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THE TUBERCULOSIS PROBLEM OF TO-DAY

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Much has been written already, and still much more has to be written on this subject to bring home to the mind of an average man the importance of this problem facing us to-day. The tuberculosis problem of to-day is of such enormous and varied dimensions that it has become a major headache in the world economics; and every nation is trying to fight out this menace with all available resources. True, that a few of these nations have been fighting successfully this terrible scourge of mankind to a considerable extent, and there are signs that they may ultimately achieve their cherished goal in the near future, yet in spite of all that it remains a baffling problem for a large number of nations of the world even to the present day.

It is a menace to mankind since it affects mostly the people, men and women, at the age period when they are the most useful members of the society. No age is exempt from its devastating clutches, but it is most rife in the second and the third decades of life, and as such assumes a role of a major problem in the national economy.

India to-day is surrounded by many forces which are undermining her growth as a nation—nay even the very existence and it appears that a vicious circle has been created which requires our utmost and carefully considered effort if we can help in eliminating those causes. We see that our ministers and public leaders are giving their best to improve the existing conditions, but it is up to us, each individual man and woman, to help in carrying out their advice and change our unhappy land of to-day into one of eternal glory an example to others. The problem is mainly an economic one with an improved back-ground of socio-political aspect, and unless each person is conscious of his or her civic rights in relation to his or her fellow citizen, it is very difficult—nay even impossible—to achieve any measure of success only through legislation. That really means a proper type of education and a proper perspective in life with a culture giving us a high sense of duty towards our fellow brethren. Unless this public sense is raised to a high and efficient degree we cannot hope to achieve any degree of success in the problems facing us to-day. It is time that we forget the past and march on the present with heads raised up to reach the horizon of future.

We do not possess to-day exact figures regarding the incidence, morbidity and mortality of tuberculosis in our country, but from all the available sources we gather that nearly five millions of people suffer from this disease every year in India and of these nearly a million are lost every year. This is appalling more so because in its wake the disease leaves so much misery and incapacity among those who have already become a victim to the disease besides sowing seeds in hitherto virgin soils. Herein lies evidently the duty of every medical man and woman in whatever capacity he is placed, to see that he contributes his mite to alleviate the suffering of those already under the grips of the disease and to see that effective measures are taken to prevent further propagation of the disease among communities exposed to infection. This duty they owe towards their own Government, their own country and for the sake of the high ethics of their own profession. If the disease is made compulsorily notifiable by the Government, probably it will help much in the prevention of the disease. It is time to act and not to waste in useless and unproductive schemes.

For a while we would like to turn our attention to Goa, where an anti-tuberculosis programme is being carried out under the aegis of the Government and according to a definite programme already laid out. Here we find that the incidence of tuberculosis locally is not very high when compared with other places in India ; but a considerable number of people of both sexes suffering from tuberculosis are imported here from places outside, especially the town of Bombay and its suburbs, where a large number of Goanese are employed in various kinds of works in Government offices, shipping companies, various public bodies and in private capacities. It is mostly from here that they acquire their infection and later on are forced by various circumstances to come back to their homes in Goa for treatment and rest. Such being the case it is a matter of great concern to us to see how this can be prevented or improved ; and it is this particular situation of events that has forced me to write out this article and bring it to the notice of the Government of Bombay, who are the only competent authority to tackle this problem effectively. I have every hope that the authorities concerned will give this matter all the attention it deserves and ameliorate the conditions of thousands who are suffering from tuberculosis in the city of Bombay itself, a leading centre of all the culture for the whole of the province including Goa.

Economically Goa is not self-sufficient, and the people are mostly dependants on the neighbouring areas of the Indian Dominion and specially Bombay where a considerable population of Goa is earning its livelihood. People here are generally enterprising and have moved to even distant places both in India and outside. We are, however, at the present moment concerned with the conditions met with in Bombay and its suburbs as they are directly influencing us here. The living conditions of these people in the city of Bombay are far from satisfactory, as

we learn day after day from patients arriving here for their treatment in the sanatorium. Since this is a major problem of public health, I would like to draw the attention of the authorities concerned in Bombay to see that all effective measures are taken up with a view to completely eradicate the disease from that town, which unfortunately is our main source of supply at the present moment. Treatment of those who are suffering from clinical tuberculosis is only a very small percentage of our total problem, and can at best touch only a fringe of the huge problem. A complete eradication of the disease from a town like Bombay is by no means an easy task and will tax the resources of the Government and the Public Health authorities to the utmost. But, nevertheless, it must be our aim and it has to be accomplished if we want to see our people living under better and a healthier atmosphere and be an asset to the nation rather than a constant drain on her resources.

A detailed history elicited from the patients coming to this Sanatorium for their treatment gives us clearly an idea of where the shoe pinches, and where we have to apply our energies to get rid of this disease. For the sake of convenience the whole problem can be divided into two categories which will be taken here separately :—

I. The general hygienic measures.

II. The personal hygienic measures.

It will not be out of place here to add a few words regarding the conditions met with in the town of Bombay before suggesting means for their improvement. Most of the people of Goa coming here for their treatment are men of moderate means. They cannot afford to stay in the healthy localities of the town and in sufficiently commodious houses and hence, occupy flats in the crowded areas of the town. The rooms of these flats, which are generally situated in the congested quarters of the city, are usually 25 to 30 feet in length, 14 to 16 feet in breadth and from 12 to 15 feet in height. Each such room is occupied generally by 15 to 20 persons and sometimes even more with their children and belongings. They cook and sleep in the same rooms with their other friends, and the conditions met with are ideal for the propagation of all kinds of diseases, especially pulmonary tuberculosis. Many of these rooms are insufficiently lighted and some even require the use of electric light during the noon hours. Sun's rays hardly enter them and as for ventilation, a single or at the most two electric fans are the only sources of the movement of the air. Such being the case, no wonder that a good percentage of the occupants in these localities should fall a victim to tuberculosis. And this is not all. The sources of income being scanty and the cost of living in a town like Bombay being comparatively higher than in the suburbs or the rural areas, these people can ill afford to support the other members of their family who are dependant upon them. The ultimate result is a very poor nutrition to all the members of the family and hardly enough clothing.

To maintain a normal health under the conditions of such strain and stress of life is not compatible, and sooner or later their health breaks down. The only supporter of the family being down with tuberculosis, the fate of others who are dependant upon him can be easily visualised. Such is the sad tale of many who have been sick and seek advice and treatment here in this sanatorium. And we have not enough means to help them. Those of the sick who are fortunate to get an accommodation in the sanatorium, are helped to a great extent. They get their treatment and are segregated from the other members of their family. But there are left many who simply remain on the waiting list, and for lack of accommodation get worse during this period of waiting and even lose their lives. The condition is very pathetic indeed, and unless the problem is tackled from the very source and rectified early, the chances are that the condition may get out of our control and may cost the Government very heavily later on. It is our sacred duty to bring the facts forward and seek for all the help from the Government and the Charitable Public Bodies.

While in Bombay, I had once the occasion to work up the incidence of the disease in the town with some of my colleagues who are specially interested in tuberculosis work; and it was a revelation to know that there were nearly 20,000 open cases of tuberculosis in the town of Bombay. These figures may not be entirely correct, and there is reason to believe that there may be many more about whom nothing was known definitely and who were probably wandering about in the town in all the public places. This brings home to us the magnitude of the problem we are facing to-day. A few sanatoria accommodating 20 or 25 cases of tuberculosis, crowded here and there, poorly equipped and not well organised can hardly solve our problem. Taking into account all the available accommodation in all the Sanatoria and Hospitals in India taking care of the tuberculous patients, we understand that they can accommodate at best only 10,000 patients. The inadequacy of this is self evident and requires hardly any comment. We have to face the problem in its entirety and seek all the available means to cut short the rising tide of this disease. A very large majority of our patients are left entirely to their lot. That is why we hear the same sort of stories repeated again and again by the patients. He suffers from an early infection, feels indisposed, but usually pays no heed to it and keeps on working as usual since he has to support himself and his dependants. Gradually he becomes worse, fever develops, or there is an intractable cough which forces him to seek medical advice. He visits one of the many medical practitioners of the town who is most easily available to him. A large number of these patients are dubbed as suffering from malarial fever or typhoid fever. A thorough examination is not generally possible in each case for various reasons. Treatment is instituted on these line and very often some amelioration of symptoms takes place. The patient under a false sense of security rejoins his duties in spite of

the fact that he is not feeling quite fit. Thus he drags on till the breakdown is complete. The fever is constant now, cough and sputum may also be present, there is a loss of weight and energy, and finally the patient is forced to seek the advice of some specialist. By this time his disease is far advanced and his scanty means are nearly depleted. A more exhaustive examinations now instituted supplemented with laboratory tests and an X-ray film of the chest is ordered. Thus the nature of the disease is revealed when it is well established and in some cases even far advanced. The diagnosis being completed, the patient is generally advised to leave Bombay on grounds of bad climate and suggested a change to his own native land for recuperation. Finally, these people with their health lost, and resources depleted, arrive in Goa to see what further lies in store for them. By the time these patients arrive to seek advice and treatment in the sanatorium here they generally resort to all sorts of local treatment even by quacks, with the result that they finally arrive in a very advanced stage of the disease with lungs riddled with cavtiies and the general health utterly lost with marked toxaemia present.

This has been our experience day in and day out, and we feel that if the problem of tuberculosis in Goa has to be harnessed effectievly we must seek to take all help from the Government and the Public Health authorities of Bombay, and check an influx of the patients too large for us to cope with adequately with the means at our disposal. Things in the town of Bombay can only be improved by active measures from the Municipal Corporation with all aid from the Government in that direction. The existing conditions in the town have to be modified and improved in a way that a fuller control is obtained in the eradication of the disease. The task is by no means an easy one looking to the present conditions in our country. Scarcity is seen on all sides, chiefly in the sphere of essential commodities like food materials and clothing. To these is added another problem of the shortness of accommodation. Bombay, since this last war, has been experiencing a great dearth of adequate house for accommodation as a result of an increase of population. To these difficulties are further added the problem of present internecine quarrels in our country entailing in its wake practically all the slender resources of our present government. Nevertheless, the basic needs remain the same, and in order that we can successfully fight against odds, a concerted effort both by the Government and the Public Bodies on the one hand and the general masses on the other is absolutely necessary if we are to achieve our final objectives. We are aware of these when we discuss the problem of our fight against tuberculosis. Our Government has to formulate a long term and a short term programme in this connection and we, as loyal subjects, must agree to support them whole-heartedly.

I. Taking up the subject of **general hygienic measures**, these can be improved and modified according to the needs by various kinds of

legislation, an improvement in the living conditions of the town, improved statistics, solving the problem of better nutrition, clothing and education of the masses and creating in their mind a public consciousness so essential for a successful outcome to any campaign like this. Suggestions are offered here with a desire that if implemented they may lead to an early improvement in our present position with regard to the problem of tuberculosis, and we hope our Government will give them all the consideration that they need.

1. Improvement in the condition of nutrition is the first requisite for a successful fight. It is a factor of prime importance if the general resistance of the masses is to be raised to a satisfactory level. Poverty, unhealthy conditions, poor physique, and high mortality rate are all directly or indirectly dependant on this single factor. Herein lies our greatest problem, and the Government must see that all the resources are mobilised in this direction, so that each and every individual is assured an adequate supply of essential food-stuffs. Our foreign rulers did not pay the necessary attention that it deserved, but they had no obligations as well for the same. The position is very different now, and the Government is responsible for the health of each and every individual. Efforts are being made in these directions, and we appeal to our brethren to see that they succeed, and that each one of us is provided with the necessary food-stuffs at the cheapest possible rates to assure a high standard of general health. This being settled, about 50% of our major problems regarding a fight against tuberculosis is settled. I need not go much into the details of this part of the problem as its importance is well realised by the Government and they are taking all necessary measures to assure a better supply of food-stuffs from all the resources in this country as well as from outside. It is a world problem at the present moment and India is no exception. Mahatma Gandhi has suggested in this connection a voluntary fast by individuals at least once a week to economise and improve the food situation today and there is much to say in its favour. It will make us self-supporting and will generally improve our morals so necessary in these days.

2. The problem of proper housing is not less important, especially in a town like Bombay. It is very necessary that the Corporation authorities should see that there is no overcrowding in the flats of the huge buildings of the town. Public Health Authorities owe a duty towards their own people to see that their health is not impaired in any way which is avoidable. The present condition in most of the buildings is far from satisfactory. A complete census of all such buildings should be taken for this purpose, and during this process all cases of tuberculosis Open" or "Suspected" should be segregated to buildings especially provided for the purpose. These buildings, or as we may call them "Observation Units", should be well provided with all facilities to carry out routine and necessary examination of these cases. These units should

make part of the Tuberculosis Dispensaries to be discussed in the succeeding parag raphs. The Municipal Authorities should allot the available space in these flats to a definite number of tenants to be decided by them. The owners of all such flats should be held responsible to the Municipality for:—

(*a*) The proper number of tenants occupying a particular building. A record of the same should be maintained by them for inspection by the Health Authorities of the Corporation. Infringement of the regulations should be made punishable.

(*b*) The maintenance of proper sanitation, ventilation, and repairs of such buildings. A nominal extra charge may be allowed for this by the authorities to be realised by the owner of the building and this too should be fixed according to certain regulations to avoid all unnecessary complications later on.

(*c*) Wilfully allowing tuberculous patients to occupy any part of their buildings. In case if by chance a patient has occupied any part of such a building without the knowledge of the owner, and the fact comes to his notice later on, he should immediately intimate the Health Authorities concerned about this fact, so that they may be able to take proper measures.

For each person in a lodging at least 500 to 1000 cubic feet of space should be allowed depending upon the conditions of the ventilation available. Not only this, but any building which is not planned according to the detailed principles of sanitation, with adequate provisions for sunlight, ventilation, open spaces, and accommodation, etc, should on no account be allowed to be constructed by the Public Health Authorities. Such condemnation may seem very harsh in the beginning but is certainly necessary for the long term programme of the health authorities, Unless the requirements are fulfilled, a building should not be passed for the occupation of tenants.

A routine examination of the living conditions in these tenements should be instituted by the Corporation and requires all emphasis. It is far better that small huts or blocks are constructed at cheap rates in the suburbs of the town which can suit the pockets of an average person, and are constructed according to the strict sanitary rules, than to allow overcrowding in the huge buildings in the town with all their inadequate hygienic arrangements and situated in the busy localities of the town. The attention of the Government is drawn to this one fact pointedly so that proper provisions are made and all overcrowding is eliminated. Under the same provisions of law all unhygienic buildings should be demolished and reconstructed. Government should brook no influence in these matters from whatever sources it may arise.

3. An equally important measure in this connection is the provision of all sanitary and hygienic measures in all public restaurants and hotels, tea stalls and cold drink shops. Here it should be made compulsory for the management to see that all utensils, glasses, etc., are properly cleaned

and sterilised before any person is served in them. It is a very frequent source of infection to a large number of people who may chance to visit these places. An average man hardly has time or will to see that he is served in thoroughly cleaned utensils. They take note only of the outside cleanliness which may be very deceptive. It is a matter of great importance and no relaxation in rules should be tolerated by the inspecting Public Health Authorities.

To ensure a better control on all such public places, they may be duly issued a licence by Public Health Authorities, who should also supervise them frequently to see that proper hygiene is maintained.. Those hotels or restaurants which are not willing to abide by these rules may be asked to close down.

In this very connection it may be suggested that a properly instituted "Food and Drug Adulteration Act" may be promulgated, prohibiting by law the use of any harmful ingredients in the preparation of various foodstuffs or their adulteration. A Special Bureau may be opened by the Government for this purpose, and all preparations put in the market should be previously analysed here and their contents known, before they are accepted fit for public consumption. There are a large number of such stuffs in the market to-day which require a close scrutiny of the Government, such as artificial ghee, milk and milk products, jams, marmalades, tinned products and a host of others. All of these require a proper check up to avoid harmful and deteriorating influence on the health of the consumers.

4. Transportation of sick persons especially suffering from infectious disease and tuberculosis forms an important part of the programme against the spread of tuberculous infection. No discrimination is shown to-day in either the railway or the ship journey, where all kinds of people can travel freely in company of one another. This is a subject requiring full appreciation by the Public Health Authorities. It is necessary in this connection to notify the public against the indiscriminate use of accommodation in these conveyances ; and both in the railway trains as well as in the ships provision should be made for separate compartments to be kept reserved for the use of only such persons, and each train and each ship should have such a unit fixed to it before it is allowed for public use. This, we feel certain, will to a large extent cut down the incidence of tuberculosis in our population. It will further add to the convenience of the passengers as well as of the railway or ship medical authorities, if before commencing a journey the person concerned intimates to them the nature of his or her disease and asks for proper arrangements to be made in advance. People, voluntarily breaking these principles of hygiene and not travelling in the special compartments provided by the railway or the ship companies, should be made criminally responsible for this neglect.

5. Compulsory notification of all the cases suffering from tuberculosis is a very desirable piece of legislation. There are a large number

of patients undergoing treatment in Bombay or in any other town of this or other provinces, in India, whose whereabouts are hardly brought to the notice of the Public Health Authorities. This is a menace to the health of the city in general in so far that such people hardly take account of their actions with regard to Public Health laws. They spit indiscriminately in any and every place without ever thinking about the consequences. It should be the duty of every medical man or woman who is treating such a case to immediately bring it to the notice of the Public Health Authorities of the town, so that proper measures may be taken immediately for segregation of such persons and a routine examination of all the contacts. This will also lead to a correct assessment of the morbidity from this disease—a valuable piece of information for statistical purposes.

The single main cause in the propagation of tuberculosis is the T. B. laden sputum of the patients, and the indiscriminate spitting, coughing sneezing or even laughing and talking may lead to infection of others. Such spitting in public places, railway trains, buses or tram cars, and even on the roads and buildings should be **absolutely interdicted** by law and all measures should be taken to so educate the public mind that they may inculcate a sense of their public duty which is very much lacking to-day. It is so common in the experience of every body in the every day life that hardly any comment is necessary. Indeed it is a social evil and can only be got rid of when the individuals realise their duty towards the public in general.

No amount of legislation alone can achieve that which can be accomplished through a proper type of education. Nevertheless, an attempt in the right direction should be started and by public lectures or cinema films such evils may be made known to the masses.

6. Every attempt should be made to increase the already existing accommodation for tuberculous patients to a satisfactory level. If we can so arrange that for every ten patients, who are suffering from clinical disease, one bed is provided, a great deal of the pressing problem will be settled. Even then a fairly large number of patients will be left without accommodation, but many of them can institute home treatment which forms a very important item in the programme of the treatment. Bombay city is hopelessly behind the right mark in this respect, and it is the duty of the City Fathers to see that admission is not denied to the taxpayers. There are a number of suburbs near the town where proper accommodation facilities can be made by starting inexpensive sanatorium buildings manned by competent and fully trained staff to look after the sick.

Climate, which is so often stressed by a mjaority of medical practitioners even now, certainly does not play such an important role in the treatment of the tuberculous as is generally believed. A healthy and nice climate is as important for the tuberculous as it is for any other chronic disorder ; and if one can secure a healthy and salubrious locality so far so good. But certainly it cannot be and should not be attempted

at the expense of one's financial status and other factors so essential in contributing indirectly to one's well-being, such as a peaceful and calm mentality. All that is essential in this connection is a well organised sanatorium or hospital unit and a fully trained staff entrusted with the care of the sick. There is no reason why the people of Bombay should be driven to other places to secure treatment there, dislocating them from their homely environments and putting an extra burden on an average patient. Those who are better placed in life, let them by all means go to healthy hill resorts or even to foreign countries if they so choose.

7. One of the main functions of the tuberculous specialists should be an education of the lay public with special emphasis to the etiology, prophylaxis and the detection of the early symptoms which may lead them to seek proper medical advice at an early date. This can be achieved by intensive propaganda, leaflets, cinema films and education of the youngsters in the school age regarding the essentials of hygiene and prophylaxis. In fact every attempt should be made to create in the lay man a Tuberculous-consciousness. Money spent in these measures is not a waste but is sure to bear good fruits. Sunshine and air, which nature has so abundantly provided in our country, should be utilised to the fullest advantage. T. B. cannot withstand the sterilising effect of the sunshine very long, and thus we can see that all places must be provided with an abundance of sunshine. The ultra-violet rays in the sunshine not only kill the tuberculous germs but also many other pathogenic bacteria and cocci and it is due to this factor alone that we are saved from wholesale ravages of many diseases.

8. And finally it will not be out of place to add here a few words regarding the maintenance of Tuberculosis Service by the Health Ministry. This can be conveniently divided into four categories :—

(*a*) *Tuberculosis hospitals and sanatoria* :—These are fully equipped with all facilities for the modern treatment of the disease including a fully equipped Surgical Unit, a Clinical Laboratory where all kinds of tests and cultures can be carried out, ultra-violet and infra-red ray facilities, with provision for good nutrition and a life free from worries and under complete discipline. The wards of the buildings should be so constructed that there is no overcrowding in any single unit, and that a division of cases can be maintained on different clinical groups of the pateints. As a rule not more than 8 patients should be allowed in each general ward, and private accommodation should be provided for more serious or fastidious patients. Since most of the patients are obliged to stay for a fairly long interval of time, there should be provision for various kinds of entertainments for both the sick and those who can move about, and a well maintained kitchen.

(*b*) *Tuberculosis dispensaries* :—They form an important integral part of the service. The dispensaries should be studded in the various localities of the town in a way that they can serve a larger part of the

population in that area. These should be well equipped as regards facilities for all clinical, laboratory, fluoroscopic and X-ray examinations and all the elementary treatment of the ambulant cases. It is generally good to have at least half a dozen beds available in each dispensary for keeping emergency patients and those undergoing special observation. It goes without saying that the Medical Officer in charge should be well trained in all methods of diagnosis and survey work in connection with tuberculosis. Tuberculin tests and fluoroscopic and X-ray control of all suspected cases and contacts should form an important part of the programme of this unit. These dispensaries, in addition to the Medical Officer, should have on the staff at least two trained nurses, two clerks and two boys in each, and can thus take care of all the ambulant cases in that particular locality, offer suitable advice for patients undergoing home treatment, and refer all those who require more elaborate treatment to the Sanatoria or the Hospital as the case may be. The records in these dispensaries should be very carefully maintained.

The Sanatoria and the Hospital, on the other hand, can refer back patients to a particular dispensary of a particular locality who have been successfully treated there and no longer require to be detained there. Thus these two units can work harmoniously helping one another. It is essential that the medical staff employed in the sanatoria or the hospital and the dispensaries should have a standardised training to secure complete harmony in work.

(c) *Mobile Units*:—For those who are so situated that they cannot be served by the dispensaries, or where there are no facilities for conducting X-ray and fluoroscopic examinations, these units will serve as a connecting link between the distant-placed sufferer and the Sanatoria or the Hospital. Each of these mobile unit has all the facilities for conducting the necessary examination for the diagnosis and control of the treatment of tuberculous patients. These motor vans are fitted with portable X-ray plants laboratory facilities, and have a utility cabin to give all elementary treatments to the patients. They are to be manned by a driver, a nurse, a boy and a Medical Officer. Mobile Units can to a large extent help in the programme of home treatment of those who can afford to pay for it, or for some reason cannot avail of other facilities. Moreover rural survey can be best conducted through these mobile units. Adequate accommodation for all those who are suffering is not a matter of an easy solution and even under the best conditions many will be left without it. For such patients these Units can serve a very useful purpose.

(d) ***Rehabilitation Units*** :—No programme for tuberculosis can be complete unless this final link is supplied in rendering the patients fit to resume their normal vocation in life. It is a known fact that tuberculosis is not easily cured. Even under the best possible conditions the patients take a fairly long time to be fit to work as normal persons. All that can be expected from the various hospitals or the sanatoria is to arrest the disease in such a way as to render the patients fit to mix up in the society

make them T.B. negative with abatement of all active signs of the disease. But this is not all. If such patients are left to themselves, and are forced to earn their own livelihood sooner or later they are bound to break down. It is during this period of the arrest of the disease and the time when they can resume normal activities of life, that all care and rest is necessary to lead to a successful issue the whole programme of treatment of tuberculosis. To achieve this a period of rehabilitation is necessary for a large majority of patients and should be provided according to the individual needs.

The whole programme is a costly one and requires all care and consideration of the Government. It is, nevertheless, an important economic problem and means have to be found out to meet these expenses.

For this purpose Government may choose localities best suited for the establishment of these Village Settlement or Rehabilitation Units. It goes without saying that each one of these units ought to have its own Managing Board and the constant supervision of a Tuberculosis Specialist so that a continuous watch may be kept on the progress of the patients. The patients are provided here with boarding and lodging, free or payment as the case may be. All facilities for the medical treatment of the patients should be provided in these Settlements. The dicipline should be strict, with a view to train these persons for their future life and as a means of living propaganda. All essentials of a hygienic and careful living should be inculcated in their minds. At the same time arrangements should be made for the proper entertainment and social life of these persons, to minimize the staleness and drudgery of life. In order that the whole plan may be self-supporting to a certain degree, it is advisable that these patients may be engaged in some kind of handicraft or work, the proceeds of which may be utilised for the running of the institution. Thus sewing clothes, basketmaking, cycle and motor mechanics, watch-making, gardening and other light agricultural activities, printing and typing, and a host of other useful and interesting industries which may both fetch some income to the institute and at the same time take away the monotony of life of the inmates. These industries may prove of great benefit to the individuals much after they have left these Rehabilitation Centres. The over-all supervision of a medical man requires further emphasis, as he will be the only person to apportion to each individual his duties and work according to his capabilities, and who will finally be responsible for their health and upkeep.

It is hoped that the above suggestions, if implemented in the spirit they have been presented here, will go a long way to improve our present position with regard to tuberculosis problem. The last word has not been said in this connection, but each item suggested has been carefully considered with regard to its usefulness and practical applicability under the present circumstances. As things improve and additions can be added to these till we can finally succeed in completely

eradicating the disease from our country. No attempt has been made to minimise the costly nature of this problem, but as pointed out elsewhere it is imperative to find out the finances to meet this urgency.

The suggestion will not be complete without adding a few words about tuberculosis in cattle. This is a problem which again requires all consideration on the part of health authorities. Milk of infected cows and the meat of tuberculous animals is an outstanding menace to the public health. Of course in India the usual custom is to take all milk which has been boiled previously and as such the chances of milk-borne tuberculosis are reduced to a very great extent. Nevertheless infected cattle cannot be tolerated by any public health organisations and it is an urgent necessity that the government should appoint proper public health inspectors to see that none of these diseased cattle are used either for the milk supply or for the meat supply of the p opulation. Such cattle should be totally destroyed and a definite plan to carry out this programme is necessary as it-will entail large expenditure.

II. **Personal hygiene**, though not strictly within the direct supervision of the Health Authorities, is nevertheless, as important as any other measure of public hygiene or sanitation ; and for an ultimate success of any Anti-Tuberculosis campaign, the personal training of individuals in the art of proper hygiene is very essential ; for it is the only effective way in which these measures can be brought home to the masses. In this connection one thing should always be our main and guiding principle and that is to avoid all primary infection by T. B. and a complete control of the infecting organism.

Tuberculosis is still ubiquitous, as is proved by the figures from various institutions of different countries. The first thing, therefore, to avoid such infection is to render the soil innocuous, i. e. to improve and maintain a good general health which is directly affected by the environents, quality of food, general hygiene, and daily exercise etc. Now the very reasonable way to prevent the incidene of tuberculosis is by increasing the resistance of our body against the infecting organism by all means at our disposal ; and herein lies the importance of a general hygienic education to children of school age which will form a sound basis for the rest of their life.

Prophylaxis of delicate children, especially born of tuberculous parents, is most important. They should be guarded against all infection, especially tuberculosis, and brought up with great care. They should be separated from their parents if they happen to be active cases of tuberculosis. The nose and throat of such children require special care. Diseased adenoids and tonsils should receive urgent attention and removed if necessary. The children should live in the open air as much as possible and special care of their dietary is necessary. All milk given should be boiled or pasteurised. In a number of countries, especially France, active immunisation of children is being carried out with (B.C.G.) Bacillus Calmette Guerin. Though the ultimate value of this procedure

is not finally settled, more then 2,000,000 individuals, mostly children have already been inoculated with this vaccine, and the advocates of this procedure are very enthusiastic about it. Much controversy is still prevailing as to its efficacy, but it is worthwhile a trial under properly controlled conditions. Those children, who are already exposed, require a careful and special watch.

2. General hygiene with regard to our body and food is absolutely essential for a healthy preservation of individuals. For tuberculosis, special eare is necessary for oral hygiene, including gums, teeth, tonsils and also nasal passages. Cleaning of mouth after each meal and before retiring is a daily necessity. In special circumstances gargles and even antiseptic applications should be resorted to. The same applies to nose. Tuberculous patients should give an extra care to their oral hygiene.

Sputum of tuberculous patients isthe most potent single factor in the spread of this disease, and in all open cases of tuberculosis a very special care regarding their sputum, sneezing and coughing etc. has to be taken. A number of workers, especially Cadæc and Mallet, Cornet and Kuss have shown experimentally that dried sputum of the tuberculous patients and the droplets ejected from their mouth during the acts of sneezing and coughing retani their infectivity for a considerable length of time. Even when mixed with dust of the rooms or roads they remain so chiefly in the places where there is no free access of sunlight. This also proves the geat sterilising properties of the sunlight which, when allowed a full play, can be a source of natural sterilisation. For that very reason most of the furniture etc. from the rooms of the tuberculous patients can be rendered sterile by the bright sun of India. All articles such as rugs, towels, handkerchiefs, bed-linen, cups, saucers and other utensils etc., coming in contact with tuberculous patients directly or indirectly require special care to avoid all infection. Both the patient as well as his attendants should take note of this to avoid all inadvertant infection. All sputum coming out during coughing and sneezing should be received in paper napkins or linen handkerchief and never on bare hands. It is a good practice for tuberculous patients to keep large paper bags hanging on their bed-sides, receive all excreta in paper napkins and put them in these paper bags. The whole of this can to burned at the end of the day and new ones substituted. Linen handkerchiefs which connot be burnt should be boiled for ten to fifteen minutes in a solution of soda, washed and dried for further use. All indiscriminate spitting should be treated as public offence, and should be put a stop to by suitable legislation. T. B. patients should be particularly careful about this. Constant care and restraint is the only solution to avoid this pernicious habit.

Wholesome, properly cooked and unadulterated food is a vital necessity for each one of us and both the individuals as the Government should see that this problem of the people is adequately met with, especially in our country where the problem is so acute all the time. It is a pernicious habit to partake of food in the same dish with others, so

commonly seen in many families and several communities. The habit should be entirely discouraged, and in case of tuberculous patients never allowed. All T. B. patients should have separate utensils reserved for their own use.

3. Housing problem needs all the attention of the Municipal Corporation. It needs all the attention of the occupants as well. Besides what is done by the Public Health Authorities, it should be the endeavour of each individual to secure well-ventilated, sunny houses with open spaces around and a clean locality. All kinds of overcrowding should be avoided and if a T.B. patient has to be kept in a house, special arrangements should be made to provide for him a separate suite of rooms, specially a sleeping room and a bath-room. In fact he should be so kept that there are no chances of conveying the infection to the other members of the household. Of course, such things arise only in the case of well-to-do persons who can afford to have their treatment at home. T.B. patients should take care even when they are talking or laughing. They should never kiss children or allow anybody to sleep with them.

Purdah is still observed in many parts of India especially among the Muslims. It is a custom which requires all discouragement, and all advocates of national health should see that it is gradually eliminated in its entirety.

4. Marriage with regard to tuberculosis patients has some special significance and the people concerned should very carefully understand their responsibilities. First of all, marriage cannot be allowed in cases of active disease of any one of the partners. It is a social offence. Regarding the persons who are arrested cases of the disease, the problem is not very easy again to decide. The personal risks to the male partner is not so great as in the case of the female partner. In the former, under, satisfactory conditions of general health with external environments favourable, and good family antecedents, marriage may be allowed with all precautions for moderation. Not so is the case in the latter, where child-bearing complicates the whole picture. It is always safe to avoid pregnancy in such cases, though with a good general health, absence of any hereditary taint and with favourable environments marriage may be permitted. Among married persons, when either of the party is suffering from active disease, the risks have been found greater in the case of healthy male partners than in healthy female partners. Opie and EcPhedron have made special studies on the subject in about 533 cases of married couples. Their figures are 45 6 per cent infection for husbands and 35 5 per cent for the wives. It is as important here as anywhere else to avoid all infection as far as possible.

5. Finally a word may be added about the choice of profession for the tuberculous patients. They have to change their entire outlook on life. As a rule, they should eschew all unhealthy pursuits, such as working in smoke and in closed atmospheres. The final choice depends upon a number of factors and circumstances; and a general rule may be laid

down that all professions chosen should be such as to provide a maximum amount of open air and sunlight, and straining the physical resources to the lowest possible level. Here it is that Government have to come forward to solve the problem of many, and in special cases even to allow such patients a life of pension and ease.

(*The Antiseptic Vol. 45. No. 4.*)

Extracts.

PROTEIN DEFICIENCY.

Effect on the Pregnant Woman and Fetus and on the Infant and Child.

Protein during pregnancy and lactation :—The protein requirements increase during these periods. Women normally store relatively large amounts of protein during pregnancy. This positive nitrogen balance begins about the 10-12 week of gestation and increases to term. Protein is needed to build up new maternal and the tissues of the fetus, including the placenta and membranes. About 135·145 nitrogen beyond maintance needs is required during pregnancy or about 842·900 gm. of protein. Under favourable circumstances the amount of nitrogen actually stored is 200-400 gm. representing 1250-2500 gm. of protein, in excess of the probable utilization by the mother for the fetus in the replacement of old tissues or the construction of new ones.

A negative nitrogen balance sets in abruptly just before term, and there is a substantial loss of nitrogen from the maternal organism during parturition and the post partum period. For woman who nurse their infants, there is an additional loss in the breast milk.

An increase in protein of the diet during the last six months of pregnancy of 15-50 gm. a day above the woman's normal requirements may be assumed to be the average need. The average allowance for non-pregnant women is 60 gm.

Many women habitually take a diet low in protein and do not change their habits appreciably during pregnancy. Therefore such women are liable to suffer from deficiency during pregnancy. A high protein diet during the latter part of pregnancy is important for successful nursing. A diet high in animal protein results not only in the highest nitrogen retention but also in the highest milk yield. About one and ½ half times the amount of protein secreted in the milk is needed in the diet to provide this. During lactation about 40 gm. of protein daily above the requirements of the non-pregnant women is needed.

Effect of Maternal Protein Deficiency:—Conception rate. Severe dietary deficiency leads to amenorrhea and inability to conceive.

Complications of Pregnancy :—The incidence of toxæmia of pregnancy is higher among women whose intakes of protein are markedly deficient than among those with diets containing sufficient amount of protein.

Anemias of Pregnancy :—Hypochromic and true macrocytic anemia of pregnancy are correlated with diets low in protein of animal origin.

Frequency of Abortion and Still Births :—Arnell (1945) found that when the maternal dietary protein was 85 gm. or more there was no fetal mortality and when it was between 75 - 80 gm. daily the mortality was 2.2 per cent. Again, when the protein consumed was between 42.5-54 gm. fetal mortality rose to 5.5 per cent. All the woman whose babies were still born consumed diets that were inadequate in protein, and the calories were rated inadequate.

Premature Births :—Inadequate protein during pregnancy especially when enhanced by inadequate calories, increases the chances of premature onset of labour.

Size and Development of the Infants at Birth :—The progressive increase in average birth length and birth weight with increasing amounts of dietary protein during the latter part of pregnancy is stricking. If the diet is low in protein during the latter part of pregnancy, there is a tendency for the infant to be born prematurely or to be relatively immature at birth.

Protein During Pregnancy and Childhood.

Requirements :— In normal adults, new tissues are required only for replacement or maintenance. Disease and injury may cause a rapid loss of nitrogen and greatly increase the need for protein at any age. But infants and children are actively growing and building tissues. Total protein needs per kilogram of body weight are much higher in infancy, in childhood and somewhat higher in childhood than in adolescence. In infancy and childhood both the quality and the quantity of dietary protein must be adequate to cover growth requirements and maintenance needs. Milk proteins are the most suitable ones. At all ages 11-15 per cent of the calories of the diet should be provided by suitable protein foods. In children this is higher but protein intake cannot be considered adequate unless caloric requirement is met. The first and most frequent effect of protein deficit is the limitation of growth. Infection increases caloric requirements, causes rapid catabolism with nitrogen loss and interferes with normal consumption and utilization of calories and protein and children are subject to more such illness than adults. Therefore diets should be planned to avoid protein deficiency.

Effects of Protein Deficiency :—Low protein usually associated with low calories and continued over long periods is a frequent cause of poor growth in childhood. The principal dietary difference as related to growths and development in childhood seems to be in the consumption of milk and other animal foods. One of the major characteristics of chronic under-nutrition in childhood is poor muscular development. The poor growth of muscle is due to the lack of sufficient protein in the presence of inadequate calories and to lack of activity or to a combination of these, calcium absorption is far more satisfactory when a high protein diet is taken than when intake is low.

H. C. Stuart New Eng. J. Med. 236: (507-537, 1947).

THE MANAGEMENT OF URTICARIA DUE TO PENICILLIN.

DONALD M. PILLSBURY, HOWARD P. STEIGER AND THOMAS E. GIBSON, J. A. M. A., 133 : 1255–1258, 1947.

The authors discuss urticaria as the most frequently encountered reaction to the parenteral administration of sodium penicillin, summarizing their experience concerning the incidence of urticarial reactions during and after penicillin therapy. Cases are cited demonstrating the unpredictability of this reaction and instances are described in which patients could, and could not, tolerate continuance of penicillin therapy by the simultaneous administration of compounds having an antihistamine effect.

The authors found that (1) penicillin reactions are more frequently encountered in patients who have had repeated courses of the drug ; (2) some patients with an urticarial reaction tolerate additional penicillin while others do not ; (3) skin tests with penicillin are unreliable as a means of predicting the occurrence of reactions to penicillin in further amounts ; (4) antihistamine compounds, particularly benadryl, are useful in controlling urticaria ; and (5) urticarial reactions may at times be extremely persistent and severe. Five detailed case histories are given, including three patients under treatment for tabes dorsalis and one with meningovascular syphilis, to illustrate the above points.

In the management of urticarial reactions, penicillin should be stopped at once and benadryl or pyribenzamine administered in a dosage of 50 to 100 mg. three times a day by mouth to adult patients. The intravenous administration of benadryl in a dosage of 5 to 10 mg. given slowly in 20 cc. isotonic sodium chloride solution is advised if the reaction to penicillin is severe or if interruption of therapy is undesirable. With subsidence of the urticaria, a test dose of 1,000 units of a different lot of penicillin should be administered intramuscularly, with the simultaneous administration of an antihistamine drug. If there is no reaction to this test dose, another dose of 10,000 to 20,000 units should be given, and if no reaction occurs within 4 hours, penicillin may be resumed in full therapeutic doses with continued administration of the antihistamine compound in gradually decreasing dosages.

The over-all experience of the authors with benadryl and pyribenzamine in the treatment of urticaria due to penicillin is summarised by table.

RHEUMATOID SPONDYLITIS

F. POLLEY AND C. H. SLOCUMB,

Ann. Int. Med.; 26: 240; 1947.

A study of one thousand and thirty-five cases of rheumatoid spondylitis encountered at the Mayo Clinic has yielded data which may help to clarify certain aspects of this disease and may help the physician to answer a few of the questions frequently asked concerning the condition. In the author's series of cases the ratio of men to women was nine to one. Symptoms of 80 per cent of patients first appeared when they were between the ages of 15 and 35 years. The average age of onset in this series was 26·7 years. The first symptoms were most frequently in the lower part of the back or lumbar region, next the region of the hip and thirdly, the thoracic region, with a few specifying the neck and shoulder girdle. In 72 per cent of the cases studied exacerbations and remissions were a characteristic feature of the course of this disease. In 28 per cent a fulminating progressive course without remissions occurred.

Limitation of motion in the cervical portion of the spinal column was noticed in 45 per cent of cases after an average duration of symptoms of eight and one half years. Transitory symptoms in the region of the neck had been present in an additional 12 per cent of cases. Involvement of the hip joints was noted in 28 per cent of patients. The joint damage was bilateral in three-fourths of the whole group.

The sedimentation rate does not tend to be as high in rheumatoid spondylitis as it is in peripheral rheumatoid arthiritis, although at times high readings may be seen in the former. Rœntgenologic evidence of rheumatoid spondylitis may be lacking if the progress of the disease has not resulted in destruction of cartilage and subchondral bone. When present, the characteristic rœntgenologic findings in rheumatoid spondylitis are arthiritis of the sacroiliac and apophysial joints, calcification or ossification or both of spinal ligaments and osteoporosis of vertebræ.

Medical Notes and News.

MADRAS NEEDS MORE MEDICAL COLLEGES.

Dr. Krishna Rau Suggests Shorter Course.

An appeal to the Madras Government to start more Medical Colleges and reduce the period of medical training to four years was made by Dr. U. Krishna Rau, Mayor of Madras, delivering the inaugural address at the annual meeting of the Coimbatore District Medical Association on 16th May 1948.

Mentioning that India had the lowest medical men in the world, Dr. Krishna Rau expressed the view that new Medical Colleges should be brought into existence in Guntur, Coimbatore and Calicut and at another place.

He felt that admission must be on the basis of merit to the extent of 30 to 50 per cent. of the seats, reserving the rest for backward communities and backward areas. He added that preference should be given to the children of medical practitioners.

To produce more candidates with the equipment at hand, Dr. Krishna Rau suggested introduction of the shift system in Colleges.

Citing the example of America where the course of study extended only to three years with the adverse effect on the efficiency of the candidate, the speaker pleaded for a simplification of the curriculum of medical study in the province, by eliminating the study of some unnecessary subjects and reducing the period to four years.

Referring to the general practitioner, he pointed out that the honorary system of work in Government colleges and hospitals must be encouraged and extended.

About the Indian system of medicine which he did not consider scientific at the time being, the speaker suggested that it could be studied as part of the Allopathic system.

Doctors and Politics.

He concluded with an exhortation to medical men to take a more active part in politics and pay more attention to public service.

Dr. P. Arunachalam, Superintendent of the Stanley Medical College spoke on "Treatment of cardiac failure."

Mr. S. Ganapathy presented the annual report which explained the work done by the Association during last year.

Col. Bhatia, Surgeon-General to the Government of Madras Dr. T. S. Tirumurthi, Dr. Hariharan of Salem, Secretary of the South Indian Medical Association and others had sent messages, wishing the meeting every success.

Mr. I. G. K. Menon, Secretary, Nilgiris District Medical Association, thanked the Coimbatore Association for having associated the Nilgiris Association with the Coimbatore Association.

Dr. C. V. Ramaraj, Secretary, proposed a vote of thanks.

When ordering please mention *Medico-Surgical Suggestions.*

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