COVER SHEET

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capable of turning out say 500,000 negatives per year, at a cost of say 14d. each, so what does it matter whether the plant costs £3,000 or, for that matter, £6,000, or whether the lens costs £500 or £1,000?

The Union Government, for a comparatively small outlay (the price of a couple of bombers), could put a complete mass miniature survey in being for every inhabitant in South Africa. The cost of hospitalization I must leave to those qualified to say, but before such a survey is contemplated, the authorities responsible for ordering the plants must understand the principles of MASS MINIATURE RADIOGRAPHY EMBODYING ALL THE PRIME FACTORS OF TIME OF EXPOSURE, ANODE-SCREEN DISTANCE, NUMBER OF CASES PER HOUR and the PRODUCTION OF A FILM COMPARABLE WITH S.A. MINER'S PHTHYSIS BUREAU STANDARDS. Then and then only should plants be ordered, and not before.

The following recommendations are made:

(1) CONTROL:
   (a) That the Miniature Radiography Services of the Union be brought under the control of a Directorate consisting of a senior radiologist and a senior X-Ray engineer acting under the direction of a committee comprised of two members nominated by each of the following:

   Laymen,
   S.A. Medical Council,
   S.A. Institute,
   Electrical Engineers,
   Civilians,
   Radiologists,
   X-Ray engineers.

   It is considered essential that the production of the negative, which is primarily an engineering matter, be divorced from the question of examination and reading of the negatives, primarily the function of the medical fraternity.

   (b) That the Union be divided into four groups, i.e., each Province will comprise one group. In each Province will be set up a centre from which the radiological service of that Province will be controlled by the directorate acting under the direction of the special committee referred to above.

(2) EQUIPMENT:
   (a) That mass miniature radiography plants, designed in accordance with the laws laid down in this paper, be installed in all the main centres of the Union.

   (b) That self-contained portable plants be used in rural areas and urban areas of lesser importance.

(3) MILITARY:

   That immediate steps be taken for all soldiers still in the Union to be subjected to miniature radiographic examination. Troops in Middle East and Italy should also be examined.

I am indebted to Dr. A. I. Girdwood, Chief Medical Officer, W.N.L.A. Ltd. Hospital, for permission to present this paper, and also to the S.A.I.E.E. for various extracts from previous papers presented to the Society.

I would also take this opportunity of saying how grateful I am to Dr. Dormer for backing my research work right from the start, and for his able assistance in preparing with me the first article to be printed in England on this subject.

I would also pay tribute to Mr. Badham and Mr. John, Engineers, who have given up much of their time to assist me in the electrical problems which arose in the preparation of the finished product which has proved so successful, and also to Captain Sprenger of my own Department.

The Duties of a Tuberculosis Health Visitor.

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Since I have learnt from experience that there is considerable doubt on this point, it must be stated at the outset that a tuberculosis health visitor should, of necessity, be at least a trained nurse. The general nurse who also holds a midwifery certificate is in a better position than a singly qualified nurse to deal with the many pregnant cases and contacts who pass through her hands. In addition, the tuberculosis health visitor should have a qualification as a health visitor to ensure that she has received the necessary training in the matters of environmental sanitation, diet and allied subjects which, it will be seen, are an appreciable factor in treatment. Without attempting to belittle the profession of Social Workers I hope it will be obvious to all of you, after I have concluded my paper, that nursing qualifications and experience are essential for any person employed as a tuberculosis health visitor.

In practice, the main duty of a tuberculosis health visitor is to make satisfactory arrange-
occupational circumstances, particulars of the history of the case, details of the facilities available for the isolation and if possible, particulars of the probable place and source of infection. Special attention is paid to those patients suffering from tuberculous in a communicable form, i.e. pulmonary tuberculosis, because as I have said before the main object must be to prevent the spread of infection. In this connection care is taken to record medical details, including particulars of X-ray examinations and sputum tests.

It is well known, but will bear repeating, that insanitary and overcrowded housing conditions contribute largely to the increasing incidence of tuberculosis. A few months experience of my work provides ample evidence of this. Equally apparent is the fact, that such conditions are almost invariably associated with malnutrition.

During my experience, I have not come across any case where it has been definitely proved that the infection has resulted from any particular food or milk supply, but because this is always a very real possibility, an investigation without enquiring into the sources of food and milk supplies, would be lacking in one of its essentials. One might remark here that the lack of being able to trace the source of infection from the food supplies, may be largely determined by the long interval between the time of infection and the stage of development of the disease when notification to the local authority takes place.

Details of financial and local circumstances are obtained for several reasons. Firstly, in order to determine what measures should be instituted to prevent spread of infection, it is necessary to assess the family circumstances to decide whether or not satisfactory isolation, and precautionary measures can be carried out at the place of residence, or, if removal to a hospital or sanatorium is necessary, to bring about conditions which are not dangerous to the other inmates of the patient's home.

In the second place, consideration must be given to the ability of the patient and the family to carry out and maintain the precautionary measures if it is desired that the patient remain at home. This factor is all important because one of the biggest difficulties one has to contend with in this work, is the natural reluctance of the breadwinner to accept arrangements for hospital treatment, with the knowledge that this will probably result in inadequate financial provision for his or her dependents. Thirdly, in a few cases only it is possible to consider to what extent the patient or his family may be able to contribute to the cost of hospitalisation, which must be borne by the local authority. You will appreciate that it is quite reasonable for the local authority to recover some of its expenditure if it is obvious that the family can afford it. This factor is provided for in the Public Health Act, which permits the local authority to recover fees wherever possible.

One of the social factors which must frequently be considered is the desirability of making arrangements for the admission of child contacts to the National Preventorium. Provided the circumstances justify it, accommodation is available, and the parents' consent is obtained, contacts from Johannesburg are admitted to the Preventorium, established and administered by the Christmas Stamp Fund.

The investigation of the occupational circumstances of the patient is made for various reasons, firstly, to see whether or not the patient is employed in an occupation in which he is liable to infect others.

In Johannesburg and on the Witwatersrand, the first factor is of particular importance, because if the investigation reveals that a patient has worked underground in the mines, the provisions of the Miners' Pthisis Legislation become operative, with the result that generally, the Miners' Pthisis Board is responsible for satisfactory treatment and for compensation. If the second factor indicates that a patient is engaged in an occupation which is considered to be a direct source of infection to the rest of the community, it is obvious that the local authority must take the necessary steps to terminate this risk. A glaring example here would be a dairy employee suffering from pulmonary tuberculosis.

Should there be any difficulty in persuading a patient in this category to undergo hospital treatment, the provisions of the Public Health Act would be invoked, and an order issued by the local authority compelling the patient to submit to suitable treatment. A particular danger here would be that if the patient were allowed to terminate his employment and find work elsewhere, it is almost certain that he would be back again at work suitable for his training, in some other dairy.

These few remarks have been made to make clear the reasons why the factors referred to are investigated. In addition, details are recorded of various other items required mainly for record and statistical purposes.

I shall now return to the main purpose of the investigation, i.e. to make satisfactory arrangements regarding the patient. In most cases, it is found that the classification of the disease is such that it falls within the groups which are considered suitable for hospital or sanatorium treatment. Consideration is then given to arranging for admission to a suitable institution. You are no doubt well aware that the accommodation available falls far short of the need, particularly for natives. However, in Johannesburg, care is taken to arrange for the completion of the necessary formalities to ensure admission to one of the Sanatoria as early as possible.

In making these arrangements several matters arise which must receive the consideration and attention of the health visitor. Firstly, measures must be instituted to arrange for the medical examination and X-ray of all contacts, and the work of following up doubtful cases and ensuring regular re-examination is considerable. Contacts showing no evidence of tuberculosis are required to revisit tuberculosis clinics after an interval of six months for re-X-ray. Other contacts are required to return to the Clinic at intervals of one or two months. In 'necessitous cases, the family is assisted by the free issue of protective food-stuffs through the agency of the Public Health Department and Social Welfare Department.
It is more than unfortunate that this aspect of assistance is not carried out to the extent that it should be.

When a patient is discharged from a Sanatorium and allowed to return home, the health visitor must arrange, in some cases, for the continuation of treatment at the Clinic, and in all such cases for regular X-ray and sputum tests. Home visits are also made and advice given regarding isolation and precautions to be carried out to avoid the risk of infecting others.

One of the most important aspects of the tuberculosis health visitor’s work is to attend the periodic tuberculosis clinics where A.P. is given to ambulatory cases; aspirations done; endotoxoid given; patients screened and X-rayed regularly, and a record kept of weight, temperature and pulse. You will remember that earlier in my talk I referred to the necessity for the tuberculosis health visitor being a trained nurse, and it is in this sphere of her work that the nursing training and experience is required, not only to enable her to assist at the Clinic, but because I have learnt how valuable is the link between the home and the Clinic. In almost every case when the patient or contacts have to attend the Clinic, one can almost sense the relief of the individual when she or he finds, at the Clinic, the same person who has visited them at home, and it is very seldom when the health visitor first mentions the necessity to attend the Clinic that the patient or contact does not inquire whether or not the health visitor will be there. I have no doubt that this link between the home and the Clinic goes a long way to getting the maximum attendance at the Clinic. Apart from this aspect you will also realise that at times of sickness and trouble the average individual does not like to deal with numerous officials, and it helps considerably if one person becomes the link with officialdom.

If it is found that the patient’s family requires financial assistance as a result of the sole support of the household having to undergo treatment, the dependents are referred to the Municipal Social Welfare Department or Non-European Affairs Department who investigate the case and provide various grants and protective foods. The patient may also apply to the King George V Fund for assistance; this is only given whilst the patient is in any institution and must be accompanied by a medical certificate from the doctor of the institution.

If the parents so desire, the necessary formalities are carried out to arrange for admission to the National Preventorium of child contacts not suffering from active tuberculosis. This Preventorium is administered by the Christmas Stamp Fund and it is necessary for the health visitor to maintain a close relationship with the officials of the Fund, to keep herself fully acquainted with the Fund’s activities and policy. In my case, this has been arranged by appointing me as a member of the Committee of the Witwatersrand Branch of the Fund. In dealing with the Social Welfare Department, there are also several formalities to be carried out, and close contact is maintained with the responsible officials of that Department.

During a period of 12 months my colleague and I have investigated 1,007 notified cases of tuberculosis. In addition, we are assisted by two native orderlies who investigate and report on native cases residing in the recognised native areas, particularly those outside the municipal native locations. The procedure adopted by these orderlies is practically the same as that carried out by the tuberculosis health visitors, with the exception that these do not attend the Clinics where the patients and contacts are treated. There is, however, an arrangement whereby close contact is maintained between the tuberculosis visiting staff and the Clinic staff. These Clinics are administered and controlled by the Public Health Department.

Considerable time is spent by the tuberculosis health visitor in ensuring that particulars of imported cases are forwarded to the local authority, where the patient is ordinarily domiciled, and if arrangements have been made for the admission of the case to a Sanatorium, a request is made that the local authority concerned accept responsibility for the cost of hospitalisation.

To sum up the first part of my paper, the tuberculosis health visitor is charged with the investigation of all tuberculosis cases; arranges for the hospitalisation and treatment of infectious cases; advises regarding isolation and precautions; looks after their welfare as far as possible in arranging assistance for them and their families; traces contacts and arranges for their attendance at the Clinics. She also arranges for admission of children to the Preventorium, attends the tuberculosis Clinics and keeps a record of the progress of the patient.

I think it will be realised from my foregoing remarks that the tuberculosis health visitor plays an important part, particularly from the family point of view, in dealing with tuberculosis patients. The arrangement may be termed a very happy and convenient one, where her work is well organised that she becomes the link between the family and other official organisations, particularly as the family is relieved of the anxiety and strain of dealing with a number of separate officials.

These activities of the health visitor naturally bring within the scope of her experience, the various difficulties associated with the problem of tuberculosis, and I trust that I need make no apology for referring to some of these difficulties.

One of the most obvious factors revealed to me in carrying out my duties, has been the extent to which tuberculosis cases among families are malnourished. It is clear that one of the major items for consideration in the Socio-Economic sphere, will be the introduction of a programme for the satisfactory feeding of the community, especially the families falling within the category of the low income groups, where the financial resources do not permit the purchase of sufficient food, let alone the more expensive protective food stuffs.

Another noticeable factor is the number of families housed under crowded and insanitary conditions. This and the question of malnutrition are quite likely well known to you, but one feels that when these matters are under consideration by the powers that be, more emphasis should be
placed on their importance from a health point of view, and from the angle that expenditure incurred in promoting good health, is in the long run less of a burden on the community than expenditure incurred in attempts to cure those who are diseased and whose disease could have been prevented.

I have referred briefly to the problem of the wage earner who is faced with the prospect of his family being left almost destitute when the patient is undergoing treatment in a Sanatorium. This is a current problem which causes considerable concern to those employed as I am. It is most distressing to deal continually with such cases, knowing that the measure of assistance that is provided, one might say as a form of charity, is usually so inadequate. Until this aspect is given and receives greater consideration, the attempts to reduce the spread of infection and the risk to which contacts in the family are exposed, will have little satisfactory result.

Another item which requires consideration is the need for providing facilities for suitable occupational therapy for patients who are allowed to return home, but who are unfit to carry out their normal occupations. One would suggest that the guiding factors should be to encourage or promote some form of activity which would not be a strain on the tuberculosis sufferers. This activity should be as similar as possible to his normal occupation, and would possibly augment the family income.

Cases do occur when follow-up investigations show that the tuberculosis patient at home pays little attention to systematic precautionary measures. The only remedy one can suggest here is compulsory hospitalisation. It is in this connection that one could anticipate, in time, beneficial results from a consistent health education programme for adults and children.

One cannot discuss the preventive aspect of tuberculosis without referring to the need for the close co-operation of the medical profession. I do not refer here to the members of the profession engaged in treating tuberculosis cases in the various hospitals and institutions, but to the general practitioner who can assist the local authority considerably, no matter where he is practising, in submitting notifications of tuberculosis and other infectious diseases without delay. Early notification of tuberculosis may be of considerable importance to the contacts exposed to infection, even if we disregard its importance to the patient.

Another aspect which must be considered in relation to the need for hospital accommodation, is the desirability of making provision for hospitalisation of advanced cases, who are beyond the stage where a cure can be hoped for, or where the disease is too far advanced to carry out treatment with the object of rendering it inactive. There is a somewhat natural reluctance on the part of institutions to accept cases of this sort while the demand for available accommodation is so urgent.

For my concluding remarks, I have deliberately chosen to refer to the fact that my main impression is how great is the problem for local authorities. One often feels that the responsibilities placed upon the local authority are essentially national in character, and how necessary it is, if any measure of success is to be achieved, for the Government to assume more responsibility in order to overcome the socio-economic difficulties inherent in the problem. All the difficulties to which I have referred are undoubtedly of such a nature that our efforts to bring about an improvement in the appalling position that exists today, can only be successful by co-ordinated measures set in motion by the Government, with the financial backing of the country, and the assistance of the numerous Government Departments concerned.

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The Rehabilitation of the European Pulmonary Tuberculous.

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"Rehabilitation," a term frequently used in connection with war wounded, is defined as "a restoration of former status and privileges." This aim can be applied to tuberculous, whose disease has been arrested. However, something more than mere rehabilitation is required for chronic, static tuberculosis, with a permanently positive sputum—"the Static Permanent Positives." As these patients are infectious, they should not return to their families and former habits. In this paper the arguments against the rehabilitation of the tuberculous will be dealt with first. An outline will then be given of what is considered a sound and practical scheme to cater for the main categories of ex-patients.

There are three main arguments against any form of rehabilitation for pulmonary tuberculous. Firstly, recent work in surgical treatment, mass miniature radiography, preventative vaccination and other research, offer so much promise that it is maintained that long-term rehabilitation is not necessary. It is true that great advances in chest surgery have been made, but such treatment leaves the patient a person minus many ribs, a lung or part of a lung, and as handicapped as one with a missing limb. The search for a drug which will cure tuberculosis is alleged to be showing signs of success. Even if it is discovered within the next few years, the test of its success will be to see if it kills the tubercle bacilli even in the most stubborn chronic cases. This would undoubtedly be a tremendous step forward, particularly from the aspect of public health; however, it would be wrong to expect that any such drug could repair damage such as lung cavities, caused by the past activity of the tubercle