

**THE  
FOUNDATIONS OF NATIONAL PROGRESS**

A Scheme of constructive work for an  
Indian Province

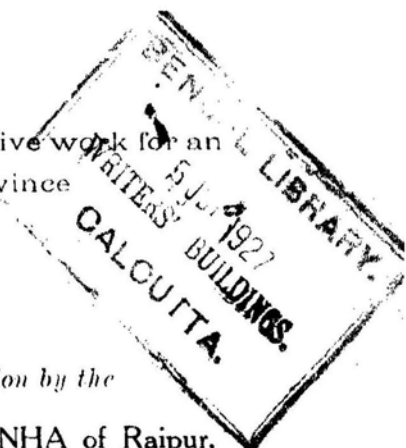
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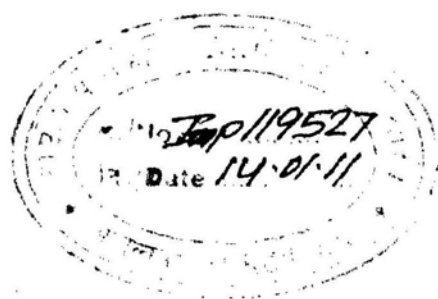
Rt. Hon'ble BARON SINHA of Raipur,  
P.C., K.C.

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To my FELLOW WORKERS

INDIANS and ENGLISHMEN

with whom for the last 30 years and over

I have been engaged in scattering the seeds

in the faith that in the fullness of time

the NATION will gather the harvest

and

To the RAIYATS of Bengal

HINDUS and MUHAMMADANS

for whose welfare I have devoted the

best days of my life

THIS WORK is dedicated

in loving memory of strenuous comradeship.

## PREFACE

The submissions which I have to make in the following pages are founded on the experience of over thirty years of work in the districts of old and new Bengal, first as a District Officer and then as a Divisional Commissioner. The purpose of the work and the aims and objects I have in view are fully explained in the body of the book and need not be repeated here. Having had to deal with a multiplicity of complex subjects my data and the materials on which I have sought to base my conclusions and recommendations are necessarily incomplete and not always quite up to date, while, in some instances, they have special application to Western and Central Bengal. Nevertheless, I trust they are substantially accurate as far as they go and of sufficient general application to serve to illustrate the points of view which I have attempted to bring out.

I should like also to explain that though my principal theme is the reconstruction of the rural areas of Bengal, I have not been able to refrain altogether from touching on the wider and circumscribing currents of public life in Bengal, for just as in the same way that there is an organic unity in the different problems of rural life, economic, hygienic and educational, - so also there is an indissoluble unity in the national life of the people, whether living in villages, towns or cities, and the broader aspects of the national problem must be dealt with, however briefly, if a constructive programme of any value is to be presented.

The chapter on Agriculture is a reprint of my original monograph on 'Agriculture in Western Bengal' written and brought out on the eve of the commencement of the labours of the Royal Commission on Agriculture, on which subsequently I was co-opted as a member. While serving on this Commission I had the opportunity which I availed of revising the chapter in the light of the additional information placed before the Commission.

In compiling the book I have had to make constant references to such Government publications as the annual administration reports of the departments of Agriculture, Co-operation etc. and



my thanks are due to these departments and more particularly to Dr. Bentley and Mr. Finlow. My thanks are also due to Sir M. Visvesvaraya and Messrs. Wadia, Joshi and Pillai from whose works I have quoted in my book here and there.

I must express my appreciation of the help rendered by Mr. S. N. Sen in looking over the proofs and in seeing the book through the Press. Without his assistance it would have been quite impossible for me to bring out the book within the short time at my disposal.

Owing to the great haste with which the book had to be pushed through I am afraid numerous errors have crept in for which my apologies are due to my readers.

Finally, I would like very clearly to point out that this production has not the imprimatur of any official authority, and for the views I have advanced I am solely responsible.

J. N. G.

4, Theatre Road, Calcutta.

*31st May, 1927.*

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## INTRODUCTION

In many places in his book the author has himself so fully epitomised his submissions and exposed his own point of view with such clearness that there seems to be hardly any need for an introduction to the work. I, however, welcome this opportunity to say how pleased I am to find Mr. Gupta following in the footsteps of his illustrious father-in-law, the late Romesh Chunder Dutt, C. I. E., I. C. S., who was one of my most esteemed personal friends. An ornament to the great service to which he belonged, he was one of the most unselfish, patriotic and strenuous workers in a galaxy of stalwart patriots, almost all of whom have now, alas ! passed away, leaving hardly any to take up their work. I trust, however, that in emulating the patriotic and literary career of Romesh Chunder Dutt, Mr. Gupta remembers that even in his own day Romesh Chunder Dutt realised that for silent work of this kind there is neither any applause from the public or much encouragement from Government. Conditions are even less favourable at the present day. The current of public opinion seems to be running in far swifter and alas mirkier eddies than ever before, and as for Government one wonders whether after having given us the 'Reforms' there is any inclination or time left for the granting of such "minor" gifts for which Mr. Gupta raises his voice.

Nevertheless, and I propose to use the language of the author quite freely, there can be very little doubt about the innate and the paramount importance of the subjects with which he deals, and the need for careful introspection to gauge the real value of the political concessions which have recently been granted. "We should never forget," says Mr. Gupta, "that political power is after all based on moral and physical strength, and that the only true test of Indian national advancement is how much and to what degree we have gained in strength, physical and moral, individual and national, how far education has advanced, how far our communal and racial differences have been obliterated and given place to, a higher unity of nationhood." There should also be no difference of opinion "regarding the primary need in India of advance towards greater homogeneity so that the great gulf may be bridged

which now separates the educated and the enlightened classes of the Indian community from the vast majority of the people. The poverty and illiteracy of the masses of the people, the unemployment of the literate middle classes on account of the paucity of industrial and other suitable employments, the low state of industrial progress reached by the country and its consequent economic tutelage, the injurious social laws and customs which still hold sway, and the prevalence of disease and other remedial causes of ill-health and physical deterioration are unquestionably our principal impediments, and the foundations of national progress must be laid on well-considered schemes for overcoming these primary evils. Elementary education has to be spread among the rural population; the course of higher education so directed as to fit modern India to the needs of the present day world and to effectually equip her youth for the stern battle of life; the lessons of science and the experience of other countries bountifully employed to improve the health and economic condition of the people; occupations have to be multiplied and the agricultural industry relieved of the vast burden which it has at present to bear, and that staple industry itself modernized and brought in line with that of more advanced countries. Indigenous industrial and commercial enterprise will have to be encouraged and the people so trained that the vast national resources of the country could be exploited and utilised by the children of the soil. No less urgent is the necessity for social reform and social progress. For it is obvious that the deplorable condition of the health and physique of the people is due not merely to climatic and economic causes, but our social laws and usages have a great deal to do with our physical degeneration." Equally true are the author's observations "that the laws of political evolution are as inexorable as those of the physical world and to attain true freedom progress must be internal. With more than 80 per cent of the people sunk in ignorance and struggling against squalid poverty and a prey to decimating disease and epidemics it might almost seem a cruel mockery to speak of the rise of an Indian democracy."

To some Mr. Gupta's book may seem to be too full of dry official data and details, but the avowed object of Mr. Gupta is to furnish materials for those who are anxious to form a constructive programme for the good of the rural areas of Bengal. In fact, it

is his object to help those who are anxious to build on the foundations of the materials which are actually available instead of wasting time and energy in sentimental declamations on what India was in the past or what India might have been to-day had the course of events been different from what it has been. In my opinion the chief value of Mr. Gupta's work lies in the detailed account of the existing materials available for constructive work in Bengal which he has delineated with a first-hand knowledge gained in administrative work in different parts of the province.

Let us now see what remedies Mr. Gupta suggests and what method of work he advocates. One fundamental axiom on which he rightly lays much stress is the need for the conservation of all the forces for progress which are available in the country and for intimate and close co-operation between all the available agencies, the main objective always being to arouse a spirit of self-help and self-reliance among the people themselves and the creation of healthy public opinion and conditions favourable to responsive and spontaneous co-operation between the people and the Government. "Non-co-operation can after all", says Mr. Gupta, "at its best be only a negative virtue and it is not by petulance and turning our faces away from the light of day that we will serve the best interests of the country. The surest and most effective way of pressing for wider opportunities is to assimilate and exhaust the opportunities for service and advancement which have already been given to us."

Turning to details, the key note of the policy advocated by Mr. Gupta as the result of his long experience in the mofussil areas of Bengal, "is for the District Officer to realise that moral and material progress of the people of his district is as much his concern as the efficiency of the administration, and to utilise to the fullest extent all the agencies which are available for carrying through schemes likely to advance the economic welfare of the people. On the one hand, he has the special departments of Government, like Agriculture, Co-operation, Public Health etc. to help him, and on the other, he has to encourage and guide the local self-governing institutions of his district from the District Board down to the Union Boards. He has not only to co-ordinate the activities of the different departments of Government and the local

bodies, but has himself to initiate schemes and modify any general policy of Government to suit the special requirements of his district". Fortunate are the districts where the District Officer sets up this high ideal of his duties and it will be for the Government to decide whether it would be necessary, as advised by Mr. Gupta, to fortify the District Officer's position by the issue of a comprehensive resolution dwelling on the advantages of closer co-operation between the District Officer and the people of his district. Few will deny that it will be undesirable to dislocate the system of district administration by the introduction of more drastic changes, and that it would be unwise to alienate the sympathy of the District Officer from the progressive activities of his district. As the provision of non-official chairman for the District Board has so obviously impaired his position in the district and reduced him to a state of comparative impotence in such matters, it seems essential, as recommended by Mr. Gupta, that sufficient funds should be placed at the disposal of the District Officer to enable him to take an active part in the development of his district. "To begin with, it will rehabilitate his position in the eyes of the people of the district, if he is able to give suitable financial assistance for the removal of the material wants of the people. He will be able to direct the policy of the District Board by being in a position to supplement its activities by making substantial grants. Over the Union Boards his influence ought to be still more potent and his financial support of still greater importance."

This leads us to what in our opinion seems to be the most valuable part of the contribution of Mr. Gupta for constructive work in rural areas. He has described in detail how in the newly created Union Board, the offspring of the Village Self-Government Act of 1919, which I had the honour, as a member of the Provincial Government of the time, of introducing into the Council, an instrument has now been found which under proper direction and with suitable encouragement will help the people of rural areas to work out their own economic salvation. From what I know of the conditions of rural Bengal I fully endorse the recommendation that for the reconstruction of rural Bengal it is of the utmost importance to complete and fully develop, with as little delay as possible, the Circle system and its component units, the Union Boards. The formation of a separate service for rural development work, and

the location along with the Circle Officer of other officers at each circle headquarters, such as a circle co-operative organizer, a circle agricultural officer, a circle sanitary officer and a circle primary education officer for simultaneously advancing the welfare of the rural areas through all the recognized channels, seem to be sound and attractive suggestions well worthy of consideration by Government. There can be very little doubt that the problem of rural advancement has an organic unity and must be simultaneously attacked in order to yield satisfactory results.

• It would be unnecessary to recapitulate Mr. Gupta's definite recommendations in the field of Agriculture, Industry and Health, but his fundamental contention that work must begin at the bottom and in the lowest units of the administration appears to me to be wholly sound. I would, therefore, strongly commend to the notice of Government the definite scheme of systematic work in the Union Boards outlined by Mr. Gupta on the foundations of the dual organizations of the Co-operative and Local Self-Government Departments. The establishment in a Union of a Union farm and dairy, a Union medical store and health work centre, and a central Union school with industrial and agricultural classes would roughly entail an annual charge of Rs. 3,500, and for the whole province, when Union Boards have been established throughout, there would be a total expenditure of two crores and a half.

This brings us to the all-important question of finance on which Mr. Gupta has rightly laid so much emphasis. It is undeniable that there is a complete unanimity of opinion in the province of Bengal that with the present financial resources of the province, it is hardly possible to keep the administration going, and there is no possibility whatever of undertaking any comprehensive remedial measures for the moral and material advancement of the people. Mr. Gupta has given figures to show the revenue of the province of Bengal per head of population, as compared with the revenue of the other major provinces, and is able to present a very strong case, indeed, for a rectification of the unequal and unjust treatment to which Bengal has been subjected before and more particularly after the Reforms. "Poor and financially crippled as the province is, is it to be wondered at," says the author, "that she has been able to make a very poor contribution for the moral and economic advancement of her people. While

Bombay, for instance, has been able to more than double her expenditure on mass education within the last ten years, in Bengal the expenditure on this all-important sphere of rural welfare has remained almost stationary." The retiring Governor of the province in his farewell message to the Council made the indictment that the financial bankruptcy of the province has been the rock on which the whole experiment of the Reforms has foundered in Bengal. Such a grave charge from so responsible a person will no doubt attract the attention of the authorities both in England and in India.

In preparing the ground for his observations with regard to the financial aspect of the problem Mr. Gupta has advanced two arguments which should carry great weight. "If money is to be usefully employed," says Mr. Gupta, "having regard to the vastness of the problems to be tackled and the extensive areas over which our rural population of about 40 millions of people is spread, the funds should be sufficient for the adoption of suitable measures in their entirety within a reasonable period of time. Small and inadequate sums spread over a large number of years are not only to yield any tangible results, but may serve to discredit such ill-equipped humanitarian movements." Then again, in pressing for an acceleration of the rate of progress, Mr. Gupta observes "In this connection I wish very strongly to draw attention to the vicious circle which is in danger of being established in India. Economic poverty of the masses and unemployment of the middle classes lead to political unrest and crime. These require the continuous strengthening of the coercive resources of the Government, which means that there is less and less left for the nation-building departments. The result is greater discontent and dissatisfaction, particularly amongst the educated portion of the population. This must in its turn be followed by greater stringency. The time has come for taking bold and comprehensive measures for breaking through this vicious circle. Little patience and wise statesmanship is sure to be rewarded by the advent of a new era of contentment and progress."

Finally, I am able to join Mr. Gupta whole-heartedly in his appeal to his countrymen to do their utmost in whatever sphere they may be placed, humble or great, to work in a spirit of self-

lessness and devotion for the good of their motherland. "We cannot all be leaders", says Mr. Gupta, "but surely we can all give a lead to our more backward brethren who are lagging behind us in the race of life. If we all took interest in some scheme or other to which I have referred, think how much that will mean. Above all, let us all help to create correct public opinion in the country with regard to the relative importance and intrinsic value of the different shibboleths which are being held up as ideals before the people." It is not long ago that I communicated to the Press an English rendering of the political reflections of our national Poet under the heading "No short cut to Swaraj." I sincerely hope that the reasoned arguments of Mr. Gupta will go some way to convincing our countrymen that no useful purpose will be served by dissipating the little energy we have in finding an explanation for all our evils in the present system of the administration, but that alleviation is possible only by determined efforts on our part to overcome natural difficulties with the aid of knowledge and science and by teaching the people to shake off the inertia of ages and to kindle in their breasts the confidence that is begotten of self exertion and self-reliance. Mr. Gupta has a no less incisive appeal to make to the Government "who stand committed to granting India the inestimable boon of responsible and national Government, but as trustees of the Indian people in the heat and stress of the moment, they cannot afford to forget that the end of all Government is the happiness and prosperity of the people and a mere engrafting of the progressive forms of Government without a corresponding advance in the moral and material prosperity of the people will be like building imposing castle on foundations of sand." It is to be hoped that this aspect of the question together with the author's reflections on the difficulties which the reformed constitution has experienced in Bengal will not escape the attention of the Royal Parliamentary Commission which will shortly begin its labours and examine the foundations on which the next constitutional advance of the country can be based.

In the meanwhile, I sincerely trust that the suggestions and recommendations made by Mr. Gupta as a result of his 30 years' experience of quiet work in the rural areas of the province would receive the attention of those for whose benefit they have been pri-



marily made, and, in particular, he would succeed in arousing the sympathy and active co-operation of the youth of Bengal in whose hands most truly the future destiny of the country lies. As to myself it has pleased Providence to place me at different periods of my life in many positions, but nothing which I have been hitherto able to do has given me so much real satisfaction as the pleasure which I anticipate, if in the closing years of my life, I am able to nurse near my own village home a self-contained centre of local self-government where modest plenty, health and knowledge will be vouchsafed to the children of the soil.

S. P. SINHA.

17, Elysium Row, CALCUTTA.

*The 15th April, 1927.*

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# THE FOUNDATIONS OF NATIONAL PROGRESS

## CHAPTER I.

### THE GOAL

#### I

*Moral and material progress to keep pace with political emancipation.*

The goal to be attained is by almost a consensus of opinion amongst the majority of politically-minded Indians now taken to be Dominion status within the Empire. This is no doubt a worthy and stimulating ideal. A little reflection will, however, persuade us that the ideal cannot be merely the attainment of any external form of political and constitutional status, however desirable in itself, without our attaining at the same time such power and capacity as will make us truly fit for that stage of political advancement. Even granting for the sake of argument that the attainment of political emancipation is a necessary step towards the acquisition of this fitness, yet we cannot ignore the fact that whatever might be the means, the end which we have to keep in view is not so much any particular political form as our national fitness for the status which we should seek to attain. It is a disregard of this important view-point which very often gives a somewhat unreal character to most of our speculations about the political and constitutional status which should be rightfully conceded to India, and makes us open to the charge of speculating in 'mendicant politics.' Political institutions at any stage of human progress rest on moral and physical foundations, and on the pillars of industrial and economic prosperity. The question, therefore, we have to put before us is have we sufficiently recovered from the corroding effects of age-long political subjection and have the healing and elevating influences of modern civilisation had sufficient time to counteract the baneful climatic,

social and sectarian influences to which we have been so long subject ? We have to guide our future efforts and base our demands according to the dispassionate answer which we are prepared to give.

The object of the above observation is not to raise unpleasant and fruitless controversies, for that will defeat the primary object of this brochure. But beginning from the rock-bottom physical foundations, having regard to the appalling death rate and infant mortality and poor physique of the people, due no doubt to the almost universal prevalence of preventible diseases, which not only kill but permanently enfeeble the race, and also to malnutrition due to the chronic poverty of the masses, can we say that the physical foundations of the race have shown any substantial improvement ? In the field of economic and industrial progress, without quoting any comparative figures of the average wealth of the Indian and the people of other civilized nations, can we deny, that we are still in a rudimentary stage of industrial progress and are one of the poorest people of the civilised world ? As regards our moral and civic virtues, although it is undeniable that there has been a marked and rapid advance in the political and patriotic sentiments of the Indian people as a whole within recent years, yet many cleavages and elements of disunion and discord, notably between the two sections of Hindus and Muhammadans, are still only too painfully visible. And has our education in independent civic and administrative responsibility been sufficiently long to have permanently raised the national standard to any great extent ? I must pause once more and repeat that these observations are not made from a desire for cheap censorship and criticism.

My object is twofold. I am anxious to impress that we must guard against undue haste in our political advance. The political system like the physical is liable to retrogression on too rapid stimulation, and want of proper assimilation is liable to enfeeble instead of strengthening the system. There are some keen observers who think that the Reforms have in some instances brought to light some of the worst features of our national character, pettiness, greed of power and sectarian and racial jealousies. Only the other day Sir Sankran Nair, one of the foremost of our political thinkers, pointed out that whereas within

## THE GOAL

the last decade under the wise guidance of Kemal Pasha even Turkey, once the home of sectarian isolation has taken rapid strides towards cosmopolitan internationalism, in India both amongst Hindus and Muhammadans sectarian jealousies and animosities seem to have greatly increased. My second object is to lay stress on the axiom that greater political power would be useless, if the wider opportunities are not utilised in broadening and strengthening the foundations on which national well-being and national power ultimately rest

### *Our Primary Needs*

There should be no difference of opinion, therefore, regarding the primary need in India of advance towards greater homogeneity, so that the great gulf may be bridged which now separates the educated and the enlightened classes of the Indian community from the vast majority of the people. The poverty and illiteracy of the masses of the people, the unemployment of the literate middle classes on account of paucity of industrial and other suitable employments, the low stage of industrial progress reached by the country and its consequent economic tutelage, the injurious social laws and customs which still hold sway, and the prevalence of disease and other remedial causes of ill-health and physical deterioration are unquestionably our principal impediments; and the foundations of national progress must be laid on well-considered schemes for overcoming these primary evils. Elementary education has to be spread among the rural population; the course of higher education so directed as to fit modern India to the needs of the present-day world and to effectually equip her youth for the stern battle of life; the lessons of science and the experience of other countries bountifully employed to improve the health and economic condition of the people; occupations have to be multiplied and the agricultural industry relieved of the vast burden which it has at present to bear and that staple industry itself modernized and brought in line with that of more advanced countries. Indigenous industrial and commercial enterprise will have to be encouraged and the people so trained that the vast national resources of the country could be exploited and utilised by the children of the soil. No less urgent is the necessity for social

reform and social progress. For it is obvious that the deplorable condition of the health and physique of the people is due not merely to climatic and economic causes, but our social laws and usages have a great deal to do with our physical degeneration.

## II

### *Real progress how to be attained.*

These contentions are, perhaps, universally admitted. But whereas one school of opinion holds that political power offers the only key for the solution of these difficulties, and the main reason why under a civilized Government and during uninterrupted peace for over a century the Indian people have not been able to make greater material and moral advance is because the people have not been allowed to manage their own affairs, the other school of opinion holds that in a vast continent like India with divergent interests of races and religions, a paternal form of Government was necessary till political consciousness was aroused in the people and they received practical training and gained experience in the art of self-government, and that with the growth of homogeneity amongst the people of India, political power would be gradually conceded, each accession of power and responsibility being carefully measured by the evidence of fitness which experience made available. It is not necessary for our purposes to examine the justice of the contentions of either party ; perhaps there is sufficient justification for either of the above points of view. The fact remains that a half way house has now been found and a guarded form of representative and responsible Government has been introduced into the country, which, it is hoped, will ultimately lead to the introduction of full Parliamentary institutions. But unfortunately up to now the introduction of representative institutions and the consequent transference of ampler powers and opportunities to the people have not been followed by a commensurate advance in the moral and material prosperity of the people ; and the outstanding feature of the present day situation would still seem to be a great deal of dissipation of energy and the neglect of great opportunities. This, however, is not to be wondered at. Judging from the stupendous issues involved, some dissipation of energy and diversion of national issues from the true path of progress was only to be



expected. There cannot be any question that the introduction of democratic institutions into India is a memorable experiment ; and if as the result of the foresight, magnanimity, and love of fair play of the British people on the one hand, and the patience, staunchness and patriotism of the Indian people on the other, a stable and workable system of representative Government can be established in India, unquestionably it will form the most remarkable achievement of modern history. In the meanwhile, however, in the heat and stress of the struggle there is danger of both the people and the Government forgetting that no external power, no political bargaining can alone help a people in winning the inestimable boon of political freedom. The laws of political evolution are as inexorable as those of the physical world, and to attain true freedom progress must be internal. With more than 80 per cent. of the people steeped in ignorance and struggling against squalid poverty and a prey to decimating diseases and epidemics, it might almost seem a cruel mockery to speak of the rise of an Indian democracy. It is with the primary object of drawing attention to this aspect of the present Indian problem that this brochure is presented to the public.

#### *The Importance of Rural Reconstruction.*

If the importance of working at the unseen foundations of society is fully recognised then the vital necessity of the reconstruction of our rural homes will also be obvious. Not only do the majority of the people live in villages and smaller towns and not only is the rural industry of Agriculture still by far the most important industry in India, but it is the reformed and expanded self-governing institution of districts and smaller rural units which afford the most suitable field for our education in the higher spheres of self-government. Unfortunately our attention has been too exclusively confined to the changes which the Reforms have brought about in the machinery of the Provincial administration, and very little heed has been paid to the momentous advance in local self-government by the passing of the Village Self-Government Act and by the decision of Government to allow District Boards to appoint their own Chairmen. With the creation of Union Boards and the grant of practical autonomy to District Boards vast scope

for self-help and progress is now open to the people of rural Bengal. The true value of these accessions of parochial power must be clear to those who, like myself, believe that the future destiny of the country cannot be shaped in the council chambers of the Empire alone, but much silent, slow and patient work has still to be done in every village and in every sphere of our national life before the foundations will be securely built on which regenerated India could take her stand.

*True Swaraj.*

It is more than five years ago that I made the above observation and it is a source of great gratification to me to find the greatest Indian of to-day, our Poet Seer, describing the beginning of true Swaraj in the following words : "Whenever the people of one single village will have learned effectively to combine for the promotion of the health, education, employment and enjoyment of life of each and all within that village, they will have lighted a torch in the path of Swaraj for the whole of India. Thereafter it would not be difficult to light one torch from another and so Swaraj will advance of itself not only by the path traversed by the mechanical revolution of the "Charka" or such like, but along the route of multi-sided development illumined by its spirit of self-reliance." It may be that any one single village may not be privileged to receive the full flare of the torch of illumination at one time, and that the work may have to be carried on simultaneously over our district areas and the progress at first will be extremely slow with many painful halts and retrogressions, but the essential facts which have to be grasped are that we must build at the foundations first, our efforts should be many-sided embracing the whole field of our national and racial well-being, and that our eyes must be turned more towards a goal of internal emancipation and development than to the attainment of external powers and privileges.

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## CHAPTER II.

### OUR METHOD OF WORK—A RETROSPECT.

#### I

#### *Utilization of all available agencies and resources.*

The method of work we advocate for the rural areas of Bengal is the result of practical experience gained in several districts in different parts of the Presidency during the course of the last 30 years. For many years past I have realised that the principal aim of all servants of the Government should be to serve the people, and to the District Officer of to-day the moral and material progress of the people of his district is as much his concern as the efficiency of the administration. Accordingly my energies were chiefly devoted to the task of organising all the forces for good which were available in the districts where I served with the object of devising means for the uplift and advancement of the people. Unity, co-operation and self-help have been the watchwords of our scheme of work. Having regard to the vastness of the task before us it would hardly seem necessary to lay stress on the paramount necessity of conserving every possible source of energy and power which might be available for the uplift of the country, and to take every precaution to prevent the dissipation of our resources. We believe that not non-co-operation and obstruction but the spirit of federation holds the key to our advance in every sphere of our political and national life, but this is a point to which I shall return in a later portion of our thesis. Turning to our immediate task of outlining a scheme of rural reconstruction we find that there are three classes of people available for work in the mofussil areas of Bengal. First of all there are the enlightened and educated inhabitants of the district, the zamindars and pleaders residing principally at the headquarters of the district and the subdivisions ; then there are the local bodies—the Municipality, the District Board and its offsprings ; and lastly there are the Government officials. In the districts where I have worked my principal aim has been to establish

close co-operation between these different agencies, and the special departments of Government like Agriculture, Co-operation, and Public Health which cater for the moral and material advancement of the people, so that by their united effort the various educational, medical and economic needs of the district could be effectually tackled.

## II

### *Work in Rangpur—1913-17.*

Almost in the beginning of my service when I took charge of the Khurda Subdivision of the Puri District (then in Bengal) I got the warmest response from all classes of people, and as a result much useful work including some important irrigation works were carried out which greatly benefited the agricultural classes. A more sustained and systematic effort was made in the Rangpur district (1913-17) As the result of our united efforts, local self-government made remarkable progress in that district: 13 new medical institutions and no less than 288 new primary schools, mostly for Muhammadan boys and girls, were established during this short period. As an example of what is possible for the people to achieve by their own unaided efforts might be mentioned the establishment of a first-grade University College, the Carmichael College, for which the people subscribed no less than 7 lakhs of rupees.

Speaking of our work in Rangpur, indicating the future line of progress, I wrote in 1917 : "The desideratum of the future of the district is steady advance and progress in the direction of more sustained self-help and greater and more genuine co-operation between all sections of the community and between officials and non-officials. A spirit of give and take, forbearance, patience and good will should be the watchword of all men who wish to serve their district and their country. The zamindars are doing a great deal, but much more is expected of them. No doubt every scheme that has been undertaken has owed its success a great deal to the financial support which has been received from the zamindars, but far more than financial assistance is looked for. A few more resident zamindars will make a great difference to the town. The Muhammadans must also try and come more to the front by larger public

service. The excellent ideals of public duty which permeate the young members of the Municipality should spread to all classes and civic renown should be the coveted goal of a far larger number of men than is the case at present."

### III.

#### *Work in Burdwan Division—1920-23.*

After taking charge of the Burdwan Division I organised a Divisional Conference which met for the first time in 1920. The main object of the Conference was to bring together District Officers of the Division, the Chairmen and other official and non-official members of the District Boards, and other outstanding leaders of public opinion, so that the various needs of the Division could be ascertained and the suitability of the line of work which had been followed by me as a District Officer could be discussed. Before meeting at a central divisional conference, district conferences had also been arranged and at the most important of these held at Burdwan on 28th January, 1920, I addressed the public at length on the objects of the Conference. "This Conference has been convened according to precedent to enable the members of local self-governing institutions of the district, specially those who live in the mofussil, to come into close personal contact with local officers and with each other, so that ideas might be exchanged, difficulties cleared and the programme of future work and the adoption of any definite line of policy discussed and settled. Gentlemen, in every direction we hear it said that a new era has opened before the country, a new and momentous stage in the Indian National Evolution has now been reached. Nobody will doubt the truth of such statements. But I think it will also be generally conceded that during the next decade our work will be chiefly of reconstruction and consolidation, the wise use of those great opportunities for which the people aspired and the first instalment of which they have now obtained. We have been rightly reminded that the eyes of the whole of the civilised world would be upon us and they will be watching with interest the use which the Indian people make of their opportunities. It is therefore the plain duty of every citizen, no matter in what sphere of life he might be placed, to strive his utmost to vindicate the wisdom of Government and the sincerity of

the aspirations of the people, their capacity to shoulder responsibility, and to work for the public good. Signs are also not wanting that there is a growing desire on the part of all responsible public bodies to press for a higher standard of equipment, and the acquisition of qualifications which would be required in different spheres of public life, and a determination on the part of the people to help themselves instead of depending solely on Government for assistance, which has been so strikingly demonstrated by the wave of industrial enterprise which is sweeping over the country."

"Before making any definite suggestions regarding the work to be done in rural areas of a district I would like with your permission to describe how the position and power of local self-governing institutions have been affected and how opportunities of doing beneficial work have been greatly enhanced firstly by the passing of the Bengal Village Self Government Act, and secondly by the decision of Government to allow District Boards to elect their own Chairman. As was pointed out by His Excellency Lord Ronaldshay "the decision of Government to empower District Boards to elect their own Chairman constitutes the greatest advance in local self-government since the time when District Boards first came into existence under the administration of Lord Ripon." The true significance of this privilege will be easily realised by those who have any practical knowledge of the working of district administration. The District Board is in charge of all the roads and communications of the district which so largely contribute to the amenities of civilised existence, and which are also directly instrumental in developing the economic and agricultural resources of rural areas. It is also the agency for maintaining and developing medical institutions in rural areas, of granting financial assistance to primary and middle schools, for improving the water-supply of rural areas, and for helping agricultural and industrial education if it be so minded. Thus it will be seen that most of the agencies for the improvement of the moral and material condition of the people are in the hands of the District Boards. With the enlargement of its powers, the question of broadening the electoral franchise and enlarging the size of District Boards will no doubt have to be considered and so also the question how far District Boards could be suitably consulted by District Officers in the general administration of the district. The District Boards of the future would thus ap-

proximate more and more to the County Councils of England. It is to be hoped therefore that District Boards will now have a definite policy and programme of work spread over a number of years, which the non-official Chairman, who will be in office for a definite term, will be able uninterruptedly to pursue.

"Perhaps even more important than the appointment of non-official Chairman of the District Board, from the point of view of Local Self-Government, has been the creation of Village Boards under the Village Self-Government Act of 1919. It would be beside my purpose to trace the history of the legislative measures which have led up to the passing of this Act. Suffice it to say that for the first time we will now have legally constituted units of administration throughout the rural areas of districts, with unfettered powers of self-taxation, which will enable the people to help themselves and remove their own local wants, instead of depending for all reforms to reach them through the centralised official agency of the district or the sub-division. The creation of these rural bodies will also greatly strengthen the administration and enable all the beneficent schemes of Government to be carried out and given effect to by a net work of local bodies, who for the present, will discharge their manifold duties under the guidance of trained executive officers to be known as Circle Officers. But of course it must be apparent to everybody that the services of paid officers, either in Government employ or in the employ of local bodies, will not be able to effect any radical changes in the rural areas, unless we are able to find voluntary workers who without any pay or any ulterior interest will be willing to shoulder the heavy responsibilities which will devolve on these self-governing institutions, for the essence of the whole scheme is the voluntary co-operation of the most educated and influential people in the task of the administration of their home areas."

In the following year ( 1921 ) the second Burdwan Divisional Conference was held. In opening the Conference I said : "Gentlemen, I endeavoured last year to explain at some length how the main object of this conference was to bring to a focus the activities of the different departments of social service work which are in operation in this Division and to afford an opportunity to the mem-

bers of the Local Self-Governing Institutions to meet each other and the Government officers and exchange their opinions and views on the different subjects at which they have laboured in common. It would be unnecessary for me to go over the same ground on the present occasion, but I trust you will permit me to recall to your mind the two principles which I enunciated last year.

"The first is that all of us who are engaged in this work believe that the foundations of the system of representative government which is now being introduced into the country, and indeed the foundations of any system which has for its object the building up of the true happiness and advancement of the people must rest on the work which is being silently and unostentatiously done in the districts of Bengal. I have always held that the most important work which we have now before us is the amelioration of the condition of the masses of the people and bridging the great gulf which now separates the educated and advanced sections of the Indian people from the great mass of the people, who are unfortunately even now poor, unresourceful and steeped in ignorance, and that the bulk of this work will have to be done in the rural areas of Bengal. As a corollary to the above I also believe that it is very important to readjust our views about the aims and objects of the District administration so that those departments of the administration which deal directly with the amelioration of the moral and material condition of the people should receive increasingly greater attention.

"The second principle which I wish to bring into prominence is that progress in these departments of the administration can best be achieved not only by a close and continuous co-operation between the officers in charge of the general administration of the district and those in charge of the special departments concerned, but also chiefly by the stimulation and encouragement of all the local self-governing institutions which have now been given such widely extended opportunities for service and good work. Besides co-operation with these local institutions, I also laid stress on the value of creating a close relationship and a bond of unity between the Members who now represent different districts in the new Provincial Council and our work in the districts which they represent. I should like to add in this connection that it is getting increasingly important to keep enlightened public opinion on our side, and this



I am convinced can best be done not so much by argument and discussion as by inviting an examination and inspection of the actual work which we might have succeeded in doing in connection with the great task of ameliorating the condition of the vast masses of our countrymen.

"I must conclude by appealing to you all to continue to press forward under the same banner of co-operation and trust. To you gentlemen who represent the districts of the division in the great representative Council of the people I have a special appeal to make. I do not wish you to take me on trust but examine for yourself the conditions obtaining in the districts you represent, see for yourself what we are trying to do, think for a moment about our difficulties and the magnitude of our task and then if you are satisfied that we can legitimately claim your support give us all the assistance you can both in and out of the Council. And if I may venture to give you a word of advice, do not be in too great a hurry to commit yourself to a policy which will have the effect of weakening the district administration. Believe me in this period of transition this Province wants nothing so much as a vigorous policy of reform and progress in the districts based on the harmonious co-operation and co-ordination of all the forces for good which are available to be carried through under the guidance of the District Officer, who should continue to possess not only the power to control and prevent lawlessness and disorder, but what is more important, the power to do good and to be of real and lasting service to the people placed under his charge. And if I turn to you District Officers and to your loyal and hard-working lieutenants the Subdivisional Officers and Circle Officers and appeal to you to rise to the full height of the great and growing responsibilities which new India with the rest of the world imposes on its administrators, I do so in the fullest confidence that to all of us the day's toil is sweet not only because it is all in the day's work but because we realise that we must complete the great task to which we have set our hand and each step forward brings us nearer to the fulfilment of what we believe to be one of the noblest achievements which History records."

The Conferences in the Burdwan Division succeeded in stimulating a commendable degree of public spirit in the districts, and the rapid advance made in the establishment of medical institutions

throughout the division and the still more remarkable achievement of the carrying out of numerous important irrigation schemes in Bankura and Birbhum bear testimony to the value of our efforts to stimulate a spirit of self-help and co-operation amongst the people.

#### IV

##### *Conferences in Presidency Division—1925-27.*

After my transfer to the Presidency Division we held a series of district conferences in this division also and there was a divisional conference at Krishnagar last year, and we have just finished our annual Conference this year, which was held at Calcutta and which had the distinction of being opened by His Excellency the Governor. It was pointed out in these conferences that the present occasion is most opportune for rural reconstruction work. There is widespread desire on the part of the public to turn to the improvement of their village homes as the real groundwork of any schemes of national progress. Unofficial organizations such as the Central Anti-malarial Co-operative Association of Dr. Gopal Chandra Chatterji, the Social Service League of Dr. Dwijendra Nath Maity and similar institutions are doing most excellent work. There is a forward movement in these directions not only at the instance of Central Societies and organizations formed in Calcutta, but on the initiative in many instances of the people of the villages themselves. Quite a number of local Village Associations have thus sprung up not only in the more enlightened centres but in remote villages and hamlets, where the more enterprising and selfless residents have taken upon themselves the task of raising the standard of life in their villages and sowing the seeds of co-operative work and civic activities amongst the villagers.

In addressing the Nadia Conference I said: "One other observation I shall make and that is about the interconnectedness of all schemes of public utility. As you will observe, the agenda deals with health problems economic problems, educational problems and also problems for the improvement of the physical conditions of our life in our villages. All these problems are closely interconnected and the best results are to be obtained if we remember their organic interconnection and devise

means for simultaneous progress in all directions. From one point of view economic and material progress should be at the root of all other schemes, for, as pointed out by Doctor Bentley, the incidence of disease and malaria seems also to depend on agricultural prosperity in rural areas. At any rate it is obvious that if we want people to go back to the villages and be content to live there instead of all flocking to the towns and cities, we must strive not only to improve the health and sanitary conditions of our villages, but must also provide suitable occupation for the people. Any scheme of rural reconstruction therefore would be incomplete, and in fact will have very little practical value, unless we are able to devise feasible schemes of village industries to be run by some form of mechanical power and which could be taken up by men with moderate capital. Some recreations and amenities which normal men now require would also have to be provided, so that neither their bodies nor their minds might starve.

"But I can well imagine the voice of the pessimist raising his finger in doubt and asking whether those who talk so glibly of rural reconstruction in Bengal have realised the enormity of the task. "Are you," he might well ask, "aware of the vastness of the physical and moral forces that are arrayed against you? Have you actually seen our deserted villages and homesteads where, alas, there are mouldering palaces and spacious buildings but no inmates, where damp vegetation and under-growth have choked out light and air, where even the rivers and waterways are glutted with noxious weeds, and the few unfortunate villagers who are still left drag on a miserable existence, slowly and inevitably succumbing in the unequal struggle against disease and starvation." Yes, for the last 30 years I have been in the thick of these struggles, and am free to admit that my soul has very often been numbed by a creeping sense of despair at the vastness of our task and the unequal character of the struggle before us. Nor can I say that any radical changes for the better have yet taken place. But yet I have seen and am seeing signs which make me take hope. I have seen villages where the people by their combined efforts have been able to minimise the ravages of malaria and disease, where they are learning the value of co-operation and trust, where they find it more profitable to combine and work than to sit idle and tear the hearts of each other in calumny and distrust. I have

seen villages where young men are giving up half of their scanty pay for the good of their village, and only yesterday I visited Birnagar where a band of young men under the able leadership of my esteemed friend, Babu Nagendra Nath Banerji, Public Prosecutor of Alipore, have set about improving their village and fighting disease and insanitation in a scientific and business like way which might well arouse the envy of a Government Department. I am not without hope. Though long and weary our path may be, yet the beacon light is in the heavens and the order to march ahead has reached us.

"I will conclude by pointing out that our only hope, however, is in unity and co-operation and the conservation of all our resources. We want unity and comradeship throughout the line, unity between officials and non-officials, between zamindars and peasants, and between Hindus and Muhammadans. These two great communities have lived in amity in the rural areas of Bengal for years and generations past and there is no reason why there should be any change now. In fact, there is every reason to hope that with the advance of education, the bonds of comradeship should be drawn closer, unless they are imposed upon by fanatics and self-seekers. Need I say that it is our duty not to divide, not to call up racial and communal prejudices and jealousies, but to cement, to unite, to ask people to look ahead, to listen to the lifting and unifying call of education and culture, and to forget the feuds and the littleness of the past."

In opening the Calcutta Conference I said "the primary object of these conferences has not been forgotten this year, but we have ventured to appeal to a wider audience, because we have felt that to achieve any tangible result within a reasonable time this movement for rural reconstruction is in need of far ampler assistance, financial and administrative than is available under the present conditions. We have felt that this is a work which cannot be satisfactorily done in any isolated district or division of the province, but it must have the united public opinion of the whole province behind its back and be placed in the forefront of the programme of Government itself \* \* \*

In this division also we laid down definite lines of policy at our last conference held at Nadia and what we have been able to achieve in different departments of our work is to be found in the

printed memorandum on the subject which, I hope, most of you have received. Most noteworthy has been the achievement of the District Board of Alipore which has organised an extensive system of anti-kala-azar and health work throughout the district and established no less than 241 centres, where I am glad to say, 1,34,868 patients have already been treated and 86,452 cured during 1926. The example of the District Board of Alipore is being followed by the other District Boards of the division as far as their limited resources will permit them to go. Without attempting to take you through the details of the list given in the printed note I would like to cite the case of what has been done in one single subdivision where the Sub-Divisional Officer and the Collector were able to enlist the sympathy and co-operation of the people to the fullest extent. I refer to the work done in the Chuadanga Sub-division of the Nadia district. Within the course of one year the Sub-Divisional Officer has been able to organise a Co-operative Agricultural Association registered under the Act as the Chuadanga *Krishi Samabaya* Ltd. with more than 4000 bonafide agriculturists as its members. The Society distributed Chinsurah Green government jute seeds of the value of Rs. 22,000/-, 24000 of mds. Kataktara paddy and 2000 sugarcane cuttings, with most satisfactory results. The Society has at its credit Rs. 4,500/- and is contemplating with the assistance of Government to start a small demonstration and cattle farm of its own. During the same year another notable achievement was the establishment of the Alamdanga Central Co-operative Sale Society Ltd. This Society is at present dealing chiefly in jute, and in spite of the adverse circumstances which the jute industry had to face last year the Society transacted business worth nearly Rs. 60,000/-, whilst 4175 shares of the value of Rs. 51,750 have already been sold, and the Society is expected to make a profit of nearly Rs. 75,00/- in round figures. Thanks to the personal interest which the Collector himself took in the infant institution, it has made a most promising start and has demonstrated the possibility of realising the ideal which was outlined in the note read at the last year's Conference. We stated that the total annual value of the jute sold amounted roughly to 60 crores of rupees, and if the Co-operative Sale Organizations are ultimately able to capture and handle even half the total quantity of the jute and even 5 p.c. represent establishment charges of the Co-operative Societies

in handling this jute, as much as a crore and a half would be available as remuneration to such educated middle-class youths who may be employed in this connection. Anti-Malarial Societies have also been started in the subdivision during the same year and they have all been registered under the Co-operative Societies Act. The Central Chuadanga Anti-Malarial Society has opened 5 anti-kalazar centres and undertaken sanitary improvements in all the villages where these associations have been started. The first Union Board dispensary in this division was established in this subdivision. Lastly, the Alamdanga Co-operative Yarn Depot was established during the year which supplied yarn to the value of one lakh of rupees to its affiliated societies, which are 10 in number, and made a profit of nearly Rs. 1,000/-. The activities of this institution have been expanded and it now deals with finished products. I am sure you will all agree that the above record is most encouraging and it shows to what extent even under the existing conditions a Collector and his Sub-divisional Officer can help the people of the district.

## V

### *Summary of Conclusions.*

The regulating principles underlying our policy and our aims as settled in previous conferences may be briefly stated as follows:—

(1) To concentrate attention to the task of rural reconstruction and the advancement of the moral and material condition of the masses of the people. It is believed that it is by such work alone that the foundations of any lasting scheme of social and political reconstruction can be most securely laid.

(2) To attain the most lasting results in this field of work, the wisest policy is to develop a spirit of self-help and self-reliance among the people themselves. To ensure continuous and efficient work, some recognised form of village organization is absolutely essential. Experience shows that our new Union Boards which are in advance of self-governing village institutions in any other part of India are most suitable for the purpose. While, however, making the Union Board the nucleus of our work, we welcome the help of any other form of spontaneous village organizations and "Samities" which might be available.

(3) With our village organization as the last unit of the administration, we aim at linking up its efforts with those of the Local Board and the District Board on the one hand and all the nation-building departments of Government on the other. We believe that under existing conditions speediest advance will be made by moving along the well-defined avenues of the Government Departments of Agriculture, Co-operation, Education, Industry and Public Health.

We aim at the co-ordination of all these Government Departments and their officers working in any particular district under the guidance of the District Officer. We believe that the best results are to be attained by the simultaneous activity of the different Departments and their co-ordination and inter-action under the guidance and with the help of the driving power of the Collector.

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## CHAPTER III.

### HEALTH AND SANITATION.

#### I

*The foundation of all schemes of public welfare.*

Health may justly be regarded as the foundation of all schemes of public welfare. It is at the root of all problems of national progress. Material and commercial prosperity and ultimately political power depend on the physical fitness of a people and their capacity for strenuous and continuous work. Particularly is this the case in a tropical country where physical conditions are strongly against vigorous existence and nature does not favour continuous and arduous exertion either of the mind or of the body. It is an equally well-acknowledged fact that in India not only is nature against us, but man has not exerted himself to the same extent as in other civilized countries to conquer nature, and with the assistance of science and organised and co-ordinated action to improve the hygienic conditions of life. Accordingly in India the death rate is abnormally high averaging between 38 to 40 for every thousand of population, whereas the normal death rate in European countries varies from 12 to 30 per thousand. In India about one-fourth of the total number of children born die within the first twelve months of their birth, the total loss of child-life being calculated at million babies every year. What an appalling waste! Actuarial calculations of the duration of life show that in India estimated expectations for male and female lives are 22 and 23 years, respectively, while in England the expectation for males is 46 and 50 for females. And what is more significant that whereas in England and other civilized countries longevity is steadily increasing, in India successive censuses would seem to show that the average duration of life is getting shorter. If the above figures only meant that there is likely to be a retardation of any further growth of India's population there would not have been so much cause for anxiety; but the real significance of the above figures is that the average health of the population of India and their physical strength are extremely



poor, and there are reasons for believing that the standard is getting lower every day. There are no figures available to show what percentage of the population is in such a state of health as will enable them to undergo any arduous exertion, soldiering for instance, for no such census was taken as was done in England during the war; but if in England it was found that nearly half of the population were diseased and unfit for soldiering, what must be the state of affairs in India?

All this gives much food for serious and somewhat gloomy reflection. Although our material resources are almost inexhaustible and we have a teeming population, individually the physique of the race is extremely poor, and our first primary duty must be to devise means for the improvement of the health and physique of the people. "The vicious circle which has existed for ages still continues," writes Lt. Col. F. W. D. Megaw, I.M.S., in the Indian Medical Gazette, "disease causes poverty and poverty causes disease. More than five millions of people suffer the death penalty every year from preventible diseases, many days of work are lost yearly by each worker from the same cause and the average efficiency of each worker is diminished by about twenty to thirty per cent. from the combined effects of disease and malnutrition."

#### *The decline of Western and Central Bengal.*

The above reflections apply generally to India, but what concerns us more intimately is that even for Bengal the western and central portions, the Burdwan and Presidency Divisions, are notoriously unhealthy. During the last decade covered by the last census of 1921, the unhealthiness of these parts seemed to have reached its climax. The population of the Burdwan Division actually showed a decline during the decade and decreased from 84,87,506 in 1911 to 80,50,642 in 1921; while that of the Presidency Division was almost stationary, having been 94,45,321 in 1911 and 94,61,395 in 1921. But the figures of the previous censuses also disclose that the forces of decay originating in malnutrition and disease have been in operation for years past. While the population of Eastern Bengal expanded by 69·8 per cent. from 1872 to 1921, and that of Northern Bengal by 28·8 per cent., the population of the Presidency Division showed an increase of 19·8

per cent., and that of the Burdwan Division showed an expansion of 5·7 per cent. only. The average birth rate for the 10 years from 1912 to 1921 for the Burdwan Division was 30·2, and that of the Presidency Division was 30·0. For the same period the average death-rate was 35·5 for the Burdwan Division and 33·1 for the Presidency. Besides malaria, hook-worm, kala-azar and other maladies seem to have made these divisions their home. With the alarming increase of disease cultivation has simultaneously languished, and it is a most depressing fact that the area under cultivation in the Burdwan Division has actually contracted from 4,716,000 acres in 1905-06 to 4,088,200 acres in 1913-14, although there has been a small upward tendency again and the area under cultivation rose to 4,389,000 acres in 1922-23.

#### *Causes of Decadence.*

It is not easy to assign definitely the causes which have brought about this decadence in the agricultural prosperity and health conditions of these parts of the province. Some experts hold that the contraction of the water-supply caused by the construction of river embankments and the obstruction to free drainage caused by railway and road embankments are powerful factors for the decline of the Burdwan Division : whereas there is almost a consensus of opinion that the decline in the health and prosperity of the districts of the Presidency Division has followed the silting up and decay of its river systems and water channels. These points will be further discussed when describing the causes of the alarming increase of malaria in several parts of Bengal.

But before I proceed to discuss the remedial measures for the improvement of health, it would be unfair if in this delineation of the present position mention were not made of the influences which are at work in several parts of both the divisions, specially near the mills and factories in the riparian areas of the Hooghly, Howrah and Alipore districts and the Asansole Sub-division of Burdwan, in improving the economic condition of the people and the health conditions of the environments of these concerns. This is a point to which reference will be made when we consider Industry and Industrial enterprise.

## HEALTH AND SANITATION

### II

#### *Remedial Measures.*

Some medical authorities recommend that there should be a careful and scientific preliminary survey made of the real requirements of the country before remedial measures for the restoration of India to health should be undertaken. It is feared that the diseases of the Indian people have been diagnosed for the most part by ignorant quacks, and it might well be that the remedies which have been proposed might be found in most cases to be worse than the disease. I do not think, however, that there is the time or the necessity for any elaborate scientific survey. The ailments of India are by this time well known and Committees and Commissions have sat and produced reports which are filling the spaces of our libraries and record rooms. It is high time that systematic and comprehensive action were taken. What is necessary is that a safe line of policy should be laid down based on the experience and research of competent authorities in this and other tropical countries, and such measures adopted which will insure that policy being carried into execution throughout the land continuously over a sufficiently long period, through the agency and with the help of all the administrative organizations of the country from the Central Government down to the smallest village institution.

But a policy without funds will be of little use and sufficient funds must be set apart for this all-important work. A few thousand rupees spasmodically spent will create no impression, lakhs and even crores will be required. No other departments of the public administration, no other schemes of public utility should have precedence over the clamant needs of the Department of Public Health in India. Disease, as medical authorities have so often pointed out, is costing the country an incredibly large sum of money, and the experience of all civilized countries shows that every country which has deliberately purchased health has made a splendid bargain even from the purely financial aspect. Incontrovertible facts and figures were quoted by Mr. Branby Williams, C.E., of the Public Health Department, in support of the above views at a recent discussion on the subject at the Rotary Club ; and it is a dismal reflection on our ignorance of health problems that the old hackneyed and entirely misleading argument was allowed to be

advanced that India could not afford to feed a larger population and improved health conditions would mean that an increasingly larger proportion of the people will be thrown on public charity. Such an argument ignores two important considerations. Improved health should raise the whole moral and mental outlook of the people and the moral restraints on an irresponsible increase of population are likely to come into play. Improved health will also enable the country to utilise the service of all classes of workers far more effectually than is possible at present, with the result that there will be a vast augmentation in the wealth and food producing capacity of the country, and it is undeniable that the agricultural and mineral resources of the country are yet far from being exhausted.

### *A Complex Problem.*

In discussing the remedial measures which should be adopted for improving the health of the people, the most important point to remember is the extremely complex character of the problem, which really embraces the whole life history of the nation. To begin with we have to consider the economic aspects of the question. It is superfluous to refer to the close connection of poverty and disease and the remarkable parallelism that exists between prevalence of disease and the economic and agricultural prosperity of any part of Bengal at any particular period. It is also obvious that any measures that might be adopted for the improvement of the material prosperity of the people will be a direct stimulus to the improvement of the health of the people. But this point is dealt with later on and need not be anticipated here.

Next comes the influence of physical conditions on health. We have already referred to the enervating influences of a tropical climate for which unfortunately there is no human remedy. Reference has also been made to remote causes, such as the decadence and silting up of rivers and other natural channels and the construction of river and road and railway embankments and the consequent obstruction to subsoil and surface drainage. These physical causes of insanitation have been dealt with at greater

length in a subsequent section in explaining the spread of malaria in the Province.

The direct and powerful connection of health with social laws and customs is also universally admitted. That the disintegrating and unscientific bases of our social system are to a great extent responsible for our physical enervation and degeneration must be realised by all impartial observers. Even as against the Muhammadans the Hindus are steadily losing ground, and in his little pamphlet "A dying race," Dr. U. N. Mookherji has drawn a very gloomy picture of the future of the Hindu community. He points out how from the evidence of each successive census the superiority of the fecundity and virility of the Muhammadan over the Hindu is amply demonstrated. Dr. Mookherji attributes the decadence of the Hindus to their social usages specially child marriage and enforced widowhood. There cannot be much doubt that these usages are opposed to the teachings of biological science. We cannot, however, devote much space to the consideration of the social aspects of this problem, but it is sincerely to be hoped that all sections of the people, specially the younger generation, will fully realise their duties of making a firm stand against customs and usages which are tending to perpetuate the physical inferiority of our race. Fortunately powerful forces are at work sweeping away the inertia and stagnation imposed by long custom and the enervation of a tropical climate. Contact with the larger life of the outer world, the struggle for existence, and the stress of economic causes, not to speak of the higher enlightenment born of education and culture, are all combining to change the foundations of our social life. The necessity of raising the standard of comfort amongst the people and a realisation of the primary need of exercising moral restraint in checking the irresponsible growth of population are also primary considerations with regard to the problem of health in a teeming country like India, where the population is already pressing so heavily on the food producing capacity of the country. Malnutrition and disease are the direct results of poverty, and want of food is in no small measure due to the excessive growth of population. So unless along with efforts to improve the health and virility of the people, simultaneous efforts are made to raise their mental and moral outlook and their standard of comfort and living, we would be powerless to break the

chain which has so firmly established the vicious circle of disease and poverty in India. We cannot stop, however, to discuss this aspect of the question, on which it is so difficult to make any definite suggestions. Equally important is educative work to spread the knowledge of the elementary laws of hygiene and sanitation among the people. We shall touch this point later on, but it is to the consideration of schemes for improvement of sanitation and the organization of medical and health work that we must now proceed.

### III

#### *Provincial Scheme: need for local Co-operation.*

Medical and health work may be considered from the point of view of either the District or the Province. The laying down of a sanitary and health policy for the province, the taking up of extensive schemes for fighting malaria, hook-worm etc., which are beyond the unaided exertions of local bodies, the removal of the unfavourable conditions created by such extensive natural causes as the silting up of rivers and drainage channels, and the provision of sufficient water-ways for railway and other road embankments come legitimately within the province of the local Government. Into the measures which are being adopted by Government for the creation of a central expert organization for controlling and guiding the health policy of the province and for training expert sanitarians and for organizing a vigorous anti-malarial, anti-hook-worm and anti-kala-azar campaign in the province, it is not necessary to enter here. But it is obvious that no big advance in the fight against disease and insanitation can be made without the closest co-operation of the people of the districts concerned. A central provincial organization of Health, however efficient, will be powerless to achieve any great results unaided, unless there were competent and willing agents all over the Presidency. And it is to the consideration of the work which can be done by the local bodies that we wish to devote special attention. In what way under present conditions can more efficient and more numerous agencies be created in rural areas both for fighting and preventing disease and increasing facilities for medical relief of the people? Where is the additional money to come from? What change of system or policy will be required?

*Schemes for multiplication of medical institutions.*

The only agency for looking after the health of rural areas is the District Board, which with its inelastic income\* has hitherto found the greatest difficulty in maintaining the existing medical institutions in mofussil in an efficient condition, far less to start new ones to keep pace with the growing needs of the people. As a result till quite recently a few struggling and ill-equipped District Board and aided dispensaries were all that we had in the way of medical institutions in the mofussil. The total number of dispensaries of all kinds in the Burdwan Division, for instance, in 1920 was 80, thus one dispensary served 156.7 sq. miles. In the same year the total number of dispensaries was 124 in the Presidency Division, and each dispensary served an area of 117 sq. miles. The want of a definite policy and of funds to carry out any policy had hitherto been the chief causes why no substantial progress could be made. But the passing of the Village Self-Government Act in 1919 opened the door for the adoption of a new policy. On the experience gained in Rangpur I suggested at the Burdwan Conference of 1920 that rural dispensaries instead of being maintained solely by the District Board should be maintained by the Union Boards with such assistance from the District Board as could be available for the purpose. Till then there was hardly any intelligent policy for the medical administration of the districts of the Burdwan Division; medical institutions had sprung up more or less through accidental causes. The policy then laid down was that two or three Union Boards should combine to have a joint Union Dispensary, the selection of the site of the dispensary depending on local considerations, such as the possibility of getting local support, the special needs and density of the population of the localities concerned. If the annual upkeep of a dispensary cost Rs. 1000 and if three Unions combine to maintain the dispensary, it was suggested that they might contribute Rs. 200 each and the District Board might find the balance Rs. 400. As regards the initial cost of the construction of the dispensary building and its equipment, it was suggested that it should be divided between the District Board and the Union Boards, the Union Boards mainly depending for their contribution on the generosity of public-spirited and well-to-do gentlemen of the locality. It was pointed out that the erection of costly buildings for these Union

Dispensaries need not be insisted on in every case at the outset, as the provision of medical men and medicines was far more urgent, while good work could be carried on in modest and sometimes in make-shift dispensaries. A qualified local medical practitioner where available was to be placed in charge of the dispensary on a pay somewhat less than what would attract a suitable recruit from outside, and the Doctor might be allowed private practice so long as it did not interfere with his dispensary duties. It was calculated that if one dispensary were established for 3 Unions we could have a dispensary roughly for every 30 sq. miles in the Burdwan Division, and thus have 5 times the number of dispensaries that were in existence at the time.

In addition to joint Union Dispensaries of the above type it was proposed that there should also be a medical store in each Union, where cholera pills, influenza tablets and quinine might be kept for free distribution to the poor, and sold at cost price to others. A qualified medical practitioner of the locality, where available, might be elected or appointed to the Union Board and placed in charge of the store. The question of giving him some allowance might be considered if the Union fund permitted this being done. Too rigid an adherence to any single line of advance was however not insisted upon, but an eclectic policy of encouraging all honest endeavour for improving the medical facilities of rural areas was adopted at both the conferences of 1920 and 1921.

The conferences took care to point out that behind all the different schemes of medical relief which could be devised should lie the important regulative principle that the people should be encouraged to help themselves, and that the District Board contributions should be made chiefly with the object of stimulating a spirit of self-help and self-reliance amongst the people for removing their local medical as well as other wants. In support of the above contention I was able to cite the phenomenal success which the adoption of a similar policy had attended our efforts in Rangpur. During the four years (1913-18) 13 new dispensaries were started, giving an average of 3 each year. For each new dispensary the people of the locality made a free gift of the building site, contributed on an average Rs. 1,000 for the initial cost and entered into a contract with the District Board to pay one-third of the recurring expenditure. When I left, this District Board was maintaining 40 medical institutions



in different parts of the District. And it was not only the richer people who helped medical and sanitary schemes with their isolated and periodic acts of generosity. The entire mass of the people of the district regularly paid small voluntary contributions through their Panchayets for the support of their medical institutions, and these Panchayeti collections formed one of the most valuable sources of income of the dispensaries of that district. This was before the days of the Village Self-Government Act and the Union Boards.

*Phenomenal Success in the Burdwan Division.*

The adoption of a policy on the above lines met with phenomenal success in the Burdwan Division. In most districts of the Division the mass of the people came forward to help their medical institutions through their Union Boards. Nor were the richer and more well-to-do people behind-hand. Gifts of land and substantial contributions for initial expenses were freely offered almost all over the Division, and in some cases the District Boards had actually to refuse such offers.

As stated above there were 89 medical institutions of all kinds in the Burdwan Division in 1920, thus one dispensary served an area of 1587 sq. miles. During the next year as a result of the adoption of the new policy and the generous support which that policy received, the number of dispensaries increased to 126, an accession of 37 new institutions or an advance of 42 p.c., the previous rate of advance having been only 2 in a year. During the next year the number of medical institutions rose to 152, while during 1923-24 the number increased to 189, and it was reported when I left the Division that 7 more dispensaries were ready to be opened almost immediately. But even taking 189 dispensaries it will be seen that in less than 4 years the number more than doubled itself, and consequently the area to be served by each dispensary was reduced from 256.7 square miles in 1920 to 73.3 sq. miles in 1923-24. The rate of progress, however, was not uniform in every district of the Division. Progress was most remarkable where village self-government and Union Boards were most active. Accordingly we find that in Burdwan not less than 20 new dispensaries were opened during the 2 years (1921-23), and the compara-

tively poor District Board of Birbhum, thanks to the energy and devotion of its then Chairman, Rai A. C. Banerjee Bahadur, opened as many as 13 new dispensaries during this period. The absence of Union Boards proved a great handicap for Midnapore, and for an area of 5,026 sq. miles that district had only 36 medical institutions, whereas Burdwan for an area of 2,669 sq. miles had 59 dispensaries, and Birbhum for an area of 1,751 sq. miles and with an income of Rs. 2,46,075 only had 30 dispensaries. A great deal of attention has, however, recently been paid by the energetic Chairman of Midnapore to medical relief, and 10 new dispensaries have been started during the 4 years from 1920-24. But unfortunately in establishing these new dispensaries the District Board of Midnapore has had to rely entirely on its own resources without any assistance from any local bodies. It is obvious that under these conditions the District Board will not be able to advance very far. It may be instructive to mention here in passing that during these three years when no such systematic policy of advance was followed, progress was extremely slow in the Presidency Division, and the number of medical institutions increased from 124 in 1920 to only 133 in 1923, or an accession of only 9 institutions in 3 years for the whole division showing an advance of 7 p. c. only.

In the meanwhile a great stimulus was given to local effort by the policy of Government, promulgated under the Ministry of Sir Surendranath Banerjea, offering financial aid to such District Boards as would be prepared to start new medical institutions on the lines suggested by Government. The amount of financial assistance offered was indeed not large, being only a contribution of Rs. 500 for the initial cost of a thana and Rs. 250 for a village dispensary, but even this has had a stimulating effect. Several applications were made both from the Burdwan and the Presidency Divisions, and in February 1923 Government sanctioned a grant of Rs. 4,500 for the Burdwan Division and Rs. 2,250 for the Presidency Division. In the following year also numerous applications from District Boards were received and Government was able to make considerably larger contributions, the Presidency Division receiving Rs. 8,250. Thus the wisdom of the policy of Government of stimulating self-help has been amply vindicated, and it is to be hoped that the policy would be continued and it will be possible for Government to make far more substantial grants in the future. It

is also to be sincerely hoped that by the combined efforts of District Boards and their Union Boards and with the assistance of the people and the Government, very soon the aim of having a medical institution for each Union Board will be achieved, and medical relief will thus be brought within easy reach of the poorest raiyat.

*Encouragement of Non-official Organizations.*

Simultaneously with our efforts to multiply medical institutions in rural areas of the district, every encouragement should be given to non-official co-operative organizations for health work which are being started in the villages, either through the encouragement and patronage of central societies in Calcutta or through the enterprise and public spirit of individuals living in the villages themselves. Pioneering work in this connection has undoubtedly been done by the Central Anti-Malarial Co-operative Society of Calcutta under the devoted leadership of its founder, Rai Bahadur Dr. Gopal Chandra Chatterji, which has established under its aegis a number of anti-malarial co-operative societies in numerous villages of Bengal. Similar work is being done by the Bengal Health Association founded by Dr. Bhramachari. These societies of which a more detailed account will be given later are not confining their attention to anti-malarial work only, but as was to be expected, once the people were taught to look after their own medical needs, they soon expanded their activities to tackling kala-azar and undertaking other preventive and sanitary measures. These institutions deserve every encouragement from the local officers and the District Boards, and they have already received some amount of local support. The local Government in sanctioning handsome grants to these organizations has set an example which should be emulated by all District Boards. The important points in favour of this method of reaching medical aid to the people are that the system stimulates the moral and intellectual faculties of the people by teaching them to co-operate for their own good and is capable of indefinite expansion, for there is no reason why there should not be a Health Association in each important village and hamlet. In fact, a spontaneous and healthy growth of this movement can alone offer a satisfactory solution of the immense

problem of medical relief and sanitary progress of the vast rural population of 42 millions spread over thousands of square miles. The Burdwan conference fully realised the value of such form of medical relief, and as a result numerous anti-malarial societies were started all over the Burdwan Division. But unfortunately some of them had a very ephemeral career, and only a few continue to do substantial good work. In reviewing the Alipore scheme of campaign to fight kala-azar, of which mention will be made again, I also drew the special attention of the Board to the necessity of awakening a spirit of self-help among the people and organizing Health Associations. In the last two conferences of the Presidency Division also great stress has been laid on the importance of developing this form of medical relief, and as a result a number of associations has been formed. But there are two important points in connection with this movement to which I must draw attention. The first is that it will be a great mistake to depend entirely on the activities of any central association in Calcutta for the organization and spread of these societies. The scope of the activities of one central body, however capable and efficient, must be limited and the essence of the scheme which I advocate is autonomy and the encouragement of decentralized local effort for removing local wants. Each District Board should in my opinion be prepared to look after the medical needs of its own district, and should not relegate its powers and responsibilities to a Calcutta Association. Its efforts should be directed to organizing a network of co-operative associations under the aegis of Union Boards, and these self-governing village institutions should serve as centres for the medical and health work of the villages under their control. I am a firm believer in their potential efficiency for such objects. My faith is based on the experience of the Burdwan Division, where within a short time in the Birbhum District, for instance, the Union Boards were able to establish a net work of Union dispensaries for medical relief and sanitary health work. In essence these Union Board dispensaries are the same as the Anti-malarial Co-operative Societies, because both organizations depend on the co-operation and support of the people who are to receive benefit from them. Besides, a number of Union Boards are now actively engaged in establishing anti-malarial and anti kala-azar societies in their villages. District Boards, therefore, would be well

advised to expend any funds that they may have to spend for this object through the agency of their Union Boards. My second point is that however desirable the encouragement of this form of medical relief might be, it is the opinion of most inspecting officers that District Boards cannot afford, for a long time to come, to abandon their existing policy of maintaining regular medical institutions in rural areas in charge of their own doctors. These societies are so far too unstable and dependent on the energy and public spirit of a few individuals to be able yet to bear the entire burden of the medical needs of our rural areas.

#### IV

##### *Preventive and Health Work.*

If on account of the paucity of medical institutions facilities for medical relief have hitherto been lamentably deficient, any organized scheme for health and preventive work in the rural areas of Bengal might be said to be non-existent. Yet there cannot be any room for doubt that with regard to this all-important question of the preservation of the health of the people, prevention is both far more desirable and economical than cure. A sound and practical policy, a suitable agency and sufficient funds for carrying out that policy are obviously necessary for any organized scheme of public health work. As the rules of hygiene and sanitation have to be obeyed and carried out by the mass of the people, legal sanction for the observance of these rules are also required. The obligations of local bodies, through whom of necessity sanitary work must be carried on, must also be defined by law.

##### *Work in Urban Areas.*

As regards urban areas, the Bengal Municipal Act has various provisions for the proper sanitation of the area under its control. Sanitary Officers—a Health Officer and Sanitary Inspectors—have to be appointed under the Act. The inspection and supervision of the sanitary work of the Municipalities is one of the chief duties of the inspecting officers of the Government Public Health Department. Municipalities are carrying on these important duties with varying success, depending chiefly on

their financial solvency and the unity and energy of the Commissioners and office-bearers. That there is much scope for improvement is not denied by the Municipal Commissioners themselves. Taking for example the sanitation of the Hooghly Municipality at the headquarters of the Burdwan division, it is a dismal spectacle to find at least half of the Municipality covered with thick and insanitary jungle within areas euphemistically known as gardens. The drains are choked with garbage and filth and most of them are never flushed. Most of the roads are in a lamentably neglected condition. There is no attempt of any kind to clean the numerous tanks and *dobas* which are left to the undisturbed possession of anopheles and other disease-carrying mosquitoes. Fortunately, thanks to the generosity of Government and the public spirit of some rich gentlemen, water works for the supply of filtered water have been installed, but unfortunately chiefly owing to defective supervision the water works are already in a broken-down and unsatisfactory condition. The deplorable sanitary condition of the Hooghly Municipality is by no means a unique spectacle in Bengal. Most of the suburban municipalities, specially the smaller ones, are in the same melancholy condition. The decadent condition of these suburban municipalities is no doubt a reflex of the economic depression and the thralldom of disease from which the country is suffering, and there cannot be much hope of any radical change, unless industries are started in mofussil towns and the economic condition of the people improves. For, undoubtedly, here again we are met with the same vicious circle. Disease leads to poverty and lethargy of the people and they in their turn help to perpetuate the reign of insanitation and disease. In the meanwhile closer supervision and periodic grants from Government would seem to be the only practical remedy. The draft Bengal Public Health Bill of 1919 while incorporating the existing health and sanitary provisions of the Municipal Act provided for additional checks and stricter control. It is doubtful, however, whether the mere tightening up of control and the provision of more stringent rules will have the desired effect. What is primarily needed is more vigour and energy on the part of the people and more money. There is hardly any scope under existing circumstances of any substantial enhancement of local taxation in urban areas.

*Work in Rural Areas.*

But it is with rural areas that we are primarily concerned. The duty of providing proper sanitation of the rural areas of the district is laid on the District Board by the Local Self-Government Act. The appointment of a Sanitation Committee and of a Health Officer is also provided for in the Act. But previous to the passing of the Village Self-Government Act in 1919, there was hardly much chance of any effective sanitary work being done in the extensive rural areas of a district through the central agency of the District Board alone and of its Sanitary Committee and Health Officer. The average size of a Bengal District is 2,732 miles, and the average population according to the census of 1921 was 1,680,906. One Health Officer for such a charge could not be expected to do much more than write inspection notes of which little or no use could be made. There are no other subordinate Sanitary and Health Officers except a few vaccinating officers, and the District Board has no local agencies which could be entrusted to carry out any schemes of sanitation and health work in rural areas. With the creation of Union Boards covering roughly 10 sq. miles of the country there is now available an agency which could do much useful work if it chose. By section 26 of the Village Self-Government Act the duty of providing sanitation and conservancy has been laid on the Union Boards. But unfortunately there is not available any staff either to lay down a scheme of sanitary work for each Union Board or to see that the scheme is carried out. The imposition of Union rate for purposes of sanitation etc. is also optional. It is true that the Local Board has the power of general supervision over the work of the Union Board and the District Board can also provide for the performance of these duties should the Union Board make default. But unfortunately in the present state of public opinion on sanitary matters, no action is, as a rule, taken either by the Local Board or the District Board in such matters. The proposed Public Health Bill of 1919 provides for cases of default by the District Board and other local bodies. If it be decided not to proceed with this Bill similar powers should be taken in an amending Act which will enable the Commissioner and the Local Government to take action in cases of deliberate default by local bodies. What is needed for rural areas is that provision should be made for:



- (1) The supply of pure drinking water and for keeping the sources of drinking water free\* from pollution.\*
- (2) The prevention of the spread of epidemic diseases like Cholera and Smallpox, and .
- (3) Preventive and health work for combating Malaria, Kala-azar and Hook-Worm etc.

Simple rules should be framed which should receive legal sanction. Either a simple Sanitary Bill for rural areas should be framed or the Local Self-Government Act and Village Self-Government Act so amended as to make the observance of these rules mandatory instead of optional

*Staff required.*

As regards staff, the staff provided by the District Board for rural health work is as we have just seen a solitary Sanitary Officer. Besides, there is a vaccinating Inspector and a Sub-Inspector of vaccination and a number of vaccinators. On behalf of Government we have a Civil Surgeon in each District and an Assistant Director of Public Health for each Division. Quite recently proposals have been made by Government for the creation of a Public Health Organization for rural areas. Last year Government offered to make suitable contributions to District Boards if they would agree to co-operate with Government in this important matter. It was proposed to divide the rural areas of Bengal into 300 public health circles, each circle comprising roughly of about 150,000 people, and to place such circles in charge of an Assistant Health Officer with a small staff under him. This Officer is to be of the rank of a Sub-Assistant Surgeon with some knowledge in public health and hygiene. It has also been proposed to amalgamate the existing staff of vaccinating inspectors and their subordinates in the proposed department of Rural Health. It has been calculated that an additional subvention of 3 lakhs from Government to District Boards would be necessary for the maintenance of such a staff. There is little doubt that at least the more advanced District Boards will accept this generous offer of Government. The utilization of the existing staff of the rural District Board dispensaries for preventive and health work is not recommended by Government for the present, and it is said that the combination



of the preventive and curative departments in one general public health organization should wait for some time. It is feared that as under the present system rural District Board dispensaries are under the executive control of the Civil Surgeon, it may lead to friction if the services of the rural dispensary Doctors were to be utilized by the District Board Health Officer for health work.

### *Health Circles.*

As regards the above scheme, which I understand has been revised and somewhat elaborated this year by Doctor Bentley, it may be suggested that instead of adopting any fresh administrative unit for a health circle, it would be wiser to adopt one of the existing administrative unit, or the circle of the Village Self-Government Act, as the Health Circle. The thana is the unit adopted in the Gaya scheme in Behar, where intensive health work is being done, and this is the unit which was proposed in the Health Bill. But as rural health work must go hand in hand with the self-governing activities of the Union Board, and as team work is essential for the success of rural reconstruction work it would be wiser to adopt the Union circle as the Health circle, the Circle Health Officer having his head-quarters at the same place as the Village Circle Officer. Indeed, it should be the primary duty of the Circle Officer to organize village health associations and to give every possible help to the rural health staff. As regards the utilization of the doctors in charge of rural dispensaries for health work, as long as such dispensaries were sparse and few in number there was not only danger of these doctors neglecting their dispensary work, but very little substantial help could be expected from only a few doctors in any scheme embracing the entire rural areas of the districts. But if gradually we succeed in multiplying Union Board dispensaries and have a dispensary for every two or even three Unions, it would certainly be wiser and more economical to utilize these doctors in charge of these village dispensaries both for curative as well as for preventive work. This is actually being done now in the Alipore district where the District Board is engaged in a comprehensive scheme for the extermination of malaria and kala-azar.

## V

*Need of District Medical Committees.*

All possibilities of friction with the authority of the Civil Surgeon is avoided by the adoption by the District Board of the suggestion of having an honorary Medical Committee for guiding the medical activities of the District Board. The formation of such advisory committees was suggested in the Burdwan Conference, and in my Note on the Alipore scheme such a committee was strongly urged for the consideration of the Board. The Alipore Medical Committee of which the President is the Director of Public Health and the Vice-President is the District Magistrate and on which the District Board and non-official medical faculties are also represented, is doing most excellent work. The District Health Officer is the Secretary and the Civil Surgeon is also an honorary member, so that all possibilities of friction are avoided. I would strongly urge that such honorary Advisory Medical Committees should be organized for other districts also. For the present it will be a great advantage if the District Magistrate were selected to be the President of this Committee and the Civil Surgeon the Vice-President with the District Health Officer as the Secretary. I am aware there may be difficulties in some cases and the desirability of providing legal sanction for such Committees may have to be considered. The easiest solution would probably be to provide for the expansion of the District Sanitation Committees of the L. S. G. Act by the co-option of honorary Members, but the scheme is likely to work best in districts where, as in the case of Alipore, there is a genuine desire to get on with the work and to welcome the assistance of the District Officer and independent medical practitioners unconnected with the District Board. This matter was discussed at this year's Conference and the chairmen of the majority of the District Boards were in favour of the proposal. The District Board of Berhampur has already got such a committee, and the District Boards of Jessore and Khulna also propose to have similar committees.

Indeed, the necessity of close co-operation between the District Board and the officers of the General department, the District Magistrate, the Sub-divisional Officers and the Circle Officers on the one hand, and the officers of the Medical depart-

ment, and the Health department on the other, is so obvious that any organization which will help towards this object ought to be welcome. To ensure greater co-ordination between the officers of the Medical and Sanitary departments and the officers of the General department, it would be desirable that the Assistant Director of Public Health when he goes out on tour to a district should whenever possible arrange to see the District Magistrate and obtain his advice and assistance, while the District Health Officer should arrange joint tours with the Sub-Divisional Officers and the Circle Officers and work in close co-operation with the local Executive Officers and the Union Boards. In the Government Note a remark has been made that it might be possible in future to restrict the services of the Civil Surgeon to purely Government work, such as looking after jails, medico-legal work, etc. and to dissociate him from the wider duties of supervision of rural medical and health work. So long as the Indian Medical Service remains what it is, I think, there will hardly be much justification for the employment of such a highly-paid and qualified staff for duties of the nature indicated in the Note. The public health of the district should be one of the primary concerns of Government, and as such, I think, the service of its chief and most highly-paid Medical Officer should be primarily utilized for this object. As the scale of pay of this service has been recently revised, I think, private practice should be disallowed and the major portion of the time of the Civil Surgeon should be utilized in organizing and supervising rural health and medical work, legal sanction being provided for his work either in the Local Self-Government Act or any separate legislation for Rural Health Work.

## VI

### *Cost of Staff: Need of a Special Sanitary Rate.*

Lastly, there is the question of finance. In the Government Note it is proposed that Government should make a contribution roughly of 3 lakhs to the District Boards for 5 years. I think, however, a more permanent source of income for this most important work must be found. Dr. Tomb, Health Officer of the Asansol Mines Board of Health, who

has considerable experience of the actual working of a suitable sanitary staff for rural areas, has calculated that for an efficient public health organization for an average district the annual cost on account of staff and price of medicines etc. would come roughly to Rs. 65,000. If the population of a district be taken to be 1,680,906, a contribution of an anna per head will provide a sum of Rs. 1,05,056. But Dr. Tomb's estimate includes a fairly large establishment—a district Health Officer, 15 Sanitary Inspectors and 10 Sanitary Assistants with clerks etc. The staff proposed by Government is, however, much more modest and it will be sufficient for the present if about Rs. 50,000 annually could be provided for this purpose. If it be decided not to proceed with the Public Health Bill which was drafted in 1919, I would strongly recommend that the Road Cess Act be amended to enable the levy of a special rate of one pice in the rupee for rural areas as was suggested by Mr. S. W. Goode, I.C.S., who was placed on special duty in connection with this work. It is to be hoped that public opinion is now sufficiently alive to the urgent need of sanitary reform to enable the amending Bill to go through without much serious opposition. To enable work on a fairly comprehensive and adequate scale to be undertaken and to enlist popular support for the amendment of the Road Cess Act, I would suggest that a Government contribution should be made amounting to half the sum which might be raised by the new sanitary rate. This will be a far more satisfactory way of encouraging sanitary work in rural areas than by periodic Government grants and doles for health work as is being done at present.

#### *Non-official Organization for Preventive Work.*

The non-official organizations to which we have referred above are also engaged in medical relief work and they devote a considerable portion of their energy to preventive and sanitary work. But as funds at the disposal of these societies is very small they are not able to do any systematic work except jungle-clearing in an intermittent way near the homes of some of the members. But there are some centres where systematic and scientific work is being carried on. Typical of such work may be mentioned the devotion of the teachers of the Santiniketan Univer-

sity at Bolepur and the disciplined enthusiasm which they have been able to inspire amongst their students and the excellent health work which is being done at Surul, Bolepur and ten other adjoining villages which have been selected for this work for the present. Bands of youths of all ages are engaged in this work and offer a splendid example for the emulation of the whole province. The wide-awake Chairman of the Suri District Board, Rai A. C. Banerji Bahadur, had arranged to send batches of teachers to get practical training at Santiniketan for starting similar work in the neighbourhood of their own schools. I understand that near Belur the *Math* people are also organizing health work through the agency of their boys and young men.

In the Presidency Division Birnagar in Ranaghat is doing most excellent work. It is true that the non-official organization at Birnagar gets some assistance from the local Municipal Board, but the financial assistance given by the Municipality is very small and the excellent preventive and sanitary work which is being carried on here is possible only because of the public spirit and devotion of the Chairman, Babu Nagendra Nath Banerjee, and the Secretary.

It is needless to point out that our success in spreading preventive and sanitary work in the rural areas on an adequate scale will entirely depend on the amount of local enthusiasm which we are able to inspire and the amount of response we get from the public.

### *Propaganda and Publicity Work.*

This brings us to the all-important subject of the necessity of propaganda and educative work with the object of spreading elementary knowledge of hygiene and social science amongst the people of rural areas. Exertion and co-operative action on the part of the people must be preceded by knowledge and the acquisition of newer and broader ideas, and the connection between their poverty, ill-health and their ignorance of the elementary laws of hygiene should be clearly and forcibly demonstrated to them. A comprehensive programme of publicity and educative work would, therefore, seem to be absolutely essential. Elementary hygiene has been made a subject in some classes of our public schools. It

should be made a compulsory subject for all students attending recognized schools. Health should, as it very often is, be made a part of all Exhibitions which are organized in the districts and subdivisions. The Public Health Officer of the District Board should pay special attention to this subject during the course of his visits to the interior of the districts, and during the winter a course of itinerant lecturers and magic lantern demonstrations should be arranged. The recent experiment of the E. B. Railway of running a Demonstration Train for the education of the people of the way-side stations met with phenomenal success. The health films explaining the sources of infection of diseases, particularly the manner in which malaria-carrying mosquitoes infect the human system, the films on child welfare and maternity etc., and the lectures on health and sanitation, formed an important feature of the demonstration and seemed to have made the greatest impression on the people. Other departments represented on this train were Agriculture, Co-operation and Industry. One most hopeful feature was the keen interest taken by women in watching the demonstrations and following with great attention the lectures and discussions of the publicity officers. The E. B. Railway propose to approach Government to help them to make the experiment an annual function. There cannot be two opinions about the desirability of supporting this laudable enterprise of the Railway with suitable financial assistance. I would also suggest that Demonstration Steamers similarly fitted up should be organized and Government should encourage the Steamer Companies to take up the idea. The Railway Company realise that even from a financial point of view this enterprise will be a paying proposition. The Steamer Companies should also be able to attract traffic and advertise their service through the attractions of similar Demonstration Steamers. If all the railways in Bengal and the steamer lines devote a few days in the year to running Demonstration Trains and Demonstration Steamers an important step forward will be taken towards the education of the rural people. As far as I know there is only one publicity officer attached to the Public Health Department, Mr. Ray, and he is a forceful and attractive speaker. But it is obvious that in order to be able to discharge its duties adequately this branch of the Public Health Department is in need of considerable strengthening. I would strongly recommend the

publicity and propaganda branch of the Health Department to be properly organized and developed.

To sum up

- (1) Medical institutions should be multiplied according to a carefully worked out programme based on the medical requirements of every part of the district. The District Board should encourage Union Boards to establish and undertake the management of dispensaries, the object being to stimulate a spirit of self-reliance and self-help amongst the people. The ultimate aim should be to have a medical institution in each Union Board. An eclectic policy should be followed, any type suitable to the local requirements being adopted.
- (2) A scheme for preventive and health work in rural areas should be carefully prepared and introduced. The existing circles of the circle system should be adopted for the work. For the pay of the staff and to meet other necessary charges a special sanitary rate should be imposed. To provide legal sanction either a simple Sanitary Bill for rural areas should be passed or the Village Self-Government Act amended so as to make the observance of simple rules of health, the preservation of the purity of drinking water and the prevention of the spread of epidemic diseases mandatory instead of optional as in the present Act.
- (3) Preventive and Health work should go hand in hand with curative and medical work, and the same staff should be utilized as far as possible for both objects.
- (4) Non-official agencies, religious and secular, should receive every encouragement to engage in medical relief and preventive health work on co-operative lines by preference.
- (5) A comprehensive scheme for propaganda and publicity work for educating the people should be

undertaken. The recent experiment of the E. B. Railway Demonstration Trains should be extended to other Railways and placed on a permanent footing. A similar system of Demonstration Steamers should also be organized. The publicity branch of the Public Health Department should be strengthened and developed.

- (6) Each District Board should be encouraged to have a District Medical Committee composed of members of the District Board, prominent members of the medical profession, and the District Magistrate and Sub-Divisional Officers and the Civil Surgeon. The Committee will co-ordinate the activities of the District Board and the medical departments of Government and the self-governing village institutions and non-official organizations.
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## CHAPTER IV.

### MALARIA AND KALA-AZAR.

#### I

#### *The Enormity of the Malaria Evil.*

Medical authorities are unanimous in pointing to the decimating and insidious character of malaria which continues to be the greatest scourge in Bengal. No other disease is responsible for so much sickness and greater loss of life or leaves more deplorable social and economic effects in its trail. "The gravity of malaria infection considered as a social ailment," says Dr. Pais of Italy, "should not be looked for in its diffusion and in the number of lives it takes from society. Malaria tends to impress a character of regression on the population among whom it reaps its victims and causes them to fall from the grade of civilisation they have attained. It impoverishes the blood and causes all the forces of man to droop and wither. Diminished will-power, diminished liking for work, restricted vision towards all the phenomena of life are special characteristics of those with chronic malaria and of the peoples who have long suffered from the infection." "If this," exclaims Dr. Bentley, "is a true picture of the conditions existing in Italy, where owing to wise legislation, the efficient organization of the State Quinine Department, the existence of a long established sanitary organization and the carrying out at heavy capital expenditure of a large programme of works of "bonificatione" malaria has been so far controlled that deaths from this cause number less than 3,000 per annum ; what must be the condition of Bengal, where malaria is wide-spread over vast areas, where the deaths from this cause can be counted by hundreds of thousands, and where the disease is increasing, where the consumption of quinine is a tenth that of Italy, where sanitary organization is in its infancy and where financial obstacles have so far prevented the carrying out of ameliorative measures on any scale commensurate with the needs of the people." Dr. Bentley calculates that on an average there are annually 28,300,000 cases of malaria

infection in Bengal, and nearly 1,000 deaths occur in Bengal daily from malaria. What is still more alarming is that malarial fever seems to be on the increase, although it would be idle to suppose that the province was ever free from this scourge in the past. Taking the fever indices for the last 50 years for Western Bengal, it is found that the index was 21·9 in 1868, 40·9 in 1912 and 51·7 in 1920. It is obvious, therefore, that the fight with malaria means a fight for life for Bengal, and if Bengal is to continue as a progressive province of India and not fall behind as a moribund and decrepit entity, the malaria scourge must be fought and mastered. And in this struggle for the very life of the Bengali nation all the resources at our command must be marshalled and brought into action.

### *Causes of Malaria.*

The two factors immediately concerned in the propagation of malaria are the malarial parasite *Plasmodium malaria* and the Anopheline mosquito. The discovery of the malaria parasite was made by Laveran in Algeria, and that of the mosquito cycle by Ross in India. The parasite which causes malarial fever belongs to the lowest order of the animal kingdom : the Protoza ; the malaria gametes or crescents forcibly shelter themselves within the protecting envelopes of our red blood corpuscles. With the bite of the anopheline mosquito the gametes are transferred to its stomach, and ultimately forming themselves in its outer surface give birth to a large number of *Plasmodium* spores which find their way into its salivary glands. When the insect bites next these malarial germs are infected into human blood and fever ensues when a sufficiently large number of them are formed by fission. Therefore the physical conditions which help the propagation of these mosquitoes help the spread of malaria. The mosquitoes breed in small pools of water and in the wood-grown edges of tanks and beds of abandoned and silted-up rivers. The construction of river embankments to prevent the flood water from passing over the country increases the danger of malaria infection in as much as it prevents the flood water from flushing the country side and washing out pools and tanks which otherwise become the haunts of these malaria-carrying mosquitoes. Railway embankments and to

a minor degree road embankments by preventing surface drainage and by providing endless breeding grounds in the burrow pits are also powerful aids to the spread of the epidemic of malaria. But the bite of the anopheline mosquitoes has not the same effect on all human systems. The well-nourished body is able to resist the inoculation of the poison to a far greater extent than anaemic and physically emaciated constitutions. Poverty and consequent want of nourishing food are therefore powerful subsidiary causes of the spread of the disease. It is thus found that there is a remarkable parallelism between the decline of agriculture, the consequent decline of population, and the prevalence of malaria in any particular area. In fact, the same physical causes, such as want of adequate and seasonal rainfall and cessation of periodic inundations of an area with silt-bearing river water, which bring about conditions which are favourable to the breeding of the malaria-carrying mosquitoes also bring about a decline of the agricultural industry and a diminution of the food supply by diminishing the facilities for irrigation and impairing the fertility of the soil. The parallelism between the decline of agriculture and the prevalence of the malaria epidemic has been so unfailing that it has led Dr. Bentley to assign a causal nexus between the two phenomena. But it is perhaps truer to say that both are caused by the deterioration of deltaic tracts due to geological and artificial causes, like the putting up of river embankments. It is in tropical and semi-tropical deltas that the anopheline mosquito and malaria find their natural home.

*Kala-azar: its Aetiology and Endemicity.*

Before proceeding to deal with the remedial measures which have been recommended for malaria, it would be just as well to refer to another type of fever, known as kala-azar, which though it has come into prominence in Bengal only within recent years, yet it already threatens to be one of the most deadly and widespread scourges of the Province. The combating of kala-azar presents almost equal difficulties, and it not only produces the same enervating effect as malaria but if unchecked and untreated results in a fearful mortality rate. It is fortunate, however, that the disease succumbs to proper treatment so that, whereas the rate of

mortality from the disease was 96 p. c. before the discovery of a proper treatment for the disease, only 5 p. c. of the cases treated now end fatally.

It is probable that kala-azar existed in the Province for many years before its scientific recognition about 20 years ago as a fever with an ætiology distinct from malaria, and it was not until 1915 that a satisfactory treatment was discovered for the disease. Before this year which marks the discovery of the antimony treatment, medical science was powerless to deal with kala-azar. Kala-azar which signifies black sickness, possibly on account of the black pigmentation of the skin which the disease produces, is a specific fever, characterised by a high mortality in untreated cases, persistent irregular fever lasting from a few months to two to three years, rarely more, and associated with enlargement of the spleen and frequently also of the liver, a gradual down-hill course with progressive emaciation and anaemia. Its onset is occasionally marked by signs and symptoms which resemble those of typhoid or paratyphoid. In some cases the fever is also confused with malaria. But the quinine resistant nature of the fever and the absence of periodicity enable a comparatively sure diagnosis to be made. The symptoms become all the more pronounced as the disease advances and there is an emaciation of the limbs, darkening of the skin, falling of hair, palpitation, increased appetite but poor digestion and occasionally a persistent cough.

Kala-azar has always been known to be infectious and once it attacks a person it tends to infect his whole household. But although the parasite of kala-azar is known, the method of transmission is still a mystery and research extending over 20 years has failed to discover the vehicle by which infection is conveyed. An expert commission has been appointed by the Government of India to investigate this aspect of the disease. If the commission is successful in discovering the vector of the disease the administration of medical treatment as well as the general scheme of prevention of the disease will be greatly benefited.

Kala-azar is endemic and occasionally epidemic in certain tropical countries and the incidence of the disease varies greatly in different localities, so that there are many villages which are entirely free from infection, while in others the foci of infection is intense. There has been some difference of opinion regarding

the extent of the prevalence of the disease and unofficial opinion places the incidence of this disease at a far higher figure than what official investigations would seem to justify. Dr. Sur, Assistant Director of Public Health, was, therefore, placed on special duty in 1920 to make a kala-azar survey of the Province. The survey is only complete for half the Province. On the basis of this survey and from other information which was available the Director of Public Health estimated in 1923 that there were at least 50,000 cases of kala-azar in the Province. From enquiries since made it would appear that kala-azar at the end of 1924 was a very appreciable cause of disease over Eastern and Central Bengal, but it was lightly distributed in the western and some of the more northern districts. From the official data available, therefore, it does not appear that there is any outburst of periodic epidemicity of the disease in any part of Bengal at the present time. Unofficial opinion, however, is inclined to take a more serious view of the situation. In any case, as stated in the Government Note reviewing the endemicity of the disease, even if kala-azar be admitted to be as prevalent in Bengal as it is in Assam, then on the basis of the more extensive enquiries which have been made in that Province we could not expect more than 1,50,000 cases for the whole of Bengal in 1922. It would perhaps not be an over-estimate, however, if at the present day the number of kala-azar cases were put somewhere near 2,00,000 annually. Only the other day I found at the Mission Hospital at Ranaghat alone during the last year nearly 12,000 patients had been injected for kala-azar. There can be very little doubt, therefore, that in kala-azar we have an enemy whose deadly and increasing potency for evil it will be a great mistake to underestimate, even though we may not agree with those who hold that the outstanding problem of the Health Department at the present day is not so much malaria as kala-azar.

## II.

### *Anti-Malarial Measures.*

We will now proceed to discuss the measures which are recommended for the eradication of malaria.

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Anti-malarial measures may be directed towards the following objects :—

- (1) The removal of physical conditions which bring about decadence of the agricultural population and also help the breeding of the malaria-carrying mosquitoes.
- (2) A systematic campaign for the destruction of the anopheline mosquitoes.
- (3) The adoption of measures for getting rid of the malaria parasite from the human system after infection.
- (4) Adoption of measures for the improvement of the economic condition of the people by the revival of agricultural and other industries.

The above measures have been classified by Dr. Bentley under two heads as direct and indirect attacks on malaria, the direct attacks consisting of measures for controlling the parasite and the disease, and the indirect in improving the economic condition of the people and their resisting power by reviving agriculture with the help of irrigation and other means. Those who are interested in the problem should study the very interesting monograph of Dr. Bentley on "Malaria and Agriculture in Bengal." Dr. Bentley attaches greatest importance to what he describes to be his indirect method of attack, but obviously simultaneous action in all the directions indicated above is necessary.

From another point of view all anti-malarial schemes might be divided into major and minor schemes. Major schemes can be more suitably undertaken by the State, whereas minor schemes afford scope for the enterprise of local bodies and private individuals.

#### *Removal of Physical Causes—Bonification.*

As regards the removal of the physical conditions which are favourable to the multiplication of anopheline mosquitoes, Dr. Bentley recommends minor and major measures of bonification, which combine in a single scheme measures both for the improvement of agriculture and public health. The principle under-

lying all schemes of bonification is the carrying of the earth of the mountains conveyed by running river water to the villages so as to render them fertile and healthy. Flushing by silt-laden spills of flood water, which have powerful larvicidal properties, results in the destruction of the anopheline mosquitoes and is thus a powerful help to the removal of the danger from malaria infection. But it is to their beneficial effect on agriculture which helps to increase the population of the areas concerned and improves their physical condition that the most stress is laid by all competent authorities.

The system of bonification advocated as being specially suitable for the deltaic and semi-deltaic areas of Bengal which are intensely malarious is irrigation and the regulation of the surface water of the area covered by the scheme. The water is to be taken from the rivers and the flushing and inundations to be arranged during the monsoon when the rivers are in flood and the water is laden with the germicidal and fertilizing silt, and which is also the season for the breeding of the anopheline mosquitoes. The regulation of water is to be accomplished by canalization and drainage, the incoming as well as the outgoing water must be regulated by dams and other means. An important part of the scheme is to bring the replenished area under the cultivation of suitable crops, the cultivation of rice being likely to be most suitable for Bengal. Direct evidence of the value of bonification as a potent anti-malarial measure is afforded by the older schemes carried out in Italy, notably in the Val di Chiana, where an extensive swampy malaria-infected marshy area covering about 800 sq. miles has been converted into smiling rice-fields which now support a healthy population of over 600 per sq. mile. Indirect evidence is also afforded by the vast irrigation schemes of Egypt and on a smaller scale by the schemes for the Godavari and Krishna valleys in Madras, which though primarily undertaken for the benefit of agriculture, have indirectly though powerfully influenced the health and prosperity of the people. It is a significant fact that although the anopheline mosquito is present in Egypt and in large numbers in the Val di Chiana, the amount of malaria is almost insignificant, showing that the prosperity and growth of population of the areas concerned create conditions

which are unfavourable to the spread of the disease. Similarly, as a result of the irrigation schemes in the deltas of the Godaverī and Krishna valleys malaria has almost disappeared from the locality. But it must be mentioned, however, that the later bonification schemes of Italy, though they have helped agriculture, have not proved very successful in reducing malaria, whereas the virulent and extensive outbreak of malaria in the Punjab is attributed to the excessive canalization of that Province. Dr. Bentley, however, explains that in the case of the later schemes in Italy which have been undertaken by Hydraulic Companies a very small number of employees have been employed, and therefore these schemes have not resulted in an increase in the density of the population so much as in increasing the value of the land. As we have seen, the density and the prosperity of the population are most important factors in reducing the endemicity of malaria in any particular area. In the case of the Punjab it is explained that the system of irrigation in vogue is perennial irrigation, the water being chiefly utilized for Rabi crops during the dry winter season, with the result that the land is always wet and the subsoil water level rises to an inconvenient height resulting in excessive water-logging and the production of a saline afflorescence or "Reh" as it is called. The explanations, however, do not seem to be sufficiently convincing and point to the necessity of great care in the formulation of these schemes, if the best results are to be obtained. What is recommended therefore, for Bengal, where 95 p. c. of the cropped area is covered by wet crops occupying the land during the wet season, is that we must have flush or inundation irrigation by drawing off water from the rivers during and not after the flood season, on the model of the Madras and the Punjab inundation canals for reasons which I have stated above.

Our first requisite would, therefore, seem to be an extensive enquiry and the collection of data by a body of experts for formulating a policy and definite schemes suitable for Bengal and requisite for her needs. There is an extraordinary amount of misconception about the needs of Bengal in the matter of irrigation which will be more fully gone into when we deal with Agriculture. Dr. Bentley suggests the appointment of a commission of experts with experience of such work in Egypt and Italy,



and it may be added, in other parts of India, such as Madras and the Punjab. It is an obviously sound advice. We are fortunate, however, in having two well considered and carefully worked out schemes ready for being taken up: the Damodar Reservoir Scheme and the Damodar Irrigation Canal Scheme. The Damodar becomes as "red" and as full and surcharged with rich silt in the rains as the Nile, and these schemes are bound to have far-reaching effects in improving the health and agricultural prosperity of the Burdwan Division. It is still more fortunate that the Damodar Canal scheme has actually been taken up by Government, and in this matter, I think, the Burdwan Conferences may legitimately claim some credit for having created public opinion and for having brought the scheme very forcibly to the notice of Government. The Damodar Canal project is to cost Rs. 78,14,981. The work commenced last year for which there was a budget allotment of Rs. 2,96,000/- for works. This year's (1927-28) budget allotment for the work is Rs. 17,00,000/-. The canal is estimated to be completed in 6 years, and when completed it will irrigate with the Eden Canal of which it will form a part about 54,000 acres. The Eden Canal now irrigates about 20,000 acres on an average. As regards the Damodar Reservoir scheme the present Chief Engineer is doubtful about its feasibility on account of difficulty in dealing with the enormous amount of silt which will be deposited in the bed of the reservoir, but surely engineering skill ought to be able to overcome these difficulties as they have been overcome in the case of the Nile reservoirs and even in the case of the Deccan reservoirs.

As regards actual bonification schemes, some experiments have already been tried in Bengal, but as pointed out by Dr. Bentley, they belong to the drainage type and apply relatively to small areas. The Dankuni Drainage Scheme in the Hooghly district was one of the first to be taken up, and has had some influence in improving the health of the thanas affected by the scheme. The experiment of the Magrahat Drainage Scheme in the Diamond Harbour subdivision has, however, been very unfortunate, as the scheme has resulted actually in the increase of malaria in the locality, demonstrating, according to Dr. Bentley, the truth of the theory that marshes can only be improved either by complete drying and subsequent cultivation or by flushing, and the

Magrahat project unfortunately has been so badly executed as to have increased instead of removing suitable breeding places for anophelines. Some other smaller schemes however seem to have attained their objects fairly well. The Jangipur Flood and Flushing Scheme has to some extent improved the health of the town, and the Banka Valley Scheme in Burdwan and Saraswati Scheme in Hooghly have improved the health of the surrounding villages.

What I have stated above and the views I have advocated are based on the opinion of sanitarians like Dr. Bentley and the authorities upon whom he has himself relied. How this problem of fighting malaria by irrigation is viewed by Irrigation Engineers and what difficulties are apprehended by them in giving practical effect to these schemes in Bengal, were stated by the Hon'ble Member-in-charge last year at the Nadia Conference, when he reviewed the progress made in these directions within recent years in Central Bengal.

"The Public Health Department has fairly definite principles as to the lines on which engineering projects for anti-malarial purposes should be designed. Briefly such operations should aim at producing conditions during the monsoon I must lay emphasis on the time at which the schemes should operate—which will be inimical to anopheline larval life. Now these conditions are held to consist in preventing the formation of large numbers of shallow pools by combining these pools so as to reduce the length of the shallow water-edge. The amount of breeding water-edge per acre is thus diminished with the result that the larvae or a very large proportion of the larvae are destroyed. One way of reducing the water-edge is to secure the flow of spill water from a flooded river over a malarial tract. This method introduces silt-laden water which is not only inimical to anopheline larval life but also beneficial to the land by aiding its fertilisation. The Irrigation Department was asked by the Public Health Department to prepare schemes designed on the above principle. But it is by no means easy to prepare schemes in many parts of Bengal which will comply with these conditions. Where deltaic lands have gradually risen it is perhaps beyond the power of the Irrigation Engineer to spill water from the rivers over a large surface. Obviously you cannot make water run uphill. Again there is always the difficulty that in attempting to revive deltaic river by

diverting it to any considerable volume of water from a living stream, you may seriously interfere with the life of the latter river and reduce it to the state of the river which you propose to renew. Moreover, even in Bengal the supply of water is not unlimited, and if you divert an excess amount from one area to another, you may seriously affect the prosperity of the depleted tract. The problem is, therefore, one of very great difficulty and it often appears to present absolute impossibilities from the engineering point of view. Mr. Addams-Williams informs me that a large portion of the Presidency Division suffers because the river system was upset centuries ago by the change which took place in the course of the Ganges with the result that the water which used to feed the rivers has been for the most part diverted eastwards so that there has been a fall in water levels which has resulted in the decay of many important rivers. It is a costly task to attempt to modify this state of things even when the engineering difficulties are not insuperable, while it will sometimes be useless to dig channels, since the water will not flow down them. Project after project has been prepared in the Irrigation Department, many of which are probably sound but many have had to be discarded after a considerable amount of time spent in preparing them, because there is always some element of doubt as to their success, and Bengal has not had sufficient money to venture on experiments which may result in failure.

The present position seems to be that the dredging of the head of the Nadia Rivers is not likely to result in any permanent benefit; dredgers can do little good except when the rivers are falling and even then the results may be obliterated in a few weeks. The period during which useful dredging can be done is so short that there is often insufficient time to make any appreciable impression and there is always the risk of the dredgers being left high and dry; moreover, the disposal of the dredged material presents difficulties, and generally speaking there is little doubt that the maintenance of even one of the spill rivers by this method would require a large fleet of dredgers costing a sum which would be far from commensurate with the benefit gained.

Fortunately, however, there do appear to be cases in which rivers can be revived by making connecting channels between them

and the living rivers. Two such cases have recently been examined and the Government have decided to make the connection at Government cost. They are the Gobra Nala in the Murshidabad district and the Bhairab in the Meherpur sub-division of the Nadia district. The head of the Gobra Nala will be connected with the Bhairab and the Nala will be flushed for about 4 or 5 months every year from this source. (It is reported this year that good progress has been made with this scheme). Again, we are proceeding to connect Bhairab above Meherpur with the Jalangi so that about 60 miles of the old river will receive a good flush in the monsoon, and I may again point out that its flushing in the monsoon when the anopheline mosquito is still passing its aquatic life is necessary, if the reduction of the shallow water edge is to produce a reduction in the number of mosquitoes. (This work has also been taken in hand, but progress has not been very satisfactory).

Again, the Public Health Department now has under examination the Bhairab scheme which the Irrigation Department has recently designed with the purpose of flushing the lower Bhairab on which Jessore stands, while the question of connecting the head of the Nabaganga with the Matabhanga is still under examination, pending the settlement of the question of crossing the railway. The Arool Bheel scheme is practically completed and has been in partial operation for some years. It only remains to excavate one small channel to connect with the two principal bheels and the cost of this work is being borne by the Jessore District Board.

In the Khulna District a project is almost ready for partial canalization of the Alaipur Khal, while the question of re-excavating the dead reaches of the Jabona below Kaliganj has been investigated with the result that a promising scheme seems feasible.

In the 24-Parganas the Arapanch scheme has been completed and was opened in 1924, while the District Board has recently agreed to pay for the completion of the excavation of the Nowi and Ichapur khals.

The Bager Khal has been definitely dropped and the Anjona project on which the people of Nadia have set great store must, I am afraid, also be abandoned in its present form. The scheme which was designed seems likely only to produce a flush and spill

at the end of the monsoon or even later and this is not likely to serve any anti-malarial purpose, as the flushing is required constantly throughout the period of the monsoon and not in October or later, by which time the larvae have become mosquitoes and material damage has been done. It may, however, be possible to obtain adequate water for flushing from the Jalangi and the scheme will be further examined to see whether it can be modified so as to meet the conditions which are required for anti-malarial schemes. I am afraid there will be some disappointment at the abandonment of this project in its present form, but it must always be remembered that our funds are very limited and that we must be reasonably certain of success before we can embark on comparatively costly experiments.

I may say here that I consider such experiments to be most essential, as it is only in this way that we shall be able to decide how far the rivers of Bengal may be drained for irrigation purpose, so as both to add to agricultural prosperity and at the same time to reduce the incidence of malaria. So far little has been achieved, largely, I think, because we aim at producing a model scheme which fulfils every condition laid down by the Public Health Department and is yet feasible from the engineering point of view. It may not be possible in Bengal to obtain perfect schemes of this kind. You are probably aware that the Italian engineers and Public Health experts have made several bold experiments with the object of eradicating malaria and restoring health and agricultural prosperity to fever-stricken areas by means of large engineering schemes. I understand that there is some despondency at present in Italy over the limited progress which has been achieved of this method inspite of some signal successes, and I am informed by Major Stewart, the Director of Public Health, Bengal that the tendency in that country now is to secure irrigation for agricultural purposes, even where a gain to public health does not seem likely to accrue. In Italy, which is no larger than two big districts of Bengal, the problem must necessarily be more simple than in Bengal where we have vast areas to deal with as well as a network of rivers, and we cannot interfere with the river system except after the most patient and exhaustive examination, since an ill-considered irrigation scheme might easily lead us into greater evils than those under which we now suffer. We must, therefore, as I

have just stated, proceed with great caution, but I am nevertheless very hopeful of our achieving some real progress within the next two or three years."

I have not the requisite scientific and technical knowledge necessary to criticise or controvert the views of such an eminent engineer as Mr. Addams Williams, but nevertheless it is worth while examining some of the main difficulties apprehended by the Engineering department. The difficulties appear to be principally of three classes :--

- (1) Even in Bengal account must be taken of the limited quantity of water which is available and the danger to the life of the living streams by attempting to revive dead ones with their water.
- (2) The difficulty of levels caused by geological formations in deltaic tracts.
- (3) The difficulty of fighting against enormous silt deposits with the artificial help of dredgers etc.

But surely there is some misapprehension in the minds of the Engineers with regard to the first difficulty, for there is no country in the world which has such an immense and almost limitless supply of water as Bengal. With an average rainfall of nearly 100 inches, while the catchment areas of the Ganges and the Brahmaputra together extend over a million square miles, has Bengal any apprehension about her resources of water-supply? As regards the other two difficulties, engineers in other parts of the world— in America, in Egypt and even in other parts of India— have successfully overcome them, and there seems to be no reason, provided always that sufficient funds are forthcoming, why these difficulties should not be mastered in Bengal. In all humility I would ask why cannot an anicut be thrown across the Ganges, somewhere high up near Jangipur, for instance, and the supply of water be regulated by a series of dams and reservoirs as in the case of the Nile, so that only the required quantity of water will be allowed to flow east through the Padma and the surplus westwards through the Bhagirathi, while there will be a whole system of canals or resuscitated river beds for the irrigation and the flushing of the whole of Central Bengal and portions of Western Bengal? Crores of rupees and engineers with the requisite

knowledge and experience will no doubt be required. But the case for Bengal is that the money needed and the men must be found.

### *Impediments to Drainage*

Along with the bonification schemes we must also consider the necessity for removing the impediments to subsoil and surface drainage caused by river embankments and also by railway and road embankments. The unequal struggle against Nature which river embankments bring in their train by the tendency of river beds to rise under such conditions and the deleterious effects of the system, both on the life of the river and the fertility and health of the surrounding country, have long been recognized. But embankments are put up mainly with the object of protecting life and property from the devastating effects of floods and for the protection of lines of railway, and they cannot be removed without substituting similar safeguards. The evils of the system have, however, been fully recognized and over 80 miles of embankments have been removed from the right side of the Damodar. But what is necessary is not so much the removal of river embankments as the provision of adequate facilities for the escape of silt-laden flood water for the flushing of the surrounding country. The establishment of a system of distributary channels and canals for the proper and useful distribution of the waters of an embanked river would, therefore, seem to be the only proper solution. Action would also seem to be necessary with regard to impediment to sub-soil and surface drainage caused by railway embankments and roads which, according to some critics, is considered to be one of the principal causes of the growing unhealthiness of Bengal. This is a very old theory and Raja Digambar Mitter advanced it with much force before the Malaria Commission of 1864. Mr. P. N. Bose of the Geological Survey who has examined the whole question of malaria exhaustively in a series of articles remarks: "The conclusion arrived at by Raja Digambar Mitter has been confirmed by various observers in Bengal and elsewhere. In fact, the fulminant type of malaria has followed the railway with such precision and regularity in alluvial tracts, that one might safely predict its prevalence there whenever