of aspen even though the log used had been felled about a year previously and might therefore be regarded as old rather than fresh. We do not contend that an occasional test can be accepted as the measure of average results when production is undertaken on a commercial scale. But the difference between 8.7 c. ft. and 16 c. ft. is so large as to suggest that even if logs which are fairly old are selected before despatch with some care and brought into India as required instead of being kept locally in stock in large quantities, it is possible to obtain much better results. For the same reasons we have allowed for Indian wood also a much higher figure of consumption based on the Company's figures for 1927, than will probably be justified in the future. It is premature to express any definite opinion on the possibilities of Indian wood. More prolonged experiments in the selection and storage of wood than have yet been made are necessary before any workable percentage can be obtained. Practically all match making machinery has been specially designed and manufactured for the use of aspen. Modifications to make it adaptable to the peculiarities of Indian wood should result in preventing waste and in obtaining a better outturn. The storage, preservation and chemical or mechanical treatment of match woods are also problems which need more investigation but do not appear to be beyond solution. We think that with gradual improvement in some of these respects the consumption of Indian wood also should be less than we have assumed.

93. Far more Indian labour is now employed than is necessary even with the present equipment of Ambernath and greater economies than those we have taken into account as regards the future are possible in this direction. More attention to the quality of

Employment of European labour.

Indian labour recruited should conduce to better results both as regards costs and quality of the matches. There is room also for a reduction in the number of Europeans employed in the works and in the local offices of the Company. While one or two foreign experts in charge of the technical departments may be of advantage to the industry, it does not appear that European fitters and mechanics and accountants on high salaries will always be indispensable.

94. Our conclusion as regards future economies is that in a factory built on a well selected site and adequately equipped, a further reduction in the fair selling price of two to four annas per gross may not unreasonably be expected. In such an event

Conclusion as regards future economies.

there should be little difference, even without the revenue duty, between the prices of Indian and imported matches and this would be true even where Indian matches were made entirely of aspen. The fact deserves to be noted because it appears to indicate that the relative advantages are not as greatly in Sweden's favour as it has hitherto been supposed in respect of raw materials, labour, overhead charges, superior management and the like. We consider therefore that there is no reasonable doubt that the industry will eventually be able to face foreign competition without protection and that, therefore, the third condition of the Fiscal Commission is fulfilled.

95. The second condition of the Fiscal Commission requires that the industry should be one which without the help of protection is not likely to develop at all or is not likely to develop so rapidly as is desirable in the interests of the country. It has been shewn

Second condition of Fiscal Commission. in an earlier chapter that until the imposition of a revenue duty so high as to afford the industry substantial protection, no progress in match manufacture was effected in India, but that in recent years a great expansion in the industry has taken place, while costs have also fallen. Our estimate of the present fair selling price is Rs. 1-4 while with a 15 per cent. revenue duty the future reasonable landed price of imported matches has been found to be Rs. 1-4 also and in favourable circumstances, therefore, no protection might be necessary. The need for protection arises entirely from two causes, namely that the Swedish Match Company are importing matches at a price below the economic level and that there exists at present a very marked prejudice against Indian matches. Until these conditions are removed the need for protection will continue.

96. The main advantages which India possesses for the manufacture of matches are the possession of a large home market and the existence of a supply of cheap labour.

First condition of Fiscal Commission :—cheap labour and home market. With the former we have already dealt, but as regards the latter, some further explanation is necessary. In all the important processes no manual labour possessing any considerable degree of skill is essential. The machinery, much of which has been invented in Sweden, is of a very simple character which works automatically and very largely performs repetition work. We may take as illustrative of the position the box making machines. These machines are so constructed that each one of them will require one workman to operate and look after it, but neither in Sweden nor in India, if labour is properly trained and selected, is more than one man necessary at one machine. A factory of the size of Ambernath uses in all 100 or more of these machines for inner and outer boxes. The wages of labour in Sweden are at least three times as high as those in India and, therefore, on this part of the process the labour costs in Sweden will show a corresponding increase. Further, a machine is capable of a certain number of revolutions per minute whether here or in Sweden; and can therefore produce the same output in a given time in both countries. It has been claimed by the representative of the Swedish Match Company that the output per head in Sweden is very much higher than the output per head in India because the machines can be worked faster. This may be true when Indian wood is used since the speed of the machine is to some extent limited by the strength of the material. But if the same material, *viz.*, aspen is used in both countries, the output should be approximately the same. The quantity of output may also be affected by the intelligence of the workman, but for operating such simple machines a very high standard of intelligence does not appear to be required and the average Indian of the artisan

class can with a little practice operate the machines efficiently. Indian labour may perhaps be found less efficient than Swedish where heavy work has to be done by hand instead of by machinery. But having regard to the difference in wages between India and Sweden, we think that labour in India, even for such class of work, would cost per unit less than in Sweden.

97. We are not to be understood as supporting long hours of work but existing circumstances cannot be neglected. India has at present an advantage over Sweden by reason of its working hours being 60 per week as against 44 in Sweden. We have said that the automatic machines should within a given time turn out the same quantity in both countries. In order therefore to attain the same output a factory in Sweden would require 60 machines and as many men whereas in India 44 would suffice in each case. The increase is approximately 36 per cent. and will apply not only to the wages; it will extend to the charges in the works costs of the various processes in respect of repairs, maintenance, supervision, local office and the like. Further, the installation of more machinery would, by adding to the cost of the block value, increase the amount of depreciation and the profit to be earned on capital. Owing to these advantages India will eventually be in a position to face foreign competition without protection, even if all raw materials are imported. It may therefore be held that the case for protection has been established without any discussion as to indigenous supply of raw material, particularly as none of the countries in which match manufacture has been established on a large scale, are entirely self supporting in the matter of raw material. Even Sweden, the home of the match industry, obtains part of its supply of aspen from Finland, Russia, Poland and the Baltic States, and although, allowing for wastage, Sweden is in a more favourable position than India as regards the price of wood, that advantage is more than counterbalanced by the freight and costs incidental to the importation of matches. We have thought it unnecessary therefore to deal with the question of wood supply in the body of the report. But the full development of the resources of the country is a matter of great importance. It is also undesirable that an industry which is concerned with the manufacture of an article in universal use, should be entirely dependent for its supply of the principal raw material on outside sources, since it is not inconceivable that the supply might be interrupted or only obtainable at a very high price. We have therefore dealt with this subject separately in a memorandum which forms part of this report. It will be sufficient here to summarize our conclusions in the matter.

98. It is established that a large number of species of trees in Indian forests are suitable for the manufacture of splints or match boxes and that a smaller number can be used for both purposes. Further investigation is required to ascertain the most suitable species, the best method of storage and the treatment (if any) re-

Effect of working hours
on relative costs.

Summary of conclusions
regarding wood supply.

quired before manufacture commences. Although no general enumeration of trees suitable for match manufacture has been undertaken, it is probable that in Burma, Bengal, Assam, the United Provinces and the Punjab there is an assured supply of timber sufficient for the manufacture of about 8 million gross of matches annually or nearly half the total demand in India. In Bombay on the other hand the supply of Indian timber is inadequate and manufacturers must rely largely on imported aspen. Since it is important for the future of the industry that the price of match wood should be kept as low as possible, while it is desirable in the national interest that the country should be self supporting in regard to this essential material, we recommend that a cautious programme of plantation should be undertaken by Government. We believe that plantation of suitable species would yield a satisfactory revenue to Government while enabling the manufacturer to obtain his supplies cheaper. Before plantation can be undertaken much preliminary research and investigation is needed. We therefore recommend that a definite research project should be drawn up at the Dehra Dun Forest Research Institute and after the subject has been fully investigated a scheme of plantation be drawn up in consultation with local Governments.

99. We have found that the Match industry satisfies the second and third conditions laid down by the Fiscal Commission. As regards the first condition, the industry

Conclusions. possesses definite natural advantages, namely a large home market and an adequate supply of cheap labour. As regards raw material, the supply of match wood in Indian forests is sufficient for the annual production of nearly half the requirements of the Indian market. No financial obstacle exists to augmenting the supply by undertaking plantation. In these circumstances we consider that the claim to protection has been established.

CHAPTER VI.

Measure of Protection.

100. In all our previous enquiries we have acted on the principle that the measure of protection required is the difference between the

Present fair selling price the basis. fair selling price of the Indian manufactured goods and the c.i.f. landed price without duty of the foreign article.

We shall apply this method in the first instance and shall then consider whether there are any special circumstances which would render the measure of protection so obtained unsuitable in the present conditions of the industry. Two fair selling prices have been estimated—the present fair selling price and the future fair selling price—and it is necessary to determine which of these is to be taken for the purpose of our calculation. Ordinarily the measure of protection is based on the average of the present and future fair selling prices. This method involves the risk that in the earlier years the industry receives less and in the later years more than the estimated amount of protection. In the case of an undeveloped or partially developed industry which has received no assistance other than that afforded by the normal level of revenue duty, inadequate protection in the earlier years may render progress slow but will not necessarily involve a set back. In the case of Match industry which has made such rapid headway under the stimulus of a very high revenue duty, a serious set back will inevitably result if the protective duty is insufficient to enable the industry to hold its existing share of the market before future economies are realized. Moreover the estimate of the future fair selling price is based on somewhat uncertain factors, in particular, the cost of wood and the possibility of obtaining an increased share in the home market. It seems safer, therefore, in framing our estimate of the amount of protection required on our accepted method to assume that the present level of costs in a well equipped and well managed factory will be attained by the industry as a whole.

101. It is also necessary to determine which of the three classes of matches, *viz.* :—

- | | |
|-------------------------|--|
| Matches with aspen | (1) Aspen splints and Indian wood boxes; |
| splints and Indian wood | (2) Aspen splints and boxes; |
| boxes taken as typical. | (3) Indian wood splints and boxes |

should be taken as typical of the industry. From the figures for the Swedish Match Company's factory in Calcutta, it appears that the proportion of matches sold which are made entirely of Indian wood is about one-third of the total. Nearly the whole production of Burma, amounting to about $1\frac{1}{2}$ million gross and the whole of that of Assam, the United Provinces and the Punjab, is of this class of matches. We have no reliable figures for Bombay, the Swedish Match Company having recently given up this class of manufacture, but two of the Gujerat factories use Indian wood entirely and some

of the other factories in the Presidency for a certain percentage of their output. From such figures as are available we are of the opinion that about one-third of the matches at present manufactured in India is of this class, and that a substantial body of consumers are prepared to buy them at a price 2 to 4 annas below that of aspen matches. So far as matches made entirely of aspen are concerned, it appears undesirable to frame our proposals for a class of match in which **no** Indian material is used. We have already explained our reasons for considering the manufacture of half size matches, which is mainly carried on in the vicinity of Bombay, as representative of the whole industry and in Chapter II it has been shown that in Bombay the manufacture of splints from Indian wood is less profitable than from aspen wood. It would, therefore, appear reasonable to estimate the measure of protection on the fair selling price of matches with aspen splints and Indian wood boxes. There is another reason for adopting this course. Though the fair selling price of matches with Indian splints is less than that of matches with aspen splints and theoretically, therefore, the measure of protection required is less, the price at which matches with Indian wood splints can be sold is also somewhat less. This is a factor which would have to be taken into consideration, and the result, so far as the measure of protection is concerned, would be about the same for both classes of matches.

102. The present fair selling price of half size matches with aspen splints and Indian wood boxes has been found to be Rs. 1-4-0·94 and the comparable c.i.f. landed price without duty of imported matches of the same size 11 annas 10 pies. *Primâ facie*,
 Theoretical measure of protection—nine annas.

therefore, the measure of protection would be 8 annas 2·94 pies or 9 annas in round figures. Subject to minor adjustments, we should in ordinary circumstances recommend this as the measure of protection to be granted to the Match industry.

103. There are certain very important features which differentiate this industry from any which has so far formed the subject of investigation by this Board. Our enquiries have been directed mainly to undeveloped or partially developed industries and our object has been to propose a scale of protection which will enable such industries to expand and eventually supply the whole home market and withstand competition without the assistance of a protective duty. Under the stimulus of the high revenue duty the Match industry has advanced far beyond this stage. In 1926, the production of matches in India exceeded half the demand of the country, while at the present moment, the capacity of the industry is at least one million gross of boxes per annum in excess of the demand. Further, we have had no alternative but to base our calculations on present production and the measure of protection which has resulted presupposes that this production will be maintained. There are two important assumptions underlying the principle upon which we have hitherto determined the measure

Difference between Match industry and other industries investigated.

of protection. The first is that Indian manufactured articles will ordinarily sell in the market at about the same price as the foreign, or at a price perhaps slightly below it and the second is that at this price the Indian manufacturer will continue to find a market for his goods and will be able to reach maximum production. Neither of these conditions is fulfilled in the case of the Match industry. As we shall see later, Indian matches sell at a price substantially below that of imported matches and the output of Indian factories depends on the respective prices of imported and Indian matches.

104. Normally when a high import duty is imposed, it may be expected that the foreign goods liable to such duty will either cease to enter the country or, if they continue to be imported, sell at the same price as the home product. Neither of these results has followed the imposition of a duty of Rs. 1-8-0 per gross on imported matches as will appear from the following Table of prices of half size matches:—

Year.	Swedish matches foreign.		Indian matches Ambernath aspen splints.		Indian matches other than Ambernath aspen splints.		All Indian wood Ambernath.	
	Highest. Lowest.		Highest. Lowest.		Highest. Lowest.			
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1924 . .	2 6 6	2 5 0	2 4 0	2 1 0	...	...	...	...
1925 . .	...	...	2 0 0	1 13 0	1 13 0	1 12 0	...	...
1926 . .	...	...	1 14 0	1 8 0	...	...	...	...
1927 . .	2 3 0	...	1 6 0	1 4 0	1 5 6	1 2 6	1 2 0	...

The price of matches varies according as they are sold wholesale by the gross, or retail by the dozen boxes or less. It appears from the Table given above that the difference in price between imported and the best Indian matches is approximately 15 annas. It remains to consider to what extent this difference extends also to the retail market. The evidence as regards the price of matches sold by the dozen is not very clear. The price of Indian matches has been stated to be as low as 2 annas a dozen though the more usual price appears to be 2 annas 6 pies per dozen boxes. Similarly, imported matches are said to be sold at from 3 annas 6 pies to 4 annas per dozen boxes. The price varies considerably according to the location of the shop and the nature of the business of the retailer. Speaking generally, we think that the most usual price is 2 annas 6 pies for Indian matches (superior) and 3 annas 6 pies for imported matches per dozen boxes. As regards retail price per unit of less than one dozen boxes, the evidence is clearer. The price of Indian matches is one pice per box and that of imported matches 2 pice per box or 2 boxes for 3 pice. It would appear, therefore, that the difference in price in the retail market between Indian and imported matches is about 1 anna per dozen or half a pice per unit of 2 boxes, or in terms of a gross boxes between 12 annas and Rs. 1-2-0 per gross. The difference therefore generally approximates to that which we have observed in the wholesale market.

One reason for the large difference in price which these figures indicate between Indian and foreign matches is that time is required for the full effect of economic forces to appear. Since the imposition of the duty the tendency of the market has been gradually to replace foreign by Indian matches. As we have stated before, aspen wood matches, whether manufactured in India or abroad, are preferred in Bombay. The imports of half size matches into that port which in 1923 stood at 1.93 million gross had fallen to 1.21 million in 1925 and in 1927 stood at .35 million. Habits persist long after good reason for them has ceased and this is particularly true of a conservative country like India. In consequence many consumers both Indian and European prefer to continue the use of imported matches, the quality of which they know, and a wide margin in price is necessary to divert their custom to the Indian made match.

105. Another reason for the marked difference in price is to be found in the varying quality of matches other than imported Swedish matches. During the War the import trade was mainly in the hands of the Japanese and the very poor quality of the matches then imported contributed not a little to the subsequent capture of the market by Sweden. Further, in the early days of the Match industry in India, the matches manufactured were defective, particularly in the head composition, and sometimes failed to ignite. There is still a wide range in quality. Matches made by the smaller concerns—the so-called cottage factories—are frequently inferior and where the splints are of Indian wood, the quality is very variable. Moreover Indian manufacturers frequently omit to impregnate their matches though the cost of impregnation is negligible. The reason given for the omission of this very inexpensive process is that the average Indian consumer does not ask, and is not prepared to pay a little more for impregnated matches. This appears to be hardly a sufficient reason for the omission. The want of impregnation has, in our opinion, contributed largely towards stamping the Indian match with the badge of inferiority. There are some manufacturers also who employ hand labour for making, side painting and labelling the boxes and in consequence the boxes present a much less finished appearance and possess an uneven striking surface. Another point to which we must draw attention is the custom of some Indian manufacturers of mixing Indian wood and aspen splints. Whatever financial advantage is gained thereby must necessarily be shortlived, and we consider the effect of this practice on the reputation of Indian match is most unfortunate.

106. Sweden was the earliest exporter on a large scale of matches to India and other parts of the world. Safety matches have come to be associated in India with Sweden. Matches of a high quality have not only been manufactured but every effort has been made to maintain the quality in all parts of the world. The quality of the Swedish companies' matches has secured for their

Variation in quality of matches other than Swedish.

Effects of Swedish propaganda.

labels and trademarks a world wide reputation and colourable imitations have often been matters of expensive litigation, sometimes with and sometimes without success. Further, if a market requires a particular size or method of packing or fancies a special label, these companies have been quick to meet its requirements. Indeed it has been claimed by the Swedish Match Company not without justification that "where it is necessary for the factory to adapt itself to follow the buyers' requirements, even when small quantities are involved, the Swedish Match industry has a decided advantage over its competitors."* As far back as 1913, 9,000 different labels were delivered from the Swedish factories. Conversely, where the public taste is satisfied with one size or quality, the conditions of competition are not so favourable, and the difference in price is not very marked. This is borne out by the observations of the Swedish Match Company itself:—† "Where the Swedish Match Industry has to reckon with competition is above all in those markets where large quantities can be manufactured in one and the same size of box and where the demands for adaptability are moderate". India is a market where the consumer exhibits a great variety of tastes, particularly in the matter of labels and this desire for variety has been further stimulated by the efforts of the Swedish Match Company. The Company and its commission agents carry on by means of hand bills, circulars and the employment of publicity agents, systematic propaganda the ostensible object of which is to extol the superiority of the Swedish make of matches, but which have indirectly resulted in lowering the reputation of the Indian product. The Company's publicity campaign does not however extend in the same degree to its Indian goods and probably in the interests of its imports the Company has refrained from claiming that for practical purposes the quality of its Indian matches is as good as that of its imported matches. These are among the reasons which have given rise to the prejudice against Indian matches.

107. In so far as the defects enumerated above are due to the avoidable inefficiency of Indian manufacturers, they should not be allowed to influence the measure of protection recommended to the industry. We find, however, that this prejudice extends to all matches manufactured in India. It is not

Best Indian matches equal in quality to imported.

denied that some brands placed on the market are of inferior quality and such matches naturally cannot be sold save at a large reduction in price. But several manufacturers in India produce matches of superior quality which cannot be distinguished from imported Swedish matches. After careful and exhaustive examination we find that the aspen matches manufactured by the Swedish Match Company at Ambernath are in every way as good as the imported

* Page 25—The Swedish Match Industry, by the Swedish Match Company, Stockholm.

† Page 24 *ibid*.

Swedish matches, and Mr. Schele, the General Manager of the Swedish Match Company, has admitted that for practical purposes the quality is the same. It must be clearly understood that though throughout this argument we shall refer to the Swedish Match Company's matches produced at Ambernath, this does not imply that no other matches manufactured in India come up to the standard of imported matches. On the contrary, we find that the best class of matches manufactured at several of the larger Indian factories are equal in quality and appearance to those produced at Ambernath.

108. We have found in paragraph 104 that the difference in wholesale price between imported and Indian matches is about 15 annas and that in the retail market a difference also exists which in terms of gross sales varies between 12 annas and Rs. 1-2-0. It is claimed generally by manufacturers that some difference must remain if the Indian Match industry is to survive. Thus on behalf of the Esavi India Match Manufacturing Company it is stated:—

Match manufacturers' claim.

“ We consider a difference of 12 to 14 annas in price per gross to be sufficient to overcome the prejudice against Indian matches ”.

In the representation of the Santa Cruz Match Works it is urged that the present price of imported matches is $4\frac{1}{2}$ pies per box and that of Indian manufacture is 3 pies per box. If this difference is maintained, the industry has a fair chance of holding its own against foreign competition. Again, in the written evidence on behalf of the Mahalakshmi Match Factory, the proprietor of which is Sir Daya Kishen Kaul, it is stated the Swedish matches sell at 6 pies and $4\frac{1}{2}$ pies per box while the Mahalakshmi matches are placed on the market at 3 pies a box. This difference represents a fair measurement of the difference due to colour and should be sufficient to overcome the prejudice against Indian matches. Match manufacturers are agreed that if the Indian industry is to hold its own against foreign competition, there must be some difference between the price of Indian and foreign matches. Most manufacturers and some of the principal dealers in Bombay consider that the difference which at present exists must continue and that the duty should be regulated accordingly. It remains to consider whether this opinion can be upheld. Further, though the effect of the duty is directly reflected in the wholesale price, it does not follow that any change in the duty will necessarily affect the retail price. The fixation of retail prices is dependent to a very large extent on the value of the lowest monetary unit in use in the trade, while the effect on retail prices of a reduction or increase in the duty is complicated by the possibility of variation in the middleman's profit. Before considering these aspects of the question, it is necessary to investigate the importance of retail sale as a factor in the prosperity of the Match industry.

109. Practically no matches are sold to the consumer by the gross. The ordinary unit of sale is the dozen boxes or the single box. We shall refer to the former as dozen

Retail and dozen sale. sales while we shall employ the term retail sales to cover all sales of less than a dozen at a time. Now the effect on prices of a reduction in the duty may vary according as sale is conducted by the dozen or retail. It is therefore necessary to determine the importance for the match trade as a whole of these two classes of sales. Any exact estimate of the proportion of dozen sales to retail sales is clearly impossible and in estimating the relative importance to the Match industry of the two methods of distribution, it is necessary to rely on such general indications as are available. Opinions on the subject are very varied. Some witnesses suggest that in the towns retail sale extends to about 25 per cent. of the total, while others would put the figure considerably below this. The greater proportion of sales, however, must be outside the large towns. Thus while the sales of Ambernath matches in the Bombay Presidency in 1927 amounted to 1·677 million gross, only about 25 per cent. of this was sold in Bombay city and suburbs. India is pre-eminently an agricultural country and the means and standard of living of the agricultural classes are very low. Speaking generally, it may be stated that dozen sales are mainly for household use. But where the means or wages of the majority of the population are small, it is clear that even for household use retail sales will to a very large extent replace dozen sales. The total demand for matches in India is about 17 million gross boxes annually. Distributed amongst a population of 320 millions, this represents a consumption per head of about 8 boxes a year or one dozen boxes in 18 months. Taking into account the standard of living of the agricultural population and the fact that matches if stored are apt to deteriorate, particularly in the monsoon months, it appears to us that almost the entire sale of matches outside the towns must be retail. Our experience of conditions in rural India confirm this impression. We have defined retail sale as the sale of less than a dozen boxes at a time. We believe, however, that the unit of retail sale does not as a rule exceed three boxes. Those who desire to purchase beyond this number will usually purchase a dozen. In rural areas and among the poorer classes of consumers the unit of sale is usually the box. We consider, therefore, that in considering the effect of any reduction in duty on the price of matches, great importance should be attached to retail sale by the single box.

110. In a memorandum* on the match trade in India, Mr. Kreuger, the Chairman of the Swedish Match Company, remarks —“In many instances the monetary system of a country is decisive for the retail

The monetary unit. price which the public has to pay. For example, in the United States of America the retail price of matches will be at least 1 cent a box and in Great Britain at least 1 penny a box independently

* *Vide* Appendix C.

of the price charged by the manufacturer". In giving evidence before us Sir Daya Kishen Kaul also was emphatic as to the importance of the monetary unit in India. The lowest monetary unit in India is the pie, but though this coin is still in occasional use, all the evidence which we have indicates that in the match trade at any rate the pice (3 pies) may be considered for practical purposes the smallest coin.

Effect of monetary unit. 111. We give below a Table illustrating the effect of the monetary unit on retail prices:—

	Price per gross.	Price per dozen.	1 box.	2 boxes.	3 boxes.
	Rs. A. P.	Annas.	Pice.	Pice.	Pice.
Indian	1 5 0	2-3 to 2-6	1	2	3
Imported	2 4 0	3-6 to 4-0	2	3	4
Difference per unit of sale . . . . .	...	...	1	1	1
Difference per box . . . . .	...	...	1	$\frac{1}{2}$	$\frac{1}{3}$
Difference per gross . . . . .	...	...	Rs. 2-4	Rs. 1-2	Rs. 0-12

It will be seen that so far as the retail purchaser of imported foreign matches is concerned, no reduction in price will result unless the fall in the import duty is sufficient to permit of a reduction of one pice in the price per unit of sale. This reduction would make the retail price of both Indian and imported matches the same. It follows, therefore, that if any difference in price is to be maintained in the retail market, it must be, as the manufacturers claim, the difference in price which exists at present. It might at first sight appear that in order to equalize the retail price of Indian and imported matches it would be necessary to decrease the duty to an extent sufficient to cover the whole of the difference per gross represented by the difference in retail prices of Indian and imported matches as shown in the Table, and that a reduction by an amount falling short of this might benefit the purchaser by the dozen without substantially affecting the position in the retail market. This, however, does not necessarily follow, since the retail dealer may find it expedient to sacrifice a portion of the profit which he now makes on retail sale.

112. Clearly the maximum wholesale price which can be charged if matches are to be sold at 1 pice a box is Rs. 2-4-0 per gross. Any price above this would involve the dealer in loss. This price does not include the middleman's profit, for which allowance must be made. Speaking generally, the evidence indicates that the margin

Reduction in the duty which might equalize retail prices of Indian and imported matches—four annas.

of profit shared by the various retail dealers is from 8 annas to Re. 1 per gross. There is, however, a curious difference between Indian and imported matches in regard to this. We have found that the fair selling price of the Indian match is Rs. 1-4-0 per gross. It is impossible, therefore, to sell at less than 1 pice per box, as the sale of 2 boxes a pice would result in a wholesale price below Rs. 1-4-0 per gross. Internal competition would also prevent the price rising

much above Rs. 1-4-0 per gross. The whole of the difference between this figure and the retail price (Rs. 2-4-0 per gross) must go to the middleman. There is, therefore, no possibility that by a reduction in the middleman's charges the retail price to the consumer could be reduced. On the other hand, the retail price of imported matches stands at present above the one pice level and there is, therefore, every inducement to reduce the retail dealers' commission so that, if possible, the retail price may be reduced to that of Indian matches. In order to exclude entirely the possibility of the retail price of imported matches being brought down to the one pice level, it would be necessary to ensure that the wholesale price should not fall below this level. The adoption of this course, however, could only be justified if we assume that the entire elimination of the middleman's profit is possible. We cannot suppose that this will ever occur. At the same time the sales organization of the Swedish Match Company is being rapidly improved and every effort is being made to reduce the chain of middlemen and lower the cost of distribution to the consumer. Though it is possible that the middleman's profit may at times stand at a much higher level, we believe that the interest of the Indian Match industry will not be adequately safeguarded if we assume a minimum retail profit or cost of distribution of anything above 4 annas a gross in future. It may be thought that if the retailer's commission is greater for Indian than imported matches, greater inducement is thereby offered to push the sale of Indian matches. This, however, is not necessarily the case, since increased turnover may well compensate for a lower scale of commission. If imported matches are to be sold at 1 pice per box, the maximum wholesale price which can be charged is Rs. 2-4-0. This, however, does not include middleman's charges which we have now estimated may be as low as 4 annas a gross. The maximum wholesale price will, therefore, be Rs. 2 per gross (Rs. 2-4-0 *minus* 4 annas). The present wholesale price is Rs. 2-4-0. It appears, therefore, that a reduction of (Rs. 2-4-0 - Rs. 2) 4 annas in the duty might not improbably bring about a reduction in the retail price of imported matches. The effect of any further decrease in the duty may well be merely to increase the profits of foreign manufacturers, without any corresponding benefit to the country. Taking the unit of sale of 3 boxes, in order to reduce the price to 2 pice, it would be necessary to secure a maximum wholesale price excluding retailer's profit of Rs. 1-8-0 per gross. This, however, would reduce the measure of protection below the difference between the fair selling price as we have estimated it and the duty free price of imported matches.

113. We have now reached the conclusion that owing to the operation of the monetary unit, there must be in the retail market a difference of at least one pice per unit of sale if the Indian match is to retain any advantage over the imported match. This difference exists with the present revenue duty of Rs. 1-8-0. Yet, it has been found possible to sell in India about 4 million

gross of imported matches. If the difference were to disappear, it cannot be doubted that the sale of imported matches would largely increase and this increase could only occur if the sale of Indian matches were proportionately decreased. Nor is there any escape from this situation possible by a further reduction in the price of Indian matches resulting from better practice and further economies. For, in the retail market at any rate, the limit in price is determined by the monetary unit, namely one pice. The immediate result of any such measure, therefore, would be to transfer demand from the Indian to the imported match. The output of Indian factories would at once decline, and since we have based our estimate of a fair selling price for the Indian manufacturer on present output, our recommendation regarding the measure of protection would no longer hold good. A period of intense competition would undoubtedly follow any reduction in the duty, many Indian factories would be closed and the industry would receive a set back from which recovery would be extremely difficult. It has been seen also that this difference in retail price might well disappear even if the present duty were decreased by 4 annas only. The duty has been in force for five years and it would appear unnecessary to make any small variation in it unless thereby some very marked advantage would accrue to the consumer.

114. So far as the consumer of Indian matches is concerned, it would appear that the retention of the duty involves no additional burden. The stage has, however,

Interests of consumer. already been reached where the price of matches made in India is determined by internal competition and, as has already been shown, the best class of Indian matches sells at some 13 or 14 annas less than imported goods. It is true that if the duty were reduced by 4 annas or less, the purchaser of imported matches by the dozen might in favourable circumstances obtain them at 6 pies per dozen less. Since, however, Indian matches manufactured of aspen wood equal in quality to imported matches can be obtained at a price determined by internal competition, no real hardship is imposed on this class of consumer. The consumption of foreign matches has fallen rapidly and the number now consumed is about 4 million gross a year, while the Swedish Match Company estimates that if the present duty is maintained, the consumption of imported matches will shortly not exceed half a million gross annually. Consumers of this class of match will as a rule be comparatively well-to-do and the relief afforded to them by a reduction of price of even 6 pies per dozen boxes will not be appreciable. On the whole, therefore, we consider that there is not sufficient reason for any reduction in duty.

115. An additional reason for our conclusion is the uncertain attitude of the Swedish Match Company. We cannot entirely ignore the possibility of the Company preferring importation from Sweden to local manufacture, for there is a powerful incentive to make a great effort to retain the

Policy of the Swedish Match Company makes elimination of imports desirable.

imports. The Company possesses in Sweden about 20 factories which manufacture between them about 30 million gross per annum. About 95 per cent. of this quantity is exported. The imports into India still constitute a considerable percentage and if they were to cease suddenly before another market is found, some of the home factories might have to close down or the number of working days per week would have to be reduced, a problem which the Company may not face without a final struggle. That this consideration is of no small importance is shown by the fact that at present matches are being imported into India at $7\frac{1}{2}d.$ per gross f.o.r. works which, as we have shown, leaves little or no margin over the works costs if it covers them fully. If the duty is lowered at this stage, the scales will be distinctly weighted in favour of the Company.

116. It may be argued—and indeed one or two witnesses have suggested—that some increase in the present duty is required.

The demand for matches in India is about 17 million gross boxes annually while the productive capacity is 18 million gross.

One of the main objects of the system of protection in force in India is to develop the industry to such an extent as to enable it to face competition without further assistance than is afforded by the revenue duty. Practically, all factories in India including those of the Swedish Match Company are now working below their full capacity and since the attainment of full production is an important factor in reducing costs, the more rapid elimination of imports would appear desirable. We think, however, that the margin left by the present duty, if retained, should be sufficient to bring about this result. It has already been shown that imports have fallen rapidly since the duty was introduced and it is probable that without further change in the duty this fall will continue. It is unnecessary, therefore, in our opinion, to increase the duty.

117. In the course of this enquiry various objections have been raised, some directly and some by implication, to the retention of the duty at its present level. Some of these refer to the qualifications of the industry for protection, a question which has already been considered in the body of the report.

It is suggested by the Bombay Chamber of Commerce that the duty should be fixed at a level which will admit of the import of a considerable proportion of foreign matches. The assumption is that the duty will remain a revenue duty, and in order to obtain a maximum return the duty should be fixed to permit imports. Since, however, we have found that the industry qualifies for protection, it is unnecessary to deal further with this aspect of the case. There still remains, however, an argument which might be advanced against our decision which requires consideration. It may be thought that in the interests of the industry itself the scale of protective duty should not be pitched higher than is strictly required. Incentive to economic production is thereby removed and premature over-production may prove

more fatal than the absence of foreign competition. We admit the force of this argument where the industry under consideration is comparatively undeveloped and is equipped to supply only a portion of the home market. Owing to the action of the Government of India in imposing a revenue duty of Rs. 1-8-0 per gross, the Match industry has passed far beyond this stage and is now equipped for a production exceeding the country's demand. The conditions for over-production, therefore, already exist and the severe competition which has resulted, already supplies the stimulus required for economic production. The consumer has already borne the burden resulting from a makeshift revenue policy, and to fix the duty now at a level which might have been justified had the industry been developed by the grant of a reasonable protective duty at an earlier stage, would involve the sacrifice of a developed industry to theoretical considerations without any compensating advantage.

118. In arriving at our decision we have not been influenced by a consideration of the vested interests involved, but have recommended what we believe will be in the country's interest as a whole. Our terms of reference require us to consider in certain circumstances whether any vested interests have been created and we consider it desirable to place on record our conclusions on this matter. There can be no doubt that substantial vested interests have been created since the imposition of the duty. The figures which we have been able to collect are not sufficiently complete to enable us to assess them precisely. But if we were to allow the same capitalization for the rest of the industry as for the Ambernath factory, the fixed capital invested may be estimated on a capacity of 18 million gross at Rs. 24 lakhs per every 3 million gross, at Rs. 114 lakhs, and working capital at the rate of Rs. 10 lakhs for every 3 million gross, at Rs. 60 lakhs. Some of the Indian factories are not so well equipped as the Ambernath works and if allowance is made for that fact, the total investment will probably be in the neighbourhood of Rs. 175 lakhs, not including the cottage factories. Though we are not recommending the continuance of the duty on the ground of vested interests, we cannot overlook the fact that the revenue duty at present in force is exceptionally high and its protective effect cannot have escaped Government's notice. Further, it has been allowed to remain in force for five years though its immediate result in stimulating the construction of match factories in India was known to Government. We consider, therefore, that Government should not ignore the existence of such interests in arriving at their final decision.

119. We recommend that the existing duty of Rs. 1-8-0 per gross boxes should be maintained and should be transferred from the revenue to the protective part of the schedule. To prevent the evasion of this duty the present duties on splints and veneers should also be maintained and transferred to the protective part of the schedule.

Retention of present
duty of Rs. 1-8-0 recom-
mended.

120. There is one anomaly in the incidence of the duty to which we should like to refer. The duty is applicable to all sizes of matches and irrespective of the number, provided they do not exceed 100 in each box. When the duty was first imposed, every method was devised by manufacturers and importers for its evasion. The full size box contained before its imposition thicker and fewer matches, the number amounting to about 60. As the duty was made applicable at the same rate whether a box contained one hundred or fewer matches, the matches were made thinner and their number was increased to 80 to 90 per box, by which means manufacturers evaded part of the duty and were for a time able to undersell those brands which still contained a smaller number of matches. Two indirect results followed this anomaly. One was that the half size obtained in proportion a higher degree of protection against foreign matches than the full size and, as we have seen, the development of its manufacture in India has been at a far greater pace than of the other size. The other was that the burden on the consumer of foreign matches varied with the size used, the user of the full size 80 to 90 matches paying the same duty as that of the half size 60 to 65 matches. We have considered the question whether we should make any proposals to rectify this anomaly. We are of the opinion that none is necessary at this stage when imports are gradually disappearing. But if any subsequent revision of the tariff takes place, we would urge upon the Government the desirability of avoiding what appears to us to be an unnecessary differentiation between two classes of consumers.

121. The period of protection has still to be determined. There are, however, special features in connection with the Match industry which perhaps render the fixation of any definite period unnecessary. Already the industry has reached a stage where the price of Indian made matches is governed by effective internal competition. The Indian industry as at present organized is capable of supplying the whole demand of the country and the elimination of imported matches which is probable in the course of the next few years should have no effect on prices. The protective duty will then impose no burden on the consumer and its removal becomes a matter of no practical interest. There is also another aspect of the case. It is important from the national point of view that India's resources should be developed and we have in a memorandum at the end of this report recommended the adoption of a scheme of plantation. A period of not less than 20 years is required before the trees of the species suitable for match making come to maturity. The premature removal of the protective duty would tend to increase foreign competition and to the extent to which imports increased, the demand for Indian wood must decline. It would follow that the inducement to undertake plantation would be less, a result which, in our opinion, would be exceedingly unfortunate. We recommend, therefore, that no definite period should be fixed,

but that as recommended by the Fiscal Commission the progress of the industry should be carefully watched and a fresh enquiry ordered when circumstances appear to warrant such action. The future development of the industry is uncertain and it may well be that the results of research in regard to the Indian wood supply may in the future render other forms of assistance more suitable.



CHAPTER VII.

Cottage Factories.

122. We have received from the Indian Match Manufacturers' Association, Calcutta, the membership of which comprises mainly the smaller match manufacturing concerns, a representation urging that a special measure of assistance should be extended to cottage factories. It was claimed that the interests of the smaller concerns would be sufficiently safeguarded if an excise of 8 annas per gross was imposed on matches manufactured by companies or firms financed by foreign capital and a bounty at 4 annas a gross granted to cottage factories for five years. As an alternative it was suggested that the present import duty should be increased by 4 annas, an excise duty of 8 annas be imposed on firms and companies manufacturing matches which are financed by foreign capital and of 4 annas per gross boxes on others and that in no circumstances should an excise be imposed on cottage factories.

123. The rapid growth of match factories of the cottage industry type in recent years is due to several causes. The most important was the increase in the revenue duty to the high level of Rs. 1-8-0 per gross of imported matches. The high prices for Indian made matches which resulted gave a great stimulus to the cottage industry. Unfortunately there was a widespread idea that these prices would continue, and the decline resulting from economic causes which might have been foreseen, such as the increase in the number of factories and the improvement in the methods of manufacture, has given rise to much disappointment. The expansion of the cottage industry has also been influenced by inaccurate and frequently interested propaganda. Mr. Troup's Memoirs on Match manufacture has popularized the view that match manufacture on a small scale is profitable and economically sound. Manufacturers of and agents for Japanese and other match machinery have lent their support to this theory in order to increase the sale of other goods. Both the Bengal and the Bihar and Orissa Governments have specially investigated the Match industry through the agency of Mr. A. P. Ghose. His interesting reports have been responsible to a very large extent for the encouragement of the cottage industry. We were anxious to obtain the benefit of his assistance, especially as our conclusions are somewhat at variance with his views. In spite, however, of two opportunities of giving evidence he declined to appear before the Board. Finally, some local Governments, without perhaps definitely committing themselves to the view that there is a future for match manufacture on cottage industry lines, have undoubtedly through the activities of their Industrial Departments, conveyed the impression that they were not entirely out of sympathy with the idea. It is not unnatural that with the decline of prices

resulting from unavoidable economic causes and the consequent elimination of many cottage factories, considerable resentment has manifested itself and a demand has arisen that special measures should be taken to assist factories of this type.

124. Our terms of reference are exceedingly wide. The concluding sentence of the resolution in which the subject was referred to this Board runs as follows:—"Generally the Tariff Board will investigate the whole question and make such recommendations as seen germane to the subject". The consideration of a representation of the type now put forward does not appear to be excluded by our terms of reference. Nevertheless we feel that in deciding whether any special assistance should be granted to cottage factories, we must be guided primarily by the considerations set forth in the Fiscal Commission's report. The sociological or educational aspect of match manufacture organised as a cottage industry is in our opinion a matter of policy to be determined by the local Governments concerned.

125. The term cottage industry is loosely applied to small match factories varying in capacity from 50 to 100 gross boxes per day, with the minimum amount of machinery, most processes being carried on by hand. These factories are for the most part situated in and about Calcutta and it is perhaps significant that match manufacture on this small scale is not attempted in Bombay, where the progress of the industry and the reduction in the costs of manufacture have been greatest. A number of these factories were inspected by the Board during its visit to Calcutta. A power driven lathe was usually employed to produce the veneer of which the boxes were made, but a few purchased the veneer from other and larger factories. Many purchased the rejected splints or matches of the larger factories. Some obtained splints from factories specializing in their manufacture for sale to the smaller concerns, while a few prepared them in their own chopping machine from veneer also manufactured by them. Other processes, such as labelling, dipping, etc., were carried out entirely by hand, frames usually being filled by means of hand worked frame filling machines, though in some factories each single splint is inserted in the frame by hand. We were anxious to ascertain whether any cottage factory existed in which all processes of manufacture were carried out by the members of a single family in their own house, but we were informed by the Director of Industries, Bengal, that no manufacture of this type was carried on in Calcutta. The various processes of manufacture carried out by hand were performed partly on the premises by hired labour, partly by workers in their own homes. For the manufacture of boxes and for labelling, veneer, paper and labels were supplied by the factory. These were taken by the workers to their own homes and payment was made for the finished boxes at piece rates.

126. We were unable to discover any essential difference between manufacture in these cottage factories and in many of the larger Indian factories with a production of several thousand gross a day. A very considerable proportion of the boxes at

No distinction in principle between manufacture in cottage and other factories.

Messrs. Esavi India Match Manufacturing Company's factory, which next to the Swedish Match Company's is the largest factory in Calcutta, are prepared by hand, while in Bombay the system of supplying materials to workers for the preparation of boxes in their own homes is extensively practised by the larger Indian factories. Nor is there any distinction in the matter of the provision of capital, since the cottage factories are financed not by the workers themselves but by the small capitalist who owns the works. It is therefore difficult, if not impossible, to define with any precision what constitutes a cottage factory or to draw any clear line between these and other factories.

127. Speaking generally, it may be said that the following are the characteristic features of those factories which were indicated

Characteristics of cottage factories.

to us as typical of the cottage industry class. Production was small and in consequence the purchase of chemicals and other raw materials was on a retail scale and consequently more expensive. Hand labour was employed in most of the processes. The boxes were therefore poorly finished and commanded a lower price than those produced in the better equipped factories. Splints were often purchased from other factories and to this extent the industry was therefore dependent for its existence on other manufactures whose interests might not always be coincident with its own. In so far as rejected splints or matches were used, the quality and reputation of the matches suffered and the price obtained was less. Conditions of labour were inferior. The rooms in which work was carried on were small, hot and insanitary. Nor was it possible to take adequate steps against the danger of fire and explosion. We addressed the Calcutta Corporation asking for a copy of their rules regarding trades or industries dealing in explosives or inflammable substances, but received no reply. Whatever regulations may be in force in Calcutta in regard to such trades, little effort appears to have been made to enforce even the most elementary precautions on these factories. In this respect Calcutta was in marked contrast to Bombay, where match manufacture in buildings situated in crowded streets is not tolerated either in the city or in the suburbs. Some of the houses in which manufacture was carried on were situated in thickly inhabited portions of the town and were not detached from the neighbouring houses. Manufacture of matches in such circumstances becomes a menace to the public safety. Recently we observed a report in the papers of a case in which two lives were lost owing to an outbreak of fire in a Calcutta factory believed to be due to insufficient care in the use of chemicals. The output of this factory was about 1,000 gross a day and in the smaller factories even less supervision may be expected.

128. Of the 33 factories of which the Industrial Engineer, Bengal, has given an abbreviated description, two only undertake the whole process of manufacture. Seventeen purchase splints and veneers from other factories and perform the remaining processes by hand. Thirteen only make boxes out of veneers manufactured elsewhere, while one makes only splints and veneers. This factory supplies the semi-finished material to the cottage factories and it is therefore to the interest of its proprietor that cottage factory manufacture should continue or even expand. A comparison of this description with that of the smaller factories in Madras given in Appendix A to the letter of the Government of Madras, dated 17th February, 1927, indicates that the features are in both cases similar. In Madras also splints and veneers are often purchased from other factories. Wages are very low and hand labour is employed in most of the processes of manufacture. The cost of production is about Rs. 1-8-0 per gross or approximately the same as in Calcutta. It appears to us from this description that any conclusion which we may form as to the future of the cottage factories in Calcutta will be equally applicable to the cottage type of industry in Madras.

129. In order to enable hand work to compete with machine manufacture, one of two conditions must exist. Either the product of hand labour must command a better price or special circumstances must render the cost of production of the hand made article lower. Where special designs are demanded of a special quality of article in quantities not sufficient to admit of mass production, a cottage or home industry may flourish. Thus for hand woven cloth there is a special market and the additional price obtainable is sufficient to cover the extra cost of production. This is not the case in the Match industry. The matches produced far from being superior, are distinctly inferior to the products of the larger factories both in point of finish and of uniformity of quality and the price obtainable is some four annas per gross lower. It remains to be seen whether there are any special circumstances which would admit of a lower cost of production.

130. We have been supplied by the Industrial Engineer to the Government of Bengal with his estimate of the cost of producing matches in a cottage factory in Calcutta, which is as follows:—

	Factories working entirely by hand including frame filling.			Factories using machine for frame filling.		
	Rs.	A.	P.	Rs.	A.	P.
Splints	0	3	0	0	6	0
Boxes	0	3	0	0	3	0

	Factories working entirely by hand including frame filling.			Factories using machine for frame filling.		
	Rs.	A.	P.	Rs.	A.	P.
Chemicals paper and labels	0	3	0	0	3	0
Frame filling	0	3	0	0	0	9
Paraffining and dipping in chemicals	0	0	6	0	0	6
Box filling	0	1	6	0	1	0
Box pasting wrapping of paper in and out	0	2	3	0	2	3
Pasting of labels	0	0	6	0	0	6
Dozen packing	0	0	6	0	0	6
Miscellaneous	0	1	0	0	1	0
	1	2	3	1	2	6

It is to be noted, however, that this estimate has not been accepted as correct by the Indian Match Manufacturers' Association, and we believe, in certain respects, not without reason. These small factories purchase all their requirements retail and the price is, therefore, very much higher than it would be if purchases were made wholesale, the difference being in some cases as much as 50 per cent. Yet the total cost of chemicals, papers and labels, etc., is given as 3 annas as against 4 annas 8 pies for the Swedish Match Company's factory in Calcutta. In the following table the prices paid by the Bhagirathi Match Factory of which the output in 1927 was about 300 gross boxes daily are compared with those paid by Messrs. Adamjee Hajee Dawood and Company for the most important chemicals.

	Bhagirathi Match factory.	Messrs. Adamjee Hajee Dawood and Company.
	Rs.	Rs.
Chlorate of potash per ton	500	455
Sulphur per ton	280	152
Phosphorus per ton	4,480	3,156
Paraffin per ton	560	525

The Bangia Diasalai Karjalaya of which the cost have been given is a factory producing some 200 gross per day but claiming to be of the cottage industry type. It undertakes only the finishing processes, veneers and splints being purchased. The figure for chemicals, paper, etc., has been given as 7 annas which is probably about the average figure under this head for a cottage factory. The cost of veneers and splints has been given at 7 annas 6 pies against the figure of 9 annas supplied by Mr. Mitter, the Industrial Engineer. Even allowing for this reduction, the total costs including overhead charges and profits but excluding the manager's remuneration amount to about Rs. 1-5-1. The advantage derived from small overhead charges incidental to the management of a

cottage factory is more than set off by the heavier labour costs resulting from the adoption of hand worked methods of manufacture. Comparing Mr. Mitter's estimate with that of the Bangiya Diasalai Karjalaya we think we should be justified in assuming that the average cost is not below Rs. 1-6-0 per gross.

131. This level of costs assumes that cottage factories serve only a very restricted market in their own vicinity. If matches have to be transported to any distance packing cases are required, while during the monsoon unless they are stored in tin lined cases, their ignition becomes defective. If, therefore, the future organization of the industry were to be on cottage industry lines, it would be necessary to provide for the cost of packing cases. Further, selling expenses would not be less than 1 anna while gross packetting would amount to 3 pies a gross. Packing charges would not, we believe, be less than those of the Swedish Match Company at Calcutta, *viz.*, 2 annas 2 pies per gross. The cost of manufacture of matches then becomes Rs. 1-9-5 for the cottage factory. The present works cost of manufacturing full size boxes of matches at the Swedish Match Company's works at Calcutta for matches with aspen splints and Indian wood boxes is Rs. 1-5-0, or if Indian wood is used Rs. 1-2-10. If to these figures we add overhead charges and a reasonable measure of profit calculated on full production, we obtain Rs. 1-8-6 and Rs. 1-6-4 per gross respectively. It appears, therefore, that for the general supply of matches in the country, the cottage system or manufacture could never supplant the mass production methods of the larger factories.

132. But it may be argued since at present the costs of the cottage and other factories are on about the same level it may be possible to secure to the cottage factories the market in their immediate vicinity and this will be in the economic interests of the country. We would concede that where circumstances are favourable, the cottage factory may survive, as for example where it is able to obtain wood below the price paid by the larger factories. But the figures which we have given for the Swedish factories are not the lowest which can be reached. The works are not yet manufacturing to their full capacity and as output increases, works costs should decline. The future level of costs is likely to be at least 3 annas a gross lower. Matches with aspen splints and Indian wood boxes command a premium of at least 3 to 4 annas a gross over the products of cottage factories and even matches with Indian wood splints manufactured in the larger factories, owing to the better finish of the boxes, sell at prices appreciably higher than those obtainable for cottage factory products. It appears, therefore, that even in local markets the cottage factory matches will not be able to hold their own against the products of the larger factories.

133. It has been suggested that by means of co-operative orga-

nization, the cost of raw materials might be brought down and manufacture in this way cheapened. We doubt, however, whether even so, the costs of cottage factories could be reduced to a level which would compare with that of the larger factories, while the want of uniformity in quality and the general lack of finish would necessitate a lower price level for their goods. No progress has as yet been made in co-operative organization, though the question, we have been informed, has often been discussed. It appears that serious difficulties stand in the way of securing the amount of combination necessary to obtain any appreciable results. It has been suggested that Government should purchase chemicals and paper and sell them to the smaller factories at wholesale rates. It has also been proposed that Government should establish a splint factory near the forests and supply splints at cost rates handing the factory over later for co-operative management. We are not sanguine of the success of any such experiment. The delay inseparable from Government activities and the uncertainty of obtaining supplies when they are needed, appear to us to render this form of assistance unsuited to business requirements. As we have already stated, there are great difficulties in the way of co-operative organization and even if the manufacture of splints in the forests were an economic proposition, which is by no means certain, the eventual management of such a factory by a combination of the smaller match making firms would be difficult. Overhead charges, office expenditure and the cost of distribution would also be heavy and the total relief obtainable would, we are convinced, fall far short of the standard expected.

Possibility of Government or co-operative assistance.

134. For these reasons we believe that from an economic point of view there is little future for match manufacture as a cottage industry. It would not, therefore, be right for us to propose any special measures which would have the effect of encouraging a type of manufacture, which in the end must give way to more modern and improved methods. Nor do we believe that the manufacture of matches is a suitable industry to be undertaken on cottage lines. Not only are the essentials for successful operation absent, but the raw materials and the finished product are of a highly inflammable nature. Special precautions are therefore necessary. The building in which manufacture is carried on should be sufficiently remote from other buildings to localize any fire which may occur. This condition is not fulfilled in the case of most of the so-called cottage factories in Calcutta and we do not believe that the necessary precautions against fire could be observed in many of the cottage factories as they are situated at present. Further, many of the chemicals used in manufacture are of an explosive nature and it is obvious that more care is likely to be observed in the handling of these in the larger factories where more efficient supervision can be enforced.

Match manufacture not suitable for cottage industry.

135. As regards the processes which form the basis of a home industry proper, namely box making and labelling, it is true that the organization of the cottage factories permits these to be carried on by workers in their own homes. This feature is not peculiar to cottage factories, but is shared by the larger factories where the latest machinery has not been fully installed. In the vicinity of Bombay we saw several factories producing 1,000 or more gross boxes a day, where the system of piece work for box making in workers' own homes was in force. The system is one which in our opinion is not conducive to the workers' welfare. By its nature no restriction can be placed on the number of hours worked or on the age or sex of the worker. When competition arises between such factories and the more modern concerns equipped with the latest machinery, the easiest and perhaps the only form of economy for the smaller factories is a reduction in piece rates. We have had evidence that such reductions have already been effected in some factories in the vicinity of Bombay. Remembering the appalling conditions of sweated labour which existed in Europe in industries where hand work came in competition with machine made goods, we cannot regard this feature of the Match industry as one to be encouraged.

136. While we cannot recommend any special measure of assistance to the cottage match factories as such, we consider that there is one aspect of the question which deserves consideration. Should Government decide to impose an excise duty on matches made in India, it may not be possible for the smaller cottage factories to pass this on entirely to the consumer. Rates of interest charged on advances are high and it is almost always necessary for such factories to sell their goods without delay at the best price obtainable. Thus when considerable sums have to be paid to Government on account of excise revenue, it may be necessary to sell stocks at a lower price than the addition of the excise would justify. Some additional expense on account of book-keeping and the maintenance of registers might also be necessary. While as has been seen there is no ground for extending assistance to match manufacture as a cottage industry, it would be unfair to impose by means of an excise duty on cottage factories a special burden which would not be borne by better equipped concerns having greater financial resources. We think, therefore, that if possible, a reduction not exceeding two annas per gross should be allowed to cottage factories in the event of the imposition of an excise duty. We are aware that administrative difficulties may occur, in particular in determining what is or is not a cottage factory. At the same time we consider that this should not deter Government from attempting to alleviate the special burden imposed on such factories. We have carefully considered whether it is possible to lay down any definition of a cottage factory, but we find that the only practicable method of differentiating cottage from other factories is by output, which we consider should be fixed with reference to local conditions.

CHAPTER VIII.

Swedish Match Company: Future organization of the industry.

137. Proposals have been put forward that Government should introduce special measures to curtail the activities of the Swedish Match Company. It is alleged that the Swedish Match Company having at its disposal very large financial resources, has endeavoured to crush the local manufacture of matches by unfair competition, by a systematic cutting of prices and by propaganda of an objectionable type. Instances have been brought forward in support of these allegations and before considering what action (if any) is desirable, it is clearly necessary to consider to what extent the case against the Swedish Match Company has been established.

138. So far as prices are concerned, unfair competition may be defined as sale at a price which does not cover works costs or at any rate which does not leave a reasonable margin for overhead charges and profit.

As regards imported matches, there is little doubt that the Swedish Match Company has been exporting half size matches into India at abnormally low price and that the competition has been unfair. Had it not been for this the Swedish Match Company would not have been able to maintain its imports which, even at the end of 1927, amounted to 3.59 million gross.

139. The complaint of unfair competition, however, so far as it relates to the production of the Indian factories of the Company appears to us to be unfounded. The Swedish Match Company's costs, as we have seen, are higher than those of the Indian

No unfair internal competition.

manufacturers, while the price of its matches are an anna to an anna and a half per gross higher than those of the Indian manufacturers. In the following Table we give the works costs and the weighted average realized price for the whole year and the difference between the two to cover overhead charges and investment on capital—

	1924.		1925.		1926.		1927.	
	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.
Weighted average realized price	2	4 0 $\frac{3}{4}$	2	1 1 $\frac{1}{4}$	1	11 0 $\frac{3}{4}$	1	5 0 $\frac{3}{4}$
Works costs	1	12 2	1	10 5	1	3 11	1	0 3
Difference	0	7 10 $\frac{3}{4}$	0	7 8 $\frac{1}{4}$	0	7 1 $\frac{1}{4}$	0	4 8 $\frac{1}{4}$

The above figures show that the reduction in the selling price has approximately corresponded to the reduction in the works costs and that in every year not only was the works costs covered by the price but a higher margin than we have allowed as reasonable in our future fair selling price was left to the Company for overhead charges and profit. It is true that the Swedish Match Company did not make as high a profit as the Indian manufacturers which, as we have shown, even during last year, was not less than 20 or 25 per cent. on the capital and in one case amounted to between 50

and 60 per cent. When the high revenue duty was first imposed and internal production was small, the level of prices was determined by the import price. Mr. Fatehally of the Santa Cruz Match Works stated that in the beginning the profits amounted to 12 to 14 annas per gross, if not more. Judging by the prices that the Ambernath works realized, the profits of the Indian manufacturers must have been extraordinarily high even if they realized prices somewhat lower than those of the Swedish Match Company's Indian factories. The main grievance, therefore, of the Indian manufacturers seems to amount to this that the Swedish Match Company by its entry into the market rapidly brought down the abnormal profits of the industry. It must, however, be recognized that the Company's activities have been of real service to the country by stimulating competition and that relief has thereby been afforded to the consumer, who in other circumstances would have been called on to pay a price far in excess of that which would yield a fair measure of profit to the manufacturers. Further, the superior quality of the aspen matches produced by the Swedish Match Company has raised the general standard of quality of Indian matches, and the improvement in the industry may, therefore, be attributed largely to the competition of the Swedish Match Company.

140. Another allegation is that the Swedish Match Company has lowered the reputation of Indian matches by unfair propaganda and by the deliberate production and sale of very inferior matches from Indian wood. As regards the second allegation, the facts are as follows. At the commencement of July orders were issued to the Ambernath factory to use Indian wood in the manufacture of splints. The wood in stock was old and inferior and the matches produced were of very poor quality. Samples were examined by the Sales Manager of the Swedish Match Company who at once wrote to the Chief Factory Manager recording his opinion that matches of this quality should not be manufactured not only because their sale would affect the reputation of the Company's other brands but also because, in view of the low price obtainable, their continued manufacture would mean a loss of about Rs. 70,000 a month. He visited the factory the next day and telegraphed to the General Manager at Calcutta requesting permission to discontinue manufacture. Permission was accorded by wire. Although manufacture had been carried on for less than a week, some 40,000 gross had already been made and their destruction would have involved the Company in a loss of about Rs. 40,000. Rather than face this loss, it was decided, contrary to the advice of the Company's selling agents, to place these matches on the market at the best price available. The goods were finally sold at approximately 12 annas a gross. We have carefully examined all the correspondence on this matter in the Company's office. There is little doubt that the sale of these inferior matches affected to some extent the reputation and price of Indian matches, particularly as sales were in small lots and

Allegation that reputation of Indian matches deliberately lowered.

spread over a considerable period. We cannot say on an examination of the correspondence and papers on the subject in the Company's office, with what intention manufacture was originally undertaken. It is clear, however, that the manufacture of these matches could not but result in substantial financial loss to the Company and as soon as this was recognized manufacture was discontinued. At the same time, we cannot overlook the fact that many complaints against the activities of the Company had already been made and it might have been expected that the Company would have taken special care to avoid any course likely to provoke criticism. We think, therefore, that in this matter a serious error of judgment was committed and that the Company would have been better advised if the whole production had been destroyed even though this would have involved it in a loss of nearly Rs. 40,000. The Company has since then discontinued the manufacture at Ambernath of matches made entirely of Indian wood and there should be no room for this kind of criticism in the future.

141. The firm of Messrs. Adamjee Hajee Dawood and Company of Rangoon own the largest Indian factory and is the most powerful rival of the Swedish Match Company. Mr. Adamjee Hajee Dawood, who is the Managing Director and Principal shareholder of the firm, was approached by the representative of the Swedish Match Company early in 1925 with a view to his entering into a trade agreement or a combine. The negotiations fell through and no agreement was reached. Soon after "strong trade rivalry—in fact a trade war—broke out" between the two rivals. Disputes over trade marks took the form of judicial proceedings. One of the suits was tried on the original side of the High Court and was decreed in favour of the Swedish Match Company. On appeal, however, the decree was reversed. In the course of its judgment the appellate Court expressed the view that the Swedish Match Company itself, though it had filed proceedings against Mr. Adamjee Hajee Dawood "had shown themselves to be not very scrupulous in avoiding designs which they knew had been appropriated and used by their rivals". This unsuccessful litigation in Burma was unfortunate for the Company, as it has created much misgiving in the public mind. But we would point out, at the same time, that instances have come to our notice in the course of our enquiry which showed very close imitations of some of the well known labels of the Company. One or two cases which were instituted by the Company in the High Courts were recently compromised by the defendants and undertakings were given by them to refrain from further imitation.

142. It has been stated in the proceedings by a considerable number of Indian manufacturers and by some of them on oath, that in 1922 or 1923 the representatives of the Swedish Match Company approached them and offered either to take over their

Litigation against
Messrs. Adamjee Hajee
Dawood and Company.

Attempts to acquire
control of industry.

* Judgment on appeal of the High Court of Rangoon, January 1928—Adamjee Hajee Dawood *vs.* The Swedish Match Company.

factories or to take in each one of them a majority interest. It was also stated that if the offer was refused the Company threatened a price war which would lead to their ruin. A counter affidavit has been filed by the Swedish Match Company in which the allegations that offers were made have been substantially admitted, though the statements as regards threats have been repudiated. Whether the threats were made in so many words is immaterial. At that time Indian manufacturers were enjoying unprecedented prosperity and it is hard to understand what motive would induce them to surrender more than half their shares in a profitable business except fear of the possible consequences of refusal. These indirect threats have so far proved completely ineffective.

143. It has been alleged that by means of circulars, cartoons and other forms of propaganda carried on by the Company to develop the sale of its imported matches, it has made comparisons to the disadvantage of Indian matches and thus spoilt their reputation. Allegations regarding unfair propaganda. There is evidence that such propaganda has been carried on by the Company or its agents and some harm must have resulted. Where trade rivalry exists and competition is intense, it cannot be expected that manufacturers will be over-scrupulous in pushing the sale of their goods. At the same time, we have seen advertisements of the Swedish Match Company which in some cases explicitly, in others by implication, condemn the products of all Indian match factories without reserve. We must confess that it strikes us as curious that a foreign firm should repay the hospitality offered to it by India by belittling the quality of Indian manufactures as a class or indeed that the Swedish Match Company considered that its interests were best served by methods of advertisement which could not but stir up animosity.

144. While incidents such as these have not unnaturally given rise to suspicion among Indian manufacturers as to the intentions of the Swedish Match Company, we have sought in vain for any facts to substantiate the general charge brought against the Company, namely, that it has caused serious injury to the Indian industry in an attempt to eliminate all competition. The most outstanding fact established against the Company is that it has carried on unfair competition in respect of imported half size matches. We believe that the scheme of protection which we have proposed is sufficient to prevent any serious injury being caused to the Indian industry by imports of foreign matches at uneconomic prices and we believe that the publicity afforded by this report should prevent any recurrence in future of such incidents as we have referred to. But we have not found that the interests of the Indian industry have been jeopardised by the activities of the Company or that up to the present the existence of its factories in India has been prejudicial to the national interest. It has been urged that the Swedish Match Company with its long experience of match manufacture and vast resources, will be able to

produce matches at a price which will enable it to undersell the Indian manufacturer without resort to unfair competition, and thus in course of time the whole industry will fall into its hands. We are by no means satisfied that the superiority of the Swedish Match Company over other manufacturers is so great as is supposed. Already, as we have shown in Section V of Chapter III, the costs of several Indian firms are below those of the Ambernath factory. In the matter of wood supply, the factories of medium size enjoy an advantage since their requirements not being excessive it is generally possible to obtain Indian wood within a reasonable distance. Storage of large quantities of wood is also unnecessary in many cases and thus both in price and quality of wood, distinct advantages are enjoyed by the Indian factory of more moderate size. Practically no Europeans are employed in Indian match factories and the cost of supervision is, therefore, much reduced, while capital expenditure on housing the European staff is avoided. Head Office expenses, necessarily very heavy for a company conducting business on a world scale, are comparatively light for the Indian concern. In all these respects the Indian manufacturer occupies a position of advantage and we see no reason why he should not compete effectively with the Swedish factories established in India, provided that he directs more attention than has been the case in the past to the quality and uniformity of his output. There is no cause, therefore, to think that in present circumstances any special measures are required against the Swedish Match Company. There is, however, among Indian manufacturers considerable apprehension as to the future which is based largely on the history, resources and general policy of the Swedish Match Company and in order to appreciate this aspect of the case, a brief account of the Company appears necessary.

145. The history of the Swedish Match Company is given in considerable detail in the pamphlet "The Swedish Match Company" published under its own name, and also in several of the prospectuses* and balance sheets which form part of our record. In 1903 two of the largest and the oldest of the match factories in Sweden known as the Jongkoping Company and Vulcan Match Works formed a combination which then or soon after absorbed five other companies. The ability of the Swedish match industry to compete in foreign markets which had been crippled was largely restored by the adoption of this course. But there still remained about eleven factories outside the group which, whether they competed against it or against one another, constituted a distinct handicap to maintenance of prices in foreign markets upon which the prosperity of the industry almost wholly depended. In 1913 Mr. Ivar Kreuger of Messrs. Kreuger and Toll, by the establishment of a Company called the United Swedish Match Factories, brought these factories under one single control. The

* *Vide* Supplementary Statement No. 1 submitted by Messrs. Adamjee Hajee Dawood and Company, Rangoon.

entire industry thus passed into the hands of these two combinations and though there was in the home market a good deal of co-operation between the two, competition in foreign markets was unavoidable. During the war Sweden had almost entirely lost its foreign trade. In 1917, in order to recapture it the Swedish Match Company was incorporated and the two combines were brought under the single control of that Company with Mr. Ivar Kreuger as Chairman.

146. The capital of the Company was, in 1917, 45 million Kronor or about $2\frac{1}{2}$ million pounds (Kr. 18·16=£1). In 1922, the Company increased its capital to Kr. 90,000,000 (£5,000,000), new shares being issued at a premium of 20 per cent. In 1924, the capital was increased by another Kr. 90,000,000 to Kr. 180,000,000 (£10,000,000). These shares were also issued at a premium. In 1927, a further issue at Kr. 230 of shares of the face value of 100 Kronors each, at a premium of 130 per cent. per share, brought up the capital of the Company to Kr. 270,000,000 which is equal to £15,000,000. The Swedish Match Company subsequently transferred a number of factories, concessions and other interests which it had acquired in various parts of America, Europe and in the East, to a new company called the International Match Corporation, incorporated in Delaware, United States of America, in December 1923. The Swedish Match Company controls this Corporation by holding a majority of its ordinary stock. According to the balance sheet of this Corporation, dated December 21, 1926, its capital consisted as follows:—

	Millions.
Participating preference stock	\$47·25
Common stock	\$30·03
TOTAL	\$77·28

147. The total capital of the two companies gives but an inadequate picture of their financial resources, the magnitude of their enterprise or of the commercial and even political influence they are able to exercise throughout the world. Under Swedish law not more than one-fifth of the voting power of the Swedish Match Company may be held by foreigners. In order both to secure capital and to enlist the support of powerful financial interests abroad, the bulk of the Company's capital consists of what are known as 'B' shares. Each share carries with it only $\frac{1}{1000}$ th part of a vote, while its right to participate in profits is not affected. The Swedish interests, thus, have practically the entire control of the Company, though the bulk of the capital is supplied by foreign investors. In 1925, within seven years of its inception, the Reserve fund of the Swedish Match Company, which was built up mainly out of the premium on the issue of fresh capital, amounted to 81·54 million Kronors (about $4\frac{3}{4}$ million pounds), or equal to about half the then subscribed capital. In 1927, as we have seen.

about 5 million pounds of fresh capital was issued at a premium of 130 per cent. To these amounts must be added the reserve of the International Match Corporation. Further, both the Companies have acquired a dominant control over the capital invested in the manufacture of matches in about 30 countries of the world. In this way large local reserves have been built up gradually in the books of most of the subsidiary companies which, when necessary, would be at the disposal of the parent company. From resources such as these arise not only the ability to carry on competition for an indefinite period, but the power to acquire a considerable amount of financial and political influence and in fact some of the most powerful banking organizations in London and New York are interested in the two companies. In return for concessions or monopolies, the Swedish Match Company has lent to foreign Governments large sums of money at comparatively low rates of interest. Among these the most important is the French Government to which about 80 million dollars, we understand, were recently advanced at 5 per cent. In the International Match Corporation's balance sheet for 1926 advances to Governments are shown to amount to about 22½ million dollars.

148. It may be estimated that the Swedish Match Company now controls not less than 65 to 70 per cent. of the total world's demand.

Extent of world control. It has built its factories practically in every important country in the world and where no factories exist, it exports matches from Sweden. In more than twenty-five countries it has either a complete monopoly granted by the Government or a virtual monopoly acquired in different ways to which we shall presently refer. In 1927 it entered into an arrangement with Messrs. Bryant and May under which, in substance, the British Company was to operate in the whole of the British Empire excluding Asia and the Swedish Match Company outside that area. The only European countries of any importance that are practically now outside the direct control of the Company are Finland, Austria-Hungary and Czecho-Slovakia, but it is believed that in Austria-Hungary and Czecho-Slovakia also it has a working arrangement as regards exports.

149. The object of the Company is to secure a position in every possible market of the world, which would enable it eventually to regulate prices. The acquisition even of the major part of the business in a market will not enable it to achieve this object. Either a complete monopoly must be obtained or a majority interest in every important unit constituting the industry. As we have stated, it has already secured this power in respect of 65 to 70 per cent. of the world's market.

150. We shall now briefly describe and give some illustrations of the methods adopted to secure its object. Where circumstances are favourable the Company obtains a direct monopoly from the State. In some cases the Company's methods. monopoly is granted because it is considered to be in the economic interest of the country. As an inducement to grant concessions moneys

are advanced sometimes as a direct loan to the Government at a low rate of interest or in the shape of discounting at a low rate the royalty payable to the Government during the whole period of the monopoly. The Company's arrangements with the Greek Government may be cited as an illustration of this policy. Where this is not possible, and especially where the industry is sheltered by a high tariff, the Company acquires in the country, by negotiation, existing factories or builds new ones. An attempt is then made to obtain control of the industry amicably. If this proves unsuccessful an intense price war is initiated until the local industry surrenders. For example, in Belgium very severe competition prevailed before the Company obtained virtual control of the industry. In this connection the statement recently made by the President of Belgian manufacturers before the special Committee appointed by the Belgian Government is of some interest.

"The cartel (meaning the Swedish Match Company) makes more money by the matches manufactured in Sweden and in other countries by it than on those manufactured in Belgium. It is therefore to its interest to close down in Belgium as many factories as possible. The price war which the cartel is capable of carrying on during years in all countries to which Belgium can hope to export matches * * * is very formidable. It is a matter of public notoriety that last year a Belgian factory was compelled to go into liquidation on account of this price war: the assets realized in the liquidation were not enough to pay 10 per cent. to the shareholders".

151. In Germany also the Swedish Match Company has acquired a controlling interest in about 65 per cent. of the industry and the German Government, fearing that the whole industry might pass into the hands of the Trust, agreed in 1927 to a compromise. A Sales Organization Company was incorporated in which the Swedish Trust and the German manufacturers had each a half interest. The Swedish group was given a share equal to 65 per cent. of the manufacture and the remainder was allocated to the German factories. No new factories may be erected except with the permission of the Government. But if any factory ceases to manufacture, its quota can be purchased by any existing factory and it is therefore possible that the Swedish Match Company may be able to acquire in course of time a considerable percentage of the existing factories other than those belonging to co-operative concerns. As regards sales, however, the German group will retain half the interest. The Government was compelled to have recourse to this compromise in order to save the German industry from the peril to which it was exposed.

Controlling interest of the Swedish Match Company in Germany.

152. Japan was the most formidable competitor of the Swedish Match Company in the East and, therefore, as we have stated in an earlier chapter, an intense price war was carried on against Japan in all the markets of the East, especially in India. In the end the Japanese industry succumbed to this competition. According to our information, the

Japan.

Swedish Match Company has now a controlling interest in about 80 per cent. of the Japanese industry.

153. While we think that nothing has so far occurred in the activities of the Swedish Match Company in India which calls for

Proposals of commercial bodies.

Government action, it must be admitted that the resources of the Swedish Company are sufficient, if it so desired, to crush for a time at least all competition from Indian firms and capture for itself the whole of the Indian market. It is in view of this possibility that the Board addressed Chambers of Commerce and Associations of Indian manufacturers and traders on the subject of the measures which should be adopted in the event of the Swedish Match Company establishing a practical monopoly in the Indian market. The replies received indicate that business opinion as a whole is averse to any establishment of a Government monopoly whether in the manufacture or sale of matches. The alternative, namely the establishment of a monopoly of sale entrusted to a Central sales organization, commends itself to the Indian Chambers of Commerce.

154. Their proposal is that this sales organization should be managed by a limited liability company and should be treated as a public utility concern. "The organization should be entirely Indian in management and capital and should control the

Monopoly of sale recommended by Indian Chambers of Commerce.

manufacture and sales of matches both local and imported. This sales organization should fix a price for the purchase of the products of manufacturers, such price being fixed separately for each manufacturer on the basis of his cost price *plus* a percentage for depreciation and interest on capital employed, provided that such price shall not be unreasonable having regard to the average cost of manufacture by Indians. This price should ordinarily hold good for a period of 5 years and the benefit of any cheapening in the cost of production that a manufacturer may bring about during this period should go to him". It is also proposed that all existing match factories in India should be licensed and a quota of production fixed in accordance with the present capacity and output of each individual factory. In the case of the Swedish factories, however, the quota should be fixed on the average output of the last 3 years and provision made for the reduction of this quota so as to ensure the cessation of production in 5 years.

155. Any scheme of this nature must depend for its success on the general support of match manufacturers and if a considerable section were opposed to it, because they

Scheme dependent for success on co operation of manufacturers.

believed that their interests would not receive sufficient consideration from the sales organization, it would be unreasonable to force this system on the industry. We believe, therefore, that, as in Germany where a somewhat similar system is in force, substantial agreement among Indian manufacturers is a condition precedent to any action by Government. Since at present reasonable profits are being made by most manufacturers, any prospect of such agreement

is remote. Nor will unanimity appear unless the Swedish Match Company attempts to capture the whole of the Indian market and the danger is so real and imminent as to merge all thought of private interest in that of the general safety. Should such a situation arise we should not hesitate to recommend Government to introduce the legislation necessary for enforcing an agreed scheme of control.

156. Before dealing with the proposals made by the Indian Chamber of Commerce in respect of licensing of match factories, it is necessary to refer to a proposal which has been very generally put forward, namely that a discriminating excise duty should be introduced. It has been suggested that a distinction should be drawn between companies and firms according as they are or are not financed by foreign capital. On the former an excise duty of eight annas per gross should be imposed while the latter should either be subject to no duty or to a duty smaller in amount. Since we are concerned with protection of Indian industries against foreign competition and the scope of our enquiries is as a rule limited by the conditions laid down by the Fiscal Commission, we should not normally consider the question of protecting any section of an industry against competition within the Tariff wall. Our terms of reference, however, in this enquiry are so extremely wide that we feel we cannot entirely disregard an aspect of the case which has been pressed on our notice from many quarters. The case as it has been presented to the Board combines two points of view. First, objection is taken to the employment of foreign capital in Indian industries and the demand is advanced that such enterprises should be specially taxed. The other aspect of the case concerns the possibility of the establishment of a monopoly and its effects on the interests of the country. Which ever point of view has been put forward, it has been assumed that a definite line of policy in the treatment of all foreign capital and of all monopolies is justified. Very important questions of policy have thus been raised which affect not only the Match industry, but also a number of other industries in this country. As regards the question of foreign capital, the matter was considered in some detail by the Fiscal Commission. In 1925, the Government also appointed a separate Committee—the External Capital Committee—to consider this subject. The reports of both these bodies indicate that the question whether the interests of the country necessitate the imposition of restrictions on the employment of foreign capital is by no means so easy of solution as it might at first appear and that in any case the difficulties in administration of any special measures and the possibility of evasion of any special disabilities imposed on foreign firms are such as to render the success of any system of differentiation extremely doubtful. It is not for this Board to attempt to decide in regard to a single industry questions of policy which are the concern of the Government and Legislature of the country. We shall, however, consider how far in the circumstances of the match industry, such measures would be in the interests of the industry and of the country as a whole.

157. So far as the interest of the consumer is concerned, we doubt if there is any ground for serious apprehension, even if the Company itself established a monopoly. All the

Monopoly would result in little additional burden to consumer.

modern tendency of Associations or Trusts which have obtained a position of monopoly in regard to the production of some particular commodity, is to fix the price at such a level as to offer no inducement to others to commence manufacture. Match machinery is comparatively inexpensive and can be quickly installed. The buildings required are also not of a type which require any lengthy period to construct. In the retail market as we have seen prices are determined by the monetary unit. Thus for a single box at present priced at 1 pice, no increase in price short of two pice is possible. The next stage in retail price, however, is that at which imported matches are now sold. We have seen how the industry expanded under the stimulus of a high revenue duty and it appears certain that if an attempt was made to push up the price of matches made in India to that at present prevailing for imported matches, new factories would arise to threaten the existence of the monopoly. It appears to us therefore that so far as the consumer is concerned, the result of the establishment of a match monopoly would be limited to some slight increase in the price of matches per dozen boxes.

158. On the other hand, it appears highly probable that within the limitations imposed by the retail market and the monetary unit,

Adverse features of monopoly.

the wholesale price of matches would be somewhat increased. Such increase would mean a corresponding reduction in the profits of the dealer and middleman. To this extent, therefore, in the case of a company financed by foreign capital additional profits which would otherwise remain in the country would be transferred abroad, while the company would also obtain those profits which in other circumstances would be distributed among Indian firms or shareholders. Further, if a monopoly of manufacture is established by a foreign firm, the industry is closed to Indian capitalists. In a country so backward as India industrially, the encouragement of the *entrepreneur* class in all industries is a matter of considerable importance. To this extent any organization of the industry which deprived Indian capitalists of a reasonable participation therein would be contrary to the interest of the country. We shall return to this aspect of the case later. Apart from very serious difficulties in administration it is doubtful, however, whether, even if the Swedish Match Company's actions justified restrictive measures, the national interests would best be served by a discriminating excise duty.

159. A discriminating excise to be effective must be pitched at such a level as to ensure that Swedish matches manufactured in

Effects of discriminating excise or reduction of quota on Swedish Match Company.

India are sold in the retail market at a price above the minimum monetary unit of one pice a box. The stage above the minimum price determined by the monetary unit is the price at which imported matches are sold.

It follows therefore that if an effective discriminating excise duty is imposed, the Indian matches of the Swedish Match Company must be sold at prices equal to imported matches where the unit of sale is less than a dozen. This will mean practically that the Company will cease manufacture in India. It appears, therefore, that the result of imposing a discriminating excise duty on the output of Swedish factories would be to force the Swedish Match Company to abandon operations in India. A very similar result would be obtained by the arrangements proposed by the Indian Chamber of Commerce. The suggestion is that if a sales monopoly is formed, the Swedish Match Company should receive a quota of production but that this quota should be reduced annually and extinguished within 5 years. Since a steadily decreasing output must mean higher costs, it is probable that the introduction of any such system would result in the immediate closing of the Swedish Match Company's factories in India, unless the increase in the cost of manufacture can be met by a reduction in the cost of distribution.

160. It need hardly be pointed out that proposals of this nature entirely overlook the vested interests of the Company and are by no means conducive to good trading relations with other countries. But apart from this it does not appear that the best interests of the country would be served by measures of this nature. We have seen that much remains to be done in the matter of experiment and research particularly in regard to the choice and treatment of suitable kinds of wood, and the co-operation of a firm of the standing of the Swedish Match Company will be of the greatest advantage in this respect. Once the industry has been declared protected, it will, we believe, be in the best interests of the Company to endeavour to promote the welfare of the industry and to develop the resources of the country. The existence of a high standard of quality at the Company's factories is also not without effect on the industry generally. Further, the training afforded to Indians in the Company's factories in the most modern methods of match manufacture must in course of time improve the general standard of manufacture in the industry as a whole. We consider, therefore, that the existence of the Company's factories is of distinct economic value to the country and that there is nothing in its activities up to the present time which calls for Government intervention. In the event of the Company using its large financial resources to attempt to extend its present share of the Indian market by means of unfair competition to the detriment of the Indian manufacturers, we should recommend that Government should be prepared to take such steps as may be necessary to safeguard the Indian industry. It is unnecessary at this stage to state in detail what action should be taken in such a case. But the general lines on which the situation may be met is indicated in our circular addressed to Indian commercial bodies.*

* Vide Appendix A.

161. There is a strong body of opinion in India which holds that legislation should be introduced compelling foreign companies operating in India to observe principles similar to those which were laid down by Government for regulating the payment of bounties to steel manufacture in the Steel Industry (Protection) Act of 1924, namely—

Importance of Company identifying itself with Indian interests.

“ No bounty shall be payable to or on behalf of any company, firm or other persons not already engaged at the commencement of this Act in the business of manufacturing any one or other of such articles unless such company, firm or persons provides facilities to the satisfaction of the Governor General in Council for the technical training of Indians in the manufacturing processes involved in the business and, in the case of a company, unless—

- (a) it has been formed and registered under the Indian Companies Act, 1913; and
- (b) it has a share capital the amount of which is expressed in the memorandum of association in rupees; and
- (c) such proportion of the directors as the Governor General in Council has by general or special order prescribed in this behalf consists of Indians ”.

It is sought thereby to secure that the management of such companies should be more closely identified with Indian interests, while the condition that the capital should be expressed in rupees would facilitate investment by Indians and help to keep the profits in the country. As pointed out by the Fiscal Commission, the provision of the Indian Companies Act which require that a company trading in India must be registered in India and have rupee capital and a registered office in India were intended to facilitate this object. We have seen that from the national point of view, the two adverse results of the establishment of a monopoly or quasi-monopoly by the Swedish Match Company are that profits instead of remaining in the country would be diverted abroad and that Indian capitalists would be deprived of a reasonable share in the industry. The former result would be mitigated if the capital of the Company were expressed in rupees and a fair opportunity given to Indians to subscribe. We consider, therefore, that it would be advantageous if this could be effected. But the latter result could only be avoided by some system of sales control which as we have seen depends on the co-operation of manufacturers. Any attempt to restrain the Company's policy directly by means of legislation would probably be unsuccessful. For it has been proved by the Swedish Company to be comparatively easy to evade a law of this nature and no effective control would thereby be imposed on the future operations of the Company. At the same time, we believe that the Company would be well advised to identify itself more closely with Indian interests by taking steps to comply with the conditions to which we have referred. Incidents have occurred in the past which have

given rise to much resentment and which cannot have conduced to the welfare of the Company. With a reasonable number of Indian Directors, such incidents would be avoided and the Company would be brought into much closer touch with Indian opinion. Further, if the capital of the Company were expressed in rupees and held to a large extent by Indians, the feeling of foreign exploitation would be far less acute. If then it is definitely declared that match manufacture in India is to be protected we believe that the Swedish Match Company would be short sighted indeed if it did not bring its activities into closer accord with public opinion in the country.



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CHAPTER IX.

Government Revenue.

162. In consequence of the growth of the industry which we have described in Chapter I, by the end of the financial year 1926-27,

Decline in Government revenue.

when this enquiry was referred to this Board, the revenue of the Government had been seriously affected. Since then there has been a further expansion of the industry resulting in a further loss of revenue to the Government. In Appendices F and G, we have given the quantity of matches and match splints and veneers imported since 1923-24 and also the total revenue derived by Government. To these figures has to be added the revenue derived by Government from the revenue duty of 15 per cent. to which materials used by the industry are liable. In 1923 practically no match wood was imported. In the works costs the value of materials other than wood and packing cases amount to about $3\frac{1}{2}$ annas per gross and calculating the duty at 15 per cent. on that amount, the incidence would be about .525 anna per gross. The approximate production of Indian factories in 1926 was 10.7 million gross. The duty on raw materials would therefore amount to about Rs. $3\frac{1}{2}$ lakhs. In 1923-24 it is doubtful if production in India much exceeded one million gross which would give a total duty of about Rs. 35,000. The figures regarding revenue may therefore be summarized as follows:—

<i>Duty on</i>	1923-24.	1926-27.
Matches, splints, veneers . . .	1,38,01,915	89,18,223
Imported match-wood . . .	...	2,60,000
Other raw materials . . .	35,000	3,50,000
	<hr/> 1,38,36,915	<hr/> 95,28,223

By the end of 1926-27, Government revenue from this source had fallen by at least Rs. 43 lakhs.

163. This fall is likely to continue. If our proposals are accepted, it is probable that little more than half a million gross of matches will continue to be imported. If we assume that aspen is used for half the matches produced in India—on a consumption of 16.5 million gross annually, between 25,000 and 30,000 tons of aspen would be required. Taking aspen at Rs. 100 per ton landed, the revenue would not exceed Rs. $4\frac{1}{2}$ lakhs. For other raw materials a duty amounting to .525 anna on a total production of $16\frac{1}{2}$ million

gross would give a revenue of nearly Rs. 5½ lakhs. The future revenue would therefore stand as follows:—

	Rs.
Duty on 500,000 gross matches at Rs. 1-8-0 per gross	7,50,000
Imported match wood	4,50,000 .
Other raw materials	5,50,000
	<hr/>
	17,50,000
	<hr/>

The revenue of Government may increase in other directions. Income-tax receipts may rise and more revenue be derived from railway freights. Any such increase will be too slight to make any appreciable difference in the position. Thus, as regards income-tax, we have found that the capital invested in the industry is about 175 lakhs: allowing a return of 10 per cent. thereon, the income-tax leviable would be less than Rs. 3 lakhs. As against this, however, has to be put the loss of income-tax on firms importing matches. As no approximate estimate can be made of the revenue derived from these indirect sources, we do not take them into account.

161. The figures which we have given above indicate that if the scheme of protection is successful, Government revenue from this source, which in 1923-24 stood at Rs. 138 lakhs, is likely to fall to about Rs. 17½ lakhs. Our terms of reference require us to report "whether the loss of Customs revenue can be made up in whole or in part by any other appropriate form of taxation of the industry" in the event of the present duty being maintained. We have considered whether we should recommend an increase in the duty on imported match wood. No very considerable increase in revenue would result unless the duty was raised to a very high level. Any large increase in the Customs duty on aspen would seriously affect the manufacturer who uses this wood. We have seen that the use of aspen for the manufacture of splints is more economical than the use of Indian wood. It appears therefore somewhat inadvisable to penalize its use by an enhancement of the duty. It is true that the use of indigenous timber would thereby be stimulated, but since the supply is insufficient for the manufacture of all the matches which existing factories can produce, an extension in the demand would result in an increase in price. Unless specially favourably situated those factories which use only Indian wood would derive no permanent advantage from a measure of this nature. We are not therefore in favour of an increase in the duty on imported match wood.

165. We see no reason, however, why in certain circumstances an excise duty should not be imposed on match factories in India.

On the 24th March, 1924, Sir Charles Innes speaking in the Council of State said "If the wood is imported from Sweden or Japan, and if the splints are cut in this country and if the veneers are made

Excise duty: General principles suggested.

in this country, then that will be a real genuine industry. At the same time it will set up circumstances which undoubtedly my Honourable friend on the right (The Honourable Sir Basil Blackett) will have to take into consideration. I do not for a moment suppose that the Government of India will impose on an industry of that kind such taxation as will tax it out of existence, but I think we may find it necessary to impose some amount of taxation on that industry. That I think is as far as I can go at present. I should like to make that statement in order that, if the industry is started, it may not be surprised that we have in some way to tax them". The incidence of a duty of this nature on an article in very common use is very small per head of population and is little felt by the individual. It is clear, however, that this Board is in no position to foresee the revenue requirements of Government and since the level at which any excise duty (if approved) should be fixed, must depend on Government's financial position, it is impossible to advise on this subject. There are, however, certain general principles in connection with the imposition of an excise duty which we desire to bring to the notice of Government. In paragraph 150 of its report the Fiscal Commission lays it down as a general principle that an excise duty should not be allowed to trench on the degree of protection required for any industry. It would generally follow from this that where an excise duty is imposed, the protective duty should be increased by a corresponding amount. Another point, however, to which we desire to draw attention is the effect of the monetary unit. This should be carefully considered in determining the level at which the excise duty (if required) and the addition to the customs duty (if any) should be fixed. If an increase in the retail price to the consumer cannot be avoided, the duty should be fixed at such a level as to absorb the whole of the increase in price. Any duty short of this must result in increased profit to the middleman. The only other matter in connection with an excise duty to which it is necessary to refer is its possible effect on the small manufacturer. We have already in the Chapter on Cottage Industries drawn attention to this and recommended that if possible some concession may be granted if an excise duty is imposed. This would be all the more necessary if any system of collection of the duty was introduced by means of revenue labels affixed to the match boxes, since this would impose an additional strain on the resources of the proprietors of cottage factories.

166. The question of the methods of administration of an excise duty is perhaps somewhat beyond the scope of this report. In the

Methods of administration of excise duty.

course of the oral evidence much attention was directed to the subject. The various methods of administration were fully considered and the difficulties in connection with them pointed out. It is evident that to some extent the method of collection adopted must depend on the level at which the duty is fixed. A duty of two or three annas per gross, which would offer no very large inducement to smuggling or illicit manufacture, would be most readily collected

by a system of returns similar to that at one time in force for the collection of the Cotton Excise. On the other hand, if a substantial duty were imposed, the possibility of manufacture in neighbouring Indian States and export into British India would have to be considered. In that event some system of labelling each box might be feasible. In many European countries each box of matches is stamped with a revenue label. The labels are obtained on payment from Government and affixed in the course of manufacture. Whether such a system should be adopted only for matches made in British India or whether it should be extended to imported matches also, would also require consideration. We may point out that the fact that the import of matches is almost entirely in the hands of the Swedish Match Company would probably facilitate any system of labelling for imported matches. These and similar problems are matters which, should an excise duty be imposed, will doubtless receive attention from the Revenue authorities. We have referred to them merely to emphasize the fact that the collection of an excise duty may not be free from difficulty. If, therefore, Government contemplates an excise duty on matches as a permanent source of revenue, it would perhaps make for efficiency in collection and simplify the administration of the duty, if at the commencement the duty imposed was on a moderate scale.



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CHAPTER X.

Summary of Findings and Proposals.

167. Under the stimulus of a revenue duty of Rs. 1-8-0 per gross the Match industry in India has made striking progress during the past five years. There are at present approximately 27 factories with a capacity of 500 gross a day or over and their total capacity amounts to about 18 million gross matches annually. The imports of matches have declined from 13.68 million gross in 1921-22 to 6.13 million in 1926-27.

2. The rapid expansion of the industry has been accompanied by a large reduction in costs, partly due to increased output and the introduction of up to date machinery, but mainly to the improved efficiency of Indian labour.

3. The future prices of aspen and of Indian wood may be expected to remain more or less at their present level, namely Rs. 120 a ton and Rs. 40 a ton, respectively, except in Bombay where the price of Indian wood may rise to Rs. 75 a ton.

4. The maximum price of Indian wood at which it may be used in the manufacture of splints in preference to aspen is about Rs. 24 a ton. It would therefore appear that at the present price of Indian wood its use in the manufacture of splints is not economically sound except in upcountry factories where railway freight is prohibitive and in Calcutta and Rangoon where Indian wood can be obtained fresh during most of the year.

5. The maximum price of Indian wood at which it may be used in preference to aspen in the manufacture of boxes is Rs. 75 a ton and in the manufacture of both splints and boxes Rs. 49 a ton.

6. In determining the fair selling price of Indian matches and the price of imported matches against which they have to compete, we have taken half size matches as representative of the industry as a whole since these constitute the bulk of the Indian production as well as of the imports.

7. We have based our estimates of the fair selling price of Indian matches on the costs of the Swedish Match Company's factory at Ambernath. This factory is the largest unit in the Match industry in India and is engaged solely in the production of half size matches and its costs are kept, unlike those of other Indian factories, on a regular cost accounting system.

8. We estimate the present fair selling price, f.o.r. works (including dealers' commission) of half size matches manufactured in India of aspen for splints and Indian wood for boxes at Rs. 1-4-0.94 per gross and of Indian wood for both splints and boxes at Rs. 1-2-7.43 per gross.

9. We estimate the future fair selling price f.o.r. works (including dealers' commission) of half size matches manufactured in

India of aspen for splints and Indian wood for boxes at Rs. 1-2-5-60 per gross and of Indian wood for both splints and boxes at Rs. 1-2-2-21 per gross.

10. The costs of several of the larger factories under Indian control are lower than those of the Swedish Match Company. The present fair selling price which we have estimated on the basis of the costs of the Ambernath factory, is more than sufficient to enable Indian manufacturers to secure a normal return on their capital.

11. We find that the price at which imported half size matches have been sold in Bombay, excluding duty but including landing and importation charges and dealers' commission, is as low as 11 annas 10 pies per gross.

12. The price f.o.r. works, Sweden, corresponding to a duty free price of 11 annas 10 pies in India would probably not exceed $7\frac{1}{2}d.$ which we believe to be an uneconomical price. In our opinion a duty free price of Rs. 1-1-4 $\frac{3}{4}$ per gross may be regarded as a fair price for imported half size matches in India.

13. We find that the Indian Match industry satisfies all the conditions laid down by the Fiscal Commission.

14. On the present fair selling price as estimated by us, we find, other things being equal, that Indian matches should be able to compete against imported matches with the ordinary revenue duty of 15 per cent. The need for protection, however, arises from the fact that imported matches are sold at uneconomical prices and that there is at present a marked prejudice against Indian matches which in the case of the best Indian factories is not justified by any differences of quality.

15. Our estimate of future economies is framed on somewhat conservative lines and we have no doubt that the industry will eventually be able to dispense with protection if there is no unfair competition and if the prejudice against Indian matches gradually disappears.

16. There are two important natural advantages which India possesses, *viz.*, the possession of a large home market and the existence of a supply of cheap labour. We estimate the present consumption of matches in India at 17 million gross a year and in this respect India has a distinct advantage over foreign manufacturers.

17. The machinery employed in the manufacture of matches is largely of a simple and automatic character and can be operated efficiently by Indian workmen. The cheapness of Indian labour therefore gives the Indian industry an advantage over Sweden.

18. Certain materials such as chemicals are not available in India, but it must be remembered that as far as the Match industry is concerned, no country can claim to possess all or most of the materials required.

19. Where aspen is used in the manufacture of splints, the price of wood is higher in India than in Sweden but this disadvantage is

counterbalanced by the freight and the costs incidental to the importation of matches.

20. We find that in Burma, Bengal, Assam, United Provinces and the Punjab there is an assured supply of Indian timber sufficient for the manufacture of nearly half the total demand in India. At present India supplies practically all the wood required for boxes and packing cases which constitute more than half the total quantity of wood required, and in addition supplies also a third of the amount required for splints.

21. The existing supply of Indian wood may be increased by a suitable system of plantation. It appears to us desirable that local Governments within whose territories match factories of any size or importance have been established, should adopt a cautious programme of plantation with reference to the probable future requirements of the factories.

22. We recommend that a definite research project into the Match industry should be drawn up at the Forest Research Institute, Dehra Dun. While the project should be under the immediate supervision of the Forest Economist, the appointment of a special officer might be considered to ensure contact with local Governments and match manufacturers.

23. *Primâ facie*, the measure of protection required by the industry may be estimated at 9 annas per gross which is approximately the difference between the present fair selling price of Indian half size matches consisting of aspen splints and Indian wood boxes and the duty free landed price of imported half size matches. To this, however, must be added a margin which will secure for Indian matches in the retail market an advantage sufficient to cover the prejudice against them.

24. In view of the limitations imposed by the minimum monetary unit in use in the match trade and having regard to the possibility of variations in the middleman's profit, we recommend that the present duty of Rs. 1-8-0 per gross should be maintained and should be converted into a protective duty.

25. In view of the fact that the prices of Indian matches are now determined by internal competition and that a fairly long period must be allowed for working out any scheme of plantation, we recommend that no limit be fixed to the period of protection. It is desirable, however, that Government should keep in touch with the progress made by the industry from time to time.

26. We consider that the manufacture of matches organized as a cottage industry has hardly any future and that on account of the dangerous character of some of the materials employed in it, it is not a fit industry for development on cottage lines. We cannot therefore recommend any special measures for the encouragement of cottage match factories.

27. If, however, an excise duty is imposed on matches manufactured in India, a reduction not exceeding 2 annas per gross

should be made in the case of cottage factories in consideration of their limited resources.

28. We find that there is no ground for the complaint that the Swedish Match Company has engaged in unfair competition with factories under Indian control by systematically selling the products of their Indian factories at uneconomical prices. On the other hand, these sell generally at higher prices than matches made by Indian manufacturers. In the case of imported half size matches, however, uneconomical prices have been charged.

29. Considerable provocation has been offered to Indian manufacturers by ill considered actions on the part of some of the Company's officers such as the production and sale of inferior matches and the employment of questionable methods of advertisement and negotiation.

30. We have not found that the interests of the Indian industry have been jeopardised by the activities of the Company or that up to the present the existence of its factories in India has been prejudicial to the national interest. On the contrary, we hold strongly that the elimination of the Swedish Match Company from India will be to the advantage neither of the industry nor of the country as a whole.

31. We do not think that in the present circumstances any action is called for against the Swedish Match Company on the ground of unfair competition. But taking into account the vast resources of the Company and the policy pursued by them in other countries, it is necessary that future developments of the Company in India should be watched. Should such developments indicate that the Company is acquiring undue control to the detriment of the Indian industry, we recommend that Government should take steps to safeguard the Indian industry.

32. We consider that, if the industry is declared protected, the Swedish Match Company should take steps at the earliest opportunity, to organize its business in India on the basis of an Indian company under the control of a local directorate with suitable Indian representation on it.

33. Should any proposals be made by agreement among manufacturers to regulate output and standards of quality, we recommend that Government should be prepared to consider them sympathetically and render such assistance as may be necessary.

34. If the scheme of protection is successful, Government revenue from matches which in 1923-24 stood at Rs. 138 lakhs is likely to fall to about Rs. 17 lakhs. In these circumstances an excise duty may, if necessary, be imposed on match factories in India. But we refrain from recommending any definite rate of duty as this must depend on Government's financial requirements.

35. If an excise duty is levied, it should be accompanied by a corresponding increase in the import duty so as not to trench on the

degree of protection afforded to the industry. Further, in levying the duty, care should be taken to fix it at such a level as to absorb as far as possible the whole of the increase in price.

P. P. GINWALLA,

President.

A. E. MATHIAS,

Member.

J. MATTHAI,

Member.

R. L. WALKER,

Secretary.

9th April, 1928.



सत्यमेव जयते

Part III.—Annexure & Appendices.



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ANNEXURE.

Memorandum on the supply of Indian wood for match manufacture.

1. Though we have found that the Match industry qualifies for protection even if its main raw material is imported, it is obviously in the national interest that the natural resources of India in match wood should be developed. The timber which forms the main raw material for match manufacture, is in the main of little service for other purposes and match wood trees in the past had been destroyed by the forest authorities as interfering with the growth of more valuable species. The utilisation of this timber therefore not only brings additional revenue to Government by way of royalty but also diminishes the expenditure on silvicultural operations. Due weight must also be allowed to the organization of the match wood supply in other parts of the world. The supply of aspen, which is generally considered the most suitable timber for match manufacture, is provided mainly from Sweden, Finland, and Russia. In the latter country the management of all trade and industry is presumably in the hands of the State, while in the former countries the supplies of aspen are largely controlled by the Swedish Match Company. The conditions therefore are such as to facilitate a monopoly of supply and it has been stated in evidence before us that one of the reasons for the increase in the price of aspen in the year 1927 was the concession granted to Messrs. Suzuki and Company by the Soviet Government. Against the possibility of any such control of supplies, the development of the forest resources of this country affords the surest protection. Further, a substantial portion of the present production of matches in India consists of matches made from Indian wood for which there is a ready market amongst the poorer classes. Some description of the present position and future possibilities in regard to the supply of indigenous wood is therefore necessary. Moreover, since the most economical form of match production is that in which aspen is used for splints and Indian wood for boxes, it is essential to the future of the industry that an adequate supply of suitable Indian wood shall be forthcoming at a reasonable price. The question of the future wood supply therefore calls for serious consideration.

2. A good match splint must not break readily either in manufacture or in striking and in order to ensure proper ignition it must be sufficiently porous to absorb a certain proportion of paraffin wax when dipped therein. The market also demands that the colour of the splint should be white. Colour does not, however, affect the utility of the match. The demand that splints should be white in colour arises entirely from the conservative outlook of consumers and is based partly on the fact that aspen of which the great bulk of matches is manufactured, has a distinctive white colour, and partly on the fact that the earlier and inferior products of Indian

factories were made of Indian wood of darker colour. The prejudice is however as we have already stated, very marked and affects the price obtainable, matches of darker wood being sold at some two to three annas a gross less. There are certain Indian woods of which the colour compares favourably with that of aspen: at the same time, from the point of view of the country generally, provided the splints are otherwise satisfactory, the question of colour may safely be ignored and in estimating the adequacy of the wood supply, we do not propose to take this quality into account. As regards wood for veneers for box making, the chief essential is that the veneers when turned off the peeling machine, should have a smooth surface, so that the paper may adhere evenly and the striking surface may be smooth. Further the wood must not be too brittle since in that event the wastage in box manufacture will be high.

3. These requirements limit to a considerable extent the kinds of wood which can be used. But there are other essentials also.

Qualities of suitable timber. The wood must be easy to veneer, cylindrical in shape, free from knots and comparatively cheap. As will appear later, owing to the higher wastage in the manufacture of matches from Indian wood, the question of price is of paramount importance. Since the cost of extraction and of carriage to the factory constitutes the major portion of the final cost, it follows that the timber should be readily accessible. When trees grow not in compact blocks, but scattered over wide areas, extraction costs must steadily increase as supplies have to be obtained further and further afield. Such species though otherwise suitable lack the element of permanence as a source of supply for commercial manufacture, and though they may from time to time be used in the various factories and to this extent supplement the available supplies of match wood, any organization of the supplies of such timber is entirely impracticable. There are therefore four qualifications which must be looked for in selecting timber for the manufacture of matches—

- (1) It must be of suitable quality.
- (2) It must be accessible.
- (3) Its cost must be comparatively low.
- (4) The supply must be sufficient for the requirements of the industry.

4. We think it desirable at this stage to set forth fully the difficulties which confront us in attempting to estimate the annual

supply of match wood available in Indian forests. It is obvious that in an enquiry of this nature any conclusions at which we arrive must be based to a very large extent on the results of investigations and research carried out by the Government Departments or by private bodies. Such questions as the distribution of the various species of trees suitable for match manufacture, the qualities of the different kinds of timber, their treatment and the proper

methods of storage, are matters which necessitate careful research and protracted investigation. On problems of this character, we are forced to accept in the main the results of investigations conducted by others and the degree of accuracy which can be claimed for our conclusions is thus limited by the amount of attention which has already been devoted to these subjects or the stage which research has as yet reached. Unfortunately, the information which we have been able to obtain is extremely scanty. No authoritative tests of Indian wood have been undertaken by the Dehra Dun Forest Research Institute with a view to determining its suitability for match manufacture. It is true that samples of various kinds of wood have been sent to different match manufacturers to be tested. But the results of such tests cannot be accepted without considerable reservations. Opinions of manufacturers are very divided and frequently entirely inconsistent with each other. Thus as regards genwa (*Eaccaria Agallocha*), while the Swedish Match Company report this to be very suitable for splint manufacture, some of the local manufacturers allege that it is very inferior. A similar conflict of opinion is to be found between Messrs. Adamjee Hajee Dawood and Company and the Swedish Match Company as to the relative merits of sawbya (*sterculia campanulata*). The reason for this divergence of views is to be found partly in differences in the standard of comparison and the relative importance attached to colour, but mainly to the condition in which the samples were received. To obtain the best results, the log should be veneered fresh before the sap has dried and it is clear that the results of experiments must vary extensively according to the period which has elapsed since the timber was felled and the climatic conditions to which it has been subjected. It is impossible therefore to ascertain which of the various woods at present in use for match manufacture are the most suitable. Nor indeed can we exclude the possibility that certain species at present rejected might yet if subjected to proper treatment, give satisfactory results.

5. Matches are manufactured from soft woods for which until recently there has been little demand in India. Until the Match industry was established on a considerable scale, many of these timbers were unsaleable and the trees were rightly regarded by the Forest Department as weeds impairing the growth of more valuable species. It is natural, therefore, that no enumeration of such species was attempted and save in a few areas in Burma no record is available of the stocks now existing in the forests. Further, little is known of the rate of growth, the liability to disease or the possibility of plantation of match woods. In such circumstances no estimate of future supplies is possible, for which even a reasonable degree of precision could be claimed. The most which we can attempt is to set forth on a conservative basis an estimate of the minimum annual supply within reach of the existing centres of the Match industry and obtainable by the factories at about present price.

6. Though the material at our disposal will not support a definite conclusion as to which Indian timber is the most suitable for match manufacture, there is ample evidence

Suitability of Indian wood for match manufacture. that satisfactory results have been obtained from several species. We find that in every

factory in India including the Swedish Match Company's factories, Indian wood is used for the manufacture of boxes, practically no imported wood being used for this purpose. In 1926, 10 million gross of matches were manufactured, requiring for the manufacture of boxes alone between 20,000 and 25,000 tons of Indian wood. Purchasers were found for the whole of this output and so far as we are aware, no complaints have been received as to the quality of the boxes. It appears, therefore, that match boxes of serviceable quality can be manufactured on a commercial scale from Indian wood. For splints imported aspen wood is still largely used, but the output of matches made entirely of Indian wood is by no means negligible. Out of the total output of matches manufactured in India, about one-third is of splints of Indian wood. The important factory of Messrs. Adamjee Hajee Dawood and Company in Rangoon uses no imported wood while the Gujerat Islam factory and the factories in the Central Provinces, the United Provinces and the Punjab obtain their supplies of timber entirely from Indian forests. We do not contend that such matches are equal in appearance and finish to the aspen match. Save in colour, however, the matches produced by Messrs. Adamjee Hajee Dawood and Company are but slightly inferior while all matches manufactured of Indian wood by the larger and better equipped factories are in our opinion of serviceable quality.

7. During recent years a larger number of Indian woods have been found suitable for match manufacture in varying degrees.

Kinds of timber used. Mr. Troup in his memoir on Match manufacture states that of the 59 samples of Indian woods tested by Mr. A. Roller, Berlin, 51 were reported suitable for match manufacture in varying degrees, but in the light of later experience many of these species would now be rejected. The Forest Research Institute gives the following list of woods which have at one time or another been reported as useful for match making by actual manufacturers in India:—

Species.	For splints.	For boxes.
<i>Bombax malabaricum</i> (simul)	Poor.	Good.
<i>Bombax insigne</i> (didu)	"	"
<i>Gmelina arborea</i>	"	Fair.
<i>Sterculia campanulata</i> (Andaman popita)	Fair.	Good.
(Burman sawbya.)		
<i>Spodiopogon mangifera</i> (gwe)	"	Fair.
<i>Euclea coriaria</i> <i>Agallocha</i> (genwa)	Good.	Good.
<i>Albizia stipulata</i> (maulettanse)	"	"
<i>Mangifera indica</i> (mango)	Very good.	"
<i>Populus euphratica</i> (river poplar)	Fair.	Good.
<i>Populus ciliata</i> (hill poplar)	"	"
<i>Lophopetalum Wrightianum</i>	Good.	Good.
<i>Holigarna</i> <i>Arnotiana</i>	Fair.	Fair.
<i>Treosia nudiflora</i>	"	"
<i>Stereospermum chelonoides</i>	"	"
<i>Sarcocephalus cordatus</i> (probably the maulettanish of Burma).	"	"

Species.	For splints.	For boxes
<i>Oana Wodier</i>		Satisfactory.
<i>Alstonia scholaris</i>	Fair.	Fair.
<i>Boswellia serrata</i> (salai)	"	"
<i>Buchanania latifolia</i>	"	"
<i>Symplocos</i> spp.	Good.	—
<i>Pinus excelsa</i> (blao pine)	Very good.	—
<i>Picea Morinda</i> (spruce)	Good but difficult to work.	—

8. In view of the stage which manufacture of matches from Indian wood has now reached, we believe that there can be no reasonable doubt that India contains timber

Local supplies of wood. of a quality suitable for match manufacture.

But far more careful experiments under varying conditions are needed before it can be decided which of the various species now in use give the best commercial results. We are thus faced by an initial difficulty. If, as in Europe, a single species of wood were used in all factories alike, the problem before us would be more easily approached. Unfortunately such is not the case. Indian wood dries very rapidly and stored under Indian conditions quickly deteriorates. This, combined with the difficulty and expense of transport, necessitates at present the use of local supplies and since the soft woods differ both in kind and in distribution in the various provinces, the kinds of timber used in the different factories vary considerably. Thus while in Burma sawhya (*Sterculia campanulata*) letpan or simul (*Bombax malabaricum*), maulettanshe and bonmeza are largely used, in Bombay *Bombax malabaricum* (simul), *Boswellia serrata* (salai), *Odina Wodier* (shembat) and mango are the main kinds in use. It is necessary, therefore, to consider the question of the wood supply with reference to the various groups of factories.

9. Of the 27 factories with a maximum capacity of 500 gross or more of matches daily, four are situated in Rangoon, ten in Bombay, and six in Calcutta. Of these the largest and most important are:—

	Capacity gross of boxes per annum.
1. Messrs. Adamjee Hajee Dawood and Company's factory at Rangoon	1,800,000
2. Swedish Match Company's factory, Ambernath, Bombay	3,000,000
3. Bombay Match Works	1,500,000
4. Andheri Match Company	1,050,000
5. Esavi India Match Manufacturing Company, Calcutta	1,650,000
6. Swedish Match Company's factory, Calcutta	1,575,000
TOTAL	10,575,000

These six factories have a capacity equal to the total Indian output in 1926 and could supply more than half the present requirements of India. We propose therefore to commence our examination of this subject by directing our attention to the question of wood supply in Rangoon, Calcutta and Bombay.

10. In Chapter II of our report we have found that where Indian wood is used for the manufacture of both splints and boxes, the economic price as compared with aspen is Rs. 49 per ton. For the manufacture of splints only in the absence of special circumstances the economic level of price is Rs. 24 per ton and for the manufacture of boxes Rs. 75 per ton. The present general level of price is Rs. 40 per ton and our estimate of the available supply of Indian wood is based on this figure.

11. The total capacity of match factories in Rangoon is 2·8 million gross matches annually. Nearly all matches manufactured in Burma are full size matches. According to present practice, one cubic foot of timber will produce about 3 gross of matches. An annual supply of 9·3 lakhs of cubic feet or about $18\frac{1}{2}$ thousand tons of timber therefore is required. This quantity does not appear large and *prima facie* it would appear that in Burma, with its 30,000 square miles of reserved forest and 150,000 square miles unclassified forest, there should be little difficulty in obtaining this supply. But although undoubtedly Burma contains a supply of match wood sufficient not only for its own requirements but also probably for those of the whole of India, the difficulties of extraction and transport are such that but a fraction of this supply is available. The trees at present most commonly used for the manufacture of matches in Burma are sawbya (*Sterculia campanulata*), letpan (*Bombax malabaricum*), maulettanshe (*Sarcocipholus cordatus*) and bonmeza (*Albizzia stipulata*). Of these the two latter are the most suitable for splints, though splints of good quality are also made from sawbya and of fair quality from letpan. From all four kinds boxes of good quality are made. Didu (*Bombax insignis*) and gwe (*Spondias mangifera*) are also sometimes used both for splints and boxes. Except bonmeza all these are fairly plentiful, but unfortunately with the exception of sawbya they occur scattered over wide areas. Sawbya is common in the Insein Division and though mixed with other species is sufficiently plentiful to render extraction over a series of years not unduly expensive.

12. The following is an estimate supplied by the Forest Department of the supply of match wood which could be landed at Rangoon at the present price, namely, between Rs. 35 and Rs. 40 per ton.

Forest estimate.	Department	Area accessible	Stock of match wood, 18' and over.	Annual supply during a felling series of 15 years.
		Acres.	Tons.	Tons.
INSEIN DIVISION.				
<i>Reserves</i>				
Mahuya } auanglin }	120,500	31,629	3,000
Western plains series	46,941	11,186	1,000
MAGWE DIVISION	60 sq. miles.	26,000	2,600

	Area accessible.	Stock of match wood, 18' and over.	Annual supply during a felling series of 15 years.
	Acres.	Tons.	Tons.
PYINMANA DIVISION.			
Mynbyin	80,000	34,320	3,400
Yonbin	32,000	15,680	1,500
Palwe	26,000	10,920	1,000
Kaing	13,341	13,000	1,300
Yanaunginyin	13,078	3,660	360
Total . . . . .	...	149,620	14,160

For the Insein Division estimates are based on a 25 per cent. enumeration, for the Magwe division on enumeration of a few plots over a limited area, for the Pyinmana division on a 5 per cent. enumeration in the Mynbyin, Yonbin and Palwe reserves, and on a 20 per cent. enumeration in the Kaing and Yanaunginyin reserves. Exploitable girth has been fixed at 5 feet at breast height. The species of match wood enumerated were—

In Insein Division—

Sawhya, Gwe, Maulettanshe, Didu and Letpan.

In Magwe Division—

Didu, Letpan and Gwe.

In Pyinmana Division—

(a) Mynbyin Reserve—Didu, Letpan, Gwe and Maulettanshe

(b) Elsewhere.—Yemane, Didu, Letpan, Gwe, Maulettanshe and Lettock.

It is necessary to explain that no great degree of accuracy is claimed by the Forest Department even for this estimate, though it is based on actual enumeration of a percentage of trees in different areas. We have, however, been informed that the Forest Department's estimate is framed on most conservative lines and in our opinion it may be taken as representing the minimum annual output which is obtainable within easy reach of Rangoon.

13. This estimate excludes from consideration the match wood available from Tenasserim Division which we have been informed

is by no means negligible. In addition there is also available a limited supply from unclassified forests, while if the present price were raised to an average of Rs. 40 per ton, the Forest Department's estimate might also be slightly raised. On the whole, we think that 16,000 tons is the safe estimate of the minimum annual permanent supply. Match factories in Burma, however, are not entirely dependent on the Burma forests for their supply of timber. At the present time Messrs. Adamjee Haje Dawood and Company are importing annually between 4,000 and 5,000 tons of match wood from the Andamans. This supply is, however, dependent on the continued running of the Government steamer between the Rangoon and Port Blair.

14. The Indian wood in use in Calcutta is mainly *genwa* (*Excaecaria Agallocha*), though *papita* (*Sterculia campanulata*) and *dhup* (*Ailanthus malabarica*) from the Andaman islands are also used. The larger factories use imported aspen for the preparation

of splints of superior quality, but Indian wood only is used in the manufacture of boxes. *Genwa* (*Excaecaria Agallocha*) is found in large quantities in the Sundarbans. Owing to the difficult nature of the forest and the unhealthy climate, no organized extraction of this timber has so far been undertaken. It is cut and brought to Calcutta by local fishermen in their boats, each consignment being comparatively small though the total annual output is very large. On arrival the timber is sold to middlemen who control the market. Transport to Calcutta occupies a considerable time and supplies are intermittent, partly owing to weather conditions and partly to want of organization. In consequence the condition in which the logs arrive varies considerably, and this variation probably accounts for the different reports which we have received as to the suitability of this wood for match manufacture. The representative of the Swedish Match Company has, however, informed us that except in the hot weather months, splints of good quality can be manufactured from *genwa* while it has been in general use for the manufacture of boxes.

15. The supply of *genwa* timber from the Sundarbans in the last three years has been as follows:—

	Tons.
1924-25	141,008
1925-26	166,404
1926-27	193,649

The Conservator of Forests reports that only a small portion of this was probably suitable for the manufacture of matches, that no estimate of the annual supply can be formed until the working plans have been completed and that it is not certain that the present output can be continued in future years. The present capacity of Calcutta factories is about 4·2 million gross. The average output of full size matches from *genwa* wood is at present not less than 2½ gross per cubic foot. Approximately, therefore, not more than 1·7 million cubic feet or some 34,000 tons of *genwa* is needed annually to meet the requirements of the Calcutta factories if both splints and boxes are made from it, and half this quantity if it is used only for the manufacture of boxes. It must be remembered that *genwa* is used largely for other purposes besides the manufacture of matches. But even so, the requirements of the match factories form a very small proportion of the output of the forests and we think there should be no difficulty in maintaining a regular permanent supply. Present prices vary somewhat at different times

of the year, but the average price may be taken at about Rs. 40 per ton.

16. The local supply can, to some extent, be supplemented by importation from the Andaman Islands. The Swedish Match Company has supplied us with its latest report on the possibility of match wood extraction from this source. The species of timber at present exported for match manufacture from the Andaman Islands are papita (*Sterculia campanulata*), dhup (*Canarium euphyllum*), didu (*Bombax insigne*) and bakota. The latter has been found by the Swedish Match Company to be excellent for splints, but their report regarding papita is discouraging. This wood, known as sawbya in Burma, has been found to give satisfactory results when extracted from Burmese forests and the difference in quality is presumably due to the different growing conditions, in the two areas. No final conclusion, however, has been arrived at and the matter is admittedly one for further enquiry and experiment. Mr. Bonnington, the Chief Forest Officer of the Andamans, estimates the total quantity of match wood in the Islands at 960,000 tons. This estimate, as an estimate of the total available quantity of match wood extractable at about present rates, is confirmed by the report of the representative of the Swedish Match Company. Great difficulties exist, however, in shipping logs to India. Communication is maintained by means of two Government steamers. Most of the cargo space is required for more valuable timber. Further, since this has already been sawn into squares in the Government saw mill, its transport is relatively cheap. It is doubtful whether at present as much as 2,000 tons a year can be transported to Calcutta and there is no assurance that in the future even this supply can be maintained. Match wood logs must be exported with the bark unremoved so that the wood may not dry. They must also be cylindrical and for this reason occupy more space. As a commercial proposition a high freight would be necessary on such wood even in normal circumstances, while the fact that there is very little cargo shipped to the Andamans necessitates even higher freights than would ordinarily be charged. Further, since match wood logs are wet, they must be loaded in the bottom of the ship lest they should spoil other cargo. Landing charges are therefore heavy while it is probable that, since shippers require a certain minimum quantity to be loaded in 24 hours, heavy demurrage charges will also be leviable. It seems improbable therefore that the Andamans will become an important source of supply for match wood in India within any reasonable period of time.

17. With the exception of factories in Gujerat nearly all factories in the Bombay Presidency use imported aspen wood for their splints. Owing mainly to their darker colour, splints of Indian wood find practi-

Supply in Bombay.

cally no sale in the city of Bombay, and though a certain proportion of matches of local wood are manufactured for the up-country market, the bulk of the production of splints is from aspen. Boxes, however, are manufactured of Indian wood when this is available. The total capacity of the Bombay factories is about 8.5 million gross of boxes per annum mostly of half size. Output is at the rate of 5 gross half size boxes per cubic foot of Indian wood. At the rate of 50 cubic feet per ton, the amount of wood required works out to about 33,000 tons annually of which half (or about 17,000 tons) is required for the manufacture of boxes. The kinds of wood in most common use in the factories are simul (*Bombar malabaricum*), shimat (*Odina Wodier*), mango (*Mangifera indica*) and salai (*Boswellia serrata*). Most of these trees occur scattered over areas and in the absence of large supplies in the vicinity of Bombay, extraction and transport must become steadily more costly. No enumeration of such woods has been undertaken in the Bombay Presidency and the Forest Department have very little information on the subject. The Chief Conservator estimates that possibly some 4,000 tons would be available annually from the Colaba and Thana Divisions at the present market price about Rs. 40 per ton. At a somewhat higher price a further supply might be forthcoming from East Khandesh where the stock of *Boswellia serrata* is stated to be considerable. From this source an annual supply of some 2,000 tons might possibly be secured. On our present information an annual supply of not more than 6,000 tons of match wood might be secured, if the price rose considerably.

18. The only factory which appears to have sufficient supply of Indian wood is the Gujerat Islam Match factory. In 1911, the management of this concern undertook plantation of simul (*Bombar malabaricum*) over an area of some 130 acres. Until this plantation yields mature wood for match manufacture, the Company claims to be able to obtain sufficient supplies of timber from the Dangs and Panch Mahals forests. Other factories use Indian wood when obtainable, but there is a general complaint that Indian match wood is difficult to obtain and supplies are available only at irregular intervals. During the monsoon months no local timber can be extracted and it is therefore necessary to accumulate stocks for considerable periods. A large number of the factories around Bombay were started for the purpose of dipping imported splints and it is natural therefore that the question of storage attracted little attention. Probably as a result of this, the Bombay factories, unlike the factories in Burma, do not store their logs in water. We have been informed by the representative of the Swedish Match Company that little protection is afforded by this form of storage. The authorities of the Forest Research Institute at Dehra Dun are of a different opinion. The matter is one for further investigation. According to the opinion which we quote below, it affords a practical method of preserving timber against the attacks of the borer

insect.* At our inspection of the Ambernath factory of the Western India Match Company, we found that not only had the Indian wood in store been attacked by this insect but the aspen wood was also infected. Obviously the wastage in the manufacture of matches must be much higher when timber is used which has been damaged in this way. It appears to us, therefore, that the present supply of Indian timber is not adequate for the needs of the Bombay factories and that in the future there is little probability of augmenting it, if reliance is placed merely on the natural resources of the forests. Further, unless means can be devised to render timber immune from the attacks of the borer insect, the possibility of infection of aspen wood from stocks of Indian wood may render the use of the latter positively detrimental to the industry.

19. In addition to the three groups of factories at the seaport towns, well equipped factories have also been established at Dhubri

Other factories.

in Assam, at Bareilly in the United Provinces and at Lahore in the Punjab. The Assam Match Company situated at Dhubri in Assam has an assured supply of *simul* and *machilus* wood. The Bareilly factory uses *simul*, *Odina Wodier*, *Holoptelea integrifolia* and *Trewia nudiflora*, the latter being used almost entirely for splints. The capacity of the factory is 1,500 gross daily and the amount of wood required per annum is some 3,000 tons. From the Utilization Report of the United Provinces for the year 1926-27, it appears that some 400 tons of *Trewia nudiflora* is available annually, while the supply of *simul* is placed at some 3,000 tons annually. *Holoptelea integrifolia* and *Odina Wodier* are also stated to be common and situated in localities which admit of easy transport. If the Forest Department's report is correct, it appears that no difficulty should arise in regard to the wood supply of this factory. In this respect the situation of the Mahalakshmi factory near Lahore is less favourable. Supplies of *simul* have to be obtained from the United Provinces and transported over considerable distances. Satisfactory results have been obtained from the blue pine (*Pinus excelsa*), the logs being boiled before use. Supplies of this timber amount to some 6,000 tons annually and although at present this is more than sufficient for the requirements of the factory, there are other commercial uses for this wood, and it is doubtful whether over a series of years the required amount will be obtainable at a price which will enable manufacture to be undertaken

* Mr. C. V. Swée, B.S.M.F., in his treatise on seasoning methods for Indian timbers remarks:—

“Immersion in water is of marked benefit in connection with the storage of logs and timbers either awaiting conversion or facilities for proper seasoning. As has been pointed out, the storage of wood in the form of logs or squares on land is decidedly hazardous. Therefore where storage is necessary, immersion in fresh water is much to be preferred to ordinary storage on land. Cracking and splitting are prevented and organisms of decay will not develop. Likewise insect attack is prevented.”

on economic lines. Spruce and silver fir, of which there are ample supplies, have been tried, but yield good results only when veneered immediately after cutting. Transport difficulties have so far rendered it impossible to secure delivery of the logs at the factory in a fresh condition. At present efforts are being made to overcome this difficulty by manufacturing splints and veneers out of hill poplar and willow in Kashmir and transporting them to the factory. It is, however, not yet possible to determine from such experiments as have been carried out whether this method offers any prospect of ultimate commercial success.

20. While on the whole the present situation in regard to the supply of Indian match wood is not unsatisfactory, it must be remembered that one of the chief natural advantages which the industry enjoys at present is the low price at which match wood can be delivered at the factory. It is essential for the progress of the industry not only that the quantity of wood available should be increased, but that its price should, as far as possible, be reduced. We have, therefore, considered the possibility of Government undertaking the plantation of suitable species of timber in convenient localities thereby reducing to an appreciable degree the costs of extraction and transportation. At our request the Chief Conservator of Forests, Burma, has drawn up an estimate of the cost of producing utilizable standing timber, after allowing for compound interest at 4 per cent. on the outlay (Statement No. 2). It has been explained to us that in the absence of reliable information as to rate of growth, outturn per acre, etc., no accuracy can be claimed for this forecast. It is, however, believed to be on the safe side. If plantation were undertaken through the agency of communities practising shifting cultivation (taungya) the cost of formation would not, we are informed, exceed Rs. 30 per acre. Without the assistance of such tribes the costs might extend to as much as Rs. 120 per acre. Taking this latter figure as the basis of calculation, we find that on a 20 years' rotation, match wood can be produced at Rs. 10-12-0 per ton of 50 cubic feet. In 1926, Messrs. Adamjee Hajee Dawood and Company paid a royalty of Rs. 12-8-0 per ton for wood extracted from their forest concession in the Insein Division and were able to obtain delivery at their Rangoon factory at the low price of between Rs. 35 and Rs. 40 per ton.

21. On these figures it would appear that after covering the cost of plantation together with compound interest at 4 per cent., Government would obtain a profit of Rs. 1-12-0 per ton. It must, however, be remembered that the match wood at present available in Government forests is scattered and often not easy to extract. With comparatively compact plantations in easily accessible areas the cost of extraction should be substantially reduced and it should be possible to increase the royalty, should this be thought desirable, while at the same time enabling the manufacturer to obtain delivery at his works in

Rangoon at a price substantially below that prevailing at present. Even under the most unfavourable circumstances, therefore, it does not appear that a scheme for the plantation of trees suitable for use in the Match industry is liable to objection on financial grounds, while in favourable circumstances the profits secured may well prove to be considerably in excess of that obtained from the plantation of other species. The opinion of the Conservator of Forests, Assam, where plantation of simal has been undertaken during the last 14 years by the agency of tribes practising shifting cultivation, is in general agreement with this conclusion. We consider, therefore, that financial considerations form no obstacle to the provision of all the match wood required by the industry by means of plantation.

22. It appears to us, therefore, desirable that Local Governments within whose territories match factories of any size or importance have been established, should

Cautious system of
plantation recommended.

undertake a cautious system of plantation with reference to the probable future requirements of the factories. Consistently with the payment of a royalty which should not be less, allowing for the costs of plantation and the rotation of fellings, than is obtainable from plantation of other species of timber, it should be the aim of Local Governments to reduce the cost of timber at factory and thus encourage the development of the industry. We have been informed by the Chief Conservator of Forests, Burma, that by re-arranging the present programme of plantation and by employing the services of communities practising shifting cultivation, 1,000 acres of reserved forest could be planted with match wood in Burma annually at the low cost of Rs. 35 per acre. At this rate the cost of formation and supervision *plus* 4 per cent. compound interest would be covered by royalty of Rs. 5 per ton produced and provided suitable localities for plantation could be selected and the cost of extraction and transport thus reduced, it appears that timber could be delivered profitably at Rangoon at a price much below that at present prevailing. The present requirements of Burma match manufacturers amount to about 18,500 tons of wood annually, while there is an assured supply of some 16,000 tons a year. So ambitious a scheme of plantation as 1,000 acres a year does not appear to us to be necessary unless it is found possible to supply the match factories in Calcutta at an economic price.

23. Calcutta is fairly well supplied with wood, and no scheme of plantation within reasonable reach of Calcutta appears feasible.

Possibility of plantation in Bombay.

But in Bombay the question of the supply of Indian wood at a reasonable price is acute. Speaking generally, it may be stated that the Bombay factories are unsuitably situated in regard to the supplies of Indian wood. The industry was at first concerned merely with dipping imported splints and constructing boxes from imported veneers and the profits which accrued from this method of evading the enhanced customs duty on matches imposed in 1922;

rendered rapidity of construction and vicinity to the port the main objects at which manufacturers aimed in erecting their factories. Such important considerations as the location of the wood supplies, the possibility of providing tank storage or even the vicinity of permanent markets were matters of minor consideration. In order to obtain the fullest and most economic utilization of Indian wood, it is probable that some redistribution of factories would be necessary. At present the Bombay factories supply approximately 5.15 million gross boxes a year, while the import of foreign matches at that port is 1.3 million. The total demand is, therefore, 6.45 million. We have been informed by the Forest Department that at the present price the Bombay forests are capable of a permanent supply of 4,000 tons of match wood annually, which is sufficient for the production of about 1 million gross annually. For the production of the balance (5.45 million gross) on a 20 years' rotation, it would be necessary to plant some 800 acres annually or if boxes only were made of Indian wood, some 400 acres annually. Plantation on so large a scale would not be undertaken without very careful experiment and research, particularly in a province where the local demands on the forests are perhaps greater in relation to their size than is the case elsewhere. We consider, however, that the question of plantation should receive the careful attention of the Local Government and that such steps as may be found feasible to increase the supply of Indian wood should be undertaken.

24. In estimating the requirements of the Match industry in respect of timber, we have taken no account of the amount of wood

Packing cases.

required for packing cases. Owing to their inflammable nature, matches must be most carefully packed. For this purpose wooden cases are used, invariably lined during the monsoon months with zinc, and at other times of the year in certain provinces with tar paper. Many kinds of Indian woods are suitable for the construction of packing cases and in the seaport towns there is also a very considerable supply of wood reclaimed from used crates and cases. We think, therefore, that the supply of timber for this purpose is adequate and that no detailed investigation into this subject is called for. Packing charges form a very small part of the cost of production of matches and in this respect Indian manufacturers are at no disadvantage as compared with their foreign competitors.

25. We have indicated generally the directions in which the solution of the problem of the supply of Indian match wood lies.

The information at our disposal is not sufficient to enable us to advise on such matters as the desirability of undertaking plantation

Research project for matches recommended.

work in all provinces, far less to determine the most suitable localities for such plantation. Clearly these are matters which must form the subject of separate investigation by the Forest Department. A necessary preliminary to any such investigation is an authoritative decision as to the most suitable kinds of timber

for match manufacture in the various provinces. We have already stated that the Dehra Dun Forest Research Institute has not as yet undertaken the work of testing the various kinds of timber with a view to determining their relative merits for match manufacture. Tests by match manufacturers though useful for comparison with results obtained at the Institute, cannot be accepted as conclusive. For their conclusions are liable to be influenced not only by conservatism and possibly by their own manufacturing interests, but also by lack of knowledge as to conditions of growth, length and method of storage in respect of the timber which is the subject of experiment. We recommend that a definite research project into the Match industry should be drawn up at Dehra Dun Institute. It will, of course, be necessary to instal such machinery as will ensure that the enquiry is conducted under commercial conditions. The problems to be investigated will include the suitability of the various kinds of Indian timber for match manufacture, the best method of storage, the extent to which the quality of the wood can be improved by previous treatment such as steaming or boiling, and the prevention of attack by insects. We mention these merely as an indication of the extent to which investigation is needed in this industry and the list is by no means exhaustive. We desire to emphasize the fact that the reliability of the results arrived at by the Research Institute must depend largely on the extent to which provincial forest departments co-operate. On such matters as the selection of fellings, the conditions of growth, the method and time of storage of the logs selected for experiment, the Institute must depend primarily on the assistance it receives from officers of the Local Governments. Considerations of this nature incline us to the view that while the research project should be conducted under the immediate supervision of the Forest Economist at Dehra Dun, some method of close contact with Local Governments must be devised. For this purpose the appointment of a special officer might well be considered whose duty it would be to keep in touch both with the provincial departments and also with the development of match manufacture in India.



APPENDIX A.

Letter from the Tariff Board to all Chambers of Commerce and Associations of Indian Match Manufacturers, and Traders, No. 946-A., dated the 5th December 1927.

I am directed to forward for the information of your ^{Chamber}_{Association} a copy of the remarks made by Sir Padamji P. Ginwala, President of the Indian Tariff Board, in resuming the enquiry into the Match Manufacturing Industry in India.*

2. The Board is anxious to obtain as full and complete an expression of commercial opinion as is possible, on the problems which are now engaging its attention. From the President's remarks it will be observed that there are certain aspects of the enquiry which have not yet been brought specifically to the notice of your ^{Chamber}_{Association}. Further, certain of the proposals which have been received involve considerations of general policy on which it is desirable that your ^{Chamber}_{Association} should have an opportunity of expressing an opinion, while the future organization of an industry engaged in the manufacture of a commodity in such common use as matches is a matter of considerable general interest.

3. An important aspect of the case which has been pressed on the notice of the Board concerns the activities of the Swedish Trust. As your ^{Chamber}_{Association} is aware, this Trust has in recent years obtained a dominating interest in the match trade of almost every country and its policy is avowedly aimed at securing a controlling interest in the match trade of the world. In pursuance of this policy, it is alleged, the Trust aims at securing a dominating position in India, partly by eliminating the smaller Indian concerns by means of unfair competition, partly by working arrangements with the larger Indian factories should this appear to be the most feasible course. Having acquired that control, it is alleged that the Trust will raise prices in India, thereby exploiting the country for the benefit of foreigners. The remedy which has been most commonly proposed is the imposition of a special excise duty on matches manufactured by firms or companies financed by foreign capital.

4. The case as it has been presented to the Board combines two points of view. First, objection is taken to the employment of foreign capital in Indian industries and the demand is advanced that such enterprises should be specially taxed. The question has already been considered by the External Capital Committee appointed by the Government of India in 1925 and it is unnecessary to deal at length with the matter here. It is sufficient to point out that considerable difficulty must be anticipated in determining whether a firm is or is not financed by foreign capital and that the possibility of evasion of any such form of taxation is a serious consideration which must not be overlooked. The other aspect of the case concerns the possibility of the establishment of a monopoly. It is urged that it is undesirable in the interests of the country to allow the smaller industrialists to be crushed, thereby enabling a single firm or group of firms to fix prices considerably in excess of the cost of production. The objection applies equally to a monopoly whether engineered by an Indian or foreign firm but an excise duty on foreign capital is proposed as an *ad hoc* measure, since the danger of monopoly at present threatens from a foreign firm. It is, however, by no means clear that this proposal would be effective. Apart from the fact that no data have been put forward on which it would be possible to estimate the amount of excise duty sufficient to prevent unfair competition, it appears not impossible that the measure may precipitate the crisis which it is designed to prevent. The Swedish Trust has at its

[* *Vide* Oral evidence, dated 22nd November 1927.]

command exceedingly large capital resources and faced with the prospect of closing its factories in India as a result of the excise duty, it may resolve on the one hand to initiate a price war regardless of cost or, on the other hand, to buy out the larger factories in this country. In either event, it might be argued that a corporation of this size would have no great difficulty in effecting a practical monopoly, when the special excise could be passed on to the consumer. Another possibility which must not be overlooked is that the Swedish Trust would comply with all the requirements of the law regarding Indian capital and would thus not be liable to the special excise duty. Practical control of the policy might still remain in Swedish hands and the danger of monopoly would remain.

5. The risk of the country being exploited by a single firm or combination of firms of match manufacturers could however be met by the establishment of a regulated monopoly. It is in this direction that European countries have generally sought for a solution of the problem created by the Swedish Match Trust. There are several methods by which in existing circumstances this effect could be attained. The first and perhaps the most obvious method is by establishing a monopoly both in manufacture and sale. The Swedish Trust controls the largest and best equipped group of factories in the country and with its long experience of manufacture, it is indisputable that it could produce a standard article of good quality at a low price. From a purely financial point of view it might be considered a good proposition to hand over the monopoly both of manufacture and of sale of matches in India to this Trust on payment of an annual sum to Government. Conditions might be made regarding the employment of Indians, the issue of Rupee capital, the quality of the goods and the price at which they were to be sold. A system of this kind is in force in Greece and Poland, where the Swedish Trust holds a monopoly. This, however, would mean that match manufacture would cease to be a national industry and on grounds of sentiment alone such a proposal affords no practical solution of the problem. A second method of securing control is by the establishment of a Government monopoly both of manufacture and of sale. This is essentially the system which is at present in force in France. There are, however, well-known objections to State manufacture and it is generally accepted that Government is normally not in a position to manufacture either so well or so cheaply as a private firm or a company.

6. Another means of preventing exploitation is by establishing a monopoly in sale, manufacture being carried on by private agency but the production regulated by requiring that the manufacture of matches should be under license. The establishment of new factories or extension of existing factories would then be controlled. Sale could be entrusted either to a separate organization or retained in the hands of Government itself. In the former case it would be necessary to form a separate sales syndicate, to which the monopoly would be entrusted. A system of this nature is in force in Germany, where a sales organization has been formed, the capital being contributed by the match manufacturers who also form the directorate of the corporation. Definite quotas of production are fixed for each manufacturer and all sales are effected by the sales organization. Government, however, retains the right of controlling the price at which the sales syndicate sells, should this appear excessive. Factories are licensed by Government and an increase in the production of matches either by the construction of new factories or extension of existing ones can thereby be prevented. At the present time the number of match factories in India is large and their size varies from the large up to date factory employing the latest machinery to the small factory where all processes are carried out by hand. There is, therefore, great difficulty in securing any effective organization of manufacturers and the introduction of the German system in its entirety would be by no means easy. At the same time some development of this method of control may appear feasible. It might be possible to organize a sales corporation comprising interests independent of match manufacturers. In that event it would be necessary to fix the price at which such a corporation purchased its supplies, the price at which it disposed of them, and

the proportion in which purchase was to be effected from each factory. The opinion of your ^{Chamber}_{Association} is requested as to whether any such corporation could be formed and, if so, whether an arrangement on these lines would prove satisfactory.

7. There remains the system of Government monopoly of sales. Restriction of manufacture by means of licensing will still be necessary since Government could not undertake to purchase matches to an unlimited extent. It would also be necessary to fix the price at which Government would purchase from manufacturers. As regards selling arrangements, various methods are possible. Government wholesale depôts might be established in the larger centres. But this would involve the organization of a new department on a somewhat extensive scale and might well be objected to on the ground of expense. Financial control, however, might be secured on much the same lines as obtains in the excise department for the sale of country liquor in some provinces. Purchasers might be required to pay into the Treasury both the cost price and the excise duty on matches. On production of the Treasury voucher by the purchaser the manufacturer would then supply the required quantity of matches and would obtain payment from the Treasury on presentation of the voucher. This method, however, might be considered cumbrous and unsuited to the requirements of the trade.

8. If a monopoly in sales is considered desirable, the most satisfactory arrangement would appear to be to entrust it to an independent sales corporation. Till, however, the organization of such a corporation becomes feasible or if it is found impossible, Government may administer the monopoly through its own agency with the assistance of a committee representing manufacturers, traders and general commercial interests. The function of such a committee *inter alia* might be to advise from time to time as to the price, quality, amount and distribution of output among the various factories. The import of matches might be undertaken by the Government acting with the advice of the Committee referred to above or might be controlled by a system of licence.

9. Any such system of monopoly presupposes that the factories undertaking manufacture are well equipped and of reasonable size and it would follow, therefore, that the smaller factories would disappear. The opinion of your ^{Chamber}_{Association} is requested as to how far such a result is desirable. I am to point out that the concentration of match manufacture in a few factories organized on a large scale would probably result in a substantial reduction in the cost of production. Further, a sales organization acting through a single agency would reduce the cost of distribution and the absence of competition would render unnecessary the very large number of different labels at present in use. With the kinds of labels reduced to a minimum, a still further reduction in costs could be effected while the elimination of competition would also result in the reduction of the profits of the middleman, which the Board has been informed are excessive. Further, mass production in well equipped factories may reasonably be expected to raise the quality of Indian matches while with a standardized product the prejudice against Indian matches, based mainly on the output of the smallest factories established in unsuitable localities, is likely to disappear rapidly. I am also to point out that at present there exists a very real danger of over-production, specially in particular localities. The growth of the Match industry around Bombay renders it increasingly difficult to secure a market for the goods produced. Competition is therefore intense and there has been a very rapid fall in price. A system of control on these lines will tend to prevent over-production and wasteful competition and to ensure a reasonable standard of quality. It will also secure a fair profit to the manufacturer and generally help to stabilise prices and at the same time safeguard the Government revenues. It will further have the advantage of maintaining a substantial share of the production in the hands of Indian manufacturers. I am now to request that your ^{Chamber}_{Association} will

favour the Board with its views on the various matters dealt with in the enclosure and in particular as to how far it considers a system of Government monopoly in matches is desirable both in the interest of the industry and of the country in general. If it considers such a system desirable, I am to enquire which of the methods outlined in this letter it would consider would secure the best results. The Board would esteem it a favour if your reply could be submitted at a very early date. I am to express regret that it has not been possible to consult the Chamber Association on these points before, but many of the considerations and suggestions which form the subject of this letter, could not be stated as definite issues until the examination of witnesses had reached an advanced stage.

10. In conclusion, I am to explain that the Board has arrived at no conclusion as regards the various matters which form the subject of this letter and that any views which have been expressed must be regarded as illustrative only.



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APPENDIX B.

REPORT ON EXPERIMENTS CARRIED OUT AT AMBARNATH ON THE 3RD AND 4TH JANUARY 1928, TO FIND THE PERCENTAGE OF WASTAGE OF DIFFERENT CLASSES OF WOOD DURING THE PROCESS OF MANUFACTURE OF SPLINTS AND BOXES.

*Letter dated the 26th January 1928, to A. E. Matthias, Esq., I.C.S.,
Member of the Tariff Board, 1, Council House Street, Calcutta.*

I understand from our Technical Staff that you made your own notes of the tests that were carried out at Ambarnath during your visit there. All the same, I presume that a copy of the report I received on the subject would be useful to you as a check on your own figures. I have gone through the figures, and would like to point out what you probably realise yourself, that it is practically impossible with a commodity like match timber to arrive at an accurate test which can be used as a kind of permanent standard. There are too many variations with this timber, not only with regard to seasons and different times of storage, but also in respect of the structure and shape of each individual log. I think this is also apparent in connection with the tests under review, as the result is unduly unfair to the Indian wood and at the same time particularly unfavourable to Aspen. I have, of course, always emphasised in my evidence before the Board that Aspen is an eminently suitable timber for match making, but in all fairness I must admit that the percentage achieved at Ambarnath during your visit exceeded anything that I have seen during my experience in practical working.

At the same time, the three experiments give a useful indication of the variations that can occur with regard to the yield of different kinds of match wood. The experiment with Shemut further shows that when it comes to old wood, practically anything can happen in the way of wastage.

Enclosure No. 1.

Report regarding investigation in order to find the percentage of waste in different stages of manufacture.

The first investigation carried out was with one Shemut log (*Odina Wodier*), measuring 8 ft. 3 in. in length and 34 in. in girth.

The following data were obtained:—

Gross weight of the log—300 lbs.

	Lbs.
Waste of cut end pieces	16.0
Waste in block stripping	20.5
Waste in peeling (only outer box veneers were peeled)	135.0
Waste in chopping	8.5
TOTAL .	180 or 60 per cent.

The nett weight of chopped veneers was 107 lbs. which together with the weight of the waste leaves a balance of 13 lbs. not accounted for, due to the fact that when cutting the blocks from the logs the saw-dust could not be collected.

Of this 107 lbs., 68 lbs. were sent to box making department.

The issue from the box making machines was 60·5 lbs. of wet boxes and 14·5 lbs. of waste, i.e., total 75 lbs., in which figure is included the paste and paper used, viz., 4·5 and 2 lbs. respectively. The figures show a balance of 0·5 lb. which cannot be accounted for.

The weight of the boxes after drying was 31 lbs.

In order to test these outer boxes throughout the manufacture, inner boxes of other wood were used and 18 lbs. of the latter were required as well as 1 lb. of labels giving a total of 50 lbs. The weight of the ready boxes after labelling was 37 lbs. and the weight of the waste 14 lbs. Total 51 lbs. leaving a balance of 1 lb. not accounted for (Paste?).

Of above boxes, 1,272 were sent to the box filling department and filled by machines. After having gone through the box filling machines 772 boxes were found to be all right and 500 boxes found to be faulty in one way or another mostly due to breakage of the outer boxes.

Summary.

In the following summary it has been presumed that the whole log has gone through the manufacture and gone in a wet stage throughout in which case the following figures will be reached at:—

Original weight of log—300 lbs.

	Lbs.	Per cent.
Waste in cross cutting	13	5
Waste in stripping	20·5	7
Waste in peeling	135·0	45
Waste in chopping	8·5	3
Waste in box making	20·5	7
Waste in labelling	24·5	8
Waste in box filling	25·0	8
Waste not accounted for	13·0	4
TOTAL	263	87

which means 13 per cent. of the measured in wood has actually been used.

Consequently the amount needed for a case of 50 gross will be as follows:—

	C. ft.	
For boxes only	10	With a theoretical content of 1·32 c. ft. per case.
For splints	*14·70	With a theoretical content of 1·91 c. ft. per case.
	24·70	

or for 100 gross 49·40 real cubic feet which corresponds to 39 Indian cubic feet according to Mercer's table.

* This figure is uncertain as no test was carried out as far as splints are concerned.

Enclosure No. 2.

Report regarding investigation in order to find the percentage of waste in different stages of manufacture.

The second investigation carried out was with one Sawar log (*Bombax Malaboricum*), measuring 14 ft. 6 in. in length and 47 in. in girth.

The following data were obtained:—

Gross weight of the log—1,013 lbs.

	Lbs.
Waste of cut end pieces	28·0
Waste in block stripping	266·0
Waste in outer box peeling and chopping	130·0
Waste in inner box peeling and chopping	130·0
Waste in bottom peeling and chopping	59·5
Waste in cutting and trimming blocks for outer box peeling	128·0
TOTAL	725

The weight of the chopped veneers was as follows:—

	Lbs.
Outer box veneers	61·5
Inner box veneers	191·0
Bottom veneers	35·5
TOTAL	288

Summary.

In the following summary it has been presumed that the whole log has gone through the manufacture and gone in a wet stage throughout. In order to keep the equilibrium between the different kinds of veneers some veneers from other logs had to be used.

The percentages work out as follows:—

	Lbs.	Per cent.
Cross cutting	28·0	3
Block stripping	266·0	26
Cutting and trimming blocks	128·0	13
Outer box peeling and chopping	130·0	13
Inner box peeling and chopping	113·5	11
Bottom peeling and chopping	59·5	6
Waste in box making	28·8	3
Waste in labelling	10·4	1
Waste in box filling	31·3	3
TOTAL WASTE	795·5	79

Cutting and trimming of blocks made an additional waste of 128 lbs. but if this quantity had gone through the peeling machines about 50 per cent. would have been useful veneers.

Consequently the total waste will be reduced to 795·5 or 72 per cent. which means that 28 per cent. of the measured in wood has actually been used.

Consequently the amount needed for a case of 50 gross will be as follows:—

	C. ft.	
For boxes only . . .	4·7	With a theoretical content of 1·32 per case.
For splints . . .	*6·8	With a theoretical content of 1·91 per case.
TOTAL . . .	11·5	

or for 100 gross 23·0 real c. ft. which corresponds to about 18·0 Indian c. ft. according to Mercer's table.

Enclosure No. 3.

Report regarding investigation in order to find the percentage of waste in different stages of manufacture.

The third investigation carried out was with one Aspen log (*Populus Japonica*), measuring 10 ft. 5 in. in length and 14 in. in diameter.

The following data were obtained:

	Lbs.
Gross weight of the log—893 lbs.	
Waste of cut end pieces	8
Waste in stripping	35
Waste in peeling	165
Waste in chopping	28
TOTAL . . .	236

The log in question gave us 667 lbs. of box veneers of which 110 lbs. were sent for box making, labelling, box filling, etc., and the waste worked out as follows:—

	Per cent.
Outer box making	1·3
Inner box making	2·0
Labelling	1·0
Box filling	0·2

Summary of percentages.

	Per cent.
Waste in cross cutting	1·0
Waste in stripping	4·0
Waste in peeling	19·0
Waste in chopping	3·0
Waste in outer box making	1·3
Waste in inner box making	2·0
Waste in labelling	1·0
Waste in box filling	0·2
TOTAL . . .	31·5

Roughly 32 per cent.

which means 68 per cent. of the measured in wood has actually been used.

* This figure is uncertain as no test was carried out as far as splints are concerned.

Consequently the amount needed for a case of 50 gross will be as follows:—

	C. ft.	
For boxes only . . .	1.95	With a theoretical content of 1.32 c. ft. per case.
For splints . . .	2.80	With a theoretical content of 1.91 c. ft. per case.
TOTAL	4.75	

or for 100 gross 9.59 c. ft.

Dombay, 9th December 1928.

[N.B.—Throughout the above experiments the wastage for splints has been calculated by the Swedish Match Company on the assumption that the wastage involved in the manufacture of splints and boxes is the same. This is not correct. In para. 18 of the Report, therefore, the wastage for splints has been calculated on the basis of the proportionate percentages set out in para. 17 of the Report.]



APPENDIX C.

Mr. Ivar Kreuger's Memorandum regarding the Match trade in India.

During the past years a considerable agitation has been carried on in India against the Swedish Match Company, advocating special laws and regulations discriminating against the Swedish Match Company in favour of the local Indian Match Manufacturers. The latter, many of whom have taken a very active part in the agitation, evidently hoped to gain advantages for themselves in this way and to create difficulties for an important competitor.

In this agitation two charges have generally been brought against the Swedish Match Company, *viz.*, that it carries on a systematic dumping policy with the object of destroying the business of the local Indian Match Manufacturers, and that the Company is aspiring to a monopoly of the Indian match trade in order to be able to charge the public exorbitant prices for its products.

In order to give the Indian Tariff Commission an opportunity to form a correct opinion on these questions the Swedish Match Company desires to give a short outline of its general price policy.

It must be evident to anybody with experience in the export business that a Company like the Swedish Match Company, doing business in all different parts of the world, cannot adopt a uniform price policy for all countries. The selling price of matches must vary not only according to the manufacturing cost of different types of matches but also according to local competition, purchasing power of the public, popularity of a certain trade-mark and a great number of other factors. In many instances the monetary system of a country is decisive for the retail price which the public has to pay. For example, in the United States the retail price of matches will be at least 1 cent a box and in Great Britain at least 1 penny a box, independently of the price charged by the manufacturer. It is natural that in such cases the Swedish Match Company will be able to obtain for its well-established trade-marks considerably higher prices than its competitors, and a lowering of the prices quoted by the Swedish Match Company, for its products would not then be of any benefit to the public. In other countries like India where the retail price of matches plays a greater role to the public than in the United States and England and consequently is more closely dependent upon the price charged by the manufacturer, it is necessary for the Swedish Match Company to maintain prices on practically the same level as the competitors. Even in India old established trade-marks may for a certain time admit of higher prices to the public, but if any considerable difference in price exists the more expensive brands of matches will soon lose their hold on the market and ultimately disappear.

It is generally recognised that for an industrial enterprise to carry on a regular dumping policy it is necessary to have a large home market protected by high tariffs so that the profits obtained from the home market can compensate for the losses made on the export business. This condition is not fulfilled for the Swedish Match Company, for which the home market only amounts to a few per cent. of the total trade, and it would therefore be absolutely impossible for the Company to adopt dumping as a general policy.

As far as the Indian factories under the control of the Swedish Match Company are concerned, the instructions given from Sweden have been that matches should not be sold except at prices at least covering all costs including all overhead charges.

In the case of matches exported from Sweden, profit has for the last years been kept on a very nominal level in order to keep our prices in line with other match exporting countries supplying the Indian market.

In view of the uncertainty regarding the view of the Indian Government upon the existing high import duty on matches, namely whether it is to be continued to be looked at as a purely revenue duty or whether it is in future to be considered a protective one the Swedish Match Company has wanted to maintain its well-known Swedish brands in the Indian market even at an extremely small margin of profit to itself.

However, should the duty be declared a protective one, the price policy outlined above would not be continued.

Regarding the charge that the Swedish Match Company is trying to establish a monopoly in India it must be emphatically denied that the policy of the Company is to establish such a monopoly.

Except in cases where the Swedish Match Company has made agreements with Governments, the Company has never aimed at obtaining a monopoly of the trade, but only at getting the opportunity to compete on equal terms with its competitors.

In order to understand the position of the Swedish Match Company with regard to the development of the Match Industry in India, it must be pointed out that the modern match industry has been made possible entirely through Swedish inventions and that during the last 80 years the most important improvements in manufacturing methods and machinery have originated in Sweden. For half a century the Swedish Match Industry has had a firmly established trade in India. Under such conditions it seems that the Swedish Match Company has a strong moral claim to participate in the Indian match trade, and the efforts made by the Swedish Match Company to maintain or strengthen its position in India ought not to be regarded as unjustified or aggressive. For more than 50 years the Company, or its predecessors, has been the main factor in deciding the prices in the export markets, and no case can be shown where the Company has abused its position by charging excessive prices to the public.

When our competitors have claimed that we were charging excessive prices in different countries they have been unable to give any other instances than the prices of matches in countries with State monopolies, such as Peru. It is entirely incorrect to take the prices in such countries which have been fixed by the Government as an indication of the Swedish Match Company's price policy. Under such conditions the price paid by the public largely constitutes a tax which the Swedish Match Company is collecting for the Government.

As a matter of fact all agitation against our Company arises from the fact that we consistently refused to over-charge the public for our goods and on account of our large turn-over and efficient manufacturing methods and selling organisation have been able to sell at a price that does not satisfy our competitors' claim for profit.

It may be stated without exaggeration that the possibility for the Swedish Match Company to work under the same conditions as its competitors in different countries constitutes the chief protection for the public against having to pay abnormally high prices for matches and any special legislation with a direct or indirect aim to putting the Swedish Match Company in a disadvantageous position compared to its competitors cannot fail to carry with it as a consequence an increase in the prices the public has to pay.

For everyone who wants to look at the situation in a fair way, it must also be quite clear that a company doing its main business outside its own country is so dependent upon public opinion that it cannot retain its markets except by giving the public a better and more efficient service than the competitors are doing.

The Swedish Match Company feels convinced that the Indian Tariff Commission will recognise that the Company has a fair claim to compete for the Indian match trade on equal terms with other competitors, and that the general policy of the Swedish Match Company is neither aggressive nor monopolistic in its tendency.

APPENDIX D.

Statements showing the actual production, nominal capacity, capital, etc., of the match factories in India.

(1) By Provinces.

Provinces.	ACTUAL PRODUCTION.		NOMINAL CAPACITY.		CAPITAL.		
	1926 Gross.	Recent Gross per day.	Year = 300 days gross.	Per day gross.	Block.	Working.	Total.
1. Bombay	5,045,502	24,364	8,490,000	27,900	Rs. 37,32,393	Rs. 24,50,000	Rs. 61,82,393
2. Bengal	2,614,970	12,850	4,872,200	16,240	20,07,613	16,12,500	36,20,113
3. Burma	1,651,707	8,112	2,887,500	9,625	46,11,085	19,70,000	65,81,685
4. United Provinces	450,000	1,500	450,000	1,500	2,07,000	50,000	2,57,000
5. Central Provinces	360,000	1,200	360,000	1,200	..*	..†	1,00,000
6. Madras	344,094	1,146	534,000	1,780	4,00,995	81,500	4,82,495
7. Punjab	180,478	800	300,000	1,000	2,23,058	1,20,000	3,43,058
8. Assam	31,900	1,500	525,000	1,750	4,48,930	1,75,000	6,23,930
9. Bihar and Orissa	24,000	75	30,000	100	50,550	15,000	65,550
TOTAL	10,702,651	51,547	18,448,700	61,095	1,16,82,224	64,74,000	1,82,56,224

* Block value not known.

† Working Capital not known.

Statements showing the actual production, nominal capacity, capital, etc., of the match factories in India—contd.

(2) By Factories.

Name of factory.	ACTUAL PRODUCTION.		COSTS.			NOMINAL CAPACITY.		CAPITAL.			
	1926 Gross.	Recent Gross per day.	1926.		Recent.	Year - 300 days Gross.	Per day Gross.	Block.	Working.	Total.	
			Rs. A.	P.							Rs. A.
<i>Bombay Factories.</i>											
Bombay Match Works . . .	843,800	4,500	1	2	7 2	1	0	0 81	2,75,701	4,75,000	7,50,701
Titwala Match Factory . . .	300,000	1,100	1	1	7 2	1	1	7 2	15,000	50,000	65,000
Santa Cruz Match Works . . .	645,900	2,500	1	2	4 8	1	1	4 10	5,00,000	2,00,000	7,00,000
Andheri Match Company. . .	609,800	2,500	1	0	0 10	0	14	9 57	2,50,000	3,00,000	5,50,000
Thana Match Works . . .	15,000*	1,200 to 1,300	1	7	0	1	2	2 46	56,000	50,000	1,06,000
National Match Works . . .	132,500	440	1	2	4 92	1	2	0	17,000	70,000	87,000
Borivli Match Manufacturing Com- pany.	180,000	1,500	1	2	4 8	..	..	..	..†	1,00,000	1,00,000
Swadeshi Match Manufacturing Com- pany.	110,000	440	..	..	..	1	1	1 11	50,000	30,000	80,000
Western India Match Company . .	1,997,000	9,584	1	3	11	1	0	2	20,61,000	10,50,000	31,11,000
Gujrat Islam Match Manufacturing Company, Limited.	151,400	500	1	3	0	1	2	0	4,32,692	1,00,000	5,32,692
Ahmedabad Sultan Match Factory .	59,502	100	1	8	0	1	2	0	75,000	25,000	1,00,000
TOTAL .	5,045,502	24,364	..	..	..	8,490,000	27,000	37,32,393	24,50,000	61,82,393	

<i>Bengal Factories.</i>										
Western India Match Company	947,800	4,794	1 12 7	1 3 11	1,575,000	5,250	8,48,370	9,50,000	17,98,370	
Jalpaiguri Industries, Ltd.	12,000†	15	1 11 0	..	12,000	40	13,943	2,500	16,443	
Bhagirathi Match Factory	25,000	200	1 8 6	1 6 0	60,000	200	50,000	25,000	75,000	
Prasanna Match Factory	7,920	27	1 8 0	..	30,000	100	..†	5,000	5,000	
Calcutta Match Factory	4,000	14	0 15 1	..	60,200	200	1,84,445	..§	1,84,445	
M. N. Mehta's Factory	300,000	2,200	1 11 0	1 6 0	750,000	2,500	3,48,000	1,50,000	4,98,000	
Essavi Match Manufacturing Com- pany.	864,500	4,000	1 10 0	1 8 0	1,650,000	5,500	4,50,000	2,50,000	7,00,000	
New Sundarban Match Factory, Limited.	18,750	150	1 8 3	..	150,000	500	74,000	30,000	1,04,000	
Karimbhoy Match Manufacturing Company.	300,000	1,000	1 8 3	..	450,000	1,500	..†	1,50,000	1,50,000	
Dharansey and Company	135,000†	450	..	1 6 0	135,000	450	38,855	50,000	88,855	
TOTAL	2,614,970	12,850	..	..	4,872,200	16,240	20,07,613	16,12,500	36,20,113	
<i>Burma Factories.</i>										
Adamjee Hajee Dawood and Com- pany, Limited.	1,101,716	5,500	1 6 2	1 4 7	1,800,000	6,000	34,30,000	15,00,000	49,30,000	
Rangoon Match Works	180,000	600	1 7 7-6	1 7 7-6	300,000	1,000	1,02,000	1,00,000	2,02,000	
Moslem Match Factory	57,941	416	..	1 4 4	187,500	625	1,00,000	70,000	1,70,000	
Burma Match Company, Limited	221,750	1,596	1 7 2	1 4 8	600,000	2,000	6,59,860	3,00,000	9,59,860	
Mandalay Match Company, Limited	90,300	Now closed	..	..	..	..	3,19,825	..§	3,19,825	
TOTAL	1,651,707	8,112	..	..	2,887,500	9,625	46,11,685	19,70,000	65,81,685	
<i>Assam Factory.</i>										
Assam Match Company, Limited	31,900	1,500	1 2 0	0 14 8	525,000	1,750	4,48,930	1,75,000	6,23,930	
<i>Punjab Factory.</i>										
Mahalakshmi Match Factory	180,478	800	1 9 1	1 3 5	300,000	1,000	2,23,058	1,20,000	3,43,058	

* Three months' production. | † Denotes nominal capacity, actual figures not available. | ‡ Block value unknown. | § Working capital unknown.

Statements showing the actual production, nominal capacity, capital, etc., of the match factories in India—conold.

(2) By Factories—*contd.*

Name of factory.	ACTUAL PRODUCTION.		Costs.		NOMINAL CAPACITY.		CAPITAL.		
	1926 Gross.	Recent Gross per day.	1926. Rs. A. P.	Recent. Rs. A. P.	Year—300 days Gross.	Per day Gross.	Block. Rs.	Working. Rs.	Total. Rs.
<i>Madras Factories.</i>									
South Indian Match Factory, Limited	22,094	73	1 4 3	0 13 6-7	210,000	700	2,81,495	25,000	3,06,495
Standard Match Factory	12,000	40	1 6 0	..	12,000	40	4,500	1,500	6,000
Malabar Match Manufacturing Com- pany, Limited.	300,000†	1,000†	..	..	300,000	1,000	1,00,000	50,000	1,50,000
Madras Swadesh Match Factory	10,000	33	1 6 0	..	12,000	40	15,000	5,000	20,000
TOTAL	344,094	1,146	..	..	534,000	1,780	4,00,995	81,500	4,82,495
<i>United Provinces Factory.</i>									
Bareilly Match Works	450,000†	1,500	1 2 0	1 1 0	450,000	1,500	2,07,000	50,000	2,57,000
<i>Central Provinces Factory.</i>									
Amrit Match Factory	360,000†	1,200†	..	..	360,000	1,200	..†	..*	1,00,000
<i>Bihar and Orissa Factory.</i>									
Government Demonstration Match Factory.	24,000	75	2 13 2	2 4 9-9	30,000	100	50,550	15,000	65,550
* Working Capital unknown. † Block value unknown. ‡ Denotes nominal capacity, actual figures not available.									

* Working Capital unknown. | † Block value unknown. | ‡ Denotes nominal capacity, actual figures not available.

APPENDIX E.

*Production of Matches in India by the Swedish Match Company compared with the imports from Sweden and the total imports :
October 1924 to February 1928 (Gross Boxes).*

	Ambarnath Factory.	Calcutta Factory.	Rangoon Factory.	Mandalay Factory.	Bhubri Factory.	Parel Factory.	Total production.	Imports from Sweden.	Total Imports.
<i>1924-25</i>									
October .	31,800	13,900	..	..	..	..	45,700	229,700	576,588
November .	32,996	18,700	..	..	..	..	51,696	328,700	715,731
December .	40,450	16,300	..	..	..	..	56,750	309,300	633,167
January .	32,600	10,950	..	..	..	..	43,550	290,150	816,442
February .	30,050	17,100	..	..	..	..	47,150	218,500	467,657
March .	41,450	19,300	..	..	..	..	60,750	228,075	483,707
TOTAL, 6 MONTHS .	209,346	96,250	..	..	..	..	305,596	1,604,475	3,693,292
<i>1925-26</i>									
April .	55,100	20,450	..	..	..	..	75,550	395,260	653,250
May .	55,400	32,450	..	..	..	..	87,850	294,050	584,410
June .	55,650	38,900	..	..	..	..	94,550	383,703	638,403
July .	63,650	44,650	..	..	..	..	108,300	404,900	792,446
August .	55,850	50,300	4,883	..	..	..	111,033	112,203	414,607
September .	82,600	44,050	17,133	..	..	..	143,783	473,149	758,720
TOTAL, 6 MONTHS .	368,250	230,800	22,016	..	..	..	621,066	2,063,265	3,861,836

*Production of Matches in India by the Swedish Match Company compared with the imports from Sweden and the total imports :
October 1924 to February 1928 (Gross Boxes)—contd.*

—	Ambernath Factory.	Caleutta Factory.	Rangoon Factory.	Mandalay Factory.	Dhubri Factory.	Parel Factory.	Total production.	Imports from Sweden.	Total Imports.
<i>1925-26—contd.</i>									
October . . .	91,550	47,850	15,525	875	..	..	155,800	408,060	675,954
November . . .	111,150	49,100	20,300	4,692	..	..	185,242	540,500	756,891
December . . .	110,900	68,550	22,550	8,700	..	..	210,700	423,410	638,887
January . . .	117,400	86,000	20,450	7,750	..	..	231,600	415,750	637,148
February . . .	75,000	70,600	16,500	9,400	..	..	171,500	446,101	611,512
March . . .	120,400	76,550	21,100	16,200	..	..	234,250	549,550	735,204
TOTAL, 12 MONTHS .	994,650	629,450	138,441	47,617	..	..	1,810,158	4,846,636	8,937,522
<i>1926-27</i>									
April . . .	117,350	37,950	13,000	11,400	..	..	179,700	538,200	728,779
May . . .	160,100	45,350	21,450	8,850	..	..	235,750	590,800	790,522
June . . .	205,050	60,200	15,950	7,800	..	..	289,000	335,050	546,983
July . . .	237,500	87,050	15,150	11,000	..	..	350,700	396,646	598,542
August . . .	247,050	93,050	13,750	10,200	5,800	..	369,850	332,381	465,406
September . . .	209,500	104,600	19,050	7,700	7,850	..	348,700	208,849	334,462
TOTAL, 6 MONTHS .	1,176,550	428,200	98,350	56,950	13,650	..	1,773,700	2,401,926	3,464,694

October . . .	236,450	81,700	17,450	..	5,960	..	341,550	409,450	501,904
November . . .	128,900	103,850	21,550	..	5,550	8,100	267,950	314,300	463,516
December . . .	142,300	100,900	26,350	..	6,760	5,500	281,800	253,150	377,855
January . . .	165,100	112,500	24,250	..	10,950	7,700	320,500	561,300	646,922
February . . .	153,800	106,800	22,900	..	12,850	9,650	306,000	292,550	346,749
March . . .	146,400	87,700	28,050	..	15,550	11,800	286,500	291,900	333,291

TOTAL, 12 MONTHS .	2,149,500	1,021,650	238,900	56,960	71,250	42,750	3,581,000	4,520,576	[6,134,931]
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1927-28

April . . .	152,350	83,600	27,900	..	17,250	4,200	265,300	363,850	441,410
May . . .	193,200	85,650	27,950	..	23,800	..	330,600	169,700	221,585
June . . .	193,350	92,150	27,800	..	20,900	..	334,200	252,450	328,779
July . . .	198,300	96,750	31,050	..	17,150	..	343,250	363,550	451,145
August . . .	210,950	109,050	37,500	..	25,300	..	382,800	243,450	310,049
September . . .	216,350	104,100	39,300	..	27,850	..	387,400	318,850	366,563

TOTAL, 6 MONTHS .	1,164,500	571,300	191,800	..	132,050	4,200	2,063,550	1,712,650	2,139,511
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October . . .	206,200	89,350	37,050	..	27,100	..	359,700	185,400	240,819
November . . .	239,500	119,850	39,900	..	37,500	..	436,850	199,450	246,061
December . . .	220,800	130,050	40,950	..	33,100	..	424,900	354,800	70,796
January . . .	250,350	127,950	45,150	..	36,500	..	459,950	146,750	157,964
February . . .	251,800	123,550	44,680	..	32,330	..	458,300	109,303	127,722

सत्यमेव जयते

Year.	United Kingdom.		Ceylon.		Straits Settlements.		Hongkong.		Sweden.		Norway.	
	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.
		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.
1910-11 .	...	43,080	...	3,195	...	12,58,140	...	4,925	...	27,76,140	...	9,07,590
1911-12 .	...	1,22,820	...	3,180	...	10,20,600	...	525	...	27,52,155	...	9,24,105
1912-13 .	59,606	52,920	1	...	248,361	1,81,905	...	...	4,225,527	31,28,055	1,418,690	11,44,665
1913-14 .	104,005	90,450	2,552	1,920	85,704	71,775	1,500	765	3,635,334	27,33,750	865,081	7,04,055
1914-15 .	137,085	1,17,585	...	...	166,197	1,22,775	3,801	3,150	2,877,310	26,92,185	649,450	6,23,370
1915-16 .	3,427	4,680	...	...	96,377	82,635	18,700	19,695	2,321,009	24,27,825	543,600	6,75,060
1916-17 .	46,550	65,565	...	...	60,824	82,725	...	...	1,446,996	18,60,945	268,499	4,63,710
1917-18 .	6,621	9,810	...	...	67,799	89,565	...	...	1,233,578	25,03,185	288,600	6,91,890
1918-19 .	5,605	15,525	...	...	36,054	47,625	106	150	113,080	2,50,410	215,095	5,26,725
1919-20 .	469	1,680	...	...	99,940	1,40,710	...	...	882,450	14,12,710	99,250	1,94,090
1920-21 .	1,501	5,640	...	...	52,698	75,100	...	...	2,263,689	34,87,360	51,250	92,630
1921-22 .	3,345	9,949	31	102	33,688	62,157	116	305	912,123	17,35,743	17,560	44,103
1922-23 .	25,899	4,250	13,058	21,790	23,747	54,826	10,000	13,400	2,656,466	41,60,435	102,641	1,76,903
1923-24 .	13,598	20,292	11,285	16,375	21,169	56,216	40,603	51,353	5,169,743	68,53,023	108,950	1,56,990
1924-25 .	12,261	15,416	8,280	9,019	33,692	62,856	25,000	30,500	3,015,248	39,33,127	236,302	3,23,357
1925-26 .	3,975	9,703	15,766	13,820	24,319	42,971	...	...	4,846,636	60,64,712	85,801	1,10,848
1926-27 .	2,936	8,401	4,403	27,802	50,709	86,744	...	...	4,520,576	57,45,252	125,951	1,77,037
*1927-28 .	...	...	...	...	...	...	...	...	2,708,553	37,00,925	67,796	1,09,389

APPENDIX F.

1. Imports of matches into India during the years 1910-11 to 1927-28 (Eleven months)

(i) Countries of origin.

Germany.		Belgium.		Austria Hungary.		Austria.		Czecho-Slovakia.		Siam.		Philippine Islands and Guam.	
Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.
	Rs.		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.
...	3,38,235	...	1,17,210	...	8,94,795	...	...	...	...	...	...	...	...
...	3,89,940	...	1,62,315	...	10,58,295	...	...	...	...	...	...	...	...
351,116	3,35,490	346,600	2,37,930	1,154,014	8,19,885	...	...	...	...	...	...	...	...
188,817	2,50,575	307,562	2,09,820	1,376,762	9,66,690	...	...	...	...	...	...	...	...
95,625	1,17,540	171,600	1,22,385	814,500	5,76,970	...	...	...	...	...	...	...	...
6,850	17,685	33,200	26,955	...	...	...	...	...	...	...	...	...	...
5,000	5,370	2,250	1,575	23,973	18,285	...	...	...	...	...	...	...	...
...
...
...
34,250	79,090	...	...	...	...	...	...	...	...	...	...	...	...
5,858	16,066	...	...	...	...	2,500	2,800	10,550	18,581	17	40	...	...
17,970	31,399	...	...	...	...	24,250	34,930	86,300	1,53,990	13	50	...	...
4,780	6,753	...	...	...	...	27,627	33,536	118,400	1,31,251	5	20	...	...
7,231	8,766	16,407	19,887	...	...	116,974	1,12,619	252,390	2,40,115	2,367	5,137	6,750	5,980
13,944	11,260	50	108	...	...	119,998	1,06,870	502,675	4,86,260	90	173	6,000	4,748
11,900	10,137	...	...	...	...	88,900	87,710	319,525	2,80,280	538	446	...	...
...	...	...	...	...	...	...	...	114,900	1,14,313	...	...	...	...

* Eleven months.

China excluding Hongkong.		Japan.		Italy.		Other countries.		Total.		Year.
Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	
	Rs.		Rs.		Rs.		Rs.		Rs.	
...	...	...	20,89,940	...	4,755	...	3,120	...	83,91,165	1910-11
...	...	...	23,12,010	...	315	...	12,000	...	87,58,260	1911-12
...	...	7,299,283	39,20,655	...	...	21,753	14,805	15,124,951	98,35,710	1912-13
...	...	7,287,485	39,00,835	...	...	39,516	28,140	13,894,318	89,64,765	1913-14
...	...	10,478,240	69,07,630	308	720	21,304	14,475	15,415,420	1,12,98,675	1914-15
...	...	15,278,018	1,05,72,510	401	885	3,205	2,670	18,304,787	1,38,30,600	1915-16
...	...	9,261,201	90,59,520	13,636	12,075	4	6	11,159,036	1,14,69,770	1916-17
...	...	15,630,342	2,01,89,295	...	...	16	33	17,226,856	2,34,83,775	1917-18
...	...	10,743,609	1,56,34,065	...	...	503	803	11,119,052	1,64,75,295	1918-19
...	...	13,932,657	1,87,34,030	...	...	343	630	15,015,109	2,04,83,230	1919-20
...	...	9,993,352	1,29,54,100	...	...	1,903	2,590	12,398,733	1,67,01,370	1920-21
...	...	12,694,609	1,84,88,979	...	...	464	1,644	13,680,801	2,08,80,469	1921-22
8	16	8,320,273	1,15,24,494	5,000	5,000	115	177	11,285,740	1,61,80,658	1922-23
71,966	93,164	5,555,382	70,09,733	82,600	97,447	47,737	60,460	11,243,745	1,45,91,813	1923-24
6	8	3,497,186	40,77,269	32,150	41,653	2,541	2,902	7,264,785	88,88,811	1924-25
4	15	2,290,532	24,62,799	27,575	30,717	157	112	7,937,522	93,45,036	1925-26
13	13	951,736	10,57,873	20,225	21,893	37,466	6,053	6,134,868	75,09,442	1926-27
...	...	324,700	3,41,975	...	...	66,922	1,34,484	3,282,873	43,99,037	1927-28*

1. Imports of matches into India during the years 1910-11 to 1927-28 (Eleven months)—contd
(ii) Shares of each Province.

Year.	Bengal.		Bombay.		Sind.		Madras.		Burma.		Total.		Year.
	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	Gross of boxes.	Value.	
		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.	
1910-11	...	22,68,135	...	27,55,200	...	7,94,955	...	10,49,745	...	15,23,130	...	88,91,165	1910-11.
1911-12	...	26,34,080	...	24,94,290	...	10,54,605	...	11,02,885	...	14,72,940	...	87,58,260	1911-12.
1912-13	4,459,853	28,93,800	4,377,903	28,15,710	1,436,323	10,17,810	1,659,592	12,18,675	3,181,180	18,69,715	15,124,951	86,36,710	1912-13.
1913-14	4,518,264	28,23,135	3,983,408	25,72,580	1,832,970	9,43,595	1,545,380	11,15,625	2,514,286	15,08,820	13,694,818	89,64,765	1913-14.
1914-15	4,326,799	30,10,890	6,484,355	47,91,330	889,876	8,52,735	1,666,266	12,57,255	2,098,124	18,86,465	15,415,420	1,12,98,675	1914-15.
1915-16	4,973,749	37,88,760	8,682,081	59,47,170	857,515	9,01,305	1,513,217	11,31,015	2,478,225	20,61,720	18,304,787	1,36,30,600	1915-16.
1916-17	2,971,045	33,48,685	5,426,536	40,67,220	516,750	6,35,050	539,975	5,35,485	1,704,700	15,93,330	11,189,036	1,15,69,770	1916-17.
1917-18	4,563,668	61,12,095	9,160,894	1,22,56,965	650,411	13,36,225	1,169,286	15,89,655	1,652,412	21,89,895	17,226,856	2,34,68,775	1917-18.
1918-19	3,185,113	43,73,185	5,090,088	70,60,305	33,431	70,685	691,134	9,81,450	2,119,266	34,89,660	12,119,952	1,64,75,295	1918-19.
1919-20	3,516,919	47,82,890	7,963,983	1,04,85,000	659,225	10,37,000	1,001,012	13,19,620	1,873,979	26,67,920	15,015,109	2,04,83,230	1919-20.
1920-21	2,942,058	43,14,850	5,535,676	68,07,279	1,331,142	21,09,420	1,104,966	15,95,660	1,294,691	18,71,270	12,598,723	1,67,01,870	1920-21.
1921-22	3,881,344	61,87,326	6,658,423	58,40,006	86,008	1,50,977	948,100	15,76,043	2,006,928	31,26,117	13,680,801	2,08,80,469	1921-22.
1922-23	3,365,898	45,76,715	4,394,684	70,17,326	619,917	9,37,615	846,165	14,61,262	1,469,076	21,87,740	12,285,740	1,61,80,658	1922-23.
1923-24	3,041,996	48,63,967	4,878,235	83,20,976	1,362,303	17,35,615	910,594	12,87,970	1,030,567	14,43,265	12,243,745	1,45,91,513	1923-24.
1924-25	2,386,129	82,28,409	2,411,303	24,12,763	986,878	11,18,070	1,013,072	12,54,447	687,412	6,74,922	7,264,785	88,88,611	1924-25.
1925-26	1,637,542	26,07,622	2,513,950	24,23,608	1,314,761	14,80,289	1,193,161	12,88,476	1,276,106	15,95,046	7,387,422	93,45,086	1925-26.
1926-27	1,077,474	21,68,856	1,431,728	14,35,319	1,032,543	11,32,809	1,151,865	12,18,417	1,441,757	15,54,044	6,134,468	76,09,442	1926-27.
1927-28	552,083	13,66,585	705,548	7,47,896	574,945	6,67,317	446,866	4,62,488	1,003,901	11,55,551	3,282,473	43,90,037	1927-28.

2. Imports of Matches into India during the Calendar years 1913 to 1927.
(i) Countries of origin.

	Sweden.		Norway.		Germany.		Belgium.		Austria-Hungary.	
	Gross	Rs.	Gross	Rs.	Gross	Rs.	Gross	Rs.	Gross	Rs.
1913	3,694,709	27,64,230	951,269	7,67,310	225,597	2,82,420	285,312	1,94,770	1,169,263	8,19,795
1914	2,778,210	23,01,495	735,557	6,60,525	112,075	1,30,410	244,600	1,71,915	1,324,330	9,31,485
1915	2,714,959	28,54,040	526,850	6,36,570	7,000	18,135	26,100	20,220	..	..
1916	1,788,346	21,86,385	378,999	5,58,375	5,000	5,370	10,250	8,940	20,462	15,000
1917	830,950	14,81,595	260,850	5,66,955	..	..	..	..	..	..
1918	681,708	15,08,115	253,809	6,32,295	..	..	..	..	..	..
1919	246,750	4,02,600	71,246	1,61,385	..	..	..	..	..	..
1920	2,821,051	43,64,850	119,250	2,22,060	..	..	..	..	..	..
1921	526,211	10,07,744	12,500	30,828	..	..	..	..	..	..
1922	2,060,920	35,41,474	65,050	1,13,209	..	..	..	..	..	..
1923	5,210,889	68,83,960	136,391	2,14,987	..	..	..	..	..	..
1924	3,305,123	43,90,673	184,402	2,39,383	..	..	..	..	..	..
1925	4,172,010	53,30,390	112,800	1,64,188	..	..	..	..	..	..
1926	4,786,227	61,62,642	149,852	2,03,093	..	..	..	..	..	..
1927	3,598,250	47,05,691	83,948	1,32,879	..	..	..	..	..	..

2. Imports of Matches into India during the Calendar years 1913 to 1927—contd.
(i) Countries of origin.

	Straits-Settlements.		Japan.		Czecho-Slovakia.		Other countries.		Total.	
	Gross	Rs.	Gross	Rs.	Gross	Rs.	Gross	Rs.	Gross	Rs.
1913	89,243	77,475	7,398,394	39,70,920	..	..	154,180	1,18,335	13,967,967	89,95,455
1914	145,844	1,02,510	8,053,149	46,87,710	..	..	215,655	1,79,655	13,609,420	91,65,705
1915	108,001	92,580	16,255,429	1,12,20,390	..	..	38,298	41,385	19,676,637	1,48,83,330
1916	73,216	88,500	9,715,771	85,85,985	..	..	63,182	80,325	12,055,226	1,15,28,880
1917	51,639	61,105	13,823,558	1,69,01,400	..	..	8,802	11,565	14,975,799	1,90,30,620
1918	58,935	77,115	13,616,354	1,91,91,225	..	..	2,593	6,045	14,613,489	2,14,14,795
1919	59,208	84,705	11,070,123	1,52,45,415	..	..	5,248	13,575	11,452,575	1,59,97,680
1920	86,424	1,23,550	13,186,648	1,72,10,140	..	..	36,055	77,620	16,249,428	2,19,08,220
1921	38,586	63,880	10,514,078	1,52,50,926	..	..	9,562	30,307	11,100,937	1,63,83,685
1922	15,335	27,463	9,832,869	1,38,69,828	..	..	143,539	2,08,613	12,117,713	1,77,60,587
1923	..	..	7,164,862	92,85,544	84,500	1,24,209	272,075	4,24,313	12,868,717	1,69,33,013
1924	..	..	3,213,132	38,38,938	220,465	2,22,747	244,282	3,09,320	7,107,404	90,01,061
1925	..	..	2,790,436	29,87,979	423,750	4,02,209	222,378	2,40,731	7,721,374	91,25,497
1926	..	..	1,138,918	12,56,323	473,625	4,31,212	243,298	2,62,563	6,791,860	83,15,833
1927	..	..	428,864	4,60,540	126,900	1,18,656	86,187	1,50,613	4,324,149	55,68,379

2. Imports of Matches into India during the Calendar years 1913 to 1927—contd.

(ii) Shares of Provinces.

Years.	Bengal.		Bombay.		Sind.		Madras.		Burma.		TOTAL.	
	Gross	Rs.	Gross	Rs.	Gross	Rs.	Gross	Rs.	Gross	Rs.	Gross	Rs.
1913	..	..	..	..	..	..	..	..	..	..	..	..
1914	..	..	..	..	..	..	..	..	..	..	..	..
1915	..	..	..	..	..	..	..	..	..	..	..	..
1916	..	..	..	..	..	..	..	..	..	..	..	..
1917	4,157,424	54,25,980	8,190,503	1,02,02,565	298,636	5,49,750	935,463	11,34,586	1,893,713	17,17,740	14,975,799	1,90,30,620
1918	3,948,541	59,09,910	7,420,665	1,03,66,690	410,666	8,84,865	1,097,031	15,74,400	1,736,566	26,88,930	14,613,489	2,14,14,795
1919	2,949,732	39,65,965	5,358,670	69,14,970	219,750	3,33,070	622,658	8,28,870	2,401,765	38,59,785	11,452,575	1,59,07,680
1920	3,529,948	50,99,420	7,959,850	1,90,44,790	1,951,564	27,67,510	1,423,907	20,15,100	1,384,259	20,71,400	16,249,428	2,19,98,220
1921	3,900,356	60,39,936	4,966,761	67,53,212	49,559	83,933	793,924	12,59,208	1,380,844	22,47,396	11,100,937	1,83,83,685
1922	2,854,094	39,91,404	5,926,481	85,50,322	430,401	6,84,850	891,225	10,21,529	2,015,512	29,12,482	12,117,713	1,77,60,587
1923	3,581,375	53,69,067	5,802,254	67,92,799	1,261,335	16,61,497	899,099	12,73,056	1,324,654	18,36,624	12,868,717	1,69,33,013
1924	2,085,831	31,43,635	2,432,046	25,04,868	1,044,533	12,61,677	970,323	12,53,703	614,666	887,188	7,167,404	90,01,061
1925	1,804,307	27,85,239	2,508,076	23,95,524	1,088,587	12,29,964	1,170,809	12,88,065	1,154,695	14,76,675	7,721,374	91,25,497
1926	1,326,710	25,75,214	1,848,433	18,32,870	1,243,172	13,22,823	1,083,728	11,46,080	1,252,414	14,88,846	6,791,860	83,15,833
1927	661,375	15,91,320	767,994	8,00,318	757,968	8,62,176	764,575	8,08,207	1,372,297	15,06,358	4,324,149	55,68,379

(i) Countries of origin.

Imports of veneers for match boxes and empty boxes into India.

(ii) Share of each Province.

Years.	Bengal.		Bombay.		Sind.		Madras.		Burma.		TOTAL.	
	Lbs.	Rs.	Lbs.	Rs.	Lbs.	Rs.	Lbs.	Rs.	Lbs.	Rs.	Lbs.	Rs.
1924-25	705,132	2,71,812	1,653,924	5,09,586	19,205	11,406	22,064	3,541	379,739	1,52,498	2,780,063	10,08,985
1925-26	371,736	1,20,357	691,227	2,43,151	10	22	..	..	65,778	23,390	1,122,751	3,66,910
1926-27	69,033	24,297	88,456	49,354	..	..	..	..	..	..	158,389	73,051

4. Imports of veneers for match boxes and empty boxes during the calendar years 1924 to 1927.

Year.	Quantity in lbs.	Value in R
1924	1,680,591*	6,61,950*
1925	1,983,507	6,47,725
1926	403,105	1,59,821
1927	80,763	19,507

6. *Imports of undipped splints into India during the Calendar years 1924 to 1927.*

Year.	Quantity in lbs.	Value in Rs.
1924	914,594*	1,88,649*
1925	67,487	9,081
1926	10,765	2,492
1927	139,402	15,620

* Figures are for nine months—April to December, 1924.



APPENDIX G.

Customs Revenue from Matches, Match Splints and Veneers for the Financial years 1915-16 to 1927-28.

	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28 (Eleven months.)
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Matches	63,383*	8,63,455	18,11,736	12,55,208	15,40,051	16,57,046	1,03,84,334	1,59,02,306	1,37,06,250	1,13,91,275	1,13,15,550	88,63,592	46,89,583
Match splints	..	..	..	..	..	..	..	..	46,902†	2,05,151	66,526	9,251	63,246
Veneers	..	..	..	..	..	..	..	..	43,703†	9,83,601	4,44,804	45,380	45,949

* Collected in March 1926.

† Collected during March 1924.

This information is not available for the years earlier than 1915-16.

Customs Revenue from Matches and Match Splints and Veneers for the Calendar years 1916 to 1927.

	1916 (Ten months.)	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Matches	6,74,805	14,61,540	10,08,135	11,78,415	16,54,291	77,33,763	1,41,39,605	1,59,76,109	1,13,72,320	1,11,47,226	98,70,071	57,53,168
Undipped splints	..	..	..	..	..	..	..	..	2,36,418*	48,271	42,331	42,490
Veneers	..	..	..	..	..	..	..	..	6,56,835*	7,25,948	1,36,824	35,570

* Ten months.

1. This information is not available for the years earlier than 1916.

2. The Trade Returns give ten months' revenue for splints and veneers but show only nine months' imports for 1924.

2. *Works costs of the Santa Cruz Match Works, Bombay.**Figures supplied on 25th November 1927.*

SUPPLEMENTARY STATEMENT No. 1.

The following items in the above factory are paid for on "Piece Work"
 Payments hereunder indicated being per unit of one case of 100 gross:—

	Rs. A. P.
Veneer levelling for splint chopping machine at 0-0-3 per tray, 40 trays per case	0 10 0
Outside boxes As. 8 per 10,000, calculated on 15,000 boxes per case	0 12 0
Inside boxes As. 9 per 10,000, calculated on 15,000 boxes per case	0 13 6
Labelling 0-1-6 per 1,000 boxes	1 6 6
Levelling splints, 0-1-0 per cart	1 0 0
Framing splints, 0-2-6 per cart	2 8 0
Releasing machines, 0-1-3 per cart	1 4 0
Match boxes filling at 0-2-3 per tray of 200 boxes	10 2 0
Dozen packing, 0-0-9 per tray of 42 dozen	1 4 3
Dozen labelling, 3 pies per 2 trays of 42 dozen each	0 3 3
Gross packing, 3 annas per 100 bundles of $\frac{1}{2}$ gross each	0 6 0
Case packing	0 5 0
	<hr/>
	20 10 6

SUPPLEMENTARY STATEMENT No. 2.

Present cost of safety matches made by the above factory, Unit case 100 gross.

	Rs. A. P.
Aspen wood at Rs. 120 per ton, 13 cubic feet per case	31 4 6
Outside boxes, As. 8 per 10,000	0 12 0
Inside boxes, As. 9 per 10,000	0 13 6
Splint chopping, including veneering for boxes	6 11 3
Labelling 0-1-6 per 1,000	1 6 6
Starch, 4 lbs. per case	0 9 0
Colour	0 3 8
Flour paste	0 2 0
Oil	0 3 0
Petrol and lorry charges	0 9 0
Waste and grease, etc.	0 4 0
Label brushes	0 0 6
Staff at factory	3 0 0

	Rs. A. P.		
Baskets, buckets, mats, tarpaulins and other sundry purchases including replacements of machine parts	4	0	0
Levelling	1	0	0
Framing	2	8	0
Releasing	1	4	0
Box filling	10	2	0
Dozen packing	1	4	3
Dozen levelling, 3 pies per 84 dozen	0	3	3
Gross packing, As. 3 per 100 bundles	0	6	0
1,225 dozen papers at 0-4-6 per ream of 480	0	11	6
210 gross papers at Re. 1-9-3 per ream of 480	0	11	0
Empty case with nails	5	0	0
Oil paper, Rs. 11-12-0 per roll for 25 cases	0	7	6
Case packing	0	5	0
Side chemical brush, one brush lasting for only two cases	0	2	6
Daily wages for overseers and coolies employed for drying, dipping, paraffining including firemen, etc.	5	0	0
Labels, small boxes, at 0-3-6 per 1,000	3	4	6
Labels for dozen packets at 14 annas per 1,000	1	1	6
Labels for $\frac{1}{2}$ gross packets at Re. 1-12-0 per 1,000	0	5	6
Chemicals and paraffin	12	9	6
Bombay godown charges and staff	2	0	0
Selling commission, half anna per gross	3	2	0
Interest on outlay	4	0	0
Non-agricultural assessment on land	0	8	0
Total cost per case of 100 gross	105	14	11
Paper rolls for outside and inside boxes	2	8	0
Total cost per case	108	6	11

SUPPLEMENTARY STATEMENT No. 3.

Estimated Cost of Match Factory with total daily output of 25 cases each of 100 gross.

	Rs. A. P.		
Land 10,000 yards at Rs. 3 per yard	30,000	0	0
Building Shed, Corrugated	1,00,000	0	0
Power Engine	7,000	0	0
Circular Saw	1,000	0	0
5 Veneering machines	2,000	0	0
3 Chopping Machines	1,000	0	0
Lining and Bottom Cutting	500	0	0
12 Inside	12,000	0	0
12 Outside	12,000	0	0
2 Levelling Machines	1,000	0	0

	Rs.	A.	P.
2 Polishing Machines	500	0	0
10 Framing Machines	8,000	0	0
3 Releasing Machines	1,200	0	0
1 Paraffining Machine	1,000	0	0
1 Tipping Machine	3,200	0	0
1 Drying Chamber	5,000	0	0
Glue boiling and Side Chemical Tank	1,000	0	0
200 Carts with frame	20,000	0	0
Trays with and without compartments	5,000	0	0
Steam Engine and Boiler	10,000	0	0
Electric Dynamo and Fittings	2,000	0	0
Extra Accessories such as Benches, Brushes, Tables, etc.	5,000	0	0
Work Shop Tools	3,000	0	0
Erection charges including foundation pullies, shaftings, etc.	15,000	0	0
Working capital including outstanding	2,50,000	0	0
	4,96,400	0	0
One Motor Lorry	7,000	0	0
TOTAL	5,03,400	0	0

Prices for machinery include $2\frac{1}{2}$ per cent. Duty and $2\frac{1}{2}$ per cent. clearing and transport charges to site of factory.

In order to arrive at f.o.b. price of machinery at port of shipment, deduct 10 per cent. for freight and shipping charges.

SUPPLEMENTARY STATEMENT No. 4.

*Chemical used in the manufacture of 100 gross boxes of matches
in the above factory.*

	Rs.	A.	P.
Iron Oxide, lbs. 4, oz. 2 at Rs. 12 per cwt.	0	7	3
Manganese, lbs. 4, oz. 2 at Rs. 12 per cwt.	0	7	3
Glass powder, lbs. 1, oz. 1 at Rs. 10 per cwt.	0	1	9
Kissel, oz. 15 at Rs. 8 per cwt.	0	1	1
Sulphur, oz. 12 at Rs. 8 per cwt.	0	1	0
Bichromate of Potash, oz. $4\frac{1}{2}$ at Rs. 31 per cwt.	0	1	8
Glue, lbs. 3, oz. 3 at Rs. 30 per cwt.	0	13	6
Potash Chlorate, lbs. 19, oz. 8 at As. 3 per pound	4	2	6
Rosin, oz. 3 at Rs. 18 per cwt.	0	0	4
Paraffin, lbs. 13 at As. 3-4 per pound	2	11	4
Amor Phos, lbs. 2, oz. 2 at Re. 1-4-0 per pound	2	10	6
Antimony, lbs. 2 at Rs. 48 per cwt.	0	13	0
Rouge, oz. $4\frac{1}{2}$ at Rs. 6 per cwt.	0	0	4
TOTAL	12	7	6

SUPPLEMENTARY STATEMENT No. 5.

Prices of Ambernath Matches in Bombay market reduced as under:—

	Rs.	A.	P.	
September 1924	2	3	0	per gross.
October 1924	2	1	0	
April 1925	1	15	0	with special reduction of As. 2 for malab.
July 1925	1	14	0	
March 1926	1	12	6	
June 1926	1	10	0	Ten thousand cases sold at Re. 1-7.
September 1926	1	7	0	
October 1926	1	6	0	Inferior quality sold at Re. 1-3.
November 1926	1	8	0	for lots under ten cases.
	1	7	9	for lots of ten cases.
	1	7	6	for lots of 25 cases.
	1	7	0	for lots of 50 cases.
	1	6	6	for lots of 100 cases.

Since the above date there has been no appreciable change in price. Our matches have all along sold at annas two to three under Ambernath prices owing to the popular belief that the Ambernath Works being owned by Swedish Match, interests would naturally turn out a better grade article than the Indian-owned factories who were not backed by the knowledge, experience and resources of Swedish manufacturers.

3. *Works costs of the Andhery Match Company, Bombay.*

SUPPLEMENTARY STATEMENTS HANDED BY THE ANDHERY MATCH COMPANY ON THE 29TH NOVEMBER 1927.

* * * * *

No. 9.

Statement showing total expenditure on the production of matches for the year 1926-27.

Per case of 100 gross $\frac{1}{2}$ sized Safeties—

	1926-27.
	Rs. A. P.
1. Cost of wood for splints and veneers	20 10 9
2. Cost of paper	4 12 8
3. Cost of chemicals	10 2 0
4. Cost of other raw materials	3 3 2
5. Factory labour	34 6 5
6. Power and fuel	0 12 1
7. Ordinary current repairs and maintenance of building, plant and machinery	3 2 0
8. General services, supervision and local office charges	4 15 2
9. Miscellaneous, e.g., rent, municipal taxes, insurance, etc.	1 0 8
10. Cost of packing cases	7 8 10
	<hr/>
	90 9 9
Depreciation, etc.	2 1 4
	<hr/>
	92 11 1

No. 10.

*Statement showing works cost per gross of matches.*Per 1 gross of $\frac{1}{2}$ sized Safeties—

	1926-27.
	Rs. A. P.
1. Cost of wood for splints and veneers	0 3 3 69
2. Cost of paper for labels and wrapper	0 0 9 10
3. Cost of chemicals	0 1 7 44
4. Cost of other raw materials	0 0 6 14
5. Factory labour	0 5 6 06
6. Power and fuel	0 0 1 44
7. Ordinary current repairs and maintenance of buildings, plant and machinery	0 0 6 00
8. General services, supervision and local office charges	0 0 9 50
9. Miscellaneous, <i>e.g.</i> , rent, municipal taxes, insurance, etc.	0 0 2 00
10. Cost of packing cases	0 1 2 50
	<hr/>
	0 14 5 87
Depreciation, etc.	0 0 4 00
	<hr/>
	0 14 9 87

No. 11.

Chemicals.

	Per gross.
	Rs. A. P.
Chlorate of Potash, 3 casks—336 lbs. per 25 cases	0 0 7 42
Other chemicals	0 0 1 30
Paraffin	0 0 4 20
Side pasting chemicals	0 0 2 64
Glues	0 0 3 88
	<hr/>
	0 1 7 44

Blue paper on veneers (inner and outer).

No. 12.

Cost of empty case for 100 gross $\frac{1}{2}$ size matches.

	Per case.
	Rs. A. P.
Packing wooden case for 100 gross	4 8 0
Tin lining	2 12 0
Labour	0 4 0
	<hr/>
	7 8 0

	Per case. Rs. A. P.
Tarpaulin instead of zinc, 3 yds., at Rs. 0-2-0 per yard	0 6 0
Wooden case for 100 gross	4 8 0
Labour	0 4 0
	<hr/>
	5 2 0

No. 13.

	Per grs. $\frac{1}{2}$ size. Rs. A. P.
Labour as per statement No. 1 Rs. 35-2-8 per 100 gross half size	0 5 7-50
Chemicals as per statement No. 2	0 1 7-44
Blue paper on inner and outer boxes	0 0 6-14
Packing paper and labels	0 0 9-10
Aspen wood for splints	0 2 0-80
Indian wood for boxes	0 1 2-89
Case value including packing and zinc lining Rs. 7-8-0 or tarpaulin Rs. 5-4-0	0 1 2-50
Office establishment, experts and other overhead charges, Rs. 3,100 a month	0 0 9-50
Repairs and replacements	0 0 6-00
Depreciation and taxes, Rs. 15,000 at 15 per cent. on 1 lakh	0 0 4-00
	<hr/>
	0 14 7-87
Plus one anna selling commission	0 1 0-00
	<hr/>
	0 15 7-87
Interest on 5½ lakhs	0 1 0-00
	<hr/>
	1 0 7-87
Allowance to buyers of quantities	0 0 6-00
	<hr/>
Gross cost per gross	1 1 1-87
Insurance, taxes, etc.	0 0 2-00
	<hr/>
	1 1 3-87

No. 14.

Labour of 100 gross $\frac{1}{2}$ size matches per process.

(1) Engine Ruston Proctor, 55 h. p.
Rs. 15,000.

2-ton fuel (crude oil), per month, cost
Rs. 150 per 2 ton, 1 month 25
days.

	Rs.
1 Driver	75
1 Engineer	150
1 Fitter	75

300 For 62,500 gross a month

Per
100 gross.
Rs. 0-12-1

Per
100 gross.
Rs. A. P.

Lubricating oil 2 drains each of 4 gallons at Rs. 3 per gallon.			
(2) Cutting logs in pieces by saw driven by four, six men at Re. 1-0-0 to Rs. 1-2-0 for handling the logs, cost per gross			0 4 3
(3) Removing bark by hand, 6 coolies, each Re. 1-0-0 to Rs. 1-2-0			0 4 6
	Rs. A. P.		
(4) Two machines for peeling—			
Veneers for splints by machines—2 machines by day each machine 3 men operators at Rs. 1-8-0 each in all	4 8 0		
2 assistant coolies at Re. 1	2 0 0		
8 Women at Re. 0-8-0	4 0 0		
	10 8 0		0 13 6
(5) Two Chopping machines—			
Each machine 2 men operators at Rs. 1-4-0	2 8 0		
4 men carriers at Re. 1	4 0 0		
	6 8 0		0 8 4
(6) Five machines for peeling veneers for boxes—			
Each machine 2 operators at Rs. 1-4-0	2 8 0		
2 carriers at Re. 1	2 0 0		
	4 8 0		0 14 5
(7) Three Lining Machines—			
1 Operator at Rs. 1-4-0	1 4 0		
1 Assistant at Re. 1-0-0	1 0 0		
	2 4 0		0 4 4
(8) Cutting Veneers for over box and drawer (2 parts)—			
2 sets veneers } 3 Machines.			
1 bottom			
Each—			
1 Operator at Rs. 1-8-0	1 8 0		
3 Coolies at Re. 1	3 0 0		
	4 8 0		0 8 9
(9) Box making by hand, i.e., veneer pasting by hand—			
500 Women employed 1,000 sets outer drawers and box pasting (per gross 0-1-9) 7 gross Rs. 0-12-0			
At home (3,60,000 sets per day for 2,500 gross.)			
Average earning per day, Re. 0-8-6.			10 15 0

			Rs. A. P.	Per 100 gross. Rs. A. P.
(9A) If worked by machines—				
8 machines (4 for outer and 4 for drawer)				
Each Machine—				
1 Operator, at			1 8 0	
1 Assistant, at			1 0 0	
			<hr/>	
			2 8 0	
		Rs. A. P.		
1 Muccadam for 4 machines, at		2 0 0		
1 Pasteman (Kanjiman), at		1 0 0		
1 Sweeper, at		1 0 0		
2 Coolies (carriers)		2 0 0		
		<hr/>		
		6 0 0	1 8 0	
			<hr/>	
			4 0 0	5 12 8
(10) Two Splints Levelling Machines—				
Two Selecting Machines—				
Each—				
One operator, at		1 4 0	1 4 0	
Two coolies, at		1 0 0	2 0 0	
			<hr/>	
			3 4 0	0 8 4
(11) Six coolies for filling trays for frame,				
each man at Re. 1-0-0		6 0 0		0 3 10
(12) Frame filling machine 18 h. p.—				
2 Operators by day at Rs. 1-8-0		3 0 0	54 0 0	
2 Muccadams by day at Rs. 2-8-0		5 0 0		
2 Sweepers by day at Re. 0-12-0		1 8 0	6 8 0	2 6 8
		<hr/>		
			60 8 0	
(13) Paraffining 12 men—				
2 men at Rs. 2-0-0		4 0 0		
10 men at Re. 1-0-0		10 0 0	14 0 0	0 9 0
		<hr/>		
(14) Dipping 2 Basin Tables—				
2 men each at Rs. 1-8-0		3 0 0		
4 coolies each at Re. 1-0-0		4 0 0	7 0 0	0 9 0
		<hr/>		
(15) Chemical mixers, Glue levers, etc., 16				
men—				
3 Men at Rs. 2-0-0		6 0 0		
3 Men at Rs. 1-8-0		4 8 0		
10 Men at Re. 1-0-0		10 0 0	20 8 0	0 13 0
		<hr/>		
(16) Eight coolies for handling carriers,				
each at Re. 1-0-0		8 0 0		0 5 1

			Per 100 gross.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
(17) Releasing machines, 6 men—			
2 Men at Rs. 1-8-0 each		3 0 0	
6 Coolies at Re. 1-0-0 each	6 0 0		
1 Muccadam at Rs. 2-8-0	2 8 0		
2 Sweepers at Re. 0-12-0 each	1 8 0	1 9 4	1 2 0
	<hr/>	<hr/>	
	10 0 0	4 9 4	
(18) Four coolies as tray carriers from releasing machines to women fillers at Re. 1-0-0	4 0 0		0 2 7
(19) Filling of boxes with splints—			
Filling by piece per 100 gross at (Re. 0-2-0 per tray) Rs. 8-5-4.			
216 (1½ gross) per gross at Re. 0-1-4.			
A woman turn out about 6 trays a day.			
A boy turn out about 3 trays a day.			
7 Muccadums at Rs. 1-8-0	10 8 0		
1 Supervisor at Rs. 2-8-0	2 8 0		
3 Sweepers at Re. 0-12-0	2 4 0	per 100 grs.	
	<hr/>		
	15 4 0	0 9 9	8 15 1
(20) Sides-Pasting 12 men—			
2 Men at Rs. 1-8-0	3 0 0		
10 Men at Re. 1-0-0	10 0 0		
1 Muccadam	2 8 0		
2 Coolies for bringing paste	2 0 0		
	<hr/>		
	17 8 0		0 10 11
(21) Packing labour—by piece—			
Dozen packing at Re. 1-0-0 per 100 gross.			
Gross packing at Re. 0-4-0 per 100 gross.			
Case packing at Re. 0-4-0 per case of 100 gross.			
	<hr/>		
	1-8-8		
1 Muccadam per day Rs. 2-8-0	2 8 0		
2 Coolies per day Re. 1-0-0	2 0 0		
	<hr/>		
	4 8 0		1 10 11
(22) Labelling by hand per piece at Re. 0-2-0 per 1,000 pieces	1 12 10		1 12 10
			<hr/>
			35 2 3
or labelling by machines 4 machines cost each Rs. 16,000 per day per machine.			
1 Operator at Rs. 1-4-0.			
1 Coolie at Re. 0-12-0.			
	<hr/>		
	2-0-0		
at Re. 0-2-0 per 1,000 pieces or about Re. 0-0-3 per gross.			

4. *Works costs of the Bombay Match Works.*

* * * * *

Statement showing works cost for 100 gross of matches, latest.

	Rs. A. P.
1. Cost of wood for splints and veneers	37 8 0
2. Cost of paper for labels and wrapper	6 0 0
3. Cost of chemicals	9 1 6
4. Cost of other raw materials	7 14 6
5. Factory labour	23 1 6
6. Power and fuel	0 7 5
7. Ordinary current repairs and maintenance of buildings, plant and machinery	2 0 0
8. General services, supervision and local office charges	3 0 10
9. Miscellaneous, e.g., rent, municipal taxes, insurance, depreciation, etc.	6 0 0
10. Cost of packing cases including tarred paper	5 5 0
TOTAL	100 6 9

The above figures are for boxes made with machinery. If boxes are made by hand it comes to Rs. 108-15-9.

13. *Statement showing works cost for 100 gross of matches in the year 1925.*

	Rs. A. P.
1. Cost of wood for splints and veneers	39 12 0
2. Cost of paper for labels and wrapper	6 0 0
3. Cost of chemicals	10 0 0
4. Cost of other raw materials	9 8 0
5. Factory labour	30 0 0
6. Power and fuel	1 0 0
7. Ordinary current repairs and maintenance of buildings, plant and machinery	1 8 3
8. General services, supervision and local office charges	7 0 0
9. Miscellaneous, e.g., rent, municipal taxes, insurance, depreciation, etc.	10 0 0
10. Cost of packing cases including zinc lining	7 8 0
TOTAL	122 4 3

The above figures are for boxes made with machinery. If boxes are made by hand it comes to Rs. 133-12-3.

14. Statement showing works cost for 100 gross of matches in the year 1926.

	Rs.	A.	P.
1. Cost of wood for splints and veneers	42	0	0
2. Cost of paper for labels and wrapper	6	0	0
3. Cost of chemicals	9	8	0
4. Cost of other raw materials	8	14	6
5. Factory labour	27	6	0
6. Power and fuel	0	12	0
7. Ordinary current repairs and maintenance of buildings, plant and machinery	1	8	0
8. General services, supervision and local office charges	5	6	3
9. Miscellaneous, e.g., rent, municipal taxes, insurance, depreciation, etc.	9	0	0
10. Cost of packing cases including tarred paper	5	14	0
. TOTAL	116	4	9

The above figures are for boxes made with machinery. If boxes are made by hand it comes to Rs. 127-12-9.

15. Statement of works costs for 100 gross of matches latest for sulphur matches half size.

	Rs.	A.	P.
1. Cost of wood for splints and veneers	40	10	0
2. Cost of paper for labels and wrapper	8	3	0
3. Cost of chemicals	15	3	2
4. Cost of other raw materials	18	13	0
5. Factory labour	28	3	2
6. Power and fuel	0	7	5
7. Ordinary current repairs and maintenance of buildings, plant and machinery	2	0	0
8. General services, supervision and local office charges	3	8	0
9. Miscellaneous, e.g., rent, municipal taxes, insurance, depreciation, etc.	6	8	0
10. Cost of packing cases including zinc lining and soldering	8	3	0
TOTAL	121	10	9

16. Statement of works cost for 100 gross of matches for sulphur matches full size.

	Rs.	A.	P.
1. Cost of wood for splints and veneers	56	4	0
2. Cost of paper for labels and wrapper	12	3	0
3. Cost of chemicals	25	6	2
4. Cost of other raw materials	13	3	6
5. Factory labour	43	6	0
6. Power and fuel	0	9	0
7. Ordinary current repairs and maintenance of buildings, plant and machinery	2	0	0
8. General services, supervision and local office charges	5	0	0
9. Miscellaneous, e.g., rent, municipal taxes, insurance, depreciation, etc.	6	8	0
10. Cost of packing cases, zinc lining, sol- dering (two cases)	17	8	0
TOTAL	181	15	8

APPENDIX I.

Table showing market prices of matches as supplied by Mr. Abdoolali Ebrahim, Bombay.

Kind	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Swedish, ‡ Sulphur . . .	0 13 0 to 0 14 0	0 13 6 to 0 14 0	0 13 6 to 0 14 0	0 13 0 to 0 14 0	0 13 6 to 0 14 6	0 14 0 to 0 14 6	1 0 0 to 1 1 0	1 6 0	1 4 0 to 1 5 0	1 8 0 to 1 11 0
Swedish, full Sulphur . . .	0 13 6 to 0 14 6	0 15 0	0 15 0	0 14 0	0 14 6 to 0 15 0	0 14 6 to 0 15 0	1 7 0	1 14 0 to 2 0 0	1 9 0 to 1 12 0	2 0 0 to 2 5 6
Swedish, ‡ safety . . .	0 13 6	0 13 6 to 0 14 0	0 13 6 to 0 14 0	0 12 0 to 0 12 6	0 12 6 to 0 13 0	0 13 0 to 0 14 0	1 4 6 to 1 5 0	1 2 0 to 1 3 6	1 2 0 to 1 3 0	1 8 0 to 1 10 6
Japan, ‡ Sulphur . . .	0 9 0 to 0 11 0	0 10 0 to 0 11 0	0 10 0 to 0 11 0	0 10 0 to 0 10 6	0 10 0 to 0 10 6	0 10 3 to 0 11 0	0 10 0 to 0 11 0	0 12 6 to 0 13 0	0 13 6 to 0 15 0	1 2 0 to 1 6 0
Japan full safety . . .	0 9 0 to 0 10 0	0 9 6	0 10 0	0 8 6 to 0 9 6	0 8 6 to 0 9 6	0 8 6 to 0 9 0	1 0 0	0 14 0 to 0 14 6	0 13 0 to 0 14 0	..
Japan, flat safety . . .	..	0 8 6	0 8 6 to 0 9 0	0 6 6 to 0 7 0	0 6 6 to 0 7 0	0 7 6 to 0 8 0	0 8 0 to 0 13 0	0 12 6	0 12 0	1 0 0 to 1 0 6
Japan, ‡ Phosphorus . . .	0 8 0	0 8 6	0 8 0	0 7 6 to 0 8 0	0 7 6 to 0 8 0	0 8 0	0 9 0	0 10 0	0 14 0	0 15 0

Japan, † Safety	..	..	..	..	0 8 0	0 8 0	0 10 0	0 13 0	1 0 0 to 1 1 0
Japan, † Sulphur	..	..	..	..	..	..	0 14 0 to 0 14 6	0 13 6 to 0 14 0	1 0 6 to 1 2 0
Sweden, † Safety	..	..	..	..	..	..	..	..	..
Sweden, † Sulphur	..	..	..	..	..	..	..	..	..
Sweden, † Sulphur	1 8 0 to 1 11 0	1 14 0 to 2 0 0	1 11 0 to 1 14 0	2 8 0	3 0 0 to 3 3 0	2 15 0 to 3 0 0	2 8 0 to 2 11 6	2 10 0 to 2 11 6	2 4 0 to 2 11 6
Swedish, full Sulphur	1 12 0 to 1 13 0	..	..	..	..	3 2 0 to 3 4 0	2 12 0 to 2 15 0	2 11 6 to 2 15 0	2 8 0 to 2 14 0
Sweden, † safety	1 7 0 to 1 10 6	1 13 0 to 2 0 0	1 10 0 to 1 12 0	2 7 0	2 15 0	2 14 0 to 2 15 0	2 8 0 to 2 11 6	2 6 0 to 2 15 0	2 0 0 to 2 14 0
Japan, † Sulphur	1 14 6	..	..	..	..	..	..	..	Not Import- ed. ...
Japan, Safety full	..	..	..	..	..	..	..	..	..
Japan, flat safety	1 3 0	..	..	..	..	..	..	..	..
Japan, † Phosphorus	1 6 0 to 1 7 0	1 5 0 to 1 7 0	1 8 0 to 1 9 6	1 8 6 to 1 9 6	2 7 0 to 2 8 0	2 7 0 to 2 8 0	..	..	..
Japan, † safety	1 6 0 to 1 8 6	1 5 0 to 1 7 0	1 8 0 to 1 9 0	1 11 0 to 2 0 0	2 7 0 to 2 10 0	2 5 0 to 2 6 0	..	..	..
Japan, † Sulphur	1 7 0 to 1 9 0	1 6 0 to 1 8 0	1 8 0 to 1 10 0	2 0 0 to 2 1 0	2 8 0 to 2 10 0	2 6 0 to 2 8 0	..	..	..
Swedish, † safety	..	..	..	..	..	..	..	..	..
Sweden † Sulphur	..	..	..	..	..	..	..	..	..

Since not imported.

Since not imported.

Not imported.

Not imported.

APPENDIX J

1. *Statement showing the movements of the Tariff Board.*

Calcutta	2nd October, 1926 to 20th February, 1927.
Burma	22nd February, 1927 to 2nd April, 1927.
Calcutta	5th April, 1927 to 14th May, 1927.
Shillong	15th May, 1927 to 14th July, 1927.
Calcutta	23rd July, 1927 to 23rd October, 1927.
Bombay	25th October, 1927 to 6th January, 1928.
Dobra Dun	8th January 1928 to 28th January, 1928.
Bareilly	16th January, 1928.
Lahore	17th January, 1928.
Calcutta	30th January, 1928 to 16th February, 1928.
Bombay	18th February, 1928 to 9th April, 1928.

2. *List of Match factories, timber depôt, etc., visited by the Board.*

No.	Name of firm.	Works visited.	Date of visit.
<i>Bengal.</i>			
1	Western India Match Company, Limited.	Factory at Narkaldanga, Calcutta.	22nd December, 1926.
2	The Karimbhoy Match Manufacturing Company.	Factory at Ultadanga, Calcutta.	15th October, 1927.
3	Bangiya Dasalal Karjaloy	Ditto	15th October, 1927 and 10th February, 1928.
4	National Match Factory	Ditto	Ditto.
5	Sukul Match Works	Ditto	15th October, 1927.
6	The Esavi India Match Manufacturing Company.	Ditto	2nd February, 1928.
7	Mr. M. N. Mehta	Ditto	Ditto.
8	The Lucifer, Limited	Ditto	10th February, 1928.

2. *List of Match factories, timber depôt, etc., visited by the Board—*
contd.

No.	Name of firm.	Works visited.	Date of visit.
<i>Burma.</i>			
9	Adamjee Hajece Dawood and Company, Limited.	Factory at Pazundoung, Rangoon.	25th February, 1927.
10	Burma Match Company, Limited, Timber Depôt.	Factory at Kanaung, Rangoon.	2nd March, 1927.
11	Timber Depôt	Rangoon	3rd March, 1927.
12	Rangoon Match Works	Factory at Mahlwagon, Rangoon.	4th March, 1927.
13	Government Forest Depôt.	Mandalay	12th March, 1927.
14	Mandalay Match Company, Limited	Closed Factory at Mandalay.	Ditto.
15	Banks of Irrawaddy	North of Mandalay	13th March 1927
16	The Mostem Match Factory	Rangoon	2nd April, 1927.
<i>Bombay.</i>			
17	The Santa Cruz Match Works	Factory at Santa Cruz, Bombay.	5th November, 1927.
18	The National Match Works	Factory at Ghatkoper, Bombay.	7th November, 1927.
19	The Swadeshi Match Manufacturing Company.	Ditto	Ditto.
20	The Thana Match Works	Factory at Thana	8th November, 1927.
21	Andheri Match Company	Factory at Andheri, Bombay.	10th November, 1927.
22	The Borivli Match Manufacturing Company.	Factory at Borivli, Bombay.	12th November, 1927.
23	Bombay Match Works	Factory at Kurla, Bombay.	14th November, 1927.
24	Western India Match Company, Limited.	Factory at Ambarnath	15th November, 1927.
25	The Gujarat Islam Match Manufacturing Company, Limited.	Factory at Ahmedabad	10th November, 1927.
26	The Ahmedabad Sultan Match Factory	Factory at Gontipur, Ahmedabad.	Ditto.
27	—	New Kankaria Tank, Ahmedabad.	Ditto.
<i>United Provinces.</i>			
28	Forest Research Institute	Dehra Dun	11th January, 1928.
29	The Bareilly Match Factory	Factory at Bareilly	16th January, 1928.
<i>Punjab.</i>			
30	The Mahalakshmi Match Factory	Factory at Shahdara, Lahore.	17th January, 1928.

APPENDIX K.

List of Match factories from which representations and replies to questionnaire were received by the Tariff Board.

No.	Name of factories.	Province in which situated.	Date of Representation.	Date of Replies to questionnaire.	Date of oral evidence.
1	Mr. M. N. Mehta's Factory.	Bengal .	6th Dec. 1926 .	19th Apl. 1927 .	7th Feb. 1928.
2	Calcutta Match Factory .	Do. .	13th Dec. 1926 .	Do. .	..
3	The Malabar Match Manufacturing Company, Limited.	Madras .	16th Dec. 1926 .	..	..
4	The Bhagirathi Match Factory.	Bengal .	22nd Dec. 1926 .	19th Apl. 1927 .	18th Oct. 1927.
5	Karimbhoi Match Manufacturing Company.	Do. .	Do. .	No date .	..
6	The Malabar Match Works.	Madras .	23rd Dec. 1926 .	..	..
7	The New Madras Match Factory.	Do. .	Do. .	..	..
8	Rajfulbaria Match Factory.	Bengal .	24th Dec. 1926 .	..	..
9	The South India Match Factory, Limited.	Madras .	Do. .	31st Mar. 1927 .	..
10	The Bengal Safety Match Works and Medical House Limited.	Bengal .	25th Dec. 1926 .	..	..
11	Bangiya Dasulai Karjaly.	Do. .	Do. .	..	9th Feb. 1928.
12	National Match Factory .	Do. .	Do. .	..	..
13	Prasanna Match Factory	Do. .	Do. .	19th Apl. 1927 .	..
14	Matangi Match Works .	Do. .	27th Dec. 1926 .	..	..
15	The Jalpaiguri Industries, Limited.	Do. .	29th Dec. 1926 .	5th Apl. 1927 .	..
16	Bhowmik's Match Factory.	Do. .	Do. .	..	..
17	Radheyshyam Match Works.	Do. .	Do. .	..	..
18	Pioneer Match Factory .	Do. .	Do. .	..	..
19	The Puri Match Industries, Company, Limited.	Bihar & Orissa	Do. .	..	..
20	The Amrit Match Factory	Central Provinces.	Do. .	..	..
21	Swan Match Works .	Madras .	Do. .	..	..
22	The New Sundarban Match Factory, Limited.	Bengal .	30th Dec. 1926 .	21st Apl. 1927 .	..
23	Messrs. Adamjee Haje Dawood and Company, Limited.	Burma .	Do. .	No date .	21st, 22nd, 24th and 25th Mar. 1927.
24	The Lakshmi Match Works.	Central Provinces.	Do. .	..	..
25	The Mahalakshmi Match Factory.	Punjab .	Do. .	4th Apl. 1927 .	22nd Jan. 1928.

List of Match factories from which representations and replies to questionnaire were received by the Tariff Board—contd.

No.	Name of factories.	Province in which situated.	Date of Representation.	Date of Replies to questionnaire.	Date of oral evidence.
26	The Bhowani Engineering and Trading Company.	Bengal .	31st Dec. 1926	..	..
27	Sukul Match Works .	Do. .	Do. .	..	..
28	Messrs. Bishnath Prasad Mahadev Prasad.	Do. .	Do. .	..	..
29	The Mysore Match Manufacturing Company, Limited.	Madras .	No date .	22nd Mar. 1927 .	..
30	The Madras Swadesh Match Factory.	Do. .	Do. .	No date .	..
31	Bengal Match Works .	Bengal .	Do. .	..	..
32	The Lucifer, Limited .	Do. .	Do. .	..	..
33	Rangoon Match Works .	Burma .	..	21st Mar. 1927 .	23rd Mar. 1927.
34	The Standard Match Factory.	Madras .	..	30th Mar. 1927 .	..
35	Bombay Match Works .	Bombay .	..	31st Mar. 1927 .	3rd Dec. 1927.
36	Titvala Match Factory .	Do. .	..	1st Apl. 1927 .	28th Nov. 1927.
37	Santa Cruz Match Works	Do. .	..	2nd Apl. 1927 .	24th Nov. 1927 and 26th Nov. 1927.
38	Andheri Match Company	Do. .	..	Do. .	29th Nov. 1927.
39	Thana Match Works .	Do. .	..	Do. .	25th Nov. 1927.
40	National Match Works .	Do. .	..	3rd Apl. 1927 .	22nd Nov. 1927.
41	Bhargava Dipsalaka Jantam.	United Provinces.	..	4th Apl. 1927 .	..
42	Malabar Match Manufacturing Company, Limited.	Madras .	..	5th Apl. 1927 .	..
43	The Borivil Match Manufacturing Company.	Bombay .	..	7th Apl. 1927 .	30th Nov. 1927.
44	The Swedish Match Company.	Do. .	..	8th Apl. 1927 .	13th, 14th and 16th Apl and 16th, 17th and 18th Dec. 1927.
45	The Swadeshi Match Manufacturing Company.	Do. .	..	19th Apl. 1927 .	23rd Nov. 1927.
46	The Gujarat Islam Match Manufacturing Company, Limited.	Do. .	..	Do. .	5th Dec. 1927.
47	Esavi India Match Manufacturing Company.	Bengal .	..	20th Apl. 1927 .	6th Feb. 1928.
48	Government Demonstration Match Factory.	Bihar & Orissa	..	12th May 1927 .	..
49	Messrs. Dharamsa and Company.	Calcutta .	..	26th Sept. 1927.	17th Oct. 1927.
50	Moslem Match Factory .	Burma .	..	No date .	23rd Mar. 1927.
51	Bareilly Match Factory .	United Provinces.	..	..	20th Jan. 1928.