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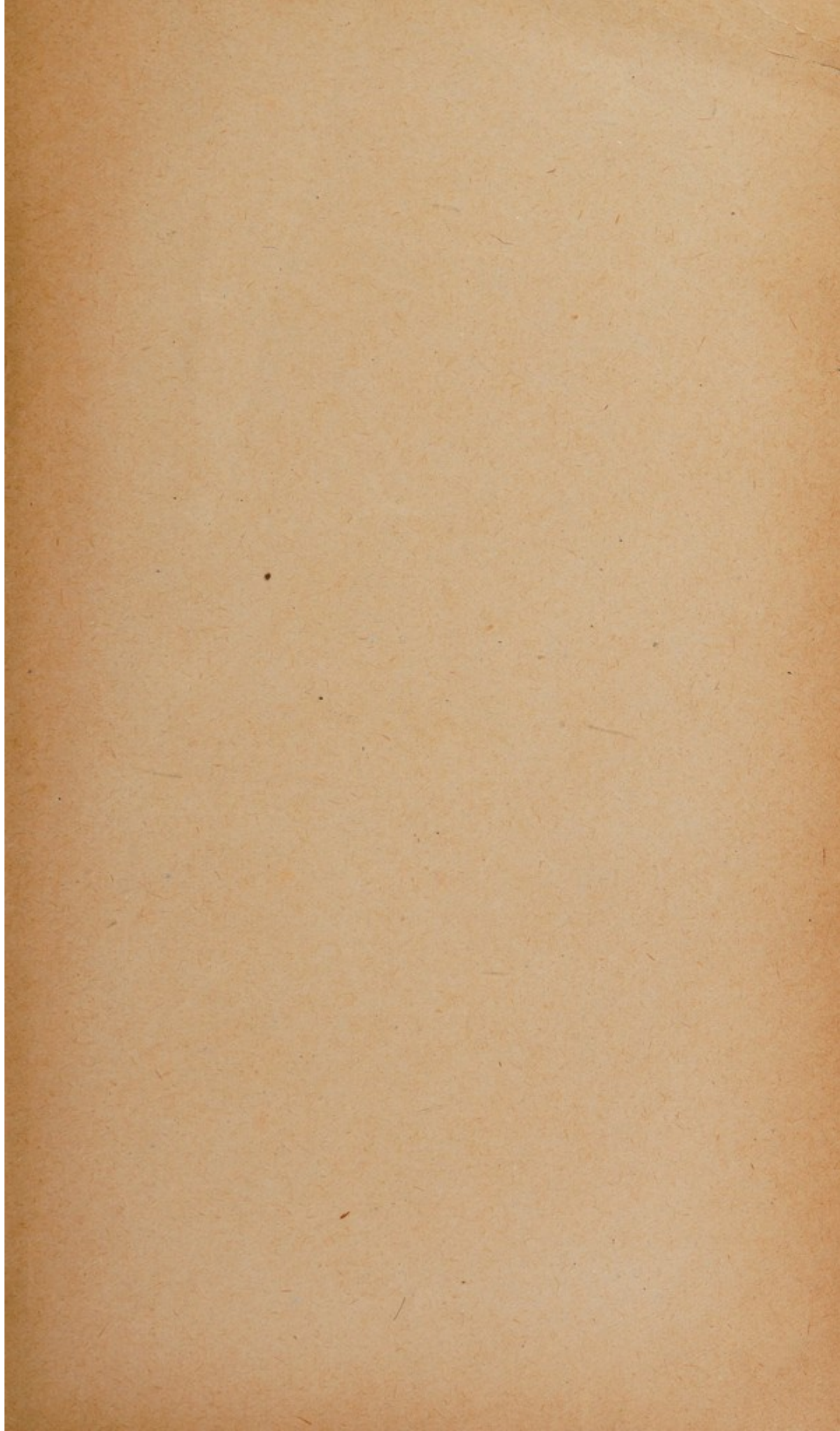
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THE
DISPENSARY TREATMENT
OF
PULMONARY TUBERCULOSIS

HILDA CLARK



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THE DISPENSARY TREATMENT OF
PULMONARY TUBERCULOSIS

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THE
DISPENSARY TREATMENT
OF
PULMONARY
TUBERCULOSIS



BY
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TUBERCULIN DISPENSARY, AND TUBERCULOSIS MEDICAL OFFICER
TO THE COUNTY BOROUGH OF PORTSMOUTH



LONDON
BAILLIÈRE, TINDALL AND COX
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1915

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PREFACE

THIS study of tuberculin treatment has been made in response to many requests for a report on the results obtained at the Street and Portsmouth Dispensaries. It is offered to those who are still able to devote themselves to the campaign against disease in the home, in the hope that an accurate record of observations, although incomplete in certain respects, may prove of value.

In apology for such errors as have possibly slipped in through my inability to correct the final proofs, and the extreme difficulty which these would present to those who were unfamiliar with the material, I must explain that I left England for work in France, and was unable to keep up communications with my publishers, to whom my very sincere thanks are due for the extreme courtesy they have shown me, and for the care with which they have arranged for the correction of proofs and preparation of index.

HILDA CLARK.

MATERNITÉ DÉPARTEMENTALE,
CHÂLONS-SUR-MARNE,
FRANCE,
December 24, 1914.

TABLE

The following table shows the results of the experiments conducted during the year 1900. The first column gives the name of the substance, the second column the amount of substance used, the third column the amount of gas evolved, and the fourth column the amount of heat evolved. The results are given in grams and calories.

Substance	Amount of substance used (g)	Amount of gas evolved (g)	Amount of heat evolved (cal)
Hydrogen	1.00	1.12	28.7
Carbon	1.00	0.85	8.0
Oxygen	1.00	0.71	4.8
Nitrogen	1.00	0.77	8.1
Chlorine	1.00	0.90	17.0
Bromine	1.00	0.94	24.5
Iodine	1.00	0.98	31.0
Sulfur	1.00	0.80	7.0
Phosphorus	1.00	0.75	6.5
Iron	1.00	0.70	6.0
Copper	1.00	0.65	5.5
Zinc	1.00	0.60	5.0
Aluminum	1.00	0.55	4.5
Magnesium	1.00	0.50	4.0
Silver	1.00	0.45	3.5
Gold	1.00	0.40	3.0
Platinum	1.00	0.35	2.5
Palladium	1.00	0.30	2.0
Rhodium	1.00	0.25	1.5
Ruthenium	1.00	0.20	1.0
Rosmannium	1.00	0.15	0.5
Mercury	1.00	0.10	0.0
Lead	1.00	0.05	0.0
Antimony	1.00	0.00	0.0
Bismuth	1.00	0.00	0.0
Strontium	1.00	0.00	0.0
Barium	1.00	0.00	0.0
Calcium	1.00	0.00	0.0
Sodium	1.00	0.00	0.0
Potassium	1.00	0.00	0.0
Lithium	1.00	0.00	0.0
Ammonium	1.00	0.00	0.0
Hydroxyl	1.00	0.00	0.0
Hydrogen peroxide	1.00	0.00	0.0
Hydrochloric acid	1.00	0.00	0.0
Sulfuric acid	1.00	0.00	0.0
Nitric acid	1.00	0.00	0.0
Phosphoric acid	1.00	0.00	0.0
Acetic acid	1.00	0.00	0.0
Formic acid	1.00	0.00	0.0
Oxalic acid	1.00	0.00	0.0
Malic acid	1.00	0.00	0.0
Tartaric acid	1.00	0.00	0.0
Glucic acid	1.00	0.00	0.0
Gallic acid	1.00	0.00	0.0
Pyruvic acid	1.00	0.00	0.0
Acetic anhydride	1.00	0.00	0.0
Formic anhydride	1.00	0.00	0.0
Oxalic anhydride	1.00	0.00	0.0
Malic anhydride	1.00	0.00	0.0
Tartaric anhydride	1.00	0.00	0.0
Glucic anhydride	1.00	0.00	0.0
Gallic anhydride	1.00	0.00	0.0
Pyruvic anhydride	1.00	0.00	0.0
Acetic acid chloride	1.00	0.00	0.0
Formic acid chloride	1.00	0.00	0.0
Oxalic acid chloride	1.00	0.00	0.0
Malic acid chloride	1.00	0.00	0.0
Tartaric acid chloride	1.00	0.00	0.0
Glucic acid chloride	1.00	0.00	0.0
Gallic acid chloride	1.00	0.00	0.0
Pyruvic acid chloride	1.00	0.00	0.0
Acetic acid bromide	1.00	0.00	0.0
Formic acid bromide	1.00	0.00	0.0
Oxalic acid bromide	1.00	0.00	0.0
Malic acid bromide	1.00	0.00	0.0
Tartaric acid bromide	1.00	0.00	0.0
Glucic acid bromide	1.00	0.00	0.0
Gallic acid bromide	1.00	0.00	0.0
Pyruvic acid bromide	1.00	0.00	0.0
Acetic acid iodide	1.00	0.00	0.0
Formic acid iodide	1.00	0.00	0.0
Oxalic acid iodide	1.00	0.00	0.0
Malic acid iodide	1.00	0.00	0.0
Tartaric acid iodide	1.00	0.00	0.0
Glucic acid iodide	1.00	0.00	0.0
Gallic acid iodide	1.00	0.00	0.0
Pyruvic acid iodide	1.00	0.00	0.0

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CHAPTER VII

THE DISPENSARY TREATMENT OF PULMONARY TUBERCULOSIS

INTRODUCTION

THE OBJECTS AND SCOPE OF THE INQUIRY

THE rapid development of public health administration for the control of tuberculosis marks a new era in the growth of preventive medicine. Hitherto concerned chiefly with definite and well-understood causes of acute diseases, it has now undertaken an intricate problem which is so wrapped up in the habits and social relations of the people that scarcely a factor in prevention or in treatment can be isolated, discussed, and established as correct.

Conditions necessary for scientific experiment are not to be obtained in clinical medicine, nor are they available for the solution of such a problem as the control of tuberculosis by any method at present suggested.

It is true that a remedy supposed to restore in a short time to complete health persons in advanced stages of phthisis could be estimated at its true value with but little delay, but in the present stage of our knowledge of tuberculosis and of the action and value of measures so far available for prevention or for treatment, it is necessary to analyze with the utmost care all evidence available as to the scope and limitations of such methods.

While the efficacy of measures directed against tuberculosis can only be tested after the lapse of time, the general demand that schemes for the control of the disease should be completed without delay makes it urgent that all possible guidance should be sought from the observation of tuberculous cases and from the immediate results of the measures adopted.

It is for this reason that I have endeavoured to describe in detail a complete series of cases for whose examination and treatment I have been responsible for the three years from June, 1910, to June, 1913. In view of the admirable text-books and monographs that have recently appeared dealing in a comprehensive way with the antituberculosis campaign in general, with different methods of treatment by tuberculin and with theories as to the action of tuberculin, I have confined myself to a description of the cases and methods which have been under my own observation, followed by a consideration of the way in which conclusions drawn from them might affect the campaign in its general policy and in its detailed administration.

In the study of tuberculosis it is necessary to distinguish between three effects of environment:

First, on the course of the disease.

Secondly, on the response of the disease to treatment.

Thirdly, on the facilities for applying the treatment desired to the disease.

It is on account of the failure to do this that so little decisive evidence has been produced as to the value of various methods of treatment when applied, as in practice they always must be, to selected cases.

The present investigation has been carried out with three main objects:

I. To estimate the value of tuberculin treatment, as shown in two consecutive series of cases.

II. To estimate the position of tuberculin treatment in a scheme designed to deal with the special problem of tuberculosis in the working classes.

III. To estimate the incidence, course, and response to treatment of tuberculosis in the population of Street, a manufacturing village in Somerset, where peculiar opportunity happens to offer for such an investigation.

The cases under consideration are divided as follows:

(a) **Dispensary Patients.**—(1) Living in Street, Walton, Glastonbury, and Wells (Somerset). These cases were treated between the dates of June, 1910, and December, 1911, and were all traced and reported on in January, 1914.

(2) Living in Portsmouth, treated between June, 1911, and June, 1913, the majority being traced and reported on in November, 1913.

(b) **Miscellaneous Cases.**—Treated between 1910 and 1911, and reported on in 1914.

For object I., all cases are considered, but for the second

object, only those under heading (*a*) are dealt with. For the third object attention is confined to those cases who were domiciled in Street, or who came to live there for reasons not connected with the establishment of the dispensary ; and all other available evidence referring to the health of the population as a whole has been considered.

The claim that the investigation here carried out is worth the attention of others rests on certain features of the material under review which have special importance:

First, a consecutive series of cases is presented, all of which were treated on the same general lines, and were selected for treatment on lines that can be described.

Next, these cases are studies not merely for the sake of showing the effect of treatment on the individual, but also to show the relation of the treatment used to a scheme that might claim to be effective in the eradication of the disease.

Special facility was given for the study of this question by the characteristics of the centres at which the cases were treated. In both places the population is unusually homogeneous and stable, and the conditions of housing, employment, and general hygiene are good, so that the effect of many factors that complicate such a study in other places is lessened.

Both series may be accepted as showing not only the conditions that occur before tubercle becomes complicated by extreme poverty or discharge from work, but also the residue of tubercle that remains to be dealt with when certain obvious causes of massive infection and of damage to general health have been eliminated. Yet the conditions must not be considered Utopian in either place, and are similar to those found in the better portions of many working-class areas.

The value of an investigation in such populations as those discussed here is greatly increased by the facility given for observing cases in an individual way and of following up the after-histories.

The third feature is the peculiar nature of the investigation at Street, which was begun ten years ago, and can be followed up with equal or increasing care in the future.

These cases might be passed over at first sight on account of the suspicion that is naturally held of any conclusions based on small numbers. On more careful perusal it will, I think, be admitted that the information obtained by a minute and prolonged study has a special use of its own in attacking the problem in places where the conditions are less favourable for investigation. This value will, of course,

be increased if other similar researches are made with which to compare it.

There are two points to which the attention of anyone who wishes to judge of the value of the material here presented will be directed. These are, the grounds on which the diagnosis is based, and those on which cases have been selected for tuberculin treatment.

There is a third matter of equal importance which must be considered, though it is less often the subject of comment. This is the nature of the selection of cases for examination, on which depends the estimate of the relation of the material studied to the total incidence of tuberculosis in the community.

For this, it must be shown how the series of cases described compared with published records of other cases, and the description must also be made in the light of recent conceptions as to the nature of the disease process. Recent evidence as to the possibility of extreme chronicity in tuberculosis shows the necessity of a more minute investigation into its relationship to the environment.

In order that observations of individual patients may be of value, they should cover the whole life, and not merely the period of obvious active disease, to which the majority of published records refer. Further information of practical importance is obtained if each case observed can be referred to a type of disease, the probable course and suitable treatment of which is known, and if the number of cases of each type likely to be found in a community can be estimated. The probabilities as to the nature of the selection of cases for examination is discussed in the chapters dealing with the centres from which the cases were treated.

The grounds on which a diagnosis was made in each patient may be summarized as follows:

The discovery of the tubercle bacillus in the sputum was considered to be the only certain proof that the lungs were infected. The occurrence of either a general or a needle-track reaction after the subcutaneous injection of tuberculin was held to indicate that infection of some part of the body had occurred at some period. If a focal reaction could be detected, it was held that active mischief was present at the spot where it was observed. Further conclusions as to the extent and nature of the disease and as to the prognosis were made by the usual clinical methods. While tuberculin treatment was usually advised for those who suffered from any symptoms that might be thus relieved without waiting for

further proof that such symptoms were due to active tuberculosis, the diagnosis and advice given to each patient varied according to the estimate formed of the condition present. Such estimates, however, depending as they do on the personal judgment of the doctor, and not on any fixed rule, cannot be made use of statistically except in the roughest and most general manner. Those who are interested only in the effect of tuberculin treatment on active tuberculosis must confine their researches to cases where the diagnosis is established by the discovery of tubercle bacilli. These cases are tabulated separately in the following study. It should be remembered that here, as well as in the more doubtful ones, wide differences are found in the clinical condition, in which few factors can be classified for statistical purposes. The attempt has been made to define three with sufficient exactness for classification, others are noted in the table of cases in the appendix, and further clinical picture is given in Section II., Chapters V. and VI.

For the study of the position of tuberculin treatment in a scheme for the eradication of tuberculosis, special attention must be paid to the cases in whose sputum no bacilli are found, since among these must be the early ones with which preventive medicine is concerned. These are the patients for which a complete cure appears to be possible. The difficulty in diagnosis can be minimized for statistical purposes by taking a sufficient series and observing it over a sufficient period.

Statistics illustrating the prophylactic use of tuberculin for such cases must be studied in the same way as those dealing with the use of vaccination of persons exposed to infection by smallpox, bearing in mind that alongside the prophylactic value the relief of symptoms and improvement in general health is claimed for tuberculin. For this purpose it is sufficient to diagnose that the patient reacts to tuberculin, and that no other cause of the symptoms can be found, every precaution being taken during the course of treatment to insure that the progress of the case is watched, and that indications for supplementary treatment are observed.

Turning to the question of selection for treatment, it must be noted that this affects the conclusions drawn both as to the value of the tuberculin for the individual and as to its general applicability. For both purposes it is necessary to classify the cases examined and those treated, and to compare them separately for each class.

In the series described in the following chapters the selection has not been made on the grounds of whether tuberculin

treatment could or could not under any conditions be of advantage to the particular patient, but has depended on the decision as to whether suitable conditions for its administration could or could not be obtained. A few patients were dying when first seen, and would in no circumstances have been treated, and in a very few others some complications made it useless to attempt to treat the tuberculosis present; but on the whole the exclusion of cases depended on factors quite distinct from an absolute contra-indication to the use of tuberculin.

Ambulatory treatment can, of course, only be applied to those patients who are in a fit condition to attend the dispensary at the necessary intervals. The selection for ambulatory tuberculin treatment depends on the estimate made as to the probable effect of walking on the patient, and on the possibility of obtaining suitable home conditions, as well as on the suitability of the case for tuberculin on clinical grounds.

In the series under consideration, when a case appeared to be unsuitable for ambulatory treatment, domiciliary treatment was given when possible, and every effort was made to obtain admission to an institution where tuberculin could be used, or where the patient's condition might be improved sufficiently to allow of treatment at home. There was, however, very little scope for this in Portsmouth, and the possibility of making such arrangements depended in many instances on other factors besides the clinical condition of the patient. It is useless, therefore, to attempt an exact comparison of the figures showing the selection of the cases for tuberculin treatment in this series with those recorded in other places unless careful comparison is also made of the facilities for treating those who are unable to attend the dispensary.

The selection of cases for ambulatory treatment differs considerably in the practice of different physicians. A study of the following chapters will show that, while the chief energies of the dispensary staff were directed in both centres to securing the attendance of as many cases in the earliest stages of the disease as possible, ambulatory treatment was found to be possible for nearly all those in the intermediate stages, with apparent success in a large proportion. It also appeared to be suitable for many advanced cases where the disease assumed a chronic character, and to achieve at least as much success in these (if those for whom sanatorium treatment was added to dispensary treatment during part of the time be included)

as is obtained in the majority of sanatoriums where tuberculin is not largely used.

The selection resulting in the present series is thus a fairly wide one, and is noteworthy as being the one of greatest importance to practical preventive medicine.

The conclusion I have formed as to the position of tuberculin treatment by the study of the cases here described is supported by those writers who have given a fair trial to similar methods of administration, and may be summarized as follows:

Tuberculin can be used with apparent good effect in nearly every case in which the condition, as judged by ordinary clinical methods, allows a reasonable possibility of improvement.

In a large proportion of cases, where the disease is at an early stage, or limited in extent, one or more courses of tuberculin, without other measures than attention to ordinary hygiene, results in apparent cure.

A course of tuberculin is a justifiable and safe prophylactic for those cases who do not present bacteriological proof, or strong clinical evidence, of active tuberculosis, but in which the presence of latent mischief is suggested by the occurrence of a reaction to tuberculin, especially if this be accompanied by any symptoms that are not promptly removed by attention to hygiene or the removal of other probable causes.

If these conclusions be accepted, it will be admitted that the provision for the skilled administration of tuberculin should be second only to measures of education, housing, sanitation, and general hygiene in a scheme for the eradication of tuberculosis; and that a fair trial should be given to this remedy as the first step in the treatment of individual cases, so that other more expensive and troublesome methods may be reserved, and given without stint, for those who are found to require them.

The description in the following pages of the Portsmouth Tuberculosis work and of the cases treated at the Portsmouth Dispensary is published by kind permission of Dr. A. Mearns Fraser, Medical Officer of Health, to whom I am indebted for the complete clinical charge of the patients and of the dispensary arrangements that was accorded to me.

I have also much pleasure in thanking the following ladies and gentlemen for support and co-operation in dealing with patients, and for permission to use information supplied by them:

Dr. W. G. Savage, County Medical Officer and School Medical Officer for Somerset; Dr. Latimer Short, now Tuberculosis

Medical Officer for Somerset; Dr. Leonard Crossley, late Resident Medical Officer Winsley Sanatorium; Dr. G. W. Eglinton, Medical Officer of Health for the Urban District of Street, Somerset; Mrs. Coode and Dr. Lauder Smith of Wells, who made arrangements for the treatment of patients in that city, and other doctors who co-operated with the dispensary work; Dr. Madeleine Barer, Assistant Medical Officer to the Street Dispensary; Miss Oates, Health Visitor to the Street Dispensary, who has kept in touch with all the Street cases since the dispensary closed; the Hon. Sec. and members of the Street Care Committee; Miss Pye, who organized and largely directed the work of the Portsmouth Dispensary Voluntary Care Committee, and to whose judgment and assistance I have been indebted at every step of the work; the members of the Care Committee, and of the numerous Philanthropic Committees in Portsmouth to whose co-operation the success of the former was due, especially the Honorary Secretary, the Committee, and the Secretary of the Portsmouth Charity Organization Society, who gave invaluable advice and personal work in connection with the patients, and who enabled me to obtain some knowledge of social conditions in the town; Alderman Sir Scott-Foster, Mayor of Portsmouth when the Dispensary was established in 1911 and Chairman of the first Insurance Committee; the Chairman and members of the Health and Tuberculosis Subcommittees of the Town Council and of the Sanatorium Benefit Subcommittee of the Insurance Committee; the many members of the medical profession in Portsmouth who co-operated with the dispensary work; Dr. Victor Blake, School Medical Officer for Portsmouth; Dr. James Fairley, Assistant Medical Officer to the Portsmouth Dispensary; the members of the staff of Health Visitors at the Portsmouth Health Department and Dispensary, and the Secretary to the Dispensary, who have assisted me with reports on cases.

SECTION I

GENERAL DESCRIPTION OF THE SCHEME AND OF
THE METHODS EMPLOYED IN THE EXAMINATION,
DIAGNOSIS AND TREATMENT OF CASES

SECTION 1

TO THE HONORABLE SENATE OF THE UNITED STATES
IN SENATE, FEBRUARY 2, 1878.
REPORT OF THE COMMISSIONERS OF THE GENERAL LAND OFFICE
ON THE LANDS BELONGING TO THE UNITED STATES.

CHAPTER I

THE DEVELOPMENT OF THE SCHEME

THE general scheme of the attack on tuberculosis which is described in the present study was evolved after a consideration of the main features presented by the disease in the particular districts concerned, of the principles already established in antituberculosis work, and of the difficulties which had been experienced in applying them.

In many fatal cases of phthisis it was apparent that advice had been sought from doctors, sometimes even from lung specialists, at a stage when the signs of disease were so slight that a positive diagnosis could not be made, although the result showed that the disease must then have been present. To understand why this curable stage was allowed to slip by without gross carelessness on the doctor's part or insane folly on the patient's, one must consider the alternatives that were usually proposed.

If the case was examined by a specialist, the usual course recommended was to undergo sanatorium treatment for six months, either at home or in a sanatorium. In either event work was to be given up, and considerable expense involved. To this few patients would agree, unless the diagnosis was absolute, and they could be assured that failure to carry it out would mean grave risk. Knowing that cure at this stage may be spontaneous, and that many cases do recover after an ordinary holiday, the doctor could not speak with the conviction that would command obedience, and the general practitioner was especially likely to temporize. The most experienced and skilful physicians have to admit that the estimation of the patient's resisting-power at this stage is extremely difficult, and that a prognosis given is quite likely to be falsified.

The result of this difficulty was, and still is, that sanatorium treatment is chiefly applicable to those with well-marked

disease, and it will always be impossible to treat all suspicious cases in a sanatorium in the hope of including thereby all whose low resisting-power necessitates treatment.

Turning to the cases in which the disease is well marked and the diagnosis established, it must be admitted that sanatorium treatment failed to cure any considerable proportion, while in working-class patients the arrest of the disease that can be attained in the majority was nearly always thrown away unless adequate time was insured for healing to take place. This drawback was greatly lessened by the tuberculosis dispensary system, the spread of which soon proved the enormous value of the co-ordination of effort on the part of all who could influence the patients' lives. This movement gave to sanatorium treatment, both at home and in the sanatorium, as much scope as can ever be possible under working-class conditions.

The dispensaries also took up the question of the prevention of infection, and much good work was done by the education of individual patients who were found to be infective, and by the inculcation of the rules of hygiene in those families which came under their influence.

A much more important factor was at the same time in course of development through the action of local sanitary authorities and others in the promotion of measures of housing, hygiene, and education, through which the habits of whole populations might be influenced.

The serious incidence of phthisis which still remained in localities where the conditions were superior to the average, and where the standard of hygiene was comparatively satisfactory, showed a limit to the improvement in the death-rate from this disease that was likely to be obtained through the measures then used either by local sanitary authorities or by antituberculosis dispensaries.

What was needed to supplement these activities was a method of treatment that could be applied to early and doubtful cases with a certainty of such a high percentage of success that the number of infecting cases might be greatly reduced.

Public health experience has shown the importance in all diseases of reducing the sources of infection to the limits within which isolation is possible. At the moment the number of infecting cases of tuberculosis is so great that even under the best housing conditions that are at present economically possible for the greater part of the population, it is not practicable fully to protect the community. Any method of

curing cases in the stage before they become infective may be called "preventive" in the public health sense.

To meet the difficulty of establishing a certain diagnosis and of estimating prognosis, it is necessary that prophylactic treatment should be free from danger, and that it should be cheap and easy to obtain at home.

If these conditions could be obtained, treatment could be urged without hesitation upon those suspected of early tuberculosis, just as vaccination against smallpox is urged for all who may possibly run the risk of infection by that disease.

The specific treatment by tuberculin introduced by Professor Koch in 1891 was designed to fill this need. It is unnecessary here to recapitulate the story of how this method came to be dropped in England, but it is interesting to note the reasons which may be held to account for the fact that the disasters which occurred at that time are no longer seen.

First, when tuberculin was first introduced, only one preparation was available—namely, OT, a preparation which is now recognized as being too powerful for use at the beginning of treatment in the majority of cases showing active disease.

Secondly, the postulates laid down by Koch for the safe handling of his remedy were persistently ignored by many who adopted it, and it was used for advanced cases and for cases suffering from complications in recklessly increasing doses and at intervals very different from those employed to-day.

Thirdly, Europe was swept by an epidemic of influenza in a very virulent form just after Koch's announcement, and it is quite impossible now to estimate whether the disasters that occurred to cases of early phthisis were due to the intercurrent infection by influenza or to the faulty administration of tuberculin.

The attempt to use tuberculin in minute doses, controlled by observation of the opsonic index, proved disappointing in advanced cases, and was too elaborate and expensive for prophylactic use at dispensaries or by general practitioners.

The use of tuberculin on lines similar to those suggested by Koch was, however, continued in Germany, Austria, Switzerland, Australia, and America, and sanatorium statistics were published which indicated that it was of use.

A few workers reported successful results in cases treated at home and even at work, and it was this claim that was considered by those interested in preventive medicine to be of the very greatest importance. If it could be substantiated, tuberculin might fill the place of a true preventive remedy in this most difficult problem—that is to say, it might be used on a

large scale to cure cases of slight tuberculosis, and so to prevent the onset of the infective illness known as "phthisis."

The main criticisms directed against this suggestion were three:

First, that the treatment was dangerous.

Secondly, that it was useless, any apparent improvement being transient, while the cases that appeared to obtain permanent improvement had never really suffered from active tuberculosis.

Thirdly, that the apparent successful use of tuberculin in a few cases might lead people to ignore other less showy but no less important factors in the campaign.

It is in answer to these objections that the following study has been made, not with the expectation that by itself it can finally settle the question, but in order that it may be added to other evidence bearing particularly on the first two points. The third may be dismissed if the line be taken, as was done both at Street and at Portsmouth, that tuberculin requires the co-operation of healthy conditions of life in all senses of the word in order to obtain its full value, and that its use is an incentive to the provision of all other measures that may further its action, and not a reason for neglecting them.

It appeared, however, that until the scope and limitations of tuberculin under dispensary conditions were better understood, there was some advantage, where funds were limited, in making provision for its use as a first step, so that the nature and extent of the other measures necessary might be ascertained. The order in which different parts of a scheme should be built up must depend on local conditions, which affect the question of urgency and practicability.

It is interesting to note that at Portsmouth, when the success of tuberculin in certain types of case appeared to be established, the extension of provision for it was accompanied by the development of measures designed to increase its scope and to cover the whole field of the campaign. If the local factors are taken into consideration, the general hygienic administration in this town must be held to compare very favourably with those in places where attention has never been distracted by the claims of tuberculin.

So much attack has been made upon the institution of tuberculin dispensaries that it is justifiable to explain why the Street Dispensary, which was the first of its kind, adopted the name used by the Tuberculin Dispensary League rather than that familiar under the Edinburgh system. The Street Dispensary differed, indeed, from those instituted by the Tuberculin

League, because it was not founded to show the value of tuberculin unaided, but to permit of its extensive use in conjunction with such other methods as were found to be necessary. It differed from the Edinburgh system, as I understood the latter, in making treatment the central feature of preventive measures. The name "tuberculin dispensary" was adopted frankly as a means of encouraging people to apply for diagnosis and treatment in the earliest possible stages, since it had been found that to urge sanatorium treatment frightened them away at this stage, and that education in hygiene and prevention of infection, though followed by a reduction in the death-rate, had not reduced the incidence to such a number as could be ignored. The name was at least etymologically correct, and it appeared to be a simple matter to explain to educated people interested in the scheme that the dispensary was the centre only, and not the whole.

CHAPTER II

GENERAL METHODS

Selection.

THE selection of cases for examination at a dispensary, where attendance is voluntary, depends more on chance than on the control of the medical officer in charge, although his attitude may exert a considerable indirect influence. Thus in some dispensaries more applicants come for the relief of symptoms, while in others more time is devoted to the search for "contacts."

The relation of the cases described in this study to the population, and to the total incidence of tuberculosis in their respective areas, is considered separately in the chapters dealing with each area.

Diagnosis.

The diagnosis of the pathological condition present rests upon a threefold basis—namely, the examination of the sputum, the examination of the patient, and the observation of the reaction to tuberculin.

The routine through which the necessary data were obtained is described in the next chapter.

It has already been pointed out that for statistical purposes a sharp line is drawn throughout based on the bacteriological diagnosis.

The examination of the patients has been confined to observation, percussion, auscultation of the lungs, and observation by means of the laryngoscope of the larynx, these being made for every patient as a routine.

The other points investigated as a routine were the temperature, pulse, weight, urine, and the general condition of other organs. No X-ray examination was possible, and time did not permit of Wassermann reaction or of other hæmological or bacteriological studies.

As regards the cases treated at Street, little time was spent on sputum examinations, and there is every reason to suppose that more might have shown tubercle bacilli on careful search.

At Portsmouth, the cases negative on first examination were generally examined a second time, but during the first year's work it was rarely possible to do more than this. It is also difficult in dispensary work to secure as good specimens for examination as are available in sanatorium conditions. The ordinary Ziehl-Neelsen method was used as a routine, and only a small proportion were examined by the antiformin method.

The threefold character of the reaction to tuberculin is fully described in many textbooks. It is referred to in the following pages in the terms of—

1. Needle-track reaction.
2. General reaction.
3. Focal reaction.

The needle-track reaction is positive if the slightest degree of redness round the track of the needle with which the dose was injected be accompanied by definite œdema or swelling. The mechanical effect of the needle and dilute phenol may cause redness and bruising, but this does not spread beyond $\frac{1}{4}$ inch, and is easily distinguished from the slightly tense pink area, circular or oval in outline if small, which characterizes the specific action. If the redness and swelling be widespread, it can be nothing else than a specific reaction. At times this swelling is very extensive and painful, affecting the whole arm, which may become quite tense and swollen. This may cause the patient much distress, and prevent sleep. It is readily relieved by a compress of hamamelis extract, and the swelling subsides in a day or two.

In only one case have I seen any harm follow. In this case a circular patch about the size of a five-shilling piece round the site of injection sloughed off, with a clean-cut edge and no sign whatever of sepsis. It healed after many weeks. No more tuberculin was given. The case was one showing suspicious signs of early phthisis.

The local reaction is followed sometimes by considerable subcutaneous thickening, forming hard lumps, which may cause the patient some anxiety, and which often interfere with attempts to give doses in the same region. These lumps are absorbed in time, readily when they are superficial, more slowly when they are intramuscular. It has been my own practice to inject the tuberculin subcutaneously, partly in order to watch the local reaction, partly because, although

subcutaneous swelling is more painful to the touch, it is more readily soothed than intramuscular swelling, and interferes less with work. In several cases where the dose was given by others deep into the muscles, small cold abscesses have formed in the fibrous lumps which resulted, and though these are not serious, and heal in time without sepsis, it is well to avoid them if possible.

The general reaction was relied on to a considerable extent, as in our dispensary work it is readily detected, and gives some indication of the degree to which the patient is sensitive to tuberculin—a matter of value in commencing treatment.

Every effort was made to ascertain if a focal reaction occurred, but this valuable method of diagnosis is more easily applied when the patient is unable to work, and can be seen daily.

By the observation of symptoms occurring during the reaction some clue was obtained in many cases, and when symptoms suggestive of tubercle occurred regularly during reactions, the presumption of active disease was made.

The interpretation of the results of the tuberculin test is a matter of individual clinical judgment which cannot be defined in exact terms. Throughout the greater part of the time during which the present series was under observation, it was the practice to advise those who suffered from symptoms suspicious of tuberculosis, and who reacted to tuberculin, to attend for treatment. The advice given to the patient and the information as to the probable diagnosis and probability of ultimate cure was based on a careful consideration of all factors in the case. To describe this would be to repeat the whole clinical study given in any textbook, and is not the purpose of the present study.

For statistical purposes, the personal opinion of the clinical condition present is admitted to be valueless, and reliance has been placed in the following pages on certain facts which can be measured with some degree of certainty, although still open to some variation in the personal equation, and which are available with some reservation for comparison with other reports.

While the presence of tubercle bacilli must be taken as the only certain proof of the presence of tuberculosis in an active form, it is recognized that the degree of activity in these cases varies enormously. In the following classifications it must be understood that no claim is made to guarantee the presence of potentially active disease in any case except where tubercle bacilli have been found, and that even in the latter it is pos-

sible that the full extent of physical signs or symptoms described may not represent the whole activities of the bacilli.

Description and Classification of Cases examined.

Different classifications have been adopted for children and for adults. In the case of adults, special attention had to be paid to methods already used by other workers, while in the case of children so little reporting of cases has been done that it seemed advisable to make a very detailed subdivision of types examined, and to describe them as fully as possible, so that the cases might be readily pictured by others and a more general scheme of classification evolved.

Adults (Pulmonary Cases).—Five factors have been considered in the adults:

1. The presence or absence of tubercle bacilli in the sputum.
2. The actual extent of infiltration of lung, as judged by ordinary methods of percussion and auscultation.
3. The length of time symptoms suggestive of tuberculosis had been noticed by the patient.
4. The presence or absence of fever at the time of first observation.
5. The presence or absence of other foci of tubercle in the body.

These factors have been grouped according to the following key:

KEY TO CLASSIFICATION OF TYPES.

1.	Slight, recent, afebrile	..	..	} Grouped together in Appendix B.
2.	" " febrile	..	..
3.	" established, afebrile	..	..	} Grouped together in Appendix B.
4.	" " febrile	..	..
5.	" chronic, afebrile	..	..	} Grouped together in Appendix B.
6.	" " febrile	..	..
7.	Intermediate, recent, afebrile	..	..	} Grouped together in Appendix B.
8.	" " febrile	..	..
9.	" established, afebrile	..	..	} Grouped together in Appendix B.
10.	" " febrile	..	..
11.	" chronic, afebrile	..	..	} Grouped together in Appendix B.
12.	" " febrile	..	..
13.	Advanced, recent, afebrile	..	..	} Grouped together in Appendix B.
14.	" " febrile	..	..
15.	" established, afebrile	..	..	} Grouped together in Appendix B.
16.	" " febrile	..	..
17.	" chronic, afebrile	..	..	} Grouped together in Appendix B.
18.	" " febrile	..	..

Description of the Types of Cases treated, including those tested only—Explanation of Terms.—Slight: Disease extending over an area the equivalent of not more than half a lobe.

Intermediate: Disease extending over an area the equivalent of more than half a lobe, but less than one lobe.

Advanced: Disease extending over an area the equivalent of more than one lobe.

Recent: Symptoms for less than three months.

Established: Symptoms for three to twelve months.

Chronic: Symptoms for more than twelve months.

The prefix TB+ indicates that tubercle bacilli were found in the sputum, TB- indicating that none were found.

Example: Type TB+ 15 includes those cases with tubercle bacilli in the sputum in whom the disease is diagnosed as extending over lung tissue equivalent altogether to more than one whole lobe, whose symptoms have been noticed for more than three months, but not more than twelve months, the temperature not being above normal for a few days before the first dose of tuberculin.

Children—1. "*Contact*."—Cases brought to the dispensary primarily on account of having been in contact with a known case of phthisis, and not on account of symptoms:

- (1) Cases with no symptoms or physical signs of disease.
- (2) Cases with slight signs, but no symptoms of disease.
- (3) Cases with slight symptoms, but no signs of disease.
- (4) Cases with both slight signs and slight symptoms of disease.

2. "*Delicate*."—Children who had been delicate since birth, the onset of symptoms suggestive of tubercle being quite uncertain:

- (1) Cases with no history of previous signs of tubercle, but with slight signs now.
- (2) Cases with no history of previous signs of tubercle, but with marked signs now.
- (3) Cases with a history of previous signs of tubercle and slight signs now.
- (4) Cases with a history of previous signs of tubercle and marked signs now.

3. "*Bronchitic*."—Cases in which the main symptoms and physical signs were those of chronic or recurring bronchitis, which had usually been present since babyhood:

- (1) Cases with no impairment of resonance.
- (2) Cases with impairment of resonance.
- (3) Cases with severe symptoms.

4. "*Recent*."—Cases with a history of recent onset:

- (1) Acute cases; well marked.
- (2) Cases with a gradual onset of definite symptoms and physical signs.
- (3) Cases with a gradual onset of indefinite symptoms.

5. "*Established.*"—Cases with a history of symptoms extending over a definite period of over six months:

(1) Cases who had had a definite illness, leaving slight or indefinite signs of chronic disease.

(2) Cases who had had a definite illness, leaving definite signs of chronic disease.

(3) Cases of gradual onset, with slight signs of disease.

(4) Cases of gradual onset, with definite signs of disease.

6. "*Advanced.*"—Cases showing advanced signs of disease:

(1) Cases in which the child was always delicate.

(2) Cases in which there was a definite onset.

7. *Adult Type of Disease.*—Cases similar to the adult type of pulmonary tuberculosis. No bacilli found:

(1) Recent, afebrile.

(2) Established, afebrile.

(3) Recent, febrile.

(4) Established, febrile.

8. TB+ .—Cases in whose sputum tubercle bacilli were found:

(1) Cases in which there were slight signs of disease.

(2) Cases in which there was a definite onset of illness.

(3) Cases with signs of advanced disease.

9. *Surgical.*—Cases of surgical tubercle:

(1) Cases in which the glands were affected.

(2) Cases in which the abdomen was affected.

(3) Cases in which the bones or skin were affected.

(4) Cases in which the joints were affected.

(5) Cases in which the spine was affected.

10. *Plural Foci.*—Cases with two foci of tuberculosis:

(1) Cases in which the disease was of an early or doubtful nature in both foci.

(2) Cases in which one focus was definite and serious, the other indefinite.

(3) Cases in which both foci were definite and serious.

Treatment.

It is realized by all who are familiar with the nature of the process of tubercular disease, and who admit that no certain rapid cure of this is at present known or even claimed to exist, that the treatment of the tuberculous person is an individual matter. This does not, however, prevent the adoption of general lines of routine, such as are necessary to a scheme dealing with large numbers of people, and such as are required in order to give a true indication of the scope and limitations of definite methods of treatment.

In the series of cases under review, the first consideration has been to cure or improve each individual, and where that seemed impossible, still to secure his confidence, so that advice might be followed as to the protection of those who were exposed to the infection.

Tuberculin treatment by intensive doses was adopted as the routine method of stimulating the resisting-power of those in whom evidence was obtained of the existence of a latent tubercular focus, including many showing suspicious signs of activity, and sanatorium treatment was only added when this proved insufficient or in exceptional cases of home difficulties.

In considering cases showing proof or signs of serious activity of the mischief, regard was had to the prognosis if sanatorium treatment could be given, and to the possibility of obtaining this.

The statistics of German sanatoria showed that the use of tuberculin increased the percentage of cases in which the disease was arrested, but there was not a sufficient series of cases fully reported to show the extent to which tuberculin could act alone without the assistance of measures improving the general health of the patient. It seemed so obvious that the latter must be an advantage, and so unlikely that all patients would have the same vitality and power of response to specific stimulation, since these clearly vary at different times even in the same individual, that any deliberate experiment in the exclusive use of tuberculin for advanced cases without recourse to other measures seemed unjustifiable.

It was realized also that in cases where much lung tissue has been destroyed, whatever method of treatment is used, time must be allowed for fibrosis to occur, for the organs to accustom themselves to altered conditions, and for a healthy machine, able to adapt itself to the hardships and changes of working life, to be built up. During this time, obviously, extra care is necessary, even when complete arrest of the disease is obtained. In cases of partial arrest, less risk is incurred if this be accompanied by a high degree of immunity to the toxins of the tubercle bacillus, such as is claimed by the advocates of tuberculin treatment, than in those cases where the protective forces succeed in walling off the bacilli, but do not induce any marked degree of immunity in the general tissues. Here, of course, supporting treatment is still more certain to be needed.

Sanatorium treatment combined with tuberculin was therefore considered the ideal for these cases, to be followed by extra care as regards nourishment and work. This ideal could

not often be obtained, and consequently a considerable series of cases showing tubercle bacilli in the sputum has been treated with tuberculin alone.

The routine adopted has been to use tuberculin as soon as possible after the diagnosis has been made and the general condition of the patient sufficiently observed to insure against the coincidence of a complication or acute phase of the disease. Where fever was present, rest in bed was ordered, and if this did not reduce the temperature, an attempt was made, either in the patient's home or (in Portsmouth) at the observation hospital, to secure rest as complete as it is possible to afford the lungs. When the temperature settled, exercise was allowed at very slowly increasing rates, and if the patient was able to attend the dispensary without rise of temperature, or could be visited at home, or was in the hospital, tuberculin was commenced.

A few febrile and subfebrile cases were treated, but these need individual consideration.

After observation of the patients under tuberculin, it was decided whether sanatorium treatment was necessary or not. Some improved so rapidly that it was obviously unnecessary. Others who improved slowly were sent to a sanatorium as a safeguard, continuing the tuberculin while there; and this number would have been greatly increased had there been more sanatorium accommodation available for Portsmouth patients, where co-operation in this way with the home medical treatment could be obtained. Failing this, in some cases the need for sanatorium treatment appeared so urgent that admission to one was secured, if possible, even at the cost of a break in the tuberculin, while in yet other cases an interval from tuberculin seemed quite advisable.

The question of whether sanatorium treatment should be given or not was often settled by the patient. Some who appeared to be progressing favourably under tuberculin at home obtained letters for a sanatorium, and preferred to go, while others who were advised to go refused or could not obtain admission.

The chief indication followed in advising sanatorium treatment was the response of the general condition, especially the weight, *if this had been lost before*, to the tuberculin treatment. The physical signs were also taken into consideration, but this will be further dealt with in discussing the conclusions drawn from the cases.

All cases attending the dispensaries for tuberculin were required to apply to their own doctors for treatment

of symptoms, when necessary, and for non-tubercular complications.

As regards other measures used at the dispensary, teaching in hygiene and in the prevention of infection was given to all cases, regular visiting being carried out by fully trained nurses in the status of health visitor. Shelters were very little used, but most cases were able to make fairly satisfactory arrangements as to space for sleeping. Advice concerning the teeth was given throughout, but especially towards the end of the period under consideration. All cases were given a card of instructions (see Appendix A). When it was found that a patient was unable to carry out the directions given, especially as to adequate diet, extra milk, extraction of teeth, and provision of new ones, rest, either partial or complete, and provision of separate sleeping accommodation, with adequate clothing for enduring the window open, the case was referred to the Voluntary Care Committee for advice as to financial arrangements and family plans, and for help, if this should prove necessary.

This part of the Care Committee work could hardly be included as medical treatment, and though in a few cases it might have been sufficient alone to save the victim of a "latent focus" from succumbing to hard conditions, it was chiefly required for patients whose financial resources had already been reduced by advanced disease, and for whom little could be expected unless they could be put in a physical condition that would respond to more active treatment. These were mostly cases too ill to be accepted by sanatorium authorities.

The Care Committee was, however, closely associated with the provision of definite treatment, since it was through them that nearly all the letters were obtained for admission to sanatoriums before the Insurance Act came into force; and it was often entirely through their efforts and care of the family that cases could be persuaded to go away, and were saved from relapse on return. They also made extensive provision for the boarding-out of children in the country.

CHAPTER III

THE ADMINISTRATION OF TUBERCULIN

Routine and Technique for Diagnosis and Treatment.

THE routine arrangements to allow of the use of tuberculin in the diagnosis and treatment of a large number of patients were made to suit two main requirements:

First, that patients could attend at suitable intervals. This was found to be at least twice a week in the early stages, three times a fortnight in the middle of the course, and once a week at the end, while as far as possible it was arranged that any dose could be deferred one or more days without necessitating a still longer interval. The hours were such as to suit the patients and to avoid any unnecessary waste of time.

Second, that the medical officer could give full attention and care to every case, and have all particulars under observation at every visit. Economy of effort was secured by arranging for the examination of cases at a different time from the hours for treatment whenever possible.

Diagnosis.

Every applicant was interviewed at once by one of the medical staff, and a time arranged for complete and careful notes of the history and physical examination, according to the convenience and the urgency of the case. Arrangements were then made for obtaining a record of the temperature at four-hourly intervals during the day. For this the temperature is taken first at the dispensary, the method employed being by the mouth, where the patient is required to keep the thermometer for ten minutes; and careful study has satisfied me that if a thermometer is kept in the mouth for this period, with the lips closed, a temperature within 0.2° F. of that registered in any longer period will be obtained. For dis-

pensary work the rectal temperature is not convenient, and unless the doctor is conversant with every movement of the patient, the rectal temperature is misleading for tuberculin administration, as it is too sensitive to the effects of exercise. It might, however, be an assistance to secure a record of the rectal temperature before rising in the morning, as the mouth temperature at this hour is much affected by the patient's habit of sleeping, and many do not wake in time to keep the thermometer in the mouth long enough. A shorter period is, of course, sufficient in the rectum.

The nurse explains to the patient how to read and shake down the thermometer, and what care should be taken of it. A card ruled for four observations in the day—at 8 a.m., 12 noon, 4 p.m., and 8 p.m.—is given, and the patient told that the times to choose are "before rising, before dinner, before tea, and on retiring to bed." The nurse visits the home shortly after to see that the patient understands and is taking the temperature correctly. The same routine hours were observed during the tuberculin test and treatment, the card being brought to the dispensary at every visit.

Sputum and urine specimens were secured for examination, and such immediate advice as to work, hygiene, and prevention of infection were given as the suspicions of the nature of the case would warrant. Rest was only advised where indicated clinically, or when the temperature was raised. It has not been ordered for the sake of a tuberculin test either before or after the dose, though a time for a test dose was always chosen, if possible, when the patient could guard against unusual exertion.

After careful examination of the physical condition, symptoms, temperature, and sputum, the patient was told to what extent a diagnosis could be arrived at, and advised whether a tuberculin test would be necessary or useful. When a test dose of tuberculin was considered advisable, a time was chosen for it when the patient could attend for examination during the time when a reaction might be expected to occur, in order that a focal reaction, if present, might be detected. While it would be an advantage to see a patient at least once in every twelve hours for three days after a dose, it has been found that, if this cannot be done, and only a single examination is practicable, the best time to arrange for this is between thirty-six and forty-eight hours after the dose. If no sign whatever of a reaction shows itself by then, a second dose can safely be given without fear of cumulative effect. If any suspicion of a slight reaction occurs, requiring a second

dose to settle the matter, this is not given till all traces of the original dose have subsided. The technique adopted in testing was as follows: "Old tuberculin," either in the form introduced by Koch or as the albumose-free preparation known as TAF, was used in nearly all cases, PTO being employed for testing purposes in a very few. The doses used are shown in many of the cases described, which illustrate the general practice followed. The first dose varied from 0.0001 c.c. to 0.001 c.c. In no case was a larger initial dose given than 0.001 c.c. If no reaction could be detected by a time at least forty hours later, 0.005 c.c. was given next, followed (if there were still no reaction) by 0.01 c.c. The last dose was injected a second time, and in some cases in which TAF had been used and no reaction occurred, as much as 0.05 c.c. was then given before the result was declared negative. In two cases as much as 0.1 c.c. TAF was given without reaction. Where a slight reaction appeared to any dose, and a further one was desired, less increase was used in the next dose, the time of which was postponed till the effect of the first had entirely passed off. The test doses were injected subcutaneously in the upper arm after a preparatory cleansing with methylated spirit.

This routine has been liable to some modification to suit the exigencies of dispensary work. Often it was impossible to secure good specimens of sputum, and to find time for thorough examination of them before the test dose was given.

In some cases, where the diagnosis appeared to be fairly certain on the general examination of the patient, treatment was begun with the mildest preparation (PTO), and no attempt was made to force a general reaction unless the complete absence of needle-track reaction cast a doubt upon the previous decision as to the diagnosis.

This procedure has the drawback in dispensary work of losing the opportunity for detecting a focal reaction, since one cannot easily arrange for a patient to attend regularly the second day after each dose as well as on the days for injection of doses, and it is rarely possible to foretell which dose will produce a reaction, when the sequence is intended for treatment, and is not designed for the other purpose.

A fortnight's observation, including testing, if necessary, is usually sufficient to complete the diagnosis, and as soon as possible the patient was advised what course to pursue.

Throughout the period of regular attendance at the dispensary, at every visit a definite appointment was given for the next. By the allotment of four patients to each quarter-hour during the times devoted to treatment, it was found that

no patient need be kept waiting, and that time could be spared, when necessary, for special examinations. When possible, however, cases requiring re-examination were asked to come at a special time.

The relief to the doctor of such a routine as this, and the facility which it gives for full personal observation of each case, is only matched by the appreciation shown by the patients of the individual care and attention which they receive.

Punctual attendance by the patients was secured by keeping late-comers till an interval occurred, so that those who were punctual were always seen without being kept waiting. Where an unexpected delay occurred, patients who were in a special hurry were allowed to come first.

With regard to the most convenient equipment for dispensary conditions, the following is simple and reliable for accurate and rapid work, and is now in general use over the country, with but slight modifications:

1. The tuberculin preparations and necessary dilutions, made up so that the dose of any patient likely to attend can be drawn up direct without any further dilution.

Preparations used for Cases described in this Series :

Old tuberculin (bouillon filtrate):

Bovine unconcentrated (PTO).

Bovine concentrated (PT).

Human concentrated (OT).

Human concentrated, albumose free (TAF).

Emulsion:

Bovine (PBE).

Human (KE).

Dilutions used.—1 in 2, 1 in 10, 1 in 20, 1 in 100, 1 in 200, etc.

Different coloured inks are used for the different preparations, corresponding to different coloured inks used in writing the doses on the charts. The preparations and dilutions are kept in the rubber-stoppered bottles in which the former are sent out. Each time a cork is removed it is sterilized in a flame before replacing. Dilutions higher than 1 in 20 are made up fresh at least once a week.

2. A sterilized glass syringe with accurately fitting metal piston, the flat top of which can be placed exactly at the graduations on the barrel, fitted with a platino-iridium needle, is placed for each pair of dilutions of each preparation—*e.g.*, one for the pure tuberculin and the 1 in 2 dilution, one for the 1 in 10 and the 1 in 20 dilutions, and so on. This saves the necessity for rinsing the syringe out between the doses, and

avoids the risk of a dose from a weak dilution being contaminated by the remains of a stronger one.

3. A spirit flame in which to sterilize the needle before each dose, and also the rubber corks of the bottles of tuberculin and dilution before these are replaced.

4. Methylated spirit and swabs of wool to cleanse the part selected for injection.

5. Strapping or plaster, a small portion of which may advantageously be placed over the site of puncture of the needle to prevent the dose oozing out.

6. An appointment diary, in which the next time of attendance for each patient is noted.

7. Case-sheets and charts for each patient kept in a folder.

8. Temperature cards kept by the patients, on which they record the temperature three or four times a day, as ordered, in plain figures, to be copied on the charts at each visit.

9. Personal weighing-machine.

10. Cabinets in which the folders containing each patient's case-papers and charts are filed vertically, those actually attending being placed in vertical order in a roll-top box on wheels that can be moved to any convenient position. Those reporting regularly at longer intervals are placed in the most accessible drawers of a cabinet, while those who are not expected to return are put where they may still be obtained for reference.

At Street, where the work was scattered and not centred at a dispensary building, all these items of equipment were arranged in portable form, and the case-papers and charts were in loose-leaf notebooks. These could be carried quite conveniently from place to place, and opened out without difficulty on any cottage table.

Technique of Dosage.

The dilutions should be prepared in sufficient bulk to insure the necessary accuracy. Using a record syringe, which holds 1 c.c., and is graduated in fiftieths, it is necessary to make up 10 c.c. of each dilution in order to obtain an accuracy within 1 per cent. Even with this degree, it must be noted that the doses entered in the following reports of cases are not assumed to be accurate to the last decimal point given. For instance, the graduation of 0.0001, 0.00015, 0.00022 indicates a geometrical increase, and not an absolute measurement of the exact dose given. To obtain the latter is an unnecessary refinement in the present technique of hypodermic injection,

in the course of which a drop is easily lost by bleeding or exudation, and in the present knowledge of the mechanism of absorption from the subcutaneous tissues.

If, however, the dilutions are made 1 c.c. at a time, taking 0.1 c.c. of tuberculin and filling up the syringe to 1.0 c.c., the error is 10 per cent., and in some cases this may be a serious matter.

For practical purposes, where small numbers are being dealt with, the 1 in 10 dilution should be made in bulk, because it will keep for some time, and the 1 in 100 should only be made in small quantities from this when required for cases who are not sensitive, and in whom the graduation need not be very exact. For difficult cases the dilutions should always be made in bulk, and the excess thrown away.

Methods of Dosage.

Two objects have been kept in view in the management of the dosage of tuberculin employed for these cases. The first is to secure healing of the focus of disease, the second to raise and maintain the immunity to tuberculin at a point at which it is likely to assist the body in guarding against relapse.

It is in order to secure the first that reactions have been allowed to occur, and to secure the second that treatment has been pushed whenever possible till large doses were reached. The discussion of these points is deferred to a later chapter.

The increase in dose is planned to secure that slight reaction which appears to produce a sense of well-being, together with signs of healing at the focus. For this purpose a routine is devised which is likely to suit the majority, and which can be altered for each individual wherever necessary. To do this, the response to each dose is carefully considered and utilized in the decision as to the time and amount for the next, attention being also paid to the condition of the patient at the time when the dose is given in order that the responsive power may not be taxed.

The general routine adopted for this series was to commence treatment with PTO, a preparation which has been found to be mild in action and to be well tolerated by the majority of patients. The initial dose is usually 0.001 c.c. of the liquid sent out. When no reaction occurs, the routine increase is 50 per cent., given at three or four day intervals, allowing of regular attendance twice a week.

The following series of doses illustrates the method used in a case where no reaction occurs. The case showed well-marked

signs in three lobes and in the larynx, tubercle bacilli in the sputum, and fever on first application for treatment. The history was recent, and the fever subsided with rest before the first dose was given. It remained normal throughout the course.

No.	Interval.	Preparation.	Dose.	No.	Interval.	Preparation.	Dose.
	Days.		c.c.		Days.		c.c.
		PTO	·001	19	4	PT	·045
1	3	"	·002	20	5	"	·07
2	4	"	·003	21	5	"	·1
3	3	"	·0044	22	3	"	·15
4	4	"	·0066	23	4	"	·22
5	4	"	·01	24	3	"	·33
6	3	"	·015	25	8	"	·48
7	3	"	·02	26	7	"	·7
8	4	"	·044	27	7	"	1·0
9	4	"	·066	28	7	TAF	·1
10	3	"	·1	29	7	"	·16
11	4	"*	·15	30	7	"	·22
12	4	"	·22	31	7	"	·3
13	3	"	·33	32	7	"	·44
14	3	"	·48	33	7	"	·6
15	5	"	·7	34	14*	"	·33
16	3	PT	·015	35	7	OT	·1
17	3	"	·022	36	7	"	·2
18	7	"	·03				

* Accidental interval.

Further treatment was not considered necessary, as the patient was in perfect health and free from any sign of active mischief. The signs on discharge in July, 1913, were those of a healed lesion. There was no cough or sputum, and the patient was at full work. She remained perfectly well in April, 1914.

When a reaction occurs, the next dose is usually postponed from one to four days, according to its severity, and the increase altered. As a rule the same dose that causes the reaction is repeated after about five days if the reaction was well marked. Slight reactions are followed by less increase, generally about 30 per cent., or even less if the reactions show an ascending scale, each more severe than the preceding one. Severe repeated reactions were generally followed by a diminution of the dose to one-tenth. The duration of the reaction and the evidence as to its specific nature, or the possibility of its being partly nervous or due to coincidence, is carefully considered, and one of short duration does not influence the next dose so much as one that lasts longer. One due to nervous causes or exercise or excitement is little regarded, while another

infection or signs of fresh activity in the focus of tubercle is regarded as a danger-signal.

Some difference of practice has occurred on the part of different doctors administering the doses to these cases, especially with regard to the occurrence of hæmoptysis. In many cases of slight hæmoptysis, where there was no rise of temperature or general disturbance, the increase of dose has been continued by all at the same rate and intervals, and I have taken the responsibility, when personally treating cases, of pushing the treatment in the same way in rather more active cases, provided that suitable conditions of supervision could be secured.

Treatment with PTO is continued in this way till about 0.5 c.c. is reached, somewhat longer intervals between the larger doses being sometimes allowed for the sake of convenience, since it is found that with larger doses intervals of four to five days do not cause hypersensitiveness. Most patients, however, are able to take the largest doses at three or four day intervals, if this is more convenient. The maximum dose is quite arbitrary, and is adopted chiefly for the sake of uniformity, as it was thought that this would be an advantage for purposes of comparison.

PT is then used, with an initial dose of about one-fiftieth of the preceding dose of PTO, and increased in exactly the same manner to a similar maximum, when a change is made to human tuberculin—OT by preference if the patient is tolerating the PT well. Some experiment was made with the albumose-free preparation, TAF, instead of OT, but as a rule this was only used when the patient was not tolerating the albumose-containing PT, and, when convenient, it was followed by OT. TAF was used in many cases instead of PT, where this was found unsuitable, but this point, together with the use of emulsions, is discussed in a later chapter.

The routine is to continue treatment till 1 c.c. of OT is reached, and then to discharge the patient if the disease appears to be arrested.

CHAPTER IV

ESTIMATION OF RESULTS

ENOUGH has been said to show how wide a view is taken in the estimation of results, and to suggest that the very width of view brings its own difficulties, since the larger the field covered the more scope there is for the action of other factors which may vitiate conclusions drawn concerning the influence of any selected features in the problem.

Thus, while the recovery of a certain percentage of a given series of cases may be due to Nature and not to the treatment, if the series was selected in such a way that the cases were of the type of which a similar percentage recovers when untreated, so the fall in death-rate in a town where certain measures have been taken may be due to other causes, and may be found to have occurred in other places where the particular measures credited with it were not employed.

Two lines of investigation are therefore pursued in estimating the results of the treatment used for the cases under consideration.

First, to determine the effect of treatment on the individuals for whom it is considered suitable.

Second, to determine the scope of the treatment in dealing with all the cases of tuberculosis in a locality, and its probable influence on the death-rate and general health and working capacity.

For this purpose the procedure is as follows:

Information is obtained as to the health of the locality and the incidence of tubercle so far as this is known.

The relation of the cases examined to the community, and particularly to persons affected by tubercle, is dealt with in order that the information obtained as to the cases examined may be considered in this light.

A summary is then given of the cases examined and not treated, with particular reference to the important consideration of whether any practicable scheme for treatment is

likely to lessen the number, now occurring, of those who are too ill to benefit from it. So long as these continue, they must be considered as failures of the scheme. Either the treatment which they received at an earlier stage has failed, or else the treatment that was offered to early cases in the locality could not be applied to the cases that needed it.

In considering the applicability of tuberculin to working-class conditions, it is necessary to take the number of cases advised to undergo treatment, and to consider what percentage were able and willing to do so, the reasons why any were unable, and whether those who were unable could be treated in any other way. These must be divided according to whether treatment was considered urgently necessary, or whether it was only advised as a safeguard.

The place that tuberculin takes in a general scheme for the control of tuberculosis is shown by a statistical analysis of all cases dealt with in regard to the method of treatment required.

This must be considered with reference to the results obtained, and also, in a broader view, in its relation to other evidence that we possess as to the possible effect of other measures or tendencies which may influence the incidence and results of tuberculosis.

Naturally if we could rely on simple measures of housing reform and hygiene to eradicate tuberculosis, it would not be worth while to make extensive provision even for the comparatively simple organization needed for tuberculin treatment, much less for elaborate and expensive sanatoriums.

Turning to the effect of tuberculin in the individual, the evidence may be examined statistically—first, to show if it suggests that harm may have been done; and, second, to show if it is possible that good has been done.

The limits of statistics in dealing with the individual must be remembered, and the evidence considered also in the light of clinical and laboratory observation.

For instance, suppose that of two series of ten cases apparently similar, treated by Methods A and B respectively, of the A cases eight die and two recover, and of the B cases two die and eight recover, this is not proof that the two cases who recovered under A treatment would have also recovered under B. They might have been the two who would have died under B.

In order to estimate statistically whether tuberculin can do harm we must consider all cases to whom tuberculin has been administered, and compare the percentage who become worse

with the percentage who might be expected to do so without treatment.

In order to estimate whether it can do good we must consider only those cases who have given it a fair chance, and it is difficult to give a definition of a fair chance.

One cannot define a full course of tuberculin in satisfactory terms, and if the arbitrary limit of a certain length of time or a certain dose of tuberculin be taken, it must be remembered that the cases included in such a definition represent a peculiar basis of selection, and that it is difficult to find any set of cases treated in a different way with whom they may fairly be compared.

In practice the reasons for stopping the administration of tuberculin are either—

(1) Because the patient appears to be quite well, and it is considered that a large enough dose has been reached to guard against a relapse. Or—

(2) Because the patient does not appear likely to gain further benefit from tuberculin, or an interval is thought desirable. Or—

(3) Because the patient refuses or is unable to attend longer.

If the numbers under (1) be compared with the total, the percentage is obviously unfair to tuberculin. If they be compared with the total of (1) and (2), it is unsatisfactory, because many cases under (3) may have given the treatment a fair chance before they gave it up.

Results are considered below in the following two groups of cases taken together:

(a) Those discharged because the disease was considered to be arrested, treatment having been continued in nearly every case for a considerable period, and to a substantial dose before it was thought wise to discharge the patient.

(b) Those not falling under (a), but who attained to a dose of at least 0.5 c.c. of old tuberculin, whatever the reason for the discharge.

Some consideration should be given as to what types of case are represented here. Certain particulars are given in order that this may be done and the nature of the selection estimated.

In order to compare the relative chances of good and harm being done by tuberculin, it is instructive to take another selection of cases—namely, the total number of cases treated, omitting those who were discharged or who discharged themselves, with no change in their condition, after less than thirteen weeks' treatment. These cases may safely be neglected and added to those unsuitable for treatment or unwilling to

undergo it. It is, of course, true that many cases discharged worse might have become worse without treatment, and might justifiably have been excluded from treatment by medical superintendents intent on obtaining good statistics, but to omit them from this estimate would be to beg the question of whether tuberculin is likely to do harm, and they are therefore included.

The results are classified in a simple manner according to the following key:

A. Disease apparently healed. No symptoms present. Signs absent, or those present of healed lesion only. No sputum.

P. Disease apparently arrested. No signs or symptoms of active disease as usually accepted.

B. General condition improved and disease less active.

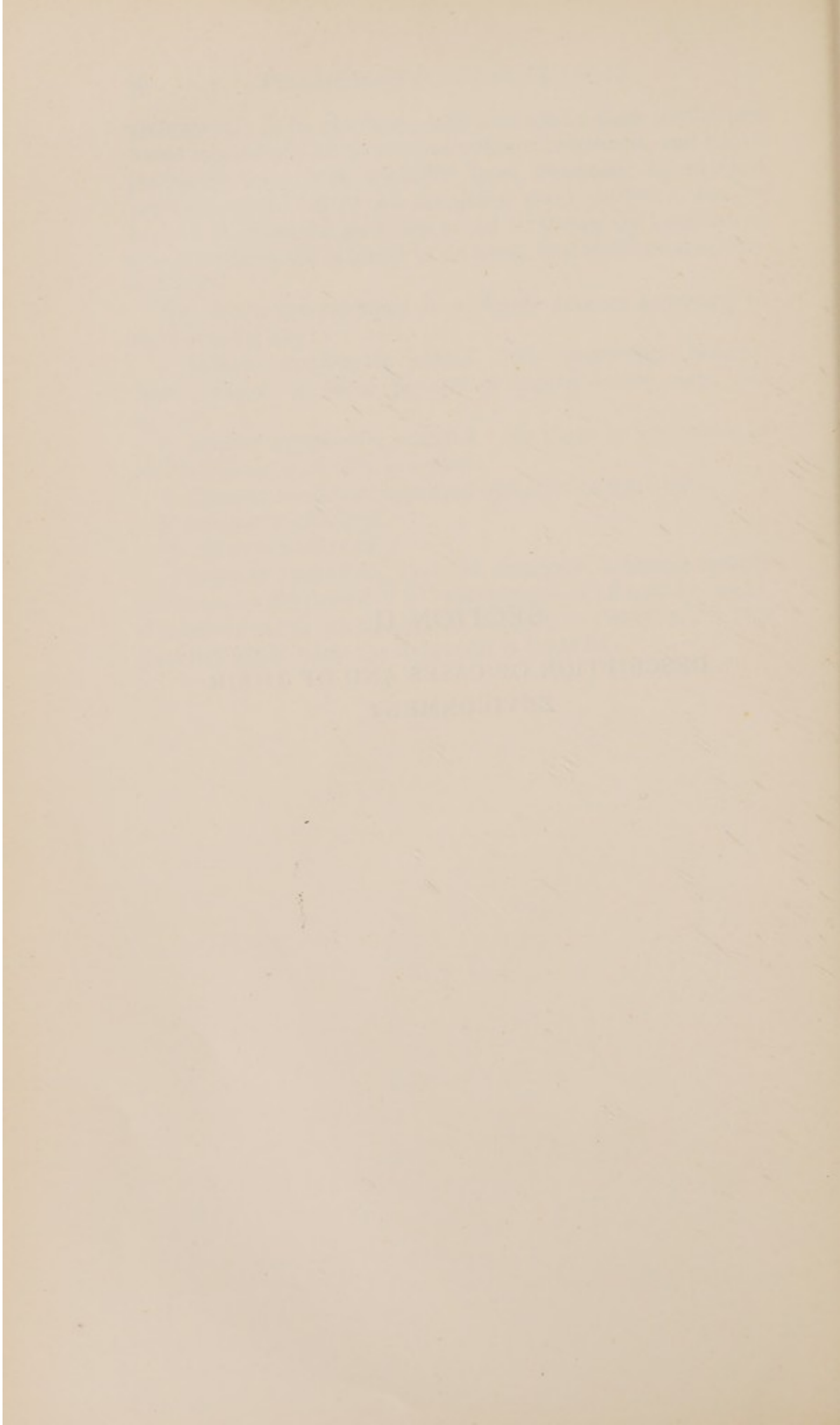
S. Disease unchanged.

W. Disease advanced.

It must be considered that the prognosis is almost equally bad in cases discharged "S" who remain so after some weeks, if tubercle bacilli are present, as in those marked "W." This does not apply when the diagnosis is doubtful.

SECTION II

DESCRIPTION OF CASES AND OF THEIR
ENVIRONMENT



CHAPTER I

DISPENSARY AT STREET, SOMERSET

STREET is a manufacturing village situated in the central district of Somerset, eight miles south of Wells, which lies below the Mendip Hills, and two miles south of Glastonbury.

To the east and south the country is undulating, to the west flat and at sea-level for ten miles to the Bristol Channel, Glastonbury and Street being on the edge of low hills which in the sixteenth century formed the coast-line at high water.

The following particulars are quoted from the Reports of the County Medical Officer of Health for 1912 (pp. 94, 83, 99) and 1907 (p. 59).

Population: Census, 1911, 4,235; estimated to middle of 1912, 4,262.

Houses: Number of inhabited houses, 952.

Area in acres: 2,918.

Occupation: Boot and shoe making, one large factory employing about 1,350 in and out workers; leather-board factory; agriculture and limestone quarries.

SOME VITAL STATISTICS FOR SIX YEARS.

Year.	Birth-Rate.	Death-Rate.	Phthisis Death-Rate.	Other Tubercular Diseases Death-Rate.	Rate of Infantile Mortality.
1907	19.60	7.60	0.23	0.00	82.3
1908	20.50	11.40	0.68	0.00	66.6
1909	20.90	10.30	0.22	0.22	96.7
1910	20.30	10.04	0.69	0.22	87.9
1911	16.05	10.08	0.47	0.23	102.9
1912	21.10	9.85	0.70	0.23	66.6
1913	21.30	8.05	0.46	—	21.9

The general death-rate in 1897 was 13.7, and this did not fall till 1903.

The actual number of deaths from pulmonary tuberculosis in Street since 1903 were as follows:

Year.						Deaths.	
1903 .. .. .	..	..	..	..	..	1
1904 .. .. .	..	..	..	..	..	3
1905 .. .. .	..	..	..	..	..	2
1906 .. .. .	..	..	..	..	..	2
1907 .. .. .	..	..	..	..	..	1
1908 .. .. .	..	..	..	..	..	3
1909 .. .. .	..	..	..	..	..	1
1910 .. .. .	..	..	..	..	..	3
1911 .. .. .	..	..	..	..	..	2
1912 .. .. .	..	..	..	..	..	3*
Total					20

* One of a patient who came to Street on account of the dispensary.

In 1913 there were two deaths from tubercle, one being a case of miliary tuberculosis. The census population in 1901 was 4,018, and in 1911, 4,235.

It will be noticed that the death-rate is low. The housing accommodation is good in nearly every part, though there are some poor small cottages still left. The conditions of employment are considered good, and work is fairly regular.

Provision of Treatment for Tuberculosis.

Since the year 1904 two maintained beds at Winsley Sanatorium, near Bath, have been used primarily for Street patients and for other employees of Messrs. C. and J. Clark (shoe manufacturers) resident outside the village. Before this time much effort was made to instruct people in the hygienic methods of treating and preventing consumption. An object lesson in the value of open windows was set the village by the cure of one of the directors of the shoe business, who recovered health at Nordrach in the Black Forest, in 1894, after two years' progressive illness, in spite of having reached an advanced stage of the disease; the recovery being completely established after two years' open-air life in Street much impression was made upon the fatalistic attitude generally prevalent at that time. This teaching was extended and enforced by the advent to the neighbourhood of a medical practitioner, who had also been at Nordrach, and who treated a number of patients by sanatorium methods in their own homes until he left the neighbourhood.

The provision of a sanatorium in the county in 1904 was therefore backed up from the outset in this district by those

methods of education and after-care, the necessity for which has only recently come into general recognition, by assistance in the maintenance of dependants and by securing suitable employment.

In the selection of patients to be sent to the beds at Winsley every attempt was made to reach those who were in an early stage, and it very seldom happened that an early case was obliged to wait long for a vacancy. Very few early cases were, however, sent, partly on account of the difficulty experienced by the general practitioners in making a diagnosis sufficiently definite to persuade a patient to give up work before the disease was well established, partly because it was not the custom to make an examination of the chest until very definite symptoms of illness appeared.

ANALYSIS OF STREET CASES SENT TO WINSLEY SANATORIUM
BETWEEN THE YEARS 1904 AND 1909 INCLUSIVE.

	Total.	Alive in 1914.	Well and at Full Work in 1914.	Dead in 1914.
Tubercle bacilli found ("TB+")	6	2	2	4
Tubercle bacilli not found ("TB-")	10	9*	4	1†
Totals	16	11	6	5

* One now "TB+".

† TB meningitis.

One of the "TB+" cases and six "TB-" cases who were alive in 1914 were treated also at the dispensary, tubercle bacilli having appeared in one of the latter by the time he applied there.

One of the Winsley "TB+" cases and three "TB-" were notified to the Medical Officer of Health in 1912-13, one of the latter having relapsed. (This case was the case who died in 1913 of tubercular meningitis.)

The cases are described in the notes at Winsley as being in the following stages:

"TB+" Cases : Alive in 1914, third stage, 1; first stage, 1.
 Dead 2; second stage, 2.
 "TB-" Cases : Alive 3 (one became
 "TB+").
 second stage, 2.
 first stage, 5.
 Dead second stage, 1 (of meningitis).

These may be compared with the other cases treated in maintained beds at Winsley Sanatorium, given in the Medical Officer's summary of after-histories in the report for 1911:

STREET CASES.

Total, 1904-1909.	Alive in 1914.	At Work.	Quite well and at Full Work.	Dead.
16	13	10	6	3 = 18.7 per cent.

ALL CASES IN MAINTAINED BEDS.

Total traced, 1904-1909.	Alive in 1914.	At Work.	Dead.
671	383	317	288 = 42.9 per cent.

The numbers are not sufficient to justify definite statements, but it may be concluded that sanatorium treatment was well backed up at Street, that the cases responded well to treatment, and that sanatorium treatment alone could not be expected to do much further to lessen the remaining incidence of tubercle.

Incidence of Tuberculosis in Street in 1910-1913.

The vital statistics and the number of cases recognized as phtisical at the commencement of this period have been given. Further information is now obtainable through records of—

1. School medical examination, since 1908.
2. Examination of cases at the Tuberculin Dispensary, 1910-11.
3. Notifications of pulmonary tuberculosis, since 1912.
4. Notifications of all cases of tuberculosis, since 1913.
5. Cases sent to Winsley after the dispensary closed in December, 1911.
6. Examinations of cases at the County Council Tuberculosis Dispensary, opened at Glastonbury in November, 1912.
7. Miscellaneous cases.

Medical Examination of School-Children.

The records of 493 children examined in Street Council School since 1908 give the following information:

Lung diseases—	Children.
Apparently tubercular (8 of these examined and considered tubercular at dispensary)	30
No signs of tubercle (2 examined and found negative at dispensary)	11
Tuberculosis other than pulmonary (1 seen at dispensary)	2
Heart affections, anæmia, etc.	28
Tonsils and adenoids	63
Defective nutrition	3
Other defects	122
Total	259
Percentage of cases showing signs of phthisis ..	6.4
Average for four years	1.6

The figures for the county, given in the report for 1912, show 0.56 per cent. of the children examined, routine and specials, as being in a condition suspicious of phthisis; while the percentage for the whole country, given by Sir George Newman, is 1.07 for 1911 and 1.09 for 1912.

It is not justifiable to lay much stress on the high figures shown by the Street records, because there is no doubt that the greater attention paid to tuberculosis in Street has led to increased care in the presentation of children for special examination, and to greater watchfulness over even the routine cases, so that tuberculosis is more often suggested to the medical examiner.

It is interesting, however, to observe that in the height and weight tables given for urban and rural districts in the county, while the Street children give averages almost identical with the other urban schools for height, the weight is persistently below the average for all ages, the average defect of weight expressed in kilogrammes, being as follows:

	Boys.				Girls.			
	4-5	5-6	7-8	12-13	4-5	5-6	7-8	12-13
Ages in years ..								
Average defect of weight in kilogrammes ..	0.4	2.0	0.9	0.3	0.8	0.2	1.1	0.7

A striking feature in the study of the health of Street children is the absence of cases of surgical tubercle, only two serious cases having occurred in recent years, both of whom were girls suffering from disease of the hip-joint, who succumbed after long illness and much surgical treatment in 1910 and 1911 respectively. The second case does not appear to have been

certified as tubercular, but there was little room for doubt as to its nature. One case of lupus is given in the school records, and two or three of glands and abdominal tubercle in which the lungs were also suspected.

Examination of Cases at Street Dispensary.

The nature of the selection of cases for examination will be gathered from what has been said already. The doctors in the neighbourhood naturally regarded tuberculin treatment as being to some extent experimental, and it was not expected that they would urge a large number of suspects to attend. Some patients were, however, definitely sent by them for diagnosis and treatment. Those who applied without a doctor's advice were not examined or treated unless his consent was obtained, but, on the whole, the demand for diagnosis and treatment came more often from the patients and their friends than from the medical profession.

All cases who applied for admission to the two maintained sanatorium beds already referred to were required to apply at the dispensary for examination, and these beds were filled during this period at the writer's discretion, the resident medical officer, Dr. Leonard Crossley, most kindly co-operating in the arrangements. All patients who had received treatment at Winsley in these beds were invited to attend at the dispensary; all except four availed themselves of this; one of the four had left the place, and the other three, considering themselves quite well and never having had bacilli in the sputum, were unwilling to come. One of these three has since died of meningitis, and two others have relapsed to some extent.

The influence of previous teaching in the village was very much increased in the direction of persuading patients to come for treatment by the fact that a lady known in the village, who had reached an apparently hopeless stage of phthisis, affecting the larynx as well as both lungs and steadily progressive, had entrusted herself to the same method of treatment under Dr. Camac Wilkinson, and had begun to improve when the dispensary was opened. This improvement continued until apparent cure was reached—a condition which is still maintained, and which naturally gave the neighbourhood some confidence in tuberculin.

It is interesting to note how readily this confidence might have been destroyed by the first dispensary case presented for treatment. This was a girl of eighteen, showing early signs in one hip and suspicious signs in the lung. Tuberculin treat-

ment was decided on, but accidentally postponed, and tubercular meningitis developed in the interval. Her death would not have been prevented by a few doses of tuberculin, had these been given as intended, and would, no doubt, in this event, have been attributed to the remedy.

As far as could be ascertained, a fair proportion of those known to have symptoms suspicious of phthisis applied, a few only of such cases refusing to attend; none of the latter who were mentioned by name to me have developed definite phthisis since. The few who have become ill since with bacilli in the sputum give, however, a history of similar symptoms to those which induced others to apply at the dispensary for diagnosis, such as attacks of pleurisy or influenza, or slight cough, proving that the dispensary did not succeed in attracting all those who should have been examined.

It must be remembered, however, that at this time the general practitioners were not prepared to give complete support to the use of tuberculin, and that this influenced at least two of the cases who became seriously ill later.

ANALYSIS OF CASES EXAMINED AT STREET DISPENSARY.

Total number, 113:

Not tested or treated	4
Reasons for not testing or treating:	
Too ill, 1, type (TB+) 16, sent to Winsley, but did not recover, and died in 1912.	
Unnecessary, 3 (none of these have become tubercular since).	
Tested, not treated	26
Negative (3 by von Pirquet only)	19
Under sixteen	9
Sixteen and over	10
None of these have developed further signs of tubercle.	
Positive	7
Types: ch. 1c, ch. 2a, ch. 4a, ch. 5c (TB-) 1, (TB-) 5 (2).	
Reasons for not treating:	
Refused, 5 (3 adults, 2 children, because they felt well).	
Unnecessary, 2 (children).	
None of these have become definitely tubercular since.	
Treated	83
Full course:	
Adults	50
Children	14
Course not completed:	
Adults	11
Children	8
Totals	61
	22

		TYPES.				
		Adults.			Children.	
No focus	..	..	3			1b .. 1
Non-pulmonary		..	1			1d .. 1
Pulmonary (TB-)	1	..	3			2a .. 1
		3	..	5		2b .. 2
		5	..	7 (E 1)		2c .. 2
		7	..	3		3b .. 1
		8	..	1		5b .. 2
		9	..	3 (E 1)		5d .. 1
		11	..	20 (E 1)		6a .. 2
		12	..	4		7a .. 1
		15	..	1		7b .. 1
		16	..	1		7c .. 1
		17	..	4		9a .. 1
		18	..	1		9b .. 2
(TB+)	11	..	1			9c .. 1 (non-pulmonary),
	13	..	2			10a .. 1 (plural foci).
	17	..	1			
Totals	..	61				22

RESULTS: PULMONARY CASES AND CASES WITH DOUBTFUL FOCUS.*

	Total.	Immediate Results, December, 1911.					Results after Three Years, January, 1914.				
		A.	P.	B.	S.	W.	A.	P.	B.	S.	W.
Fully treated: Adults ..	49	34	8	6	1	0	34	5	8	2	0
Children	14	12	1	1	0	0	11	1	1	1	0
Partly treated: Adults ..	11	0	4	7	0	0	3	5	2	0	1
Children	7	0	1	6	0	0	3	2	2	9	0
Totals	81	46	14	19	1	0	51	13	13	3	1
Percentages .. ..	..	..	..	..	..	..	61.7			1.2	
							79				
							95				

* Omitting one adult with pelvic abscess, who made a complete recovery after operation, which was followed by tuberculin treatment, and one child with lupus, who did not improve in a few weeks, and then stopped attending.

Further analysis of these cases is given, together with those attending the dispensary from Glastonbury and Wells, in the general summary of all cases treated with tuberculin, in Chapter II. (p. 54).

Notified Cases of Tuberculosis and Cases brought under the Notice of the Tuberculosis Medical Officer, 1912-13.

The following figures show the fresh cases of tuberculosis recognized since the Street Dispensary was closed:

Notifications.—1911. Notified from Street Dispensary: 30 cases. These have already been considered above.

1912. Total number of cases notified under the compulsory Act: 11. Of these, 5 had already been notified from the Street Dispensary, one of whom came to Street to attend the dispensary, and is given among the "Miscellaneous" cases; 2 are included among those diagnosed as tubercular by the School Medical Officer; 5 cases remain as fresh ones; 3 of these (2 male and 1 female, all TB+ cases) received sanatorium benefit, and will be described among the cases sent to Winsley in 1912. One case remains which has not been under any other heading. This patient is the mother of four children treated at the Street and Glastonbury Dispensaries, and suffers from a chronic fibrosing form of phthisis. She is confined to her house, and no form of treatment has been attempted.

1913. Total number of fresh cases notified: 28. Of these, 8 had been notified from the Street Dispensary, and 2 had been treated at Winsley prior to 1910, and are included in the description of these cases. Four other cases were sent to Winsley, and are described below. The remaining 15 may be classified as follows: 3 adult males not seen by County Tuberculosis Officer (1 died of miliary tubercle); 3 adult males seen and treated by County Tuberculosis Officer (1 TB+, too ill for treatment); 7 adult females and 1 child seen and treated by County Tuberculosis Officer (3 of the females TB+).

1914. Number of cases notified up to the end of January: 3. One already observed at school; 2 fresh cases, both children (1 male, 1 female), referred to Glastonbury Dispensary.

Cases sent to Winsley, 1912-13.—Total number: 7.

	TB+.				TB-.			
	Stage.			Total.	Stage.			Total.
	I.	II.	III.		I.	II.	III.	
Male	0	1	2	3	3	0	0	3
Female	0	0	1	1	0	0	0	0
Totals ..	0	2	2	4	3	0	0	3

Tuberculin was administered to the three male "TB+"

cases. No tuberculin was in use at the sanatorium during the time when the other four cases were there.

Results on Discharge.—"TB+" cases: Improved, 3; unimproved, 1 (male). "TB-" cases: Improved, 1; well, 2.

Eight "TB+" cases were therefore detected during the years 1912 and 1913. Two of these were newcomers to the place since the Street Dispensary was closed. Three had definite symptoms of illness when the dispensary was open, and would probably have applied for treatment had that been a more familiar course to pursue. With regard to the other three, the onset of definite symptoms seems to have been more doubtful, and possibly did not occur until after the dispensary closed.

All the cases so far dealt with may be considered to come under the class of insured persons and dependents. Of those who do not do so, the tubercle incidence, so far as known to the writer during the period under discussion, is represented by five cases, of whom the only definite ones with tubercle bacilli in the sputum are the two advanced cases already referred to—one who recovered at Nordrach, in Germany, in 1894; and the other who recovered under tuberculin treatment in 1911, after sanatorium treatment had been tried without success.

One other case suffered from pleurisy many years ago, and it was considered that the lung was affected. Complete health was restored by an open-air life without special treatment. Another is one of the early cases reported in the "Miscellaneous" series below, while the fifth reacted to tuberculin without showing signs or symptoms of active mischief, and received a short prophylactic course only.

While it may be concluded that no other definite cases have occurred in the place during the years 1904-1914, it is impossible to ascertain further the number of latent or even chronic cases. The total number diagnosed in the period is 154, or less than 4 per 1,000 population, annually. In 15 of these there is evidence of tubercle bacilli having been found in the sputum, the latter number including 5 deaths. There were 16 deaths (certified as due to pulmonary phthisis) besides these in the period, about whom the evidence as to tubercle bacilli is not forthcoming, but in whom there is no special reason to doubt that tubercle was the cause of death. One death of a patient who came to Street to attend the dispensary is not included.

Care must, however, be taken in making statistical deductions from these figures, because chance plays a considerable part in the detection of cases, and the cause of death is not always substantiated by sputum examination.

Supposing there to have been 30 undoubted cases of pulmonary tuberculosis during the ten years, an average of 3 fresh cases annually is obtained. By the methods described here a number of other cases would be detected at an early stage who would have recovered or died of another disease, so that if a whole population could be examined, the proportion showing evidence of some degree of activity would probably be greater than 4 per 1,000 annually.

CHAPTER II

CASES AT GLASTONBURY AND WELLS: SUMMARY OF SOMERSET CASES AND RESULTS

Glastonbury.—Population: Census (1911), 4,251; estimated to middle of 1912, 4,251.

Number of inhabited houses: 1,058.

Area in acres: 5,000.

Occupation: Manufacture of rugs and gloves; agriculture. Many workers employed at boot and shoe factory at Street.

SOME VITAL STATISTICS FOR SIX YEARS.¹

Year.	Birth-Rate.	Death-Rate.	Phthisis Death-Rate.	Other Tubercular Diseases Death-Rate.	Rate of Infantile Mortality.
1907	22·90	13·44	0·74	0·24	152·10
1908	18·90	13·44	0·49	0·00	26·44
1909	18·90	14·19	0·49	0·24	52·63
1910	23·04	13·69	0·24	0·00	74·46
1911	22·81	12·20	1·88	0·23	123·70
1912	21·16	10·81	1·18	0·23	67·40

Wells.—Population: Census (1911), 4,655; estimated to middle of 1912, 4,655.

Number of inhabited houses: 1,190.

Area in acres: 720.

SOME VITAL STATISTICS FOR SIX YEARS.²

Year	Birth-Rate.	Death-Rate.	Phthisis Death-Rate.	Other Tubercular Diseases Death-Rate.	Rate of Infantile Mortality.
1907	20·83	13·19	0·41	0·20	59·41
1908	19·80	15·88	0·41	0·41	93·75
1909	18·35	13·82	0·61	0·00	56·18
1910	19·39	15·37	0·41	0·00	42·55
1911	16·72	16·72	0·00	0·21	89·74
1912	13·93	13·96	1·50	0·00	76·92

¹ Quoted from the report of the County Medical Officer of Health for 1912, p. 83.

² *Ibid.*, p. 99.

In estimating the extent to which a dispensary can help in securing examination and diagnosis of early cases, it is interesting to compare the death-rates, notifications, and dispensary arrangements at Street, Glastonbury, and Wells respectively. The populations are very nearly the same. The facilities for obtaining treatment under the County Council scheme since November, 1912, are similar.

Street.—See description above. Notifications (1913) = 6.5 per 1,000.

Glastonbury.—Phthisis death-rate (see above): Higher than that of Street or Wells. Notification of tuberculosis: In 1912, 5; in 1913, 15 = 3 per 1,000.

Patients now attend the County Council Dispensary in Glastonbury if recommended by their doctors, but there are few at present doing so. Prior to 1912 there was little provision for treatment, except for Street workers, and no general experience of the value of a dispensary.

Wells.—Phthisis death-rate (see above): About the same as Street, and lower than Glastonbury. Notifications of tuberculosis: In 1912, 6; in 1913, 33 = 7 per 1,000.

Provision of treatment under County Council scheme: Patients, recommended by their doctors, attend the dispensary at Glastonbury, six miles away, which they can reach by train. Selected cases are sent away for sanatorium treatment.

Although it is impossible to treat early cases while at work by this arrangement, the attendance at the dispensary is reported as being good and regular, and a fair number of cases in the early stages have been secured.

Here there had been some experience of the value of a dispensary, and there was marked co-operation of the medical profession in this, though there had been little provision for treatment before 1911, and very few cases were discovered during the short period the dispensary was open.

Two other towns in the neighbourhood may be compared with these.

Radstock.—Population: 3,723. General and phthisis death-rate: About the same as Street. Notifications (pulmonary): In 1912, 3; in 1913, 14 = 3.8 per 1,000.

County Council dispensary since 1912.

Bridgewater.—Population: 16,900. General and phthisis death-rate: About the same as Glastonbury.

Notifications: In 1912, 15; in 1913, 32 = 1.8 per 1,000.

County Council dispensary not opened till February, 1914. Before that cases could go to Taunton Dispensary, opened in 1912.

The cases treated at Glastonbury and Wells may be included with those at Street for the purpose of observing the scope of tuberculin at a dispensary, as they belong to the same social class. In Glastonbury the only cases treated were employés of the Street shoe-factory and their dependants. Those who were at work attended the Street Dispensary, while those unable to walk the two miles were attended in their own homes. Three employés living at Glastonbury had been sent to Winsley Sanatorium during the years before 1910, and also the daughter of one of them. These three were severe TB+ cases. One died before 1910; one had been doing a little light work, but relapsed and was hopelessly ill in that year; and the third returned from Winsley unfit for work, with serious laryngeal tubercle still active. The daughter of the one who died was described at Winsley in 1909 as Stage 1 TB-, but in 1910 was in Stage 3, with the larynx affected and tubercle bacilli present in large numbers. Her sister was found to be in Stage 3, with tubercle bacilli present; and the mother in Stage 2, but without bacilli.

These cases were all treated; also an early case, acutely ill, but with no sputum; three others who were able to attend at Street; the children of these cases, and three children of another employé not himself tubercular.

At Wells, the tubercular cases in the workhouse sick-wards were treated by arrangement with the medical officer, and a dispensary was opened in the surgery of one of the medical practitioners in the city, cases being admitted only on the recommendation of their medical attendants.

STREET, GLASTONBURY, AND WELLS.

	Adults.	Children.
Fully treated ..	59	22
Partly treated ..	21	12
Totals ..	80	34

Types.

	Adults.	Children.
No focus ..	3	1b 1
G	1	1c 1
"TB-"		1d 3
1	3	2a 4
2	2	2b 2
3	5	2c 3
5	9	3b 1
7	6 (E1)	5b 2
8	1	5d 2

STREET, GLASTONBURY, AND WELLS—*continued.*

Types.

	Adults.		Children.	
"TB -"				
9	5 (E1)	6a ..	.. 3
11	21 (E1)	7a ..	.. 1
12	4	7b ..	.. 1
15	1	7c ..	.. 3
16	2	7d ..	.. 1
17	5	9a ..	.. 1
18	2	9b ..	.. 2
"TB +"			9c ..	.. 1
11	1	10a ..	.. 1
13	2	10c ..	.. 1
16	3		
17	1		
18	3 (D1)		
Totals	..	80	..	.. 34

STREET, GLASTONBURY, AND WELLS: CASES FULLY TREATED—ADULTS.

Type.	Actual Numbers.			Percentage arrested.	TB +.			General Course of Treatment.	No. of Cases.	Average Number of Weeks of Tuberculin.			Working Capacity.				
	Total.	Results.			Total.	Results.				1911.	1914.	1911.	1914.	No. of Weeks.		Before.	After.
		1911.	1914.			1911.	1914.										
1 & 2	4	A	A	4	100			Dispensary	3	A	A	24	Full ..	1	4		
3 & 4	4	A	A	4	100			Ditto and tuberculin at home	1				Off ..	3			
5 & 6	9	A	A	8	88.9			Dispensary	7	A	A	27	Full ..	6	9		
		P	P	1				Dispensary and sanatorium ..	1	P	P	36½	Part ..	1			
								Tuberculin at home	1				Fair ..	1			
													Off ..	1			
7 & 8	6	A	A	5	83.3			Dispensary	3	A	A	34½	Full ..	3	6		
		B	B	1				Ditto and sanatorium	2	B	B	47	Part ..	1			
								Ditto and tuberculin at home	1				Off ..	2			
9 & 10	4	A	A	2	50			Dispensary	3	A	A	34½	Full ..	3	4		
		A	S	1				Ditto and sanatorium	1	B	B	50½	Off ..	1			
		B	B	1						A	S	24					
11 & 12	20	A	A	13	65	1	A	Dispensary	15	A	A	32	Full ..	8	18		
		P	P	2				Ditto and sanatorium	2	P	P	38	Part ..	4	2		
		B	B	1				Ditto and tuberculin at home	1	B	B	39	Fair ..	2			
		B	B	3				Ditto and hospital	1	B	B	35	Off ..	6			
		P	S	1				Ditto and change	1	P	S	20½					
13 & 14	2	P	B	1	0	2	P	Dispensary and shelter	1	P	B	39	Full ..		1		
		B	B	1			B	Ditto and tuberculin at home	1	B	B	40½	Off ..	2			
15 & 16	2	A	A	1	50	1	P	Dispensary and shelter	1	A	A	53½	Full ..		2		
		P	D	1			D	Ditto and sanatorium and tuberculin at home	1	P	D	44	Off ..		2		

17 & 18	4	P	P	P	0	1	P	B	I	Dispensary .. Ditto and sanatorium	..	2	P	P	38 36½	Full .. Part .. Off ..	2	3	
No focus	3	A S	A S	P B	66					Dispensary .. Ditto and sanatorium	..	2 2	A S	P	20 29	Full .. Fair .. Off ..	1 1 1	1 1 1	
MISCELLANEOUS CASES FULLY TREATED: ADULTS.																			
1 & 2	1	A	A		100					Tuberculin at home ..	..	1	A	A	41½	Full ..	1	1
3 & 4	1	A	A		100					Tuberculin ..	..	1	A	A	34½	Full .. Part ..	1	1
5	5	A B	A B		40					Tuberculin ..	..	5	A B	A B	33½ 26	Full .. Part .. Fair .. Impvd. Varies	1 1 1 1	2 1 1
9 & 10	1	A	A		100					Tuberculin ..	..	1	A	A	4½	Full ..	1	1
17 & 18	2	A B	A P		50					Tuberculin ..	..	2	A B	A P	19½ 44	Full .. Part .. Off ..	1 2	1 1
No focus	1	B	B		0					Tuberculin ..	..	1	B	B	32½	Part ..	1	1
Totals	69 =	A P B B P A P S P	A P B B P A P S D		65	7 =	A P B P	A B B D	3 2 1 1							Full .. Part or "fair" Off .. No oc- cupation	29 14 24 2	58 10 1	

NOTE.—The letters under heading "Results" indicate the condition (1) on discharge, (2) in January, 1914—e.g., PB means that the disease was partially arrested (P) on discharge, but relapsed to some extent, so that there were signs of activity in 1914, although the condition was better (B) than before tuberculin was given.

CHAPTER III

PORTSMOUTH

General Survey.

THE population of Portsmouth in 1911 was 231,141, the number of inhabited houses being 47,033; the area in acres (land and inland water), 6,100.

The death-rate for 1912 was 12.7, the lowest for all towns of the same size in England and Wales, the average for the preceding ten years being 14.82. The death-rates from pulmonary tuberculosis for 1910, 1911, 1912, and 1913 were 1.09, 1.02, 1.13, and 1.08 respectively. The total tuberculosis death-rate for 1912 was 1.5.

The notifications of pulmonary tuberculosis, under the Public Health (Tuberculosis) Regulations of 1911, in 1912 were as follows:

	Cases.
Notified from private medical practitioners	497
.. .. district poor-law medical officers	117
.. .. the poor-law infirmary	173
.. .. hospitals	89
.. .. school medical officers	4
.. .. the municipal tuberculosis dispensary	409
Total	1,289

The total number of notifications of pulmonary and non-pulmonary tuberculosis in 1913, under the Public Health (Tuberculosis) Regulations of 1911 and of 1912, was 1,237; pulmonary, 983.

The number of notifications of pulmonary tuberculosis in January, 1913, under the Public Health (Tuberculosis) Regulations of 1911, was 15,983.¹

The number of notifications of pulmonary and non-pulmonary tuberculosis, under the Public Health (Tuberculosis)

¹ Figures quoted from the Report for 1912 of the Medical Officer of Health for Portsmouth.

Regulations of 1911 and 1912, in 1913 from February 1, when the regulations came into force, was 1,222.

Summary.

Age Period.	Number of Cases notified on Form A.											Totals.	Number notified on Form C. of Poor-Law Institutions.	Totals.	
	0 to 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 35.	35 to 45.	45 to 55.	55 to 65.	65 and upwards.				
Pulmonary:															
Males	1	5	29	21	39	35	143	111	54	34	2	474	61	535	
Females .. .	0	4	35	29	35	60	114	76	29	14	2	398	35	433	
Non-pulmonary:															
Males	4	17	41	22	20	5	15	10	1	0	2	137	11	148	
Females .. .	0	7	28	19	10	7	13	6	5	0	1	96	10	106	
Totals	5	33	133	91	104	107	285	203	89	48	7	1105	117	1222	

Renotifications in the same year are here corrected, but no correction is made for cases notified in 1913 who had previously been notified in 1912. Observation at the dispensary has shown that this occurs pretty frequently, though probably not so often in Portsmouth as in towns where the working-class population is more fluctuating.

A complete inquiry into every source of information concerning the incidence of tuberculosis in Portsmouth has not been undertaken, and the subject can only be dealt with on broad lines. There are certain characteristics of the place which affect the problems under consideration here, and which must be briefly outlined. They are carefully described in an article on social conditions in Portsmouth, contributed by Miss E. H. Kelly to a series published by the Charity Organization Society, from which the following notes are partly taken. Much information is also given in the valuable "Digest of Charities and Institutions in Portsmouth and the Neighbourhood," which is revised annually and incorporated with the annual reports of the Portsmouth Charity Organization Society.¹

Portsmouth shares with the rest of the south coast a reputation for a mild climate that is suitable for some types of chest complaint; and, being an important centre of employment, there is no doubt that a number of working-class sufferers from these in other places are able to avail themselves of a doctor's recommendation to choose such a climate. This affects the question of infection and the material dealt with at the dispensary.

¹ W. H. Barrell, Ltd., Portsmouth; price 3d.

Portsmouth is the first naval port and arsenal in the British Empire, and is also an important military centre, being the headquarters of the Southern Coast Defences Command. This close connection with the Services affects the population in many ways—some obvious, some unsuspected; but the most important point for the present study is the character of the main employment, in the Royal Navy and in H.M. Dockyard; in the latter over 13,000 men are employed by the Admiralty, in addition to large numbers employed by contractors. The work varies considerably in its nature, but is regular and, for a large proportion of the men, permanent. It is possible for men to obtain many months of sick-leave without forfeiting their jobs, and every effort seems to be made to give them light and suitable work on first returning. The influence of the conditions of life in the Navy on the spread of phthisis is dealt with later.

There are 2,000 workshops in the town, employing over 4,000 men; and considerable employment is also afforded by the building trade, owing to rapid development of the town.

There is very little employment of women, except domestically, in the tailoring, dressmaking, and millinery trades, and in the manufacture of corsets and underclothing. The latter industry is very badly paid, and is not apparently in a thriving condition. The wives of dockyard hands very seldom go out to work, but those of sailors are frequently obliged to do so, especially if there be any children to support.

The housing conditions are good in by far the larger part of the area occupied by the working classes, and it is doubtful whether any large town in the country can equal Portsmouth in the provision of good-class cottage property. There are a few districts, not large in extent, where the houses are dirty and insanitary, and the inhabitants of the lowest social grade and behaviour; the former fact appears to be due to the latter rather than to faulty construction.

A vast improvement has been effected in recent years in the clearing of slum areas, the results of which have, possibly, not yet had time to show to their full extent in the phthisis-rate. Back-to-back houses are practically non-existent, and the majority of cottages have yards or gardens, often of a fair size.

Of 93 towns included in an official inquiry, in 5 only are houses of six rooms occupied in any numbers by the working classes; they are Cardiff, Chatham, Coventry, Nottingham, and Portsmouth. The prevailing type at Portsmouth contains five rooms and a scullery.

The comparison of rents, rates, and retail prices with London

is estimated at 92 to 100 in 1912, there being a percentage increase in Portsmouth of 7 since 1905.

The records of the medical inspection of school-children are of interest in considering what proportion of cases showing definite signs of phthisis come under notice at the dispensary, and also for the sake of comparison with the cases in the previous chapter. The percentages of cases of tuberculosis are as follows:

Years.	Routine Cases.	Special Cases.	Both together.
	Per Cent.	Per Cent.	Per Cent.
1911-1912	·5	1·80	·6
1910-1911	·5	3·50	·7
Four years previous to 1911 (average)	·4	1·05	·5

These percentages for 1911-12 represent 43 actual cases (30 routine). In addition to these 36 cases were found among children attending a special inspection held in order to inquire into the causes of their absence from school. Fourteen of these children were attending the dispensary at the same time, and during this period the total number of children diagnosed as tubercular at the dispensary was 80, making a total of 128 children brought to official notice as tuberculous before notification was made compulsory.

The nature of the disease in the school-inspection cases was as follows:

	Total Number of Children examined.	Phthisis.	Glands.	Bones.	Other Cases.	Total "Surgical."
Routine ..	5,913	22	—	—	—	8
Special ..	689	9	—	—	—	4
Extra inspection clinic	—	12	4	9	3	16

It is noticeable that the children brought up to the special inspection clinic show a much higher proportion of "surgical" cases, and it is evident that the majority of these have not yet been examined officially at all. The evidence of the Royal Hospital, quoted below, shows that there must be a considerable incidence of surgical tuberculosis in the town.

Prior to 1911 no special provision was made in the town for the treatment of consumption and other forms of tubercular disease. Cases of phthisis among paupers were compulsorily

notified and visited by a trained nurse in the capacity of Health Visitor, who also visited all houses where a death from this cause occurred, and those cases notified voluntarily by doctors.

From 50 to 60 cases were sent annually to sanatoriums or special homes through the Charity Organization Society or other relief agencies.

It is not easy to ascertain what number of cases made their own arrangements for special treatment, or were assisted privately. The proximity of the Royal National Hospital for Diseases of the Chest at Ventnor would no doubt have some influence.

It is stated that for the last five years an average of 275 cases of surgical tubercle in children have been dealt with annually by the Portsmouth Royal Hospital, both as out-patients and in the wards, as well as cases of surgical tubercle in adults. Cases of pulmonary phthisis are treated as out-patients only.

Before the opening of the municipal dispensary, a number of patients were treated at the hospital with tuberculin by the intensive dose method and with vaccines while attending as out-patients. There were, however, no arrangements for home supervision or instruction in hygiene from the hospital or by anyone in touch with the medical treatment. These cases were notified to the Health Department, and visited by the Health Visitor.

The question of prevention of infection from tuberculosis in Portsmouth has never been entirely within the control of the local authorities, since every year a considerable number of men invalided from the Navy with active phthisis return to Portsmouth homes or settle afresh in the locality.

Figures to illustrate this point are obtained from the Annual Report of the Navy. In 1909 there were 209 cases invalided from the Navy (13 being officers) out of 325 cases detected, 22 deaths having occurred in the Service. Of the 325 cases, in 253 the lungs were affected. In 1910, 252 cases were invalided, 14 of whom were officers. In 1911, 237 cases were invalided, out of 286 cases recorded, 245 of which were pulmonary. In 1912 there were 219 final invalidings, 202 of whom were pulmonary cases, 12 other pulmonary cases having died.

The actual numbers taking up residence in Portsmouth is not known, but during 1912, 45 cases were known to the writer, of whom the majority were in an advanced condition, and had tubercle bacilli in the sputum.

The cases, invalidings, and death ratios are falling steadily, as is shown by the following figures:

RATIOS PER THOUSAND—AVERAGE.

	Case.	Invaliding.	Death.
Five years prior to 1909 ..	3·24	2·41	·38
" " " 1912 ..	2·68	2·06	·27
1912	2·32	1·83	·18

Cases now appear to be recognized and invalided from the Service at an earlier stage than formerly, and, thanks to the arrangements for sanatorium benefit, suitable treatment can always be provided directly a man comes home, many cases being sent straight to a sanatorium from the Royal Navy Hospital. In former days these men came home somewhat improved by hospital treatment, but with the disease only partially arrested, so that the hardships incident to finding work were likely to cause a relapse and to result in widespread infection.

The dispensary was opened in June, 1911, as the central feature in the municipal scheme for the control of tuberculosis in the borough. Such measures as improvements in housing and other sanitary conditions, instruction given to notified phthisical patients by trained nurses, the provision of sputum flasks and disinfectants, and arrangements for disinfection of rooms occupied by tubercular patients, were carried out by the Health Department itself. Provision for the treatment of sufferers from the disease, and for utilizing to the fullest extent all means of preventing infection, was organized from the Municipal Dispensary, also under the control of the Health Department.

In connection with this, a voluntary Care Committee was organized to co-ordinate all the existing charities in the town that are available for phthisical patients, in order that every case might be put in a position to benefit as far as possible from treatment, and to follow instructions as to the prevention of infection.

The staff of the dispensary consisted of one medical officer and one trained nurse as health visitor from June to December, when an assistant medical officer and second nurse were appointed, a third nurse being appointed in the autumn of 1912.

Langstone Hospital.

A disused hospital situated on Langstone Harbour was adapted in September, 1911, for the treatment of phthisical patients, so that eleven beds could be utilized for selected patients from the dispensary who were in need of further treatment than the dispensary afforded. The facilities for treatment were limited, there being only one trained nurse resident, and no probationer for the first year. It was not therefore possible during that time to provide for the complete rest which is essential for certain cases, or for the supervision of the patient's exercise, which is necessary for its effective graduation.

A probationer was appointed in the autumn of 1912, and the number of beds increased to eighteen in the spring of 1913.

The medical treatment was given from the dispensary by means of frequent visits, and consisted, in nearly every case, of a continuation of the tuberculin given there, together with graduation of rest and exercise.

A number of advanced cases were admitted with the object of selecting, after further observation, those which would respond to treatment. Some improved sufficiently to obtain admission to sanatoria. Acute early cases were also admitted for observation, and after treatment there were either returned home to attend the dispensary, or were sent to sanatoriums, the latter course being rarely necessary.

A number of chronic cases were admitted for short periods at varying stages of their treatment at the dispensary.

The Routine at the Dispensary.

The dispensary is open every day of the week except Sundays. The mornings are occupied with the examination of new patients, re-examination of patients under treatment or before discharge, laboratory work, work in connection with the Care Committee, the classification and indexing of notes and matters incidental to dispensary administration.

Patients undergoing a course of treatment attend in the afternoon or on Saturday morning. Two evenings a week are set aside for those who cannot attend at any other time, and attention is paid as far as possible to the convenience of each patient.

Particulars necessary for reference concerning each applicant are entered on a special form arranged in alphabetical order in

a "kalamazoo" binder. On this is entered the decision as to what form of treatment is advised, and whenever this is altered the new decision is entered below.

A card is also filled in with the patient's name and number, with the decision as to treatment, and this is placed in a card-index drawer under the heading corresponding to the treatment entered. On this the progress of the patient is recorded, and it can be moved to a fresh heading whenever a change of treatment is made. In this way it is possible at any time to count and investigate further the patients under each heading.

The actual charts, case-papers, and other particulars of each patient are kept in a quarto folder, which is filed in alphabetical order, those of patients attending regularly being placed by the consulting-room table.

Admission of Patients.

All inhabitants of the borough are eligible to apply for advice at the dispensary, and up to the present no payment has been required. A large proportion of the patients have been sent to the dispensary by their own doctors.

In the case of patients who were under a doctor, but had applied without consulting him, it has been pointed out that they are not likely to obtain benefit from treatment at the dispensary unless it is in co-operation with their home treatment, and that their own doctor is in the best position to judge whether they are in a condition suitable for treatment at the dispensary. Those not under a doctor have been told that they are likely to need occasional home treatment, even if they are treated at the dispensary, and are advised to consult someone at once. In many cases this has been done.

No medical treatment other than tuberculin has been given at the dispensary, and whenever other treatment has appeared advisable, especially in the relief of symptoms such as a cough or indigestion, the patient has been referred to a general practitioner. Several patients have been treated in their own homes by general practitioners, who have brought the charts regularly to the dispensary and obtained the doses there.

In view of the infectious nature of the disease, and the desirability of securing cases at the earliest stage possible, no definite rule was made that patients should only be examined on the recommendation of a doctor, since many will not take the trouble to see a doctor and pay a fee until they feel definitely ill, when the disease may have progressed beyond the stage at which it is curable.

A municipal dispensary is likely to attract a representative sample of the diseased persons in the community which it serves, with the exception of the well-to-do classes. At Portsmouth no definite line was drawn, and a few cases from the professional and official classes were treated, these not being in sufficient numbers to invalidate the conclusions drawn from the cases as a whole with regard to the artisan and skilled labourer class, who composed the majority.

The reasons for applying to the dispensary were very varied, the publicity given in the local press to a municipal venture leading to its existence being widely known. Many patients asked their doctors if they might come because they had read about it in the papers, or because their friends, suffering from similar symptoms, had improved under the treatment. The last-named reason appeared to be the chief cause of the rapid increase in the number of applicants which occurred after the dispensary had been in existence three or four months.

Many advanced cases applied, and though few of these could be completely cured, the improvement which they experienced drew other cases in a more favourable stage. People were ready to believe that if bad cases improved, less bad ones might get well, so that the cases who finally relapsed were not complete failures in the scheme.

The dispensary did not attract such a large proportion of cases from the poorest districts as from the more respectable ones, although the death-rate from phthisis is higher in the former. The material is therefore different from that seen at most other dispensaries which are situated in towns where the housing and employment conditions are less favourable. In these attention is directed first to the excessive phthisis mortality in the poorest districts, because they represent a greater proportion of the whole than they do at Portsmouth.



CHAPTER IV

PORTSMOUTH CASES

General View of Adult Cases of Pulmonary Tuberculosis treated with Tuberculin.

OF a total number of 910 adults examined, 10 gave no reaction to full test doses of tuberculin, and were considered to be free from tubercle in any form; 30 were found to have tuberculosis not affecting the lungs (21 of these were tested or treated); 151 did not appear to be in need of special treatment for tuberculosis, including 15 who were tested with tuberculin and reacted. In 719 cases the diagnosis was made of pulmonary tuberculosis in a condition requiring treatment. Of these 719 cases, 553 (77 per cent.) were treated with tuberculin; 104 (14 per cent.) were so ill that no treatment was likely to arrest the disease, and suitable arrangements could not be made to use tuberculin; 15 (2 per cent.) had complications which made it impossible to arrange for tuberculin treatment; 47 (7 per cent.) refused to undergo tuberculin treatment.

Children suspected of Pulmonary Tuberculosis treated by Tuberculin.

OF a total number of 398 children examined, 36 gave no reaction to full test doses of tuberculin, and were considered clinically to be non-tubercular; 45 were found to have tuberculosis not affecting the lungs; 70 did not appear to require special treatment. In 247 the condition was diagnosed as being due to active tuberculosis affecting the lungs or bronchial glands. Of these 247 cases, 149 (60 per cent.) were treated by tuberculin; 7 (3 per cent.) had advanced disease with tubercle bacilli present, and were too ill for dispensary treatment; 55 (22 per cent.) had complications which made dispensary treatment inadvisable, and which in most cases required treatment before the tuberculosis could be attacked; 36 (15 per cent.) refused tuberculin treatment.

SUMMARY OF CASES EXAMINED.

(Note.—Children=under sixteen; adults=sixteen years and over.)

Total number examined, 1,316. Of these, tuberculin was administered (either in testing or in treating) to 872; no tuberculin given in 444.

I. No tuberculin given (not treated or tested):

(1) Surgical cases:

(a) Adults	..	..	..	..	..	9
(b) Children	..	..	..	..	..	12

(2) "TB+" cases—Adults:

(a) Too ill or unsuitable	92	} 104
(b) Refused treatment, or left town	..	11		
(c) Treatment not needed (lesion healed at sanatorium)	..	..	1

(3) Probably "TB+," but no note of sputum:

Adults, too ill to treat	12
--------------------------	----	----	----	----	----

(4) "TB+" cases:

Children, too ill to treat	7
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(5) "TB—" cases—Adults:

(a) Evidence of active disease:

Refused treatment or left town	15	} 24
Referred elsewhere as unsuitable	9	

(b) No evidence of active disease:

Refused treatment or left town	47	} 136
Complication or unsuitable for test	..	..	34
Test and treatment unnecessary	..	..	55

} 160

(6) "TB—" cases—Children:

(a) Refused test or left town	28	} 140
(b) Referred elsewhere for complications as unsuitable	..	..	59
(c) Test or treatment unnecessary	..	..	53

II. Cases to whom tuberculin has been administered:

(1) Cases not reacting to test and discharged "negative":

Adults	10	} 46
Children	36	

(2) Summary of cases reacting to tuberculin, and diagnosed as tubercular, classified according to the scheme on p. 19: total number

.. 826

TYPES.

ADULTS.				CHILDREN.			
Classifica- tion.*	Number.	Classifica- tion.*	Number.	Classifica- tion.*	Number.	Classifica- tion.*	Number.
No focus	10						
(TB-) 1	30	(TB+) 1	6	1a	9	5d	11
2	4	2	2	1b	11	6a	4
3	29	3	3	1c	5	6b	5
4	3	4	0	1d	2	7a	5
5	63	5	10	2a	23	7b	2
6	2	6	0	2b	13	7c	2
7	10	7	6	2c	4	8a	4
8	8	8	8	2d	3	8b	6
9	26	9	22	3a	16	8c	1
10	10	10	8	3b	10	9a	15
11	54	11	21	3c	3	9b	4
12	13	12	9	4a	6	9d	2
13	3	13	6	4b	5	9e	1
14	4	14	23	4c	3	10a	5
15	5	15	19	5a	6	10b	1
16	4	16	49	5b	7	10c	5
17	14	17	39	5c	11		
18	14	18	58				
Totals	306		289	Totals	137		73
Non-pulmonary = 21.							

Non-pulmon- TB+,
ary, total 33. total 11.

* For reference to classification, see p. 19.

ADULT CASES OF TUBERCULOSIS.

- A. Cases of surgical tuberculosis, including those tested, but not treated 21
- B. Cases of pulmonary tuberculosis tested or treated .. 595

ADULTS.

- 1. Cases tested, but not treated with tuberculin .. 42
(These cases had no tubercle bacilli in the sputum.)
Reasons for not treating:
Unnecessary 15
Referred for other treatment (unsuit-
able) 6
Refused treatment 17
Left the town 4
- 2. Cases still under treatment on June 1, 1913 .. 129
- 3. Cases treated with tuberculin and discharged .. 424
(Of these, 228 cases were discharged before the course was completed.)
(a) Treated for less than 4 weeks 41

ANALYSIS.

Type TB+.	No.	Type TB-.	No.	<i>Reasons for discontinuing Tuberculin.</i>			
I	1	I	2	Referred	..	..	21
9	2	2	2	Refused treatment	..	..	10
11	1	6	1	Left town	..	..	6
12	1	10	1	Worse (died)	..	..	2
13	1	11	3	<i>Condition.</i>			
14	4	12	2		All Cases.	"TB+" Cases.	
15	2	16	1	Apparently arrested	2	..	1
16	7			Better	..	..	5
17	4			<i>In statu quo</i>	..	24	.. 15
18	6			Worse	..	..	10
Totals	29		12				

(b) Treated for more than 4 and less than 13 weeks .. 70

ANALYSIS.

Type TB+.	No.	Type TB-.	No.	<i>Reasons for discontinuing Tuberculin.</i>			
I	1	I	1	Referred elsewhere	..	..	2
5	2	2	1	Refused treatment	..	..	10
11	1	5	3	Refused treatment because better	..	..	4
13	1	7	1	Left town	..	..	7
14	1	9	2	Sent to sanatorium	..	..	4
16	1	11	3	<i>Condition.</i>			
17	1	18	1	Arrested	..	..	1
18	2			Apparently arrested	..	..	13
Totals	13		14	Better	..	..	13

2. *In statu quo* 33

Type TB+.	No.	Type TB-.	No.	<i>Reasons for discontinuing Treatment.</i>			
10	1	1	1	Referred	..	..	23
12	3	5	1	Refused treatment	..	..	10
14	3	9	1				
15	1	10	1				
16	3	11	4				
17	2	12	1				
18	8	18	3				
Totals	21		12				

3. Worse 10

Type TB+.	No.	Type TB-.	No.	<i>Reasons for discontinuing Treatment.</i>			
16	4	12	1	Referred	..	..	5
17	1			Refused treatment	..	..	2
18	4			Because worse	..	..	3
Totals	9		1				

(c) Treated for 13 weeks and over 117

ANALYSIS.

1. Improved 65

Type TB+	No.	Type TB-	No.	<i>Reasons for discontinuing Treatment.</i>	
3	1	1	1	Referred elsewhere	1
5	1	3	1	Refused treatment	29
7	1	4	1	Left town	14
8	2	5	7	Interval	9
9	6	7	1	Complication or unsuitable	3
10	1	9	3	Sent to sanatorium (2P, 7B)	9
11	1	10	2		
12	3	11	6	<i>Condition on Discharge.</i>	
13	1	12	3	Apparently arrested	39
14	3	13	1	Better	26
15	3	17	1		
16	2				
17	6				
18	7				
Totals	38		27		

2. Same 21

Type TB+	No.	Type TB-	No.	<i>Reasons for discontinuing Treatment.</i>	
2	1	10	1	Referred	11
5	1	11	2	Refused treatment	6
9	1	12	2	Sent to sanatorium	4
11	2	15	1		
12	1	18	2		
14	1				
16	3				
17	1				
18	2				
Totals	13		8		

3. Worse 31

Type TB+	No.	Type TB-	No.	<i>Reasons for discontinuing Treatment.</i>	
8	1	16	1	Referred as unsuitable	28
9	2			Worse (died) (all TB)	3
10	1				
12	1				
14	3				
16	8				
17	3				
18	11				
Totals	30		1		

(d) Adults completely treated and discharged before June 1, 1913 195
 (These cases are dealt with in the table on pp. 70 and 71.)

Type.	Actual Numbers.			Percentage arrested.		TB+ Cases.		
	Total.	Result.	Number.	A.	A and P.	Total Number.	Result.	Number.
1 and 2	13	A P	12 1	92	100	2	A	2
3 and 4	15	A P	14 1	93	100	2	A	2
5 and 6	36	A P S	33 2 1	92	97.4	3	A P	2 1
7 and 8	13	A P	10 3	77	100	3	A P	1 2
9 and 10	26	A P	13 13	50	100	11	A P	5 6
11 and 12	38	A P S	23 14 1	60.5	97.4	15	A P	7 8
13 and 14	6	A P B	3 2 1	50	83.3	2	A	2
15 and 16	21	A P B S	8 8 1 3	39.5	76.2	19	A P B S	6 8 1 4
17 and 18	28	A P S B W	7 16 1 1 2	25	82	18	A P S W	4 11 1 2
Total	195 =	A P B S W	123 61 3 7 2	A A+P A+B+P Discharged W	63 94 96 1	75	A P S B W	31 36 5 1 2

Percentage Results.—TB+ cases: A, 41; A+P, 91; discharged worse, 2.8.

General Course of Treatment.		Weeks of Tuberculin (Average).		Working Capacity.		
		Result.	No. of Weeks.		Before.	After.
Dispensary	10	A	24	Full ..	6	12
Ditto and Care Com.	2	P	35	Fit ..	1	1
Ditto and sanatorium	1			Part ..	1	
				Off ..	5	
Dispensary	14	A	36	Full ..	8	14
Ditto and Care Com.	0	P	50	Fit ..		1
Ditto and sanatorium	1			Fair ..	1	
				Off ..	6	
Dispensary	31	A	28	Full ..	21	32
Ditto and Care Com.	1	P	36	Part ..	3	2
Ditto and sanatorium	2	S	38	Off ..	9	
Ditto and country ..	2			Fit ..	2	
				Fair ..	1	
				Unfit ..	1	
				Pregnant..	1	
Dispensary	11	A	28	Full ..	8	13
Ditto and Care Com.	1	P	43	Part ..	1	
Ditto and sanatorium	1			Off ..	5	
Dispensary	21	A	28½	Full ..	6	24
Ditto and Care Com.	1	P	37	Part ..	3	
Ditto and sanatorium*	4			Fair ..	2	2
				Poor ..	1	
				Pregnant..	1	
				Off ..	13	
Dispensary	29	A	30	Full ..	13	33
Ditto and Care Com.	5	P	44	Part ..	10	
Ditto and sanatorium	3	S	42	Fair ..	2	2
Ditto and country ..	1			Part (unfit)	1	
				Fit ..		2
				Poor ..	3	
				Poor impvd.		1
				Off ..	9	
Dispensary	4	A	27	Full ..		3
Ditto and sanatorium	2	P	54	Fit ..		2
		B	58	Part ..		1
				Off ..	6	
Dispensary	9	A	40	Full ..		16
Ditto and Care Com.	1	P	42	Part ..	1	1
Ditto and sanatorium	11	B	42	Fair ..	1	
		S	27	Unfit ..	1	
				Poor ..		1
				Off ..	17	1
				Fit ..		2
Dispensary	18	A	32	Full ..	4	20
Ditto and Care Com.	1	P	41	Part ..	0	4
Ditto and sanatorium	9	B	54	Fit ..		1
		S	50	Fair ..	1	
		W	60	Unfit ..	1	
				Attacks of pleurisy & asthma ..	1	1
				Off ..	15	1
				Relapsed and died		1
Dispensary	147			Full (and fit)	65	153
Ditto and Care Com.	12			Off (and un-		
Ditto and sanatorium	34			fit) ..	88	4
Ditto and country ..	3			Part, etc.	42	14

Percentage Working Capacity.—At beginning: Off work, 44; full work, 33. At end: Off work, 1.5; full work, 84.

Results after a Period of Six to Eighteen Months since Discharge.

All these cases have been under observation in 1913, nearly all having been reported on as recently as October. The only cases who could not be traced at that date were two or three who had left the town in good health, and who are not likely to have relapsed. They were not "TB + " cases.

Cases discharged "A" may therefore be taken as remaining well. Of the cases discharged "P," five of those without TB's are reported as being less well than on discharge, one suffering from a complication and one only showing signs of active mischief. Three "TB +" cases have relapsed to a slight extent, the prognosis still being better than when they first applied at the dispensary, and two died. One of these, belonging to type (TB+) 16 relapsed after two months at full work, active signs recurring in larynx and lungs, sputum returning, and death occurring in a few months. The other, belonging to type (TB+) 18, kept well and free from sputum for six months, and then died after a brief illness described by his private doctor as "bronchitis and pneumonia."

Of the cases discharged "B," two have continued to improve, though the disease cannot be considered arrested. Neither of these had TB's. The third (TB+) relapsed, and is now hopelessly ill.

Of those discharged "S," three are better, two being TB+, one remaining the same (still no TB's), and the other three have become worse and died (TB+).

It must be recognized that careful examination of the cases discharged "P" some time ago, who remain well and free from sputum and symptoms, would probably lead to the inclusion of some among the "A's."

RESULTS TO THE END OF THE YEAR 1913 OF CASES "COMPLETELY TREATED," AND DISCHARGED BEFORE JUNE, 1913 (PORTSMOUTH).

Treated between June, 1911, and May, 1913 (inclusive), and reported on in December, 1913.

(One case, in the TB- series, is omitted who became ill with another disease (recurrence of dysentery, with intestinal obstruction), there being still some evidence of tubercle.)

	All Cases.		TB- Cases.		TB+ Cases.	
Arrested	123	} 91%	92	} 96%	31	41%
Apparently arrested	54		23		31	41%
Better	9	} 95.4%	4	} 89.3%	5	
Same	1		1		0	
Worse	8	4.1%	0	8	10.7%	
Totals	195		120		75	

These cases are tabulated with further details on p. 70.

CHILDREN.

I. Cases tested only, reacting (partially or completely) to test, but not treated with tuberculin 28

ANALYSIS.

Type.	No.	Type.	No.	<i>Reasons for not Treating.</i>	
1a	5	3a	6	Unnecessary	19
1b	3	4b	1	Referred elsewhere, because complication	1
1c	1	5a	2	Refused treatment, because better	3
1d	2	5b	2	Left town	3
2b	1	5d	2		
2c	2	9a	1		
	—	Total ..	28		

2. Cases treated with tuberculin, course not completed .. 67

The cases were treated for varying periods of time, and the results are compared with these periods in the same way as in the case of adults.

(a) Treated for less than thirteen weeks 35

ANALYSIS.

(I) Condition improved 15

Type.	No.	Type.	No.	<i>Reasons for discontinuing Tuberculin.</i>	
1b	1	5b	1	Referred for other treatment	3
2a	1	5c	1	Refused treatment	8
2b	1	5d	1	Left town	4
2c	1	7a	2	Number TB+	1
2d	1	8a	1		
3a	1	9a	1		
4a	1	10a	1		
	—	Total ..	15		

(2) Condition *in statu quo*, or worse (worse, 1) 20

Type.	No.	Type.	No.	<i>Reasons for discontinuing Tuberculin.</i>	
1c	1	5c	1	Referred	15
2a	2	5d	1	Refused treatment	3
2b	1	6a	2	Left town	2
2c	1	6b	1		
3b	1	9a	1		
3c	1	9b	1		
4b	1	9c	1		
5b	3	9d	1		
	—	Total ..	20		

<i>Condition on Stopping.</i>					
S	..	..	..	..	19
W	..	..	..	..	1
Number TB+	..	..	..	..	0

(b) Treated for more than thirteen weeks, course not completed 35

ANALYSIS.

(1) Partially arrested (quiescent) 11

Type.	No.	Type.	No.	<i>Reasons for discontinuing Tuberculin.</i>	
2a	I	5a	I	Referred	4
3a	I	5d	I	Refused to continue, because well	3
3b	I	8a	I	Interval	3
3c	I	8b	I	Left town	1
4b	I	10c	I		
	—	Total ..	10	Number TB+	2

(2) Improved 8

Type.	No.	Type.	No.	<i>Reasons for discontinuing Tuberculin.</i>	
2b	I	7c	I	Referred	7
3a	2	9a	I	Refused treatment	1
5c	I	9d	I		
6b	I			Number TB+	0
	—	Total ..	8		

(3) *In statu quo* and worse (worse, 1) 8

Type.	No.	Type.	No.	<i>Reasons for discontinuing Tuberculin.</i>	
S 2a	2	4b	I	Referred	7
3a	I	6b	I	Refused treatment	1
3b	I			Number TB+	0
3c	I	W 10c	I		
	—	Total ..	8		

3. Cases fully treated 77

(a) Disease arrested (93.5 per cent.) 72

ANALYSIS.

Reaching maximum dose of 0.5 c.c. TAF and over .. 23

Reaching maximum dose of under 0.5 c.c. TAF .. 49

<i>Types.</i>				Number TB+ 3	
1a	4	5c	4		
1b	4	5d	2		
1c	I	6b	I		
2a	11	7a	I		
2b	7	7b	2		
2c	2	7c	I		
3a	4	8a	I		
3b	3	8b	I		
4a	4	8c	I		
5a	3	9a	7		
5b	2	9b	3		
	—	Total ..	65		

(b) Disease not arrested 5

ANALYSIS.

Type.	No.	Type.	No.	Condition on Discharge.			
3b	I	8b	I	B .. ..	.. ..	.. ..	3
6a	I	10c	I	S .. ..	.. ..	.. ..	2
7a	I						
	—		—	Number TB+	.. ..	.. ..	1
		Total ..	5				

4. Cases still under treatment on June 1, 1913 43

ANALYSIS.

Type.	No.	Type.	No.	Number TB+			
1b	3	5d	3				
1c	2	5b	1				
2a	6	5c	2				
2b	2	5d	3				
3a	1	7a	1				
3b	3	8a	1				
4a	1	8b	1				
4b	1	9a	4				
4c	3	10a	1				
5b	1	10b	1				
5c	2	10c	2				
	—		—				
		Total ..	45				4

Results of tuberculin treatment considered in relation to all cases examined and treated (see p. 35):

1. Total number of cases receiving tuberculin, including those tested only, omitting those still under treatment on June 1, 1913: 645.

Number stopping W: 54 (8 per cent.).

2. Total number of TB+ cases included in above heading: 300.

Number stopping W: 50 (16 per cent.).

3. Total number of cases treated and discharged before June 1, 1913, omitting those who were discharged *in statu quo* after less than thirteen weeks' treatment: 487.

Number stopping A and P: 323 (61 per cent.).

Number stopping W: 54 (11 per cent.).

CHAPTER V

SUMMARY OF ALL CASES TREATED OR TESTED WITH TUBERCULIN, ILLUSTRATED BY EXAMPLES

A, Adults : No Tubercle Bacilli found.

- (1) FIRST are described the cases not reacting to test and discharged as negative. These are tabulated on pp. 78-81.
2) Cases diagnosed as tubercular.

		TYPE.		
		NO FOCUS DETECTED.		
		<i>Results.</i>		
Fully treated..	5	A 3
				B 1
				S 1
Partly treated 9				Refused because well .. 3
				Complications, no worse .. 4
				Treatment unnecessary .. 2
Under treatment, June, 1913				1
Total				15

No other treatment was given in any case.

CASE 1.—F., aged twenty-two, sister to Cases 19 and 71. Examined as contact case, and was found to be in extremely good health, looking well, good colour, active and free from any signs or symptoms of infection. Her age and condition considered in relation to the family history made one suppose that she inherited a different susceptibility to tuberculosis from the others. She was anxious to be tested and treated, and it was interesting to do so.

TAF 0.001 gave no reaction, 0.005 temperature to 100.6° F.; needle-track reaction. No focal reaction discovered. After 4 days, PTO 0.001, to 99.4°; after 7 days, same dose, no reaction, in 4 days, 0.002, no reaction; in 3 days, 0.003, to 101.2°, with headache and needle-track reaction; in 6 days, 0.003, to 100.4°; in 5 days, 0.0005, no reaction; in 3 days, 0.0075, no reaction; in 4 days, 0.001, to 99°; in 3 days, 0.0012, no reaction; in 4 days, 0.0018, to 100.2°; in 3 days, 0.001, no reaction. The dose steadily increased without further reaction

till PT ·18 c.c. was reached, when it was thought unnecessary to continue treatment.

It should be noticed that the patient was at full work during this time as a shop-assistant, attending the dispensary in the evenings. This case illustrates how completely the extreme sensitiveness at an early stage of the treatment can generally be overcome so that large doses are tolerated without causing the patient the slightest discomfort.

One other case in this class is similar. The others applied on account of symptoms, and were treated purely experimentally. There are too few of them for any general conclusions to be of any value, though it should be noted that at least no harm was done.

TYPE (TB-) 1.

SLIGHT, RECENT, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

	<i>Results.</i>			
Fully treated.. * 13	A	..	..	.. 13
Partly treated, unable to attend 3	P	..	..	.. 2
	S	..	..	.. 1
Not treated 12	Refused	..	..	.. 4
	Left town	..	..	.. 3
	Unnecessary	..	..	.. 5
Under treatment, June, 1913				5
Total 33				

Of the cases fully treated, all but three presented signs and symptoms very suggestive of the onset of phthisis, one of the remaining three being a contact case free from definite symptoms, though anæmic, and the other two suffering from symptoms of doubtful origin. One showed signs of infiltration of the larynx.

None of those who were not treated have shown further signs of tubercle so far as they have been traced. No other treatment was given except remedial exercises for spinal weakness in one case.

Two cases were helped by the Care Committee, but not in a way to alter the home conditions at all radically.

CASE 2.—M., aged twenty-three. Office work. This man applied for diagnosis on account of having been "run down lately." He had lost weight and was anæmic, and had not improved with taking an extra half-hour at dinner-time for a walk. He had suffered from rheumatism three years before.

No family history of consumption.

Examination.—Slight retraction right apex, moist sounds at apex of right lower lobe. Temperature to 99·2° F. one day (during four days prior to first dose).

CASES NOT REACTING TO TEST, AND

Date.	Sex and Age.	Family History.	Symptoms.
1910	F., 16		Anæmia, 2 to 3 months. Temperature to 99·6°
1910	F., 24	Sister signs of phthisis; brother, surgical tuberculosis; no bacilli found	Bad colds
1910	M., 21	Mother said to be phthisical	Ill for 5 weeks; pleurisy; cough, sputum
1911	F., 18	2 cases	Cough; sputum; 2 weeks, dysmenorrhœa
1911	F., 23		Influenza; faints
1910	F., 18	Sister, surgical tuberculosis; no bacilli known	Anæmia
1910	F., 24	Ditto	Ditto
1910	M., 55		Cough and sputum, 2 years
1912	F., 17		Cough and sputum; night sweats; notified as tubercular
1913	F., 23	Sister has consumption	Cough; sputum; hæmoptysis. Sent by doctor. Temperature irregular to 99·4°

DISCHARGED "NEGATIVE."—TOTAL NUMBER, 19.

Signs.	Test Doses.		Reaction.	Results.*
	Prep.	C.C.		
Right apex	OT	·001	Nil	Well.
	"	·003	"	
	"	·008	"	
Right apex	OT	·001	Nil	Well.
Both apices ; temperature to 99·2°	OT	·001	Nil	Fair ; no further signs of tuber- culosis.
	"	·005	"	
	"	·01	"	
	"	·01	"	
Right apex ; temperature to 100°	OT	·0001	Nil	Fair ; no further signs of tuber- culosis.
	"	·001	"	
	"	·005	"	
	"	·008	"	
	"	·01	"	
Apex left lower	OT	·001	Nil	Well.
	"	·003	"	
	"	·008	"	
	"	·01	"	
Right apex	OT	·001	Nil	Well.
	"	·005	"	
	"	·01	"	
	"	·01	"	
Ditto	Ditto	Ditto	Ditto	Ditto.
Left upper marked dul- ness				Well (diagnosis tertiary sy- philis).
	TAF	·001	Nil	
	"	·005	"	
	"	·01	"	
	"	·01	"	
Right apex	TAF	0·01	Nil	Well.
	"	0·05	"	
	"	0·01	Slight needle- track	

* At the latest date at which a report has been received.

CASES NOT REACTING TO TEST, AND

Date.	Sex and Age.	Family History.	Symptoms.
1911	F., 19	Mother, brother, and sister died of phthisis	Cough; shortness of breath; loss of flesh
1912	M., 38		Cough; sputum; hæmorrhage; 4 months' history of syphilis; occasional rise of temperature||
1912	M., 17		Cough; sputum; shortness of breath; night sweats, 2 weeks
1912	F., 16	Father's brother died of phthisis	Cough; sputum; loss of flesh; night sweats; shortness of breath; lassitude; hoarse, 12 months. Temperature irregular to 99·8°
1912	M., 30		Run down
1912	F., 17	Mother's father died of phthisis	Cough; short breath; hoarse
1912	F., 23		Cough; sputum; loss of flesh, 1 month
1913	F., 39		Cough; sputum; hæmoptysis; bronchitis, etc., 2 years
1912	F., 20	Mother has phthisis	Shortness of breath

* October, 1911.

† November, 1911.

|| The diagnosis was made of tertiary syphilis. Patient kept much the post-mortem revealed no signs of tubercle whatever. There was

DISCHARGED "NEGATIVE"—Continued.

Signs.	Test Doses.		Reaction.	Results.
	Prep.	C.C.		
Right upper; temperature to 99.4°	TAF	.001*	Headache	This case con- tinues to have suspicious signs.
	"	.003	Nil	
	Aqua dest.	.005	Slight needle- track	
	"	.01	Nil	
	TAF	.01†	"	
	"	.01‡	"	
"	.01§	"		
"	.05	"		
Right lower lobe; ulcer on arytenoid	TAF	.001	To 100°; no needle-track	
	"	.005		
	"	.01	To 101°; no needle-track	
Slight signs at apices	TAF	.001	Nil	Well.
	"	.005	"	
	"	.01	"	
	OT	.01	"	
Apices; bad teeth	TAF	.001	Temperature settled to 99.8°	Well.
	"	.002		
	"	.002		
	"	.006		
	"	.015		
Left apex crepi- tus; tempera- ture to 99°	TAF	.001	Nil	Well.
	"	.004	"	
	"	.01	"	
	"	.01	"	
—	TAF	.001	Nil	Well.
	"	.005	"	
	"	.01	"	
	"	.05	"	
Bad teeth	TAF	.001	Nil	Not traced.
	"	.005	"	
	"	.01	"	
	"	.01	"	
Rhonchi and râles	TAF	.001	Nil	Well.
	"	.003	"	
	"	.01	"	
	"	.01	"	
	"	.05	"	
Cords red; bad teeth			Nil	Well.

† December, 1911.

§ March, 1912.

same for a year, when the hæmoptysis recurred, and he died. The fibrosis of the right lung, with abscess formation.

Test.—Von Pirquet positive. OT 0.001, temp. nil; 0.005, temp. to 100° F. second day. PTO 0.0025 on second day after this rise, temp. to 100° F. Seven days, PTO 0.003, temp. nil. Three days, PTO, 0.004, temp. to 101° F same night, then normal and steady. Four days, PTO 0.005, temp. nil. Four days, PTO, 0.0065, temp. nil. Five days, PTO, 0.01, temp. nil. Temperature kept normal after this, the dose being increased at the usual interval in the following sequence: 0.02, 0.04, 0.06, 0.085, changed to PT, 0.004, 0.008, 0.01, 0.02, 0.035, 0.045 (which gave a rise to 99° on the second day), 0.05, 0.07, 0.09, 0.1, 0.15, 0.2, 0.3, 0.4, 0.5, 0.6, 0.65, 0.75.

OT was then used, the patient having already improved markedly and gained 5 pounds in weight; the doses were 0.3, 0.45, 0.5, 0.75, 1.0, and another pound was gained, the temperature remaining normal. No physical signs could be detected except slight retraction of the apices. The course had occupied twenty weeks.

Nine months later the patient had gained another 6 pounds, and was in excellent health and at full work. A year later he suffered from rheumatism again. In January, 1914, he was in excellent health, the lungs showing improved air entry, and no signs except slight retraction.

CASE 3.—M., aged sixteen. Dockyard. This is a very similar case, and is quoted simply to illustrate the ease with which reactions are overcome in this type. On application the temperature was rising to 99.4° daily, but settled somewhat under observation.

Test.—TAF 0.001; needle-track reaction. Temp.: first day, 99.2°; second day, 99.6°; became normal in intervals of doses.

TUBERCULIN TREATMENT.

Interval since Last Dose.	Preparation.	Dose.	Reaction (Highest Temperature).	
			First Day.	Second Day.
Days.		c.c.	Degrees.	Degrees.
12	PTO	•005	100	99
3	"	•005	99.2	
4	"	•0064	101.8	99.2
5	"	•0064	99.4	
4	"	•009	99.6	
5	"	•01		
3	"	•013	100	
6	"	•015	98.8	
3	"	•02	100.4	
4	"	•022	99.4	
3	"	•024	99.2 morning.	
4	"	•032		
3	"	•042	100 same night.	
5	"	•044	99 first day.	
6	"	•05	No reactions after.	

CASE 4.—F., aged twenty. Domestic service.
Reason for Application.—Sent for treatment by her doctor.
Symptoms complained of.—Cough, sputum streaked with blood, night sweats, shortness of breath, pain in left chest, lassitude. Duration, six weeks; gradual onset.
Previous Health.—Never strong.
Examination—Condition of Lungs.—Slight loss of resonance right apex and apex of left lower lobe.
General Condition.—Poor, flabby, not wasted, anæmic, bad teeth, kyphosis, afebrile.

Course of Treatment.—This girl was admitted at once for observation, as she had no home to go to. Being eligible for sanatorium benefit, she was sent at once to a sanatorium, where she remained four months. There the diagnosis was confirmed, but she was sent home little better, and said not to be fit for work. She was boarded out in the country near, and treatment commenced. P.T.O. was given, from 0.001 to 0.0018, the patient being sensitive, but she improved so rapidly that she refused to stay, and went to her home to get a place.

This case illustrates the beginning of active symptoms in a very chronic type of the disease. Although she has to be entered in the early class, the general condition suggested the pre-existence of latent mischief. The sanatorium treatment was entirely thrown away because graduated labour was not properly given.

TYPE (TB-) 2.

SLIGHT, RECENT, FEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>	
Fully treated..	3	A	3
Partly treated	4	Improved, but could not finish course, and relapsed; this case had the use of a shelter	1
		Improved, but refused to continue, and relapsed..	1
		Improved, and was sent to a sanatorium for domestic reasons; now well ..	1
		Had two doses only, and was unable to attend; remains the same ..	1
Total	7	Total	7

CASE 5.—The case who refused treatment and relapsed was treated at the observation hospital, and had signs of laryngeal infiltration, which became more marked on her subsequent relapse when tubercle bacilli were found. She responded well to treatment at this stage, and there is no reason to suppose

she would have relapsed had she continued. She originally applied for diagnosis because she had been nursing a sister who died of phthisis; she did not complain of any symptoms and looked well.

CASE 6.—M., aged thirty-two. Factory. This man made application for a bed in Winsley Sanatorium in October, 1910, his doctor having told him that he was suffering from early phthisis. He gave the history that he had been in good health till twelve months before, when he had had an attack of shingles and had not got well. He complained of pain in the stomach, which was getting worse, and in the back and legs, generally when walking and after food; no cough or sputum. His general condition was very poor, and he was much wasted, being very weak and hardly able to drag himself about. He had only given up work for two weeks.

On examination, loss of resonance was found at the left apex.

Arrangements had been made to send this patient to the sanatorium. As the home conditions were very unsatisfactory, it was not thought advisable to treat him there. He had only out-relief, a meal a day provided by a lady near, and the little money which his wife could earn for himself and four children. Treatment was, however, commenced while waiting for a vacancy, and after a fortnight he was so much better that another patient was sent to the sanatorium instead.

TUBERCULIN TREATMENT.

Temperature before Dose.	Interval since Last Dose.	Preparation.	Dose.	Temperature after Dose.	Weight.	Notes.
Degrees. 99·2	Days.	OT	∫c.c. ·001	Degrees. 100	st. lbs. 9 1¼	
Normal	5	PTO	·001	101		
	7	"	·001	102	8 12¼	
	7	"	·0005	100·4		
	4	"	·0005	100·4	9 5¼	
	6	"	·0005	99		
	3	"	·001	101·4		
	3	"	·001	101·3		
	5	"	·001	103·8	9 8	Very marked improvement.
	6	"	·001	99		
	5	"	·002	100·4		
	5	"	·002	99·4		
	4	"	·0035	100·2		
	4	"	·004	No reaction		
	4	"	·006	102·4	9 10½	
	5	"	·006	99·2		
	4	"	·007	No reaction		

After this tuberculin was pushed without marked reaction. The patient continued to gain weight and improved, and after three months' treatment he returned to work.

Treatment continued with steady temperature, weight maintained, until 1 c.c. of OT was reached in May, 1911, when he was discharged well.

In December, 1911, patient reported himself quite well, doing full work. Weight, 10 stone 13 pounds; heavier than he had ever been in his life, and he has remained well ever since.

The severity of the reactions at the beginning of this case might probably have been avoided by increasing slower when the reaction to 0.005 was overcome, but the result could hardly have been bettered.

In January, 1914, this man was in excellent health, maintaining his weight, and at full work.

TYPE (TB-) 3.

SLIGHT, ESTABLISHED, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>	
Fully treated..	.. .. 16	A (2 with laryngeal signs) ..	14
		P (1 with laryngeal signs) ..	2
Partly treated	.. .. 2	P (1 stopped because of complication; 1 refused treatment, better)	.. .. 2
Not treated ..	.. .. 7	Refused	3
		Unnecessary	4
Under treatment, June, 1913	9		
Total	34		

Of the cases discharged "A," one had three months' sanatorium treatment immediately before the tuberculin, during which time he was given three doses of BE—this gave marked reactions—one had remedial exercises for spinal curvatures, and one had a long holiday at the end of treatment.

CASE 7.—M., aged twenty-eight. Hairdresser.

Reason for Application.—For diagnosis; he had not seen a doctor.

Family History.—Father died of inflammation of the lungs, mother had a weak chest, sister died of consumption. His wife had consumption in her family. He had three children, all said to be in good health. No other members of the family seen at the dispensary. Home conditions comfortable.

Symptoms complained of.—Pain in chest through a cold, and slight hoarseness at times.

Onset and Course.—Gradual (twelve months).

Examination.—No signs were found in the chest; in the larynx cords were dirty in colour, movement good, right arytenoid swollen. Temperature normal. Pulse, 88.

Test Dose.—OT 0.001; temperature to 101.8°.

Arrangements could not be made to see patient during reaction.

TUBERCULIN TREATMENT.

Interval since Last Dose.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PTO	•0005	99.2	
3	"	•0006	99.6	
5	"	•00065	100.6	
6	"	•00065	99.8	
3	"	•00065		Patient feeling better.
4	"	•0008	99.4	
3	"	•00095	99	
4	"	•0125	102.6	Dose given by mistake, owing to a correction of the previous dose, which caused the number of naughts to be overlooked. The mistake was not noticed at the time, and the same dose was given again in seven days' time.
7	"	•0125	102	
7	"	•0125	100.6	
7	"	•0125	99.8	
4	"	•0135		
3	"	•015	101.8	
7	"	•015	102.4	

Patient continued at work during this time, and made some slight improvement. He hardly missed any work even during the most severe reactions. The original mistake was now noticed, and as it has been before realized that sensitiveness caused by too big an increase cannot be overcome by repeating the same dose or increasing it, the dose was diminished to 0.005.

Interval since Last Dose.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PTO	•005	99.2	
3	"	•0065		
4	"	•009	99.4	
3	"	•01		
4	"	•015	101.2	Weight increased 2 lbs.
7	"	•015	99.2	
3	"	•018	99	
4	"	•024	100.8	
7	"	•024		

After this the dose was increased steadily without reaction to 0.15 c.c.

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PTO	.15	100.2	Weight increased 4 lbs.
7	"	.15	99	
3	"	.2	99.2	
4	"	.25		
4	"	.35		Accidental interval of ten days.
10	"	.25	100	

It should be noted that the correct dosage after an unintentional interval in a patient who is sensitive is very difficult to estimate, and a reaction is extremely likely to occur whatever reduction is made. It is best to warn the patient to put up with it.

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
3	PTO	.25		Date, January 2, 1912. Unavoidable interval of two weeks.
4	"	.35		
3	"	.4	99.2	
7	"	.5	99.4	
4	"	.7		
3	PT	.01		
14	"	.01		
3	"	.024	99.4	
4	"	.024	Rise	
4	"			
6	"	.024		Rise of temperature due to chill lasting two days.

Dose was increased steadily with no definite reaction to PT 0.54, when treatment was stopped for a fortnight owing to patient having a severe cold. On recommencing, PT 0.16 continued to 0.8; no reaction; temperature, 100.2°. Four days later, PT 0.3; no reaction. Continued to 1.0 c.c.; temperature during this time subnormal. Change then made after three days to OT 0.1; increased steadily without marked reaction to OT 1.0 c.c.

Patient was then discharged in good health, still thin and slightly anæmic. He still complained of occasional hoarseness. Physical examination showed slight loss of resonance and harshness of respiratory murmur at right apex. Right vocal cord reddish. Weight increased by 2 pounds.

Some months later conditions were found to be the same, general health good. Patient left the town.

The most marked result in this case was the improvement in general health and sense of well-being. There is no doubt that a month at a sanatorium at the end of treatment would have improved the weight and the condition of the blood. As it was quite impossible for the patient to leave his work without losing an extremely good opening, this could not be arranged.

The case was not of the type in which the effect of tuberculin can be proved, but everything pointed to a serious prognosis at the outset and to a fairly good one at his discharge. It is a case in which it must be considered that there is some probability of relapse, unless arrangements could be made for testing with tuberculin within a year, and for giving a second course if necessary.

TYPE (TB-) 4.

SLIGHT, ESTABLISHED, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated..	..	..	1	A	..	..	1
Partly treated	..	..	1	P (left town)..	..	..	1
Not treated ..	..	..	1	Refused treatment ..	..	..	1
Total ..	..	..	3				

No other treatment was given.

CASE 8.—F., aged twenty-five. Married; one child. Type, TB-4. Applied May, 1912. No phthisis in family.

Symptoms complained of.—Loss of flesh, night sweats, shortness of breath, pain in glands.

Onset and Course of Disease.—Twelve months; gradual increasing pain, two weeks; confinement, ten weeks ago; febrile since.

Reason for Application.—Sent by doctor for treatment.

Previous Treatment.—None.

Previous Health.—Good.

Condition on Admission.—Lungs, slight loss of resonance and harshness at bases; cervical glands both sides; bad teeth; pulse 132; febrile.

TUBERCULIN TREATMENT.

Weight.		Interval since Last Dose.	Prep.	Dose.	Height of Temperature.	Days Temperature raised.				Notes.
st.	lbs.	Days.		c.c.	Degrees.	1	2	3	4	
7	6 $\frac{1}{4}$	7	PTO	.001	99.6	-	+	+	-	Temp. to 99°.
		4	"	.0014	99.6	+	+	+	-	
		7	"	.0018	100.6	-	+	+	-	
		7	"	.0018	100.6	-	+	+	-	
7	8	5	"	.0018	99.6	-	+	-	-	Temp. settled (98.4°).
		6	"	.002	99.6	-	+	-	-	
		5	"	.002	100.4	-	+	-	-	
		5	"	.002		-	+	-	-	

TUBERCULIN TREATMENT—Continued.

Weight.	Interval since Last Dose.	Prep.	Dose.	Height of Temperature.	Days Temperature raised.				Notes.
					1	2	3	4	
7 10	4	PTO	·0024	101·6	-	+	-	-	
	10		·0006						
7 12	3	..	·0008	99·6					
	4	..	·001						
	4	..	·0013	100					
	5	..	·0013	99·6					Pain in glands.
	3	..	·002						
	4	..	·0022	100					
	3	..	·0022	100					
	4	..	·0022	99					NT + .
	4	..	·0024	99					Pain.
	4	..	·0026	99					
	5	..	·0036	99					
	3	..	·005	99					NT + .
5	..	·006	99						
3	..	·008	100	+	-	-	-		
4	..	·008							
8 1		..	·01	101	+	-	-	-	
7 10½	5	..	·01	99					Temp. better.
	5	..	·012						
	4	..	·016	100·4					
	5	..	·016	99					
	5	..	·016						
	4	..	·02	99·2					
	3	..	·03						
	3	..	·04						
	4	..	·05	99					NT + .
	..	..	..	·05					

Patient improved greatly. Glands decreased very much, but did not disappear. Became pregnant again, and then left the town.

TYPE (TB-) 5.

SLIGHT, CHRONIC, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

				Results.				
Fully treated..	..	..	45	A (5 showed laryngeal signs)	39		
				P	2
				B	3
				S	1
Partly treated	..	..	14	P	..	..	9
				B	4
				S (with laryngeal signs)	1
				Reasons for stopping:				
				Left town	..	..	5
				Refused treatment	..	..	5
				Complications	..	..	1
				Interval	..	..	3
Not treated ..	..	..	11	Refused	..	..	3
				Left town	..	..	1
				Complications	..	..	3
				Unnecessary	..	..	4
Under treatment, June, 1913			9					
Total ..	..	..	79				

Of the cases treated, 34 showed typical signs and symptoms of early phthisis; 28 of these were fully treated, 24 being discharged "A," 3 being discharged "P," and 1, who suffered from a complication, being discharged "B." The remaining 6 did not complete the course; the disease was partially arrested in 4, and the other 2 improved.

Of the cases discharged "A," 1 had teeth attended to, 1 lived in the country while attending, 1 was helped by Care Committee in order to enable her to rest, 2 were pregnant and confined during course of treatment.

Of the cases not fully treated, 1 was at observation hospital for six weeks (left town, "P"), 1 was helped by Care Committee (left town, "P"), 1 had teeth attended to—stopped treatment because symptoms did not appear to be wholly due to tubercle, condition improved ("B").

CASE 9.—F., aged thirty-four. Factory worker.

Family History.—One brother had been treated at sanatorium, third stage tuberculosis diagnosed, no sputum. One advised to live out of doors on account of weak chest. One examined at dispensary had well-marked early mischief.

Onset and Course of Disease.—Pleurisy four years before, ill-health since, with liability to colds on chest.

Reason for Application.—For diagnosis.

Previous Health.—Good until four years ago; dysmenorrhoea.

Examination.—Lungs, loss of resonance and crepitations left apex. Vocal resonance and fremitus diminished. Temperature normal.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.	Weight.
Days.		c.c.	Degrees.	st. lbs.
	PTO	•001	99•4	7 5½
3	"	•0025	100	
7	"	•0025		7 5¾
4	"	•0035		7 6
7	"	•005		
3	"	•0075	99•4	
4	"	•009		7 6¾
3	"	•01	99	
4	"	•015	99	7 4¾
3	"	•02	99•4	
4	"	•03	99	7 5
3	"	•04	100 (same night)	
3	"	•045		7 5¾
3	"	•05	99	
4	"	•06		7 6½
4	"	•075	99 (same night)	
4	"	•08	99•6	7 5½

TUBERCULIN TREATMENT—*Continued.*

Interval.	Preparation.	Dose.	Temperature.	Weight.
Days.		c.c.	Degrees.	st. lbs.
5	PTO	.085	99	
6	"	.1	100	
5	"	.1	99	7 10
4	"	.15		
4	"	.2		
3	PT	.01		7 9½
3	"	.02		
4	"	.04		7 11½
3	"	.06		
4	"	.07		7 9
3	"	.09	99.8	
4	"	.1		7 9¼
3	"	.15		
8	"	.2		
3	"	.3		7 10½
4	"	.35		
4	"	.4		
3	"	.5	99 (same day)	
7	"	.525		
3	"	.6		7 11
4	"	.7		
3	OT	.2		7 10¼
4	"	.3		
4	"	.35		7 11
3	"	.4		
7	"	.5		
3	"	.65		7 10
7	"	.7	99.4	
4	"	.7		
4	"	.8		7 9¼

Patient improved very much during treatment, and remained in much better health after discharge.

The crepitations were lost, and only a slight retraction remained. She was in good health and free from signs in the lung in January, 1914.

CASE 10.—F., aged thirty; sister to Case 40. Applied for treatment in 1910, having been tested previously with tuberculin, to which she reacted.

History.—Liable for many years to repeated attacks of severe illness, generally accompanied by asthma. The health in between the attacks was fairly good, and there was no sign that it was deteriorating.

On examination, slight loss of resonance was detected at the apex of the left lower lobe. The condition of emphysema, with slight chronic bronchitis, made it difficult to detect a focus of tubercle. Temperature was normal.

Tuberculin was given in the usual sequence without reaction, interrupted by an acute pneumonic attack. This subsided,

and tuberculin was continued, the patient improving and suffering less from asthma than usual. She was, however, in a different climate from her home.

Not long after her discharge she fell ill again, and the attacks appear to have been as frequent and as severe as they were before she had tuberculin. Vaccine treatment has been tried since, also without effect.

CASE II.—M., aged thirty-three. Insurance agent. Applied for diagnosis in 1911.

Symptoms.—Attacks of bronchitis and asthma, cough, sputum sometimes streaked, loss of flesh, night sweats, shortness of breath.

History.—Gradually getting worse for seven years; never strong.

Examination.—Infiltration of both apices; no moisture.

Treated from January 12 to July, when so much improvement seemed to have been obtained that patient was discharged under letter P, 2 c.c. of TAF having been given. He had gained 8 pounds in weight, and the attacks of asthma were much slighter and less frequent.

After two months patient said he was worse again, and begged to have some more treatment. Several doses of distilled water were given in order to see how much of the benefit might be due to suggestion. Patient said the asthma was slightly better, but that his cough had not improved in the same way that it did with the first course, so that it was thought better to try tuberculin again. Very little further improvement was obtained, however. Since discharge patient has kept much the same, and the diagnosis of tubercle remains uncertain. The reaction to tuberculin was never very definite, though a slight needle-track reaction occurred.

TYPE (TB-) 6.

SLIGHT, CHRONIC, FEBRILE (NO TUBERCLE BACILLI DETECTED).

Total number 2

In both cases it is probable that the condition of fever on first examination was temporary.

CASE 12.—One was a case of asthma who did not benefit from a trial course of tuberculin, and stopped "S." Her husband had active disease with bacilli in the sputum, and was treated at the dispensary. One daughter was tested, reacted, and was treated. One son was tested, and did not react.

The other case is still under treatment.

TYPE (TB-) 7.

INTERMEDIATE, RECENT, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>					
Fully treated..	10	A	..	..	..	..	9
				B	..	..	..	..	1
Partly treated	3	B	..	..	..	..	3
				Refused to continue	..	..	..	..	2
				Left town, because better	..	..	..	..	1
Not treated (left town)	..	..	1						
Under treatment, June, 1913	..	..	2						
Total	..	..	16						

Of the cases discharged "A," two were sent to a sanatorium for a month each.

CASE 13.—Of the cases fully treated and discharged "B," one, who had severe lupus as well as pulmonary mischief, rested from work for some weeks. The lupus was improved under treatment, but did not heal. The lung condition improved markedly, and the prognosis is now much better than is usual in cases described as "B."

CASE 14.—M., aged nineteen. Factory worker. Had been off work two weeks.

Family History.—One sister died of phthisis the year before at the age of seventeen.

Onset and Course of Disease.—Tightness on chest, with colds distinctly worse lately.

Reason for Application.—For diagnosis.

Previous Health.—Had always had delicate chest, suffering from tightness on chest with colds.

Examination.—Loss of resonance and moist sounds at left upper lobe. Patient seemed ill. Temperature normal, but had risen to 99.4° once in the previous three days.

Course of Treatment.—It was decided to send him to the next vacancy at the sanatorium, as he lived too far from the dispensary to attend unless he should improve rapidly. Treatment was, however, commenced while waiting.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.	Weight.	Notes.
Days. 4	PTO	c.c. ·001	Degrees.	st. lbs. 8 0½	Temperature up second day, up three days.
4	„	·0025	101.4	8 3¼	

After this, weight was 8 stone 7 pounds. He then went to the sanatorium and continued treatment there, with normal temperature throughout. Tuberculin was pushed steadily without any reaction whatever, and weight increased to 9 stone $2\frac{1}{4}$ pounds. He continued treatment after coming home, and returned to work. He maintained his weight, and was discharged on reaching OT 1 c.c., apparently in perfectly good health, which he has maintained since.

The increase in dose throughout in this case was less than 50 per cent. The case is not really defined as to length of symptoms, and might be put in Class 9 or 11.

CASE 15.—M., aged eighteen. Office work.

Family History.—Mother died of phthisis.

Symptoms complained of.—He was anæmic and thin, and had been tired and slack lately, with slight cough. He had suffered from severe pain in the frontal region occasionally.

Onset and Course.—Recent onset of symptoms of ill-health.

Reason for Application.—For diagnosis.

Examination.—Loss of resonance and crepitations detected at the apices of both lobes and at the right upper apex. Temperature to 99°; once to 100° (but taken shortly after a meal).

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.	Weight.
Days.		c.c.	Degrees.	st. lbs.
	PTO	·0025		9 2
3	"	·005	99·4	
4	"	·006	99·4; 100·4	9 $3\frac{1}{2}$
7	"	·006	100·8	9 $1\frac{1}{2}$
4	"	·0065	100·6	
3	"	·006	99·2	
3	"	·0065		9 3

Patient was then sent to a sanatorium for a month, not so much because it seemed necessary, as for the sake of avoiding risk and building up the general development, which had never been good. Tuberculin was continued while he was there.

Interval.	Preparation.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
	PTO	·0065			
4	"	·007		9 5	
4	"	·009	99·6	9 $6\frac{1}{2}$	
4	"	·012	101		
7	"	·012	100·2	9 $8\frac{1}{4}$	
5	"	·012	102·2		
4	"	·006		9 6	Temperature irregular.

Interval.	Preparation.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
3	PTO	·0085	99·4 daily		
3	"	·01	99·4 daily		
4	"	·015	100	9 9	Returned home and went to the sea for 2 weeks, then continued, temperature being again normal.
14	"	·02			
5	"	·03	101		
4	"	·03			
3	"	·04		9 11	
5	"	·055	100	9 10½	
5	PT	·06	103		PT given in error.
8	"	·01	100	9 5½	
8	PTO	·06	99		
5	"	·075	100		
4	"	·075	99		
6	"	·08			
4	"	·09		9 7¼	
4	"	·12			

After this, the doses were increased without reaction:

PTO, 0·25, 0·35, 0·45 (temp. to 99·2°), 0·45, 0·5; weight 9 stone 10 pounds. PT, 0·01, 0·015, 0·02, 0·025, 0·035, 0·042, 0·055; weight, 9 stone 11 pounds. 0·065, 0·075 (return of headache), 0·075, 0·09, 0·1, 0·15, 0·175, 0·2 (temp. to 100°). 0·2, 0·3 (temp. to 99·2°, headache), 0·32, 0·38; weight 9 stone 12 pounds. 0·42, 0·48, 0·55, 0·6, 0·65, 0·7. OT, 0·1, 0·15, 0·2, 0·3, 0·45, 0·5 (temp. to 100°), 0·5 (temp. to 99°), 0·52, 0·6 (temp. to 99·4°), 0·62; weight 9 stone 9 pounds.

Patient was then discharged, the general condition being good and the lungs healed, with slight retraction only of the apices. Six months later the frontal pain again became troublesome, and he was sent to the nose and throat department of the Bristol Royal Infirmary for examination. Mr. A. J. Wright there found and removed a tuberculous granuloma on the nasal septum. On recovery from this operation another short course of tuberculin was given of TAF 0·001 to 0·4 c.c. Since that time the patient has remained perfectly well.

TYPE (TB-) 8.

INTERMEDIATE, RECENT, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>	
Fully treated	..	..	7	A (3 with laryngeal signs) ..	6
				P	1
Under treatment, June, 1913			2		
Total	..	..	9		

The chief possibility of mistaken diagnosis in this type of case is due to influenza. While the early stages of tuberculosis are often wrongly taken for influenza, it is also easy to jump to the conclusion that a subacute relapsing influenza, lasting over a number of weeks, with patches of congestion in the lungs, is really due to tubercle, and it is unwise to rely entirely on a tuberculin reaction in settling the diagnosis. These cases may account for many successful results of treatment, since they are probably more prone to natural cure than is tuberculosis.

By careful observation of a patient when at rest it should be possible as a rule to distinguish, and the further course under tuberculin treatment may occasionally throw light.

The above cases appeared to be fairly certainly tubercular.

CASE 16.—In the case discharged "P," the larynx was affected, and though the general health and capacity for full work is reported, some hoarseness remains, together with sputum, in which bacilli have never been found.

One case was treated for seven weeks at Langstone, the family being supported by the Charity Organization Society, and one had extra nourishment allowed by the Care Committee.

TYPE (TB -) 9.

INTERMEDIATE, ESTABLISHED, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>	
Fully treated	16	A (3 with laryngeal signs) ..	10
		P	4
		B	1
		S	1
Partly treated	7	Refused treatment, or left town	6
		P	2
		B (1 (?) laryngeal) ..	3
		S	1
		Complications	1
		P (? laryngeal)	1
Not treated	2	Left town	1
		Unnecessary	1
Under treatment, June, 1913	6		
Total	31		

CASE 17.—The case discharged "better" only, after full treatment, was complicated by complete deafness, apparently due to both middle and internal ear disease. The evidence as to the part played by tubercle was not very convincing. This patient had sanatorium treatment for two months during her course, but did not make much improvement.

CASE 18.—The case marked "S" was the wife of a man dying of consumption; she improved and was discharged "A,"

but had very heavy work nursing her husband, and relapsed after he died to much the same condition as she was in when first seen, there being still no sputum. A second course would be almost certain to arrest the disease.

Two patients discharged "A" were pregnant and confined during the course.

No other cases received other help or treatment.

CASE 19.—F., aged 20. Millinery assistant. Sister of cases 1 and 71.

Family History.—One brother and one sister died of phthisis, one brother and one sister treated at dispensary for phthisis.

Onset and Course of Disease.—Attack of influenza previous winter.

Reason for Application.—For diagnosis.

Examination.—Lungs, loss of resonance at both apices, most marked over the left, where crepitations could be heard at the end of inspiration after coughing, expiration being prolonged. Anæmic. Appearance suggested similar constitution to her brothers.

Temperature normal. Pulse 80.

The source of infection was difficult to determine, as the sister who died two years before had been free from sputum till the end of her illness, when, presumably, precautions were taken, as the family was a very careful one. It is suggestive that infection had occurred from a common source in childhood that had not been traced.

A dose of OT 0.0005 gave reaction of 99.4° the second day, with well-marked needle-track reaction.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Highest Temperature.	Notes.
Days.		c.c.	Degrees F.	
	PTO	•001		
3	"	•002	101	
10	"	•002	99.8	
8	"	•002	100.2	Patient unable to attend on the most advantageous days for the dose.
8	"	•0005		Patient better; gained 5 lbs.

After this, patient had a bad swollen face and was unable to attend for three weeks, when a dose of 0.001 gave a severe reaction.

Interval.	Preparation.	Dose.	Highest Temperature.	Notes.
Days.		c.c.	Degrees F.	
21	PTO	•001		Severe reaction. Dose increased steadily, with slight reactions and somewhat variable temperature. Temperature raised two days.
6	„	•0005		
	„	•002	101	
7	„	•001	99•2	

After this the dose was increased steadily without marked reaction, and patient reached a dose of 1 c.c. of OT in thirty-six weeks of treatment.

At the end of this time she was in good health and full work, with no signs of active mischief, and had gained 3 pounds since the outset. She has reported herself as keeping well since.

TYPE (TB -) 10.

INTERMEDIATE, ESTABLISHED, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated..	..	..	2	P	..	..	1
				B	..	..	1
Partly treated	..	..	6	P (2 left town; 1 laryngeal ? advised to have interval)	..	..	3
				B (complication)	..	..	1
				S (refused treatment, 1 laryngeal ?)	..	..	2
Under treatment, June, 1913			2				
Total	..	..	10				

Seven of the cases treated have never shown symptoms at all typical of phthisis, and these must be numbered among those in whom the diagnosis of the cause of ill-health must remain obscure.

CASE 20.—M., aged 18. Invalided from the army for blindness, said by the surgeon at the Eye and Ear Infirmary to be due to optic atrophy. He was suffering from a cough and applied for diagnosis. Early signs were found in the lungs, but the reactions to tuberculin gave very severe headache, and in view of the cranial mischief, it was not thought advisable to continue treatment at the dispensary, or even at the observation hospital, where there was no resident medical officer, so that although the patient expressed himself much better, treatment was stopped. Patient went into the Poor Law Infirmary, and on his discharge some months later the lung condition was much advanced and tubercle bacilli were present in the sputum.

CASE 21.—F., aged 39. Married. The case discharged "B" after a full course was one who had been operated on at the hospital before treatment commenced for a growth on the clavicle considered by the surgeon to be tubercular. She had been attending the hospital as an out-patient and receiving medicine for her chest, the physician considering that she was too ill to benefit from tuberculin. She was febrile when first seen, and continued so for many weeks, though the temperature fell slightly under treatment. It improved still more when she was obliged to come down to the dispensary in a chair on account of a slight accident.

After this a gummatous ulcer appeared on the thigh, and the tuberculin was interrupted for a time while she had treatment for this. Her general condition, which had improved very much before this, continued to improve when she came back to finish her course later, but complete relief of symptoms was not obtained.

TYPE (TB-) II.

INTERMEDIATE, CHRONIC, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>			
Fully treated..	.. .. 39	A .. .. .	.. .. .	.. .. .	28
		P .. .. .	.. .. .	.. .. .	6
		B .. .. .	.. .. .	.. .. .	3
		S .. .. .	.. .. .	.. .. .	2
Partly treated	.. .. 22	P .. .. .	.. .. .	.. .. .	7
		B .. .. .	.. .. .	.. .. .	6
		S .. .. .	.. .. .	.. .. .	7
		Reasons for stopping: P. B. S.			
		Advised interval ..	2	-	-
		Refused treatment	5	3	3
		Referred for other treatment ..	-	1	5
		Killed in accident	-	1	-
		Laryngeal signs in those who stopped:			
		P .. .. .	.. .. .	.. .. .	2
		B .. .. .	.. .. .	.. .. .	1
		S .. .. .	.. .. .	.. .. .	4
Not treated ..	.. .. 4	Refused .. .. .	.. .. .	.. .. .	3
		Unnecessary ..	.. .. .	.. .. .	1
Under treatment, June, 1913	11				
Total	76				

CASE 22.—One of the cases fully treated, discharged "S," improved, though very slowly, during treatment, and a change of air was arranged, during which treatment was continued. She was discharged after many months (forty-one weeks of actual treatment) with the disease apparently arrested, and returned to work in 1911. She relapsed, however, in the summer

of 1913, and in January, 1914, was in much the same condition as when first seen, or possibly slightly worse, the extent of the physical signs in the lungs having increased. She then had sanatorium treatment lasting four months, without improvement, followed by a second course of tuberculin which appears to have arrested the disease again.

CASE 23.—The other case, discharged "S," suffered from severe asthma and improved at first under treatment. Polypi were removed from the nose, but kept recurring. As she did not respond further to tuberculin, she was referred to a hospital for treatment, and improved somewhat again; but the condition cannot be considered entirely convincing of there being a tubercular basis of any importance.

In none of the three cases discharged "Better," after full treatment, can the condition be considered to be quite certainly wholly, or even mainly, due to tuberculosis; two are cases in whom the improvement has been maintained for two years, and in all three there is much to suggest a syphilitic complication.

The cases discharged "A" were certainly those who seemed at the outset to be most typical of chronic tuberculosis, and in several there was everything to suggest that the disease was progressing, although it was not at the time of first examination, causing fever, since the symptoms had become definitely worse in the preceding weeks.

The cases receiving other treatment were as follows:

Form of Treatment added to Tuberculin.	Fully Treated: Results.				Partly Treated: Results.		Totals.
	A.	P.	B.	S.	P.	S.	
Hospital				I	I		2
Observation Hos- pital	I (5 wks.)				I (6 wks.)		3
	I (2 wks.)						
Sanatorium ..	I (1 mo.)	I (1 mo.)			I (1 mo.)		3
Care Committee..	I		I		I		3
Country	I			I			2
Teeth	I					I	2
Pregnant and con- fined		I					I

One case who refused treatment reapplied in 1913, the disease being then hopelessly advanced, with tubercle bacilli present.

CASE 24.—One patient, still under treatment in June, 1913, had presented much cause for doubt as to the diagnosis, as signs suspicious of tubercle and yet very suggestive of hysteria kept appearing in the spine, rib, and foot, those in the lungs being of very doubtful character. The back was immobilized, and sanatorium treatment arranged, but the husband would

not permit this. She became pregnant, and labour was induced, and since this a spinal abscess has formed. Tuberculin appears to have done this case no good, but the home conditions were very adverse.

CASE 25.—M., aged 19. Carpenter.

Family History.—Phthisis in mother's family.

Symptoms complained of.—Cough, pain in chest, and tightness of breathing during repeated attacks of asthma. No sputum.

Onset and Course of Disease.—Had always been liable to attacks of asthma. No more definite evidence of tubercle.

Reason for Application.—For diagnosis on account of repeated attacks of asthma. Was not under doctor.

Previous Treatment.—Had had frequent medical treatment. Home conditions were good.

Previous Health.—Had had pleurisy and pneumonia eight or nine years ago. Influenza several times. Health pretty good between attacks of asthma.

Examination—Lungs.—Some loss of resonance with prolonged expiration at right apex anteriorly. At apex of right lower lobe breath sounds were rough, accompanied by few quiet crepitations. General condition fairly good, though flabby. He was able to do fairly regular work, but was sometimes prevented by attacks of asthma.

Test.—OT, 0.001; no general reaction, needle-track reaction; weight, 9 stone 6½ pounds. After four days, 0.003; temperature, 102.4°; weight, 9 stone 1½ pounds.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Weight.	Notes.
Days.		c.c.	st. lbs.	
7	PTO	.0005		
	"	.001	9 6½	
	"	.001		
	"	.001		Bilious attack. Dose increased steadily at usual rate without reaction, with steady temperature and steadily improving general condition to—
3	PT	.6	9 9½	Dose increased at usual rate to—
?	"	.06		Three days after this influenza, temperature to 101.6°; no doses for six weeks.
Weeks.				
2½	"	.03		Dose increased rapidly, without reaction, except needle-track, to—
	OT	.65		
	"	.1		Dose then increased without reaction to—
	"	.86		

Patient was then discharged, professing himself to be in much better health than for many years, and much more free from his attacks of asthma.

CASE 26.—M., aged 33. Railway porter.

Symptoms complained of.—Debility, indigestion, slight cough, sputum, slight hoarseness.

Onset and Course of Disease.—Symptoms since pleurisy four years ago. Frequently off work.

Reason for Application.—Sent by doctor for diagnosis.

Examination.—Lungs, dulness at right apex and over the lower lobe. Dulness left apex and crepitations during re-
action. Larynx normal. Pulse 126. Cardiac apex beat violent. General condition fair. Muscular development poor. Artificial teeth. Mouth clean. Temperature normal, once to 99.2° during four days before testing.

Test.—TAF, 0.001; no reaction. After four days, 0.005; temperature, 101.2°; needle-track and focal reaction.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Highest Temperature.	Notes.
Days. 10	PTO	c.c. •001	Degrees F.	Doses increased steadily, with slight reactions and general improvement and gain in weight to—
	„	•01	100	
4	„	•012	99.6	
3	„	•016	100.6	
4	„	•02	99.4	
4	„	•03	100.2	
4	„	•03	100.6	
4	„	•0075	—	
	„	•6		
Then	PT OT	•01 1 c.c.			Weight stationary. Doses then increased steadily 50 per cent. without reactions to—
	KE „	•01 •08		
				Similar increases to— Still sputum, therefore same dose repeated at weekly intervals eight times; then—

Patient was then discharged, in good health and at full work.

The case was of a type likely to become definitely consumptive. He would probably have responded equally well to sanatorium treatment.

CASE 27.—M., aged 44. Factory worker.

Family History.—One brother died of phthisis.

Symptoms complained of.—Winter cough, sputum, fever.

Onset and Course of Disease.—Attacks every winter for last five years, lasting three to five months. Each worse than the last.

Reason for Application.—For diagnosis.

Examination.—Lungs. Patches of loss of resonance and crepitations at left apex and right lower lobe. Temperature normal. General condition fair. Patient a tall, thin man.

Test.—OT; 0.001; temperature, 99.2° first day, 99.6° second day.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.
Days.		c.c.	Degrees.
4	PTO	.0035	
3	"	.0035	
3	"	.0045	
3	"	.006	103
7	"	.0055	101
5	"	.0065	103
7	"	.006	101
5	"	.006	99.6
5	"	.007	103
5	"	.0035	99
4	"	.005	99
4	"	.0075	
3	"	.009	

After this, dose increased at 50 per cent. increases, without reaction till PT 0.055 was reached; temperature, 100°.

Same dose in seven days gave no reaction. Then the weight began to increase until 9 pounds was gained at the dose of PT 0.3. This weight was maintained till 1 c.c. of OT was reached in April, 1911, the patient having come through the first winter for six years without an illness, not having lost indeed more than an occasional half-day's work, when the reactions were severe.

He lost weight during the summer, and had a second short course of TAF in October, when he regained it. He has kept well and at full work since.

CASE 28.—F., aged 18. Dairy assistant.

Symptoms complained of.—Slight cough, sputum, slight huskiness, lassitude.

Onset and Course of Disease.—Cervical glands had been removed three years before.

Reason for Application.—For treatment, on account of symptoms.

Examination.—Early signs detected at left apex and right base.

Test.—TAF, 0.001; temperature, 99.4°; crepitations detected.

Tuberculin Treatment.—PTO; seven doses from 0.001 to 0.0048, then fourteen from 0.001 to 0.007, then twenty-seven from 0.0002 to 0.002: extreme sensitiveness was encountered. TAF; twelve doses from 0.0001 to 0.00054: the sensitiveness appeared to be overcome.

The patient had never complained of the reactions and seemed fairly well, not having to give up work.

She gained a stone in weight the first seven months of treatment, and maintained this for two weeks. She then began to lose, and had lost 7 pounds when she began to seem less well in herself.

On examination, a slight increase in the area of infiltration was detected, and it was decided to stop tuberculin and send her to a sanatorium. There had been no marked reaction for several doses. Some days after the last dose she went a long bicycle ride without a hat on a very hot day in the middle of summer, and returned with a severe headache, which continued, and was accompanied by fever till she died some weeks later. There were no definite signs of tubercular meningitis, and no post-mortem was allowed.

TYPE (TB-) 12.

INTERMEDIATE, CHRONIC, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated..	..	..	3	P (1 with laryngeal signs)	..	2	
				B	..	1	
Partly treated	..	..	12	P	..	3	
				B	..	3	
				S	..	5	
				W	..	1	
				Reasons:	P.	B.	S. W.
				Refused	..	2 2	1 1
				Interval	..	1 1	- -
				Unsuitable (1 to sanatorium with laryngeal signs)	..	- -	4 -
Under treatment, June, 1913			2				
Total	..	..	17				

One case, discharged "P" after full treatment, was nineteen weeks at the observation hospital, and the other, an asthmatic case, was sent to the south coast at the end of her course. The case partly treated, who did not improve at home and was sent to a sanatorium, came back (after June, 1913) in good health and fit for work. This type of case has proved unsatisfactory,

but the numbers are not sufficient for evidence as to the reason.

CASE. 29—F., aged 17. Occupation, shoe factory. Date of application, August, 1910.

Family History.—Mother died of consumption.

Symptoms complained of.—Amenorrhœa, listlessness.

Onset and Course of Disease.—Was under-developed and deficient in vitality, and not very bright, had always been delicate, had never menstruated. Consumptive bowels as a child. Off work six months.

Reason for Application.—Brought by step-mother for diagnosis.

Examination—Lungs.—Loss of resonance at both apices, crepitations at left. General condition suggestive of deficient thyroid secretion. Temperature to 99.2° .

Tuberculin Test.—OT, 0.001, 0.005, 0.008; no temperature or needle-track reaction.

Patient had pain in the chest and felt ill.

Treatment.—Exercises were given for three months and attention paid to general hygiene. As she did not improve and the signs in the chest persisted, the temperature being sub-febrile and rising to 99.6° , tuberculin treatment was commenced.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.
Days.	PTO	c.c. •001	No rise.
3	"	•003	
4	"	•0045	
3	"	•006	
4	"	•008	
3	"	•009	

Doses were continued at a rather slow rate of increase, depending on the patient's sensations rather than on the temperature, which gradually settled. As it settled, reactions to the doses began to show, though they were never very typical. The patient improved to some extent, and the moist sounds in the chest cleared up; but when a dose of OT 0.25 was reached, it was decided to send her to a sanatorium.

The condition was then as follows: No sputum present. Quiescent mischief upper halves of both lungs. General condition poor. Rectal temperature, 36° to 37° C.

She remained five weeks, and was discharged fit for work. On her return crepitations were to be detected

again at the left apex. She returned to work at the factory.

Tuberculin Treatment.—PT was continued up to 0.5 c.c.

Treatment was stopped when the dispensary closed in December, 1911. She had improved considerably and no moist sounds could be heard in the lung. Menstruation commenced, and she appeared to have more energy.

She kept well and at work until the summer of 1913, when she became ill and applied for sanatorium benefit. The mischief was found to have extended over the left lung, and tubercle bacilli were present in the sputum.

She was sent to a sanatorium, but was sent home after two months as being too ill to remain.

In January, 1914, the disease was active, and extended over the left lung and right upper lobe; the general condition was poor, the temperature rising to 103° daily. She has improved somewhat under tuberculin treatment since, but the prognosis is bad.

TYPE (TB -) 13.

ADVANCED, RECENT, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>						
Fully treated (with laryngeal signs)	1	A	..	..	..	..	1
Partly treated	1	P (refused to finish)	..	..	..	..	1
Under treatment, June, 1913,				1						
Total	3						

The evidence as to lung disease is clear in these cases, the only likely alternative diagnosis being syphilis. The improvement without recourse to antisiphilitic treatment suggests that the diagnosis of tubercle was correct.

TYPE (TB -) 14.

ADVANCED, RECENT, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>						
Fully treated..	3	P (1 with laryngeal signs)	..	..	..	..	2
					B	..	..	..	..	1
Under treatment, June, 1913				1						
Total	4						

CASE 30.—The case still under treatment in June, 1913, improved at first at the observation hospital and returned home to work. He did not take sufficient care, however, and relapsed, tubercle bacilli being then found. Sputum was present

on first examination, and bacilli could probably have been found then with further search. The original prognosis was bad. The patient developed laryngeal trouble and died.

The other cases were also equally clearly cases of phthisis, and although the improvement has been slow and a slight relapse occurred in the one marked "B," the later history has been satisfactory, all three being at full work for which they were unfit at the outset.

One discharged "P" was at the observation hospital six weeks. One discharged "B" was at the observation hospital four weeks.

TYPE (TB-) 15.

ADVANCED, ESTABLISHED, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>	
Fully treated..	..	..	2	A (1 with laryngeal signs) ..	2
Partly treated	..	..	2	B (left neighbourhood) ..	1
				S (with laryngeal signs); re- fused treatment because no better.. ..	1
Under treatment, June, 1913			3		
Total			7		

CASE 31.—One case under heading "Result A" had been recently discharged after two months at a sanatorium, as unfit for graduated labour on account of slightly raised temperature. This temperature settled, and the chart suggests that it was doing so before tuberculin was commenced. His general condition was good and was well maintained during his course, with rapidly increasing exercise and work. At the end of the course he was fit for full work as an engineer, and has remained so since, although he was somewhat sensitive to the larger doses of tuberculin, and treatment had to be stopped before this was overcome.

CASE 32.—The laryngeal case who did not improve had very extensive laryngeal mischief, which may have been partly due to syphilis. She was referred to her own doctor, and the condition has not changed since.

CASE 33.—The case who left the neighbourhood, a fairly severe one, was reported by his doctor to have improved very markedly. He (the patient) wrote in January that he had undergone Alabone's treatment since he stopped tuberculin and had improved much more with that. It should be noted that a considerable length of treatment had been given, and that it is not unusual for improvement to continue after the doses have stopped.

TYPE (TB-) 16.

ADVANCED, ESTABLISHED, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated..	..	..	2	A (1 with laryngeal signs) .. 2			
Partly treated	..	..	2	B	..	..	1
				W	..	..	1
Not treated (unsuitable)	..		1				
Under treatment, June, 1913			1				
Total	..	..	6				

These cases were all clearly phthisical except—

CASE 34, discharged "B," in whom there was so much hysteria that the diagnosis was less certain. There were fairly convincing signs of infiltration of one lung, with crepitations, which cleared up under treatment, but a suspicion of commencing spinal caries, for which a diagnosis was chiefly required, was not entirely settled.

A second course of tuberculin was given later by her own doctor and the condition is reported improved.

CASE 35.—One case discharged "A," aged 16, had a shelter to sleep in, and, being an under-sized, unhealthy-looking boy, was persuaded to obtain open-air work, in which he was fortunately able to obtain a good opening. The signs in the lungs, which were very well marked, persisted for some time and only healed towards the end of the course. He made a most satisfactory recovery, has developed a good physique, and emigrated to the Colonies.

CASE 36.—The case who stopped worse, had a bad family history, and the prognosis seemed so bad at the outset that he was urged to go to the Poor Law Infirmary, where open-air wards are in use. He preferred to remain at home, and improved so much under tuberculin that hopes were entertained of arresting the disease. An ischio-rectal abscess occurred, however, and was followed by a serious relapse, from which he was slowly recovering in the autumn of 1913.

CASE 37.—M., aged 20. Occupation, yacht steward and insurance collector.

Family History.—Mother and one brother (TB+) treated for phthisis at the dispensary.

Symptoms complained of.—Cough.

Onset and Course of Disease.—Four and a half months before, sudden hæmoptysis.

Reason for Application.—For treatment.

Previous Health.—Good until hæmoptysis, four and a half months before.

Previous Treatment.—After hæmoptysis, in bed two weeks, home conditions good. Then sanatorium two months. On discharge doctor said he had improved very much and was likely to do well if he kept free from hæmorrhage. Had lost sputum. No record as to whether tubercle bacilli had been found in it.

Examination.—No laryngeal symptoms, but the left arytenoid was infiltrated with a soft and boggy surface. The cords were a bad colour.

Lungs.—Signs of infiltration of both lobes of the left lung with rough inspiration and prolonged expiration, and loss of resonance also at the right apex of the right lower lobe.

General condition fair. Still had cough. Temperature, 99.2°. Pulse 100.

Tuberculin Treatment.—PTO, 0.0024, increased at the rate of about 30 per cent.

He was not sensitive to tuberculin, and slowly improved. During treatment occasionally had some coloured sputum. During the winter was not quite so well, and was admitted at the observation hospital for a fortnight. He improved very rapidly.

As he had slight hæmoptysis on going home, he was re-admitted for another fortnight, gained 7 pounds, and was discharged on attaining dose 1 c.c. of OT, with normal temperature, greatly improved in health. He has continued well since this, free from cough and sputum, and doing full work as an insurance collector. No signs of moisture in the lungs remain, and the larynx is normal.

TYPE (TB-) 17.

ADVANCED, CHRONIC, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>	
Fully treated..	.. .. 11	A (both with laryngeal signs)	2
		P (1 with laryngeal signs)	5
		B (2 " " ")	3
		S (1 " " ")	1
Partly treated	.. .. 4	P	1
		B (refused treatment)	2
		S	1
Under treatment, June, 1913	5		
Total	20		

The case fully treated and discharged "S" was not very typical of tubercle, the larynx being extensively infiltrated in a way that resembled a syphilitic lesion, without any ulceration. On the whole, the cases are characteristic of a fairly common type, and are not much differentiated from the succeeding group 18.

In several, very long standing and troublesome symptoms, seriously interfering with working capacity, were lost under tuberculin treatment, and no other assistance was used except in one case (see Case 38 below).

Two cases who were discharged "B," one after full treatment and one after part, had been treated previously at a sanatorium where the condition was described as Stage III., TB negative. Both cases had kept at work since with occasional relapses, and both have been distinctly better since the tuberculin, though still not free from relapses.

A brother and sister of one have been treated, and the wife and child of the other.

CASE 38.—F., aged forty-two. Occupation, housewife.

Family History.—Mother of Cases 37 and 98; treated at dispensary for phthisis.

Symptoms complained of.—Cough, sputum, pain in chest.

Onset and Course of Disease.—Never strong. Had had pleurisy and influenza and cough in the winter, with sputum occasionally streaked with blood.

Reason for Application.—For treatment.

Examination.—Signs of infiltration of the right lung, three lobes, no definite moist sounds. Pulse 90, temperature, 99.2°.

Test.—TAF 0.001; temperature, 99.6°. Headache, shortness of breath, irritation of the throat and cough. Needle-track reaction.

Tuberculin Treatment.—Treated with PTO without much reaction, marked improvement, good health, no gain in weight, occasionally slight hæmoptysis. Treatment continued to TAF 1 c.c. in thirty-six weeks. On discharge health much improved, no cough, very little sputum. Has kept well since.

It is difficult, in the case of this family, to say from whom the infection came. The mother gave the longest history, and it is very probable that she and the elder son had had bacilli in the sputum at one time or another.

TYPE (TB-) 18.

ADVANCED, CHRONIC, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated..	..	..	2	P (1 with laryngeal signs)	..	..	2
Partly treated	..	..	7	B (refused treatment)	..	..	1
				S*	..	..	6
Under treatment, June, 1913			7				
Total	..	..	16				

* Unsuitable, and not likely to respond to treatment, so that it was stopped. One of these had exophthalmic goitre, and was transferred to the hospital.

While these cases appeared to be tubercular in everything except the absence of tubercle bacilli from the sputum, there is a good deal to suggest syphilis in some of them, and further investigation than the dispensary organization allowed time for would have been very interesting. Most of the cases discharged "S" expressed themselves as feeling better for the treatment. One discharged "P" was at the observation hospital four weeks. Two who stopped "S" were at the observation hospital two and three months respectively.

CASE 39.—M., aged fifty-six. Factory worker.

Symptoms complained of.—Debility, sputum (slight), occasionally streaked with blood.

Onset and Course of Disease.—Pleurisy eight years ago, and had not regained health. Continued work till eighteen months ago, when he became more definitely ill.

Examination—Lungs.—Resonance poor all over; worse over right lung. Expiration prolonged, and moist sounds at both apices and at apex of right lower lobe. Râles under left clavicle. Cavities right upper and left lower.

General Condition.—Very poor and emaciated and feeble. Temperature to 100.6°. Nervous, irritable. Marked oral sepsis.

Treatment.—Patient was ordered to stay in bed, and tuberculin was commenced at home; temperature rising to 100° or over daily for five weeks.

Test.—PT, 0.0001, 0.0004, was given; and then, after a week, 0.001, 0.0015. Temperature, 101° for three days.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Highest Temperature.	Weight.	Notes.
Days.		c.c.	Degrees F.	st. lbs.	
7	PTO	.0015			After this, temperature normal. Patient able to attend dispensary.
	"	.0018			
	"	.002			
3	"	.003	99.2	7 9	Temperature remained irregular. Temperature irregular, and rising to 99.6° to 100°; after this, between reactions (wife suffering from influenza).
3	"	.0035			
4	"	.005	99.2	7 12	
7	"	.006	100.2	8 3	
4	"	.006	100 (3 days)		
6	"	.0055			
4	"	.006	101		

TUBERCULIN TREATMENT—Continued.

Interval.	Prep.	Dose.	Highest Temperature.	Weight.	Notes.
Days.		c.c.	Degrees F.	st. lbs.	
3	PTO	·0065	101	8 4	Temperature still to 100° daily between reactions.
4	"	·006	101		
7	"	·0055	101	8 3	
5	"	·006			
4	"	·007	101	8 5	
7	"	·0075		8 4	
5	"	·0085			
6	"	·01			
5	"	·02	101		
4	"	·02	101	8 2½	
3	"	·02	101		
4	"	·02		8 3½	

Patient was then sent to Winsley sanatorium, the physical signs having greatly improved, but the general condition being unsatisfactory.

The temperature remained up at Winsley, but the doses were continued and it gradually fell.

PTO, 0·035, 0·04, 0·05, 0·06, 0·075, 0·095, 0·125, 0·2, 0·3.

After this the reactions became more severe, the temperature settling between them.

Interval.	Preparation.	Dose.	Temperature.	Weight.
Days.		c.c.	Degrees.	st. lbs.
3	PTO	·325	101	8 12
5	"	·35	101·4	

The resident medical officer wrote when he first arrived that the physical signs did not seem to account for the general condition, which might be due to oral sepsis, but he could not consider the prognosis good enough to warrant expense over treating this.

After these severe reactions he wrote that he considered the tuberculin was doing harm, and that he was not in a fit condition to have teeth extracted. The patient came home therefore, after eight weeks away. Treatment was continued at home (see table on p. 113).

During this time the teeth were extracted, and in course of time replaced.

Treatment was continued with PT with slow rates of increase up to 0·7 c.c.; weight, 9 stone 1 pound.

OT was then given, with normal temperature and weight maintained up to 1 c.c., without reaction, in July, 1911. Patient returned to half-time work.

Interval.	Preparation.	Dose.	Highest Temperature.	Weight.	Notes.
Days.		c.c.	Degrees F.	st. lbs.	
	PTO	.3	101		
4	"	.3	To 101, normal after		
4	"	.3	100	8 11	
4	"	.325	100		
7	"	.35	100	8 9	
4	"	.375	100		
4	"	.375	101		
4	"	.375	101		
7	"	.375	100	8 9	
5	"	.4	100		
5	"	.4	100		
5	"	.45			Slight hæmorrhage.
14	"	.3	100	8 9	
4	"	.3			
3	"	.35			
3	"	.375			
4	"	.45	100		
4	"	.45			
4	"	.5			
4	"	.525			
3	"	.55			
4	"	.6		8 12	
4	"	.65			
3	"	.7			

The lungs fibrosed and no moist sounds have been detected since. He has continued at regular work, not usually full-time, but with fair general condition till 1914.

CASE 40.—F., aged thirty-one.

Applied in 1910 for diagnosis and treatment.

History.—Never strong. Bronchitis at thirteen, with asthma, and had been liable to attacks ever since. Improved when at south coast. At twenty, considered definitely tubercular, and had open-air treatment, after which she kept better for some time, but had been getting worse again for two or three years before 1910. Various forms of treatment had been tried for the asthma without effect, and the general condition was getting steadily worse.

On examination, signs of infiltration were found of the whole of the left lung, which was in a fibroid condition, with very poor air entry. Crepitations were heard at the left apex. The diagnosis, confirmed in consultation, was of a progressive fibroid phthisis, and a very bad prognosis was given. Prior to testing with tuberculin, the temperature was normal and the patient had been free from severe asthma for some weeks, though in very poor health.

OT 0.0001 c.c. was given, without reaction; 0.001, no rise of temperature, needle-track reaction; 0.005, no rise of

temperature, needle-track reaction; 0.01, temperature to 103° the same night, became normal in three days, accompanied by severe attack of asthma.

Treatment was begun with PTO; 0.001, 0.0025, 0.0035, without reaction, patient seeming much the same as before the dose.

Another attack of asthma and general illness then came on, resembling those to which patient had always been liable, but more severe. As each preceding attack had been more severe than the one before, it was not considered that this should be attributed to the tuberculin. The mouth temperature rose for two days to 100° and then fell to normal, at which it continued with occasional premenstrual rise. The rectal temperature varied from 99° to 101°.

The tuberculin was continued without reaction, except that the doses seemed to increase the asthma sometimes. The patient continued very ill for some weeks, and there was no gain in weight. She was in bed three months.

After four months improvement began to show, PT 0.1 having been reached in the ordinary sequence, and by the time OT 1.0 c.c. was reached, nine months from the commencement, a stone had been gained in weight, and the patient was as well as before the illness. Since that time she continued to improve, with occasional slight relapses. A second course of TAF from 0.005 c.c. to 1.0 c.c. was given a year later, and the condition has been very much improved since then. In 1914 the lung condition is very much better than on first examination, the air entry over the left lung having greatly improved and the apex of the right appearing to be clear. She has much less asthma, and is able to lead an active life. The weight is maintained.

B, Adults: TB+.

TYPE (TB+) 1.

SLIGHT, RECENT, AFEBRILE (TUBERCLE BACILLI DETECTED).

		<i>Results.</i>	
Fully treated..	2	A	2
Partly treated	2	B (refused treatment)	1
		S (treatment thought unnecessary)	1
Under treatment, June, 1913	2		
Total	6		

No other treatment was given.

The prognosis should be good in this type, but the numbers are insufficient for statistical purposes.

The cases have been easy to treat and not strikingly sensitive, though all have shown reactions at the beginning.

TYPE (TB+) 2.

SLIGHT, RECENT, FEBRILE (TUBERCLE BACILLI PRESENT).

				<i>Result.</i>	
Partly treated	..	..	1	S (sent to sanatorium, B)	.. 1
Under treatment, June, 1913			1		
Total	..	..	2		

CASE 41.—The patient, who was sent to a sanatorium, had tuberculin for a considerable period while at work before, but did not improve. She did not take sufficient care of herself, and it would no doubt have been better to send her to a sanatorium sooner, though it is doubtful if permanent cure would have been obtained, as she was an unsatisfactory patient. She returned to work with the disease partially arrested.

TYPE (TB+) 3.

SLIGHT, ESTABLISHED, AFEBRILE (TUBERCLE BACILLI DETECTED).

				<i>Results.</i>	
Fully treated..	..	..	2	A (1 with laryngeal signs, 1 pregnant and confined)	.. 2
Partly treated	..	..	1	B (refused treatment)	.. 1
Total	..	..	3		

No other treatment was given.

CASE 42.—F., aged twenty-one.

Family History.—Two sisters died of phthisis. One brother treated at dispensary for abdominal tubercle (apparently cured).

Symptoms complained of.—Slight cough; sputum, occasionally streaked; shortness of breath on exertion; loss of voice.

Onset and Course of Disease.—Indifferent health, anæmic; no definite illnesses except cough, bronchitis, and influenza.

Reason for Application.—For diagnosis. Sent by doctor.

Examination—Lungs.—Loss of resonance and harsh prolonged expiration, at right apex anteriorly and posteriorly. Teeth very bad. General condition fair. Temperature normal.

Cardiac Condition.—Apical systolic murmur. Pulse 110.

Shortly after application patient found that she was in early stage of pregnancy.

Tubercle bacilli were found in sputum. Immediate treatment was urged.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Highest Temperature.	Notes.
Days.		c.c.	Degrees F.	
	PTO	·001		Occasional marked needle track reaction.
3	„	·002		
5	„	·0024		
3	„	·004		
4	„	·006		
3	„	·009	99	
4	„	·01	99	
3	„	·012	99	
4	„	·014	99	
3	„	·018	100·2	
7	„	·018		
4	„	·024		

After this the dose was increased at the usual rate of 50 per cent. without further reaction. It should be noticed that slight sensitiveness seems to have been induced by the slow rate of increase before this; but, on the other hand, no serious reaction occurred, and it is quite possible that a more rapid increase might have given sharper reactions. PTO was continued up to 0·9 c.c., followed by PT 0·01, increased at the usual rate, not interrupted by occasional reactions to 99°.

Patient suffered from abdominal pain after PT 0·24, and a change was made to TAF, as it has frequently been found that when this symptom occurs, the patient stands TAF better. After five doses treatment was stopped, and the confinement occurred.

Patient had a normal labour, hæmorrhage being slightly excessive. Though she was very weak for a time afterwards, she improved sufficiently to return for treatment after two months.

Interval.	Preparation.	Dose.	Highest Temperature.	Weight.
Days.		c.c.	Degrees F.	st. lbs.
	TAF	·001	99·4	8 12½
5	„	·0012		
3	„	·0018	99·4	

The dose was increased at a regular rate. Patient was now able to have her teeth attended to, and this was a great advantage to her. In four weeks she had lost her cough and sputum, and appeared to be in perfectly good health.

The doses were continued for another seven weeks up to 1 c.c. TAF without reaction, when she was discharged well.

TYPE (TB+) 5.

SLIGHT, CHRONIC, AFEBRILE (TUBERCLE BACILLI PRESENT).

				<i>Results.</i>			
Fully treated..	..	..	3	A	..	..	2
				P	..	..	1
Partly treated	..	..	4	P (refused treatment)	..	..	2
				B (refused treatment)	..	..	1
				S (did not improve, and was sent to country for asthma)	..	..	1
Under treatment, June, 1913			3				
Total	..	..	10				

One patient discharged "A" had three weeks at the observation hospital, and at the end of the course a month at a sanatorium.

CASE 43.—One patient discharged "P" after full course was also treated for syphilis, as she suffered from secondary stage skin eruptions. She lost her sputum, and there was reason to conclude the tubercle was completely arrested, although the general condition remained somewhat poor. She was not very sensitive to tuberculin.

CASE 44.—F., aged twenty-three. Married. One child. Applied August, 1912.

Symptoms complained of.—Cough, sputum, loss of flesh, shortness of breath, pain in shoulders, attacks of asthma.

Onset and Course of Disease.—Five years ago severe cold. Was told she was consumptive and sent to a sanatorium for two months, but told there that she had not got tubercle. Returned better and kept better, though still subject to attacks of asthma, till five months ago, when she became worse.

Previous Treatment.—Sanatorium five years ago.

Examination—Lungs.—Infiltration of both upper lobes. No crepitations.

Test.—TAF, 0.001, no reaction; 0.005, needle-track reaction; 0.01, temperature to 99.6°; 0.01, no reaction.

It was decided that tuberculin was not needed, and some diluting fluid was given to see if suggestion would affect the asthma. Patient got worse, however, and tubercle bacilli were found in the sputum.

Tuberculin Treatment.—Treatment was commenced with PTO 0.001 and she began to improve. After a month her child was ill and she had to leave off coming. She then had a relapse, and treatment was started again after a month, and continued without reaction to PTO 0.62, when, as she was not improving, she was advised to try a change of air in the country to see if this would affect the asthma. This she did, but she did not

improve, and continues (in 1914) seriously incapacitated by asthma and weakness.

This case should be compared with Case 39, and might have done equally well with the same care and perseverance.

TYPE (TB+) 7.

INTERMEDIATE, RECENT, AFEBRILE (TUBERCLE BACILLI DETECTED).

		<i>Results.</i>	
Fully treated..	.. .. 1	A .. ..	.. .. 1
Partly treated	.. .. 1	P (refused to finish)..	.. .. 1
Under treatment, June, 1913	4		
Total	6		

The case discharged "A" also had teeth attended to.

TYPE (TB+) 8.

INTERMEDIATE, RECENT, FEBRILE (TUBERCLE BACILLI DETECTED).

		<i>Results.</i>	
Fully treated..	.. .. 2	P (both laryngeal) ..	.. .. 2
Partly treated	.. .. 3	P (refused treatment)	.. .. 1
		B (stopped for complication, rheumatism) ..	.. .. 1
		W (discharged) ..	.. .. 1
Under treatment, June, 1913	3		
Total	8		

One case (partly treated, result P.) was helped by Care Committee. One case (partly treated, result W.) had ten weeks at the observation hospital.

In the other cases no other treatment besides tuberculin was given.

CASE 45.—M., aged seventeen. Occupation, pastrycook.

Onset and Course of Disease.—Had been under a doctor for five weeks for a bad cold, and had been told by him that he was consumptive.

Reason for Application.—Sent by employer for diagnosis as his mother wished to know whether he was consumptive, and would not believe doctor.

Examination.—Loss of resonance and harsh moist respiratory murmur at both apices. No definite moist sounds. Vocal cords dirty in colour, arytenoids injected. Tubercle bacilli found in the sputum.

He was urged to give up work, but refused to do so.

Home conditions were fairly good, as, though father was in the infirmary and mother had to take in work, there were three elder members of the family earning. His objection to stop-

ping work was for fear of losing his job. The employer did not apparently take any further interest in the case, and it was impossible to insist upon his stopping. He was, however, dealing with the cooking and not handling the food after it had been cooked.

Tuberculin Treatment.—PTO, 0.001; weight, 6 stone 12 pounds.

The dose was increased regularly at the rate of 50 per cent., with perfectly steady, normal temperature. 0.01 sent the temperature to 99°, but the dose following, 0.015, gave no reaction. 0.24 gave a temperature of 100°, but repeated in five days gave no reaction. Increase was continued up to 0.8. Weight, 7 stone 6 pounds.

Patient's general condition much improved. Sputum still present in the mornings. PT 0.01 was then given, and increased steadily to 0.6. OT 0.1 was given, and increased up to 0.8.

The patient was then absent for three weeks, after which doses continued up to 2 c.c. and the patient was discharged in good condition. Weight 7 stone 9 pounds.

He still had slight cough and sputum in the early morning, but professed that there was never any during the day.

He reported himself in January, 1913. Weight, 8 stone 1½ pounds. Still same condition, but no tubercle bacilli in the sputum.

While this case presented the features of an acute one when first seen, with marked signs of toxæmia, although there was no rise of temperature, and a short history, he showed a very low degree of sensitiveness to tuberculin. Other similar cases, especially those in which such marked improvement occurs as was seen in this case, have in my experience been sensitive to tuberculin.

CASE 46.—M., aged twenty-seven. Single. Invalided, Royal Navy. Stoker, P.O. Applied August, 1912. Mother died of phthisis in 1909, brother died of phthisis in 1911, sister died of phthisis in 1909.

Symptoms complained of.—Slight cough, slight sputum, loss of flesh, night sweats, pain on right side.

Onset.—June, 1912. Acute. Improved last eight weeks.

Reason for Application.—For treatment. Not under doctor.

Previous Treatment.—Royal Naval Hospital.

Previous Health.—Good.

Condition on Admission.—Lungs, infiltration of right upper and middle lobes, rhonchi and râles, and left apex faint crepitation. Febrile. Temperature settled slightly with rest.

Interval.	Prep.	Dose.	Highest Temperature.	Days Temperature raised.				Weight.	Notes.
				1	2	3	4		
Days.	PTO	c.c. ·001	Degrees F.					st. lbs. 11 0½	Temperature irregular.
3	"	·0013							
3	"	·002	99·4					10 13¼	
7	"	·001						11 2	Temperature to 99°.
4	"	·0014	100·4	-	+	-	-		
5	"	·0014	99·4	+	-	-	-	11 0	NT+.
3	"	·0014							
3	"	·002	100·4	-	+	-	-		Temperature normal.
7	"	·002	100·2	-	+	-	-	10 13	
3	"	·002	99·4	+	+	+	+		
4	"	·003	101·8	-	+	-	-		
5	"	·003		-	+	-	-		
4	"	·004	99·6	-	+	-	-		
5	"	·005	101·6	-	+	-	-		
5	"	·005	100·2						
4	"	·005	99·4	-	+	-	-		
4	"	·007	102	-	+	+	+		
7	"	·007	99·6	-	-	+	-	11 2	Work.
3	"	·01							
4	"	·015	100·2	-	+	-	-		Sputum blood-stained.
5	"	·015	100·6					11 0	
7	"	·015	104						

Patient was very irregular in attendance, and after getting work, refused to continue, as he said he felt quite well.

Temperature settled, he lost cough and sputum and maintained weight at full work.

Report in January, 1914.—Full work and well, no sputum.

CASE 47.—M., aged twenty-one. Dockyard.

Symptoms complained of.—Slight cough, pain in right shoulder, hæmoptysis.

Onset and Course of Disease.—Had applied quite at the outset of his symptoms, and presumably the mischief had not been of long duration, as he had been at Haslar with chicken-pox three months before applying, and had been carefully examined there because the temperature had not returned to normal in the expected time. He had at that time a slight cough, but no other symptoms. Pulse 86. No sputum.

Reason for Application.—Sent by doctor on account of symptoms.

Previous Health.—Rheumatic fever in childhood. Said he had been liable to rise of temperature since this.

Examination.—Fairly extensive mischief in right lung. Tubercle bacilli in the sputum. Temperature showed daily rise to 101°.

He refused to admit that there was anything the matter with him whatever, and said he felt perfectly well. He was doing full work, and looked energetic and well, except that he was definitely anæmic.

He was unwilling to stop work, and remained working with temperature 101° to 102° daily, while treatment was begun with small doses.

Tuberculin Treatment.—PTO, 0.0001; weight, 10 stone $3\frac{1}{2}$ pounds. No reaction. Seven days steady increase, again no reaction. Weight the same. Three days after this doing extra hard work, temperature higher, going to 102° and 103° . Still expressed himself well, and seemed to be fairly fit. Pulse never rapid.

Was admitted at the observation hospital four weeks later. He was reluctant to go, but gave way. Was put on absolute rest.

Temperature gradually settled, and remained generally normal (occasionally 99.4°) for six weeks. He was not sensitive to the doses, which were pushed at a moderate rate.

Occasional days walking sent his temperature up. He was on exercise for a fortnight. Dose reached was PTO 0.007, weight +1 pound. Three days later temperature became more irregular, and tuberculin was stopped. He was made to rest.

After fourteen days temperature came down and was normal three days, when it suddenly rose to 104.6° with rapid pulse, respiration, and a condition resembling acute pneumonia developed, with tubercle bacilli predominating in the sputum. Some improvement took place, the temperature falling somewhat, but there were signs of serious extension of the disease in the lungs. A dose of Spengler's I.K. solution (0.0001 c.c.) was given, followed by PTO, 0.0002 c.c., but the temperature rose slightly for a few days, and it was decided to give no more.

No reason was ever ascertained for the relapse. No other patients were ill at the time. He had disobeyed orders a week or two before and gone out at night, but there was no evidence that this was the cause.

If hospital accommodation could have been provided for him for twelve months, the prognosis would not have been hopeless, but this being impossible except in the infirmary, where he refused to go, he had to be sent home, where the conditions would not allow any chance of recovery, and he died six months later.

TYPE (TB+) 9.

INTERMEDIATE, ESTABLISHED, AFEBRILE (TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated..	..	..	9	A (1 laryngeal)	..	..	5
				P (1 " )	..	..	4
Partly treated	..	..	11	Reason for discontinuing:			
					P.	B.	S.
				Refused treatment	2	1	2
				Left town ..	1	1	
				Discharged (1 died, 1 relapsed, and advised sanatorium) ..			2
				To sanatorium	1		
				Complications	1		
Under treatment, June, 1913				Totals ..			
			3		5	2	2
			23				

Of these cases, three were at the observation hospital; one for eight weeks (see Case 49) also sent to sanatorium; one for four weeks, who then refused treatment and was discharged "P"; one for three weeks, who was discharged "P." One case discharged "A" and one partly treated and discharged "P" were helped considerably by the Care Committee.

CASE 48.—The case who died was a long-standing bronchitic case, a man of fifty-eight, who had been off work a long time. He improved at first, and maintained this improvement for a considerable time before a fresh attack of bronchitis, not apparently connected with any reaction to tuberculin, proved fatal. This case was fairly sensitive to tuberculin throughout, but professed himself the better for the reactions. There was at no time any clear evidence of definite improvement.

CASE 49.—F., aged twenty-six. Occupation, domestic service. Off work four days.

Family History.—Father died of phthisis; brother died when a few weeks old, said to be of phthisis.

Symptoms complained of.—Sudden illness while at work, weakness resembling influenza.

Onset and Course of Disease.—Had suffered from winter cough for five years and had been worse for two months, with a little sputum, now stopped, occasionally streaked with blood; shortness of breath, night sweats, pain in right chest, slight hoarseness and lassitude. Had been taken ill with a rise of temperature a few days before.

Reason for Application.—Sent by doctor for treatment.

Examination—Lungs.—Infiltration both apices and apex of

right lower lobe, with suggestion of other scattered patches. Bad teeth. No sputum.

Treatment.—Admitted at once (March, 1912) to observation hospital. Temperature soon settled, and patient improved rapidly under tuberculin combined with sanatorium treatment, and was sent to the country, where tuberculin was continued until she was fit to take a situation. Throughout this time there was no sputum. She was fairly sensitive to tuberculin. She took a situation and continued treatment.

After twenty-five weeks' treatment OT 1 c.c. was reached, and patient seemed perfectly fit and well, having gained 12 pounds in weight, and temperature being normal while at full work.

After treatment had been stopped for one month she seemed less well and had a feverish cold, during which some sputum reappeared and was found to contain a few bacilli.

She was admitted for observation again, and a second course of tuberculin commenced, to the small doses of which she was again quite sensitive. After six weeks, the condition being certainly no worse than when she was first seen, she was sent to a sanatorium to undergo graduated labour, and remained eight months. No tubercle bacilli were found again, but a difficulty was experienced in overcoming the shortness of breath and obtaining full working capacity. She returned well and fit for work.

CASE 50.—M., aged twenty, single. Invalided Royal Navy. E.R.A. Off work five months. Applied July, 1911.

Family History.—Father died of phthisis; one sister died of laryngitis.

Symptoms complained of.—None now, but not feeling fit for work.

Onset and Course of Disease.—December, 1910, feverish attack; no signs in lungs. Sent to Haslar because of family history, and tubercle bacilli found. Got well and kept well till one month ago; anal fistula, now better.

Reason for Application.—For treatment.

Previous Treatment.—Royal Naval Hospital: operation at hospital for fistula.

Previous Health.—Good.

Condition on Admission.—Lungs: no moist sounds both apices. Slight harshness and dulness. Larynx: right cord and arytenoid infiltrated. Temperature normal. No sputum. (See table on p. 124.)

Patient obtained work after two months' treatment, and has continued well and at full work since.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Highest Temperature.	Days Temperature raised.	Weight.	Notes.
Days.		c.c.	Degrees F.	1 2 3 4	st. lbs.	
	OT	.001	99.2	+ + - -	10 6½	
6	"	.001	99.2	- + - -	10 8¼	
3	PTO	.001				
4	"	.002	99.2	- + - -	10 9¼	
3	"	.0032				
4	"	.0048			10 10½	
3	"	.0072				
	"	.01				
	"	.015				
	"	.0225			10 11¼	
	"	.035	99.2	- + - -		
4	"	.045				
3	"	.07	100.6	- + - -		To 99°, three days.
6	"	.07	101	- + - -		
5	"	.07				
3	"	.09				
	"	.125	99.2		10 12	
28	"	.05			10 10	
5	"	.1				
5	"	.15				
5	"	.225				
4	"	.35	102.6	- + + -	10 12	
7	"	.35	99.2	- + - -		
3	"	.4	99.8	- + - -	10 11	
4	"	.42	98.8			
5	"	.5	99			
3	"	.6				
	"	.75				
7	PT	.02	99.2	- + - -	10 10	
4	"	.026				
7	"	.03			10 12	
5	"	.05	99	- + - -		
4	"	.07			10 9	
4	"	.15				
4	"	.15	101			Tired. Cold; temper- ature irregu- lar some days.
	"	.05	99.2		10 8	
3	"	.06				
4	"	.062	102	- + - -	10 9	
6	"	.068	99.6	- + - -		
3	"	.07				
3	"	.09			10 7½	
3	"	.12				
4	"	.18	102			
8	"	.18			10 7	
4	"	.25				
4	"	.36				
3	"	.5				
	OT	.1			10 7	
	"	.14	100			

TAF 0.14, 0.2, 0.26, 0.3, 0.36, 0.5, 0.7, 0.7, 0.9; weight, 10 stone 8 pounds.

A brother of this patient applied for diagnosis, was treated for very early laryngeal tubercle, and remained in excellent health in January, 1914.

A sister who applied for diagnosis in 1911 was advised to undergo a test, although no definite signs of disease could be detected. This she refused to do, as she felt well. She is reported in 1914 as having died of phthisis, but exact particulars of her illness are not forthcoming.

CASE 51.—F., aged forty-nine; married; five children. Applied July, 1912.

Family History.—Three daughters, one son being treated at the dispensary.

Symptoms complained of.—Cough, sputum, hoarseness.

Onset and Course of Disease.—Got overtired nursing daughter who died of phthisis. Gradual onset, covering a few months.

Sent by doctor for treatment.

Condition on Admission.—Left lung râles upper and lower lobes. Right apex harsh.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Highest Temperature.	Days Temperature raised.	Weight.
Days.	PTO	c.c.	Degrees F.	1 2 3 4	st. lbs.
		.001			
4	"	.0014			7 1½
3	"	.002			
5	"	.003	102	- + - -	7 2½
8	"	.003	101	- + + -	
5	"	.003	103	- + + -	
7	"	.0075	98.8		7 3
3	"	.001	99.2		
4	"	.0012	99		
3	"	.0018			
4	"	.0026	101	- + - -	
8	"	.0026	100	- + - -	7 1½
7	"	.0026			7 3½
4	"	.003	99.6	- + - -	
5	"	.003			
4	"	.0034	99.2		7 4½
4	"	.005	99.8	- + - -	
6	"	.006			
4	"	.009			
4	"	.013			
5	"	.016			
3	"	.02			7 6
4	"	.03			
5	"	.04	101	- + - -	
6	"	.03	100	- + - -	
5	"	.03	100.6	- + - -	

TUBERCULIN TREATMENT—Continued.

Interval.	Preparation.	Dose.	Temperature.	Days Temperature raised.	Weight.
Days.		c.c.	Degrees	1 2 3 4	st. lbs.
4	PTO	.04			7 6
3	"	.06	100	- + - -	
4	"	.07	99		7 5
5	"	.08	100.4		
5	"	.08			
4	"	.1	NT +		
5	"	.1	99		
5	"	.11			
5	"	.16			7 7
3	"	.2			
5	"	.26			7 4
	"	.34	NT +		
4	"	.34			
4	"	.5			
4	"	.66			7 6½
3	PT	.01			
5	"	.02			
5	"	.03	99		
3	"	.04			
4	"	.05			
4	"	.064	99.6		7 7
4	"	.064			
4	"	.068			
4	"	.09			
4	"	.11			
4	"	.16	101	+ - - -	
5	"	.16			
5	"	.18	100	+ - - -	
6	"	.04			
	"	.054			
	"	.07			
	"	.1	101	+ - - -	

This patient suffered from a relapse, which began the day after the last reaction was over. She was urged to go to a sanatorium, but refused, and did not improve again at home. She continues in much the same condition.

CASE 52.—M., aged twenty-four; occupation, shoemaker.

Family History.—Father died of phthisis. Mother seriously ill with it; had applied at the dispensary, but had been in too advanced a condition to treat.

Onset and Course of Disease.—Seven months previously attack of pleurisy, followed by cough.

Reason for Application.—For diagnosis. Has been under two or three doctors, but was unwilling to believe there was anything the matter.

Previous Health.—Good until seven months before.

Examination—Lungs.—Loss of resonance and harsh breath

sounds at both bases. No tubercle bacilli found on first examination, but a few found in a later specimen. Urine contained a haze of albumin. Pulse 88.

Test.—PT 0.001, given before tubercle bacilli had been found, gave a temperature of 101.2°.

Tuberculin Treatment.—PTO 0.0002, no reaction. Dose increased with only slight reactions to 99°. Patient professed himself quite well.

After 0.014, patient said he could only come once a week. He was urged to make arrangements to attend regularly, but would not, because he was better.

PTO 0.024 gave reaction to 99.6, accompanied by vomiting, and patient was urged to stop work, although he professed himself quite well.

The condition was not satisfactory, and arrangements were made to take him to the observation hospital. This, however, he refused to do, and he stopped treatment. He then had an attack of pleurisy, and was still unwilling to follow advice about his work, or going to the observation hospital.

Later he got an extension of the disease in the ankle-joint, and was anxious to return for treatment; but it was too late for this request to be acceded to, and he died four months later.

CASE 53.—M., aged nineteen; occupation, railway. Off work three months.

Symptoms complained of.—Cough, sputum, loss of flesh.

Onset and Course of Disease.—Five months before lost voice. A month later was taken ill with pneumonia, and sent to infirmary, where he was found to be phthisical.

Previous Health.—Good until five months before.

Examination — Lungs.—Infiltration of both apices with crepitations at the left. General condition very poor; a thin, weedy boy, typically phthisical in appearance. Afebrile.

Test.—OT 0.0005 gave reaction to 102°. Bacilli found in the sputum.

Tuberculin Treatment.—Tuberculin was given on the usual lines, sensitiveness being very marked at first, and gradually diminishing. No other treatment was given. The home conditions were good, though poor.

Patient gained 22 pounds in weight, and the physical signs gradually cleared up. He was discharged after four months with the disease arrested, free from sputum, and at full work, and has remained so ever since.

TYPE (TB+) 10.

INTERMEDIATE, ESTABLISHED, FEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>				
Fully treated	2	A	..	..	..	..	..	I
		P	..	..	..	..	..	I
Partly treated	4	Reason:			P.	S.	W.	
		Refused treatment			I	I		
		Interval advised..			I		I	
Under treatment, June, 1913	2							
Total	8							

CASE 54.—The case partly treated, discharged "P," who refused to continue, was very seriously ill when first seen, and made a most satisfactory recovery, largely thanks to the support provided by the Care Committee. He was at the observation hospital two and a half weeks. After returning to full work he had a good deal of overtime, and would not take the trouble necessary to attend, as he thought he was well. He relapsed suddenly after a year's work, and died after a very short illness. His wife was tested and treated, and remains well, and the child was tested and did not react.

CASE 55.—The case discharged "A" appeared a very serious one on first examination, and a bad prognosis was given. She was fairly plump and short of breath, and had a tendency to fever. She responded slowly but well to treatment, and was only sent to a sanatorium for a month near the end of her course as a safeguard. She did not seem to receive much additional benefit from this. She has since suffered from pelvic complications, but in spite of that the lungs have kept well, and she is free from sputum and from signs of active tuberculosis.

CASE 56.—The case who refused treatment was three and a half weeks at the observation hospital, and improved very much, but suffered from an alveolar abscess on discharge. He did not obey orders on recovering from this, and went to stay in the country instead of returning to the observation hospital as arranged. He continued to get worse, and was finally readmitted at the observation hospital, but it was found to be too late for any hope of improvement, and he returned home and died.

CASE 57.—F., aged twenty-seven; occupation, domestic service.

Symptoms complained of.—Run down, cough, sputum, severe headaches.

Onset and Course of Disease.—Run down for seven months, with cough and sputum; severe headaches.

Reason for Application.—Sent to the dispensary for treatment on the recommendation of the Resident Medical Officer at Ventnor Sanatorium, where she had been sent by the Charity Organization Society.

Previous Treatment.—Was in Ventnor Sanatorium for five months until a week before she came to the dispensary. Operation for appendicitis the previous year.

Previous Health.—History of pyorrhœa alveolaris for three years. Very nervous since operation.

Condition on Discharge from Ventnor (kindly furnished by the R.M.O.).—Lungs: infiltration of apex of right upper and lower lobes, rather indefinite. Tubercle bacilli in the sputum. Slightly short of breath, and a little husky in the mornings. General condition: Quite unable to be safely at work; plump and well nourished; muscles flabby. Temperature subpyrexia, 99° to 99.4° ; very unsteady. Marked premenstrual rise. Weight increased from 7 stone $9\frac{1}{2}$ pounds to 8 stone $3\frac{1}{4}$ pounds at Ventnor.

Treatment.—Patient came to the dispensary a week after leaving Ventnor. The Charity Organization Society arranged in co-operation with the Care Committee to provide maintenance while she attended the dispensary. Satisfactory living conditions were obtained.

During four days' observation the temperature went once to 99.8° .

Tuberculin treatment commenced a week later:

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
	PTO	.001		8 $2\frac{1}{2}$	
4	"	.0014			
4	"	.002	slight rise		
4	"	.001	100		
3	"	.002	100		Temperature remaining fairly steady otherwise.
3	"	.001			General condition improving.
3	"	.0014			
3	"	.002	99.6		
4	"	.0026	99.6		
4	"	.004			
4	"	.006	99.6		

Treatment was continued as a rule with small rates of increase, occasionally 50 per cent. 0.018 gave temperature of 100.6° . About this time patient obtained a lighter situation.

After that no reaction, steady increase, and steady improvement.

PTO 0.32 gave temperature 100.8°, and after four days the dose was reduced to 0.1; no reaction. Dose continued up to 0.5; no reaction; weight, 8 stone. PT given, and increased at the usual rate; 0.2 gave temperature 100.2°. After four days 0.1 was given; no reaction; dose increased.

At 0.5 there is a note that the patient was still feeling tired, with some streaking of the sputum. Weight, 7 stone 10 pounds.

TAF 0.05 given, and patient not feeling quite so well, with a slight return of hæmoptysis. An interval from doses given for three weeks.

Patient suffering from depression, and it was decided that she had better stop work. She was admitted at the observation hospital. Treatment recommenced (after four weeks' interval) with PBE 0.001. This was increased steadily, temperature becoming normal again, to PBE 0.04 in five and a half weeks. General condition much improved.

Patient left the observation hospital, and went to the country for a change. She came back well and fit for work, and took another situation, in which she has remained well and free from signs of active mischief.

Treatment may be required again later.

CASE 58.—F., aged thirty-eight; married; one child. Applied February, 1912.

Family History.—Mother died of phthisis thirty years ago.

Symptoms complained of.—Cough, sputum, hæmoptysis, loss of weight, night sweats, pain in the back, lassitude.

Reason for Application.—Sent by doctor for treatment.

Previous Health.—Poor.

Condition on Admission.—Lungs: Retraction both upper halves; no crepitations; harsh breath sounds at left base. Temperature irregular.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Days Temperature raised.	Weight.	Notes.
Days.	PTO	c.c.	Degrees.	1 2 3 4	st. lbs.	
		·001			8 8	Sputum blood-stained. Needle-track reaction.
3	„	·0014				
4	„	·002				
3	„	·003	99.4	- + - -	8 7	Sputum was blood-stained at intervals throughout course.
4	„	·0036				
3	„	·0048	102.4	- + - -		

TUBERCULIN TREATMENT—Continued.

Interval.	Prep.	Dose.	Temperature.	Days Temperature raised.	Weight.	Notes.
Days.		c.c.	Degrees.	1 2 3 4	st. lbs.	
7	PTO	.0044	99.4			
4	"	.006	100.6	- + - -		
5	"	.006	99.4	- + - -		
4	"	.008	99.4	- + - -		
6	"	.008	99.2		8 4½	
3	"	.01				
4	"	.014	99.4		8 6	
6	"	.01	99.4			
3	"	.01				
4	"	.01				
3	"	.012				
4	"	.014				
3	"	.016	100.2	- + - -		
4	"	.004				
3	"	.0044				
4	"	.0066				
5	"	.007	99.8	- + + -		
7	PBE	.00001			8 4	
2	"	.00002	102	- + + +		Bed.
10	"	.00001			7 13	
4	"	.000014				
3	"	.00002				
4	"	.000024				Better.
3	"	.00003				
4	"	.000036				
4	"	.000043		Irregular		
10	PTO	.002				
3	"	.003	101	Irregular		Admitted Langstone for six weeks.
14	"	.001	100	- + + -	8 0¼	
6	"	.001				
3	"	.0015	99.8	- + - -		
4	"	.0018	99.2	+ + - -		
3	"	.0022				
3	"	.0028				
3	"	.0034				
3	"	.004		Irregular		
4	"	.0048	100	- + - -		
6	"	.0048				
3	"	.0054				
3	"	.0064				
4	"	.008				Returned home.
3	"	.012	99.6			
4	"	.016	100			
3	"	.02	99.8			
4	"	.026				
4	"	.034	99.8			
6	"	.034	102	- + - -		
7	"	.034				
4	"	.05				
3	"	.07	101.4	- + - -		
6	"	.07	100			
4	"	.07	99.8			
7	"	.07	100			
4	"	.008				

TUBERCULIN TREATMENT—Continued.

Interval.	Prep.	Dose.	Temperature.	Days Temperature raised.	Weight.	Notes.
Days.		c.c.	Degrees.	1 2 3 4	st. lbs.	
3	PTO	·012				
3	"	·016				
4	"	·018		Irregular		
14	"	·002				
4	"	·004	98·8	- - + -		
3	"	·006				
3	"	·008				Three days later temperature irregular for twenty days.
23	Sp	·001				
3	"	·002	99·6			
4	"	·003				
3	"	·004				
4	"	·006				
3	"	·008				
4	"	·01			8 6	
3	"	·014				
4	"	·02				Three days later temperature irregular for seven days.
10	PTO	·001				
3	"	·002				
4	"	·003	100·2			Cough.

Admitted at Langstone for observation for one month, but decided to return home rather than go on to a sanatorium.

Has got slightly worse since.

TYPE (TB+) 11.

INTERMEDIATE, CHRONIC, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated	..	..	15	A	..	..	7
				P	..	..	8
Partly treated	..	..	5	Reasons: P. B. S.			
				Refused treatment	1	1	2
				Left town..	..	-	1
				Sent to sanatorium	-	-	2
Under treatment, June, 1913			2				
Total			22				

Two cases discharged "P" and one discharged "A" were helped to a considerable extent through the Care Committee.

CASE 59.—The latter was the widow of a man who died of consumption, and was persuaded to come for examination, as she appeared to be very much run down; she had four children to support. She went to the factory by day, and took in washing at night, and help was given so that the washing might

be dropped while she was under treatment. She improved very markedly, lost her cough and sputum, and has remained well since she was discharged in 1911.

No other treatment was given to cases in this type except to the two below, who were sent to a sanatorium.

CASE 60.—F., aged twenty-six; married, no children. Applied August, 1911.

Family History.—Mother died of phthisis; mother's father, mother, and brother died of phthisis.

Symptoms complained of.—Cough, sputum, hæmoptysis, shortness of breath, pain on both sides, loss of voice.

Onset and Course of Disease.—Always cough; worse for the last two years. Pneumonia three years ago.

Reason for Application.—Came for diagnosis. Was not under a doctor.

Condition on Admission.—Lungs: Infiltration of apices of both upper lobes and of apex of right lower lobe. Larynx: Cords white, arytenoids flushed.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Days Temperature raised.	Weight.	Notes.
Days.		c.c.	Degrees.	1 2 3 4	st. lbs.	
	OT	·001	99·2	++++	7 5¼	Larynx focal.
6	PTO	·001	still up	(2 weeks)	7 9¼	
7	"	·0012	100·2	-+++		
5	"	·0014	100	-+-		
7	"	·0016	98·8	-++-	7 11¼	
6	"	·002	99·6	-+--	7 10	
4	"	·002	99·8	-+--	7 11	
4	"	·0024	99·8	-+--	7 12¼	
3	"	·003	100	-+--		
7	"	·003	99·8	-+--	7 11¾	Pain.
5	"	·003	99·6	-+--		
3	"	*	99·4	-+--		
3	"	·003	99·4	-+--		
3	"	·004	99·6	-+--	7 12	
4	"	·005				
3	"	·007	99·4	-+--	7 11½	Hoarse, TB+.
4	"	·01	99·6	-+--	7 12	
6	"	·012	99·8	--+-		
5	"	·016				
4	"	·02				
3	"	·03				
4	"	·04				
4	"	·05	102	++++	7 10¾	
12	"	·01				
6	"	·02				
4	"	·03				
4	"	·05				

* A dose of diluting fluid only (containing no tuberculin) was given on this day, in order to ascertain whether the reactions were specific.

TUBERCULIN TREATMENT.—Continued.

Interval.	Prep.	Dose.	Temperature.	Days Temperature raised.				Weight.	Notes.
				1	2	3	4		
Days.		c.c.	Degrees.					st. lbs.	
4	PTO	·075						7 13 $\frac{1}{4}$	
3	"	·11							
4	"	·16	99·8						
6	"	·16	99·4						
5	"	·2							
4	"	·22							
3	"	·26						7 12 $\frac{1}{4}$	
3	"	·32							
3	"	·4							
4	"	·5							
4	"	·6							
4	"	·8						7 12 $\frac{1}{4}$	
13	"	·5							
3	"	·8							
7	"	·8	101	-	+	-	-		
	"	·8	99·4						
	PT	·01						7 11	
3	"	·02							
4	"	·02							
3	"	·03						7 10 $\frac{3}{4}$	
4	"	·044	99·2	-	+	-	-	7 9 $\frac{3}{4}$	Pain in throat.
4	"	·056							
4	"	·064						7 12 $\frac{1}{4}$	
4	"	·076							
3	"	·086							
4	"	·1							Cough, sputum, pain.
3	"	·05	99·4						
4	"	·05							
3	"	·076	99·6						
4	"	·07							

Patient then had some bad teeth extracted, and, following this, the temperature was raised for two weeks. She was then admitted to Langstone, and PBE was given, seven doses, 0·001 to 0·008. No reaction. Physical signs as before.

Patient then went to Ventnor, where she remained five months and improved slowly, being discharged with the disease arrested. She did not return to the dispensary, but was reported to be keeping fairly well till the autumn of 1913, when she could not be traced.

CASE 61.—F., aged thirty; married.

This patient had been under a doctor, who said that the lungs were affected, and advised her either to go to a sanatorium or to live in the country. She was not able to go to a sanatorium, and went to the country for a while and improved. She relapsed on her return, and came to the dispensary instead of going to the doctor again.

Examination.—Lungs: Dulness and crepitations right apex anterior; prolonged expiration left apex. Larynx normal.

No tubercle bacilli found on first examination; second examination tubercle bacilli found. Cardiac condition: systolic thrill. Pulse 88. Temperature observed five days, once to 100°.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
	PTO	·002		6 9	
6	"	·0035	99·2		
7	"	·00375	99·8		
7	"	·00375	99·8		
4	"	·00375			
4	"	·0044	99·2		
7	"	·005			
3	"	·006	99·6		
4	"	·0064		6 10	Patient better.
3	"	·008	99·8		
4	"	·01	99·8		
5	"	·012			

Fifty per cent. increases for five doses; return of cough, sputum TB+. Temperature continuing normal.

Interval.	Prep.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PTO	·24	99·4	
6	"	·3	100·6	
7	"	·3	101·6	
7	"	·3	99·4	
4	"	·3		Sputum disappeared. Dose increased steadily with normal temperature to—
	PT	·1		
5	"	·1	101	
5	"	·15	99·2	
4	"	·2		
3	"	·3	100	
9	"	·3	103 same night; normal next day	In this case the interval was too long, and was not intentional.
5	"	·3	100	Marked symptoms.
4	"	·15		
4	"	·18		
5	"	·22	100	
5	TAF	·01		Dose increased for 4 doses to ·04, when patient unable to attend for two months.
	"	·08	99·2	No sputum; little cough. (Dose given by mistake.) General condition improved.
4	"	·06	99·2	
3	"	·09		
4	"	·13	100	

Patient discharged in good health. No moist sounds in the chest. Seven months later patient not so well, and agreed to have a second course.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
5	TAF	·001	100·8	6 9	Temperature normal again in—
6	„	·01			
3	„	·002	100·2		
5	„	·002	99		
3	„	·003			

Dose increased steadily up to TAF 0·044 in six weeks. Reaction only to 99°. Weight stationary.

After this, patient suffered from an early miscarriage, and was unable to attend. Ten weeks later (February, 1913) she was in good health. No cough or sputum. Weight 6 stone 9 pounds. Physical signs still showed some crepitations at right apex. During treatment patient had an attack of hoarseness, with some redness of the arytenoids, but this did not appear to be tubercular.

The type of case appears to be a chronic relapsing one. On beginning treatment, the disease had been partially arrested, but it was showing a tendency to relapse, and it is extremely probable that she will require a further course of treatment to be carried to a big dose of Old Tuberculin.

CASE 62.—M., aged twenty-four; single. Electrical fitter.

This man applied at the dispensary in June, 1911, complaining of sputum, occasional hæmoptysis, loss of flesh and hoarseness. He had been in much the same condition since an attack of pleurisy with hæmoptysis three years before, this having recurred six months before. He was at full work.

On examination, infiltration of the left upper lobe was found, with crepitation. The cords and arytenoids were injected. Sputum TB+. Temperature normal.

Tuberculin was given for forty-one weeks in the following doses:

31	doses	PTO,	from	·003	to	·8	c.c.
17	„	PT,	„	·02	„	·4	c.c.
1	„	TAF,	„	·1	c.c.		
16	„	TAF,	„	·001	„	·01	c.c.
4	„	PBE,	„	·001	„	·005	c.c.

As his condition never improved at all, and a slight increase occurred in the extent of the physical signs, the temperature becoming irregular, he was advised to give up work and to go to a sanatorium. After four months in a sanatorium he

returned with the disease arrested, free from sputum, and the chest free from signs of activity, and remains well and at full work.

TYPE (TB+) 12.

INTERMEDIATE, CHRONIC, FEBRILE (NO TUBERCLE BACILLI PRESENT).

				<i>Results.</i>			
Partly treated	..	..	9	P (interval advised)	..	..	2
				B	..	..	1
				S (unsuitable ; I refused to stop work)	..	..	5
				W	..	..	1
Total	..	..	9				

CASE 63.—M., aged twenty-six. Blacksmith in dockyard; formerly in Royal Navy.

Symptoms complained of.—Severe cough and cold; sputum in the morning; shortness of breath on exertion.

Onset and Course of Disease.—Cough and cold since operation for bronchitis six years ago. Liable to bronchitis. Invalided from Royal Navy one year ago.

Previous Treatment.—Operated on for appendicitis six years ago. Royal Naval Hospital for three months a year ago.

Examination.—Loss of resonance right upper lobe anterior; whole of right lung posterior; left apex anterior. Harsh, squeaky crepitations over right lung, with râles and marked loss of respiratory murmur at the base. Larynx not seen. Sputum 3 ounces in twenty-four hours. Tubercle bacilli found. Temperature from 97.4° to 99.2°, steady for two weeks.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
	PTO	.001		11 3½	
3	"	.0014			
4	"	.002	99.6		NT +.
4	"	.003	100.4		
5	"	.003	100.6		Herpes labialis.
			(up 4 days)		
9	"	.002			
3	"	.003	100	11 4	
10	"	.001			
3	"	.0014	99.4		
3	"	.0018			
4	"	.0024	99.4		Temperature up for 2 days, then normal; no dose given. Temperature rose again to 99.8° for 2 days; next day normal.
		.0024	100		
3	"	.003	100.8		

After this temperature was irregular, and patient said he was suffering from a cold. The dosage in this case does not seem to have been very successful. Probably more attention should have been paid to the reaction to the third dose. Harm seems to have been done by the fourth and fifth doses; in the case of the latter there was probably an error both in the increase and in the time of administration. After two weeks temperature was again normal, and treatment was continued:

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
14	PTO	·001	99·6	11 0	
3	"	·001	99·6		
4	"	·0016	100		
5	"	·002			
4	"	·0026	99·4		
3	"	·004	99·4		
3	"	·006	101·8		Temperature irregular. After this, patient not so well; marked hoarseness. Temperature settled to normal.
7	"	·006	101·6		
7	TAF	·0001	99·2		
3	"	·00014			
4	"	·0002			

TAF was increased steadily, with an occasional rise of temperature to 99·8°, which sometimes came after the dose, but sometimes before it, and could not therefore be considered a definite reaction.

TAF 0·003 gave a more definite reaction, morning temperature being raised.

For continuation of treatment, see table, p. 139.

Patient became more hoarse. Weight continued about 10 stone 3 pounds. PBE was then tried, beginning with 0·001 increased without reaction to 0·006, when the temperature was 101° second day. Continued in the usual manner, with occasional rises of temperature, not always apparently a reaction, to 0·016. Spengler IK solution was then tried, commencing with dose 0·001, and increased speedily, without definite evidence of reaction, temperature being more unstable, and occasionally rising to 100°. After a dose of 0·015, patient preferred to stop, although he was urged to continue treatment.

He reported a month later that he was feeling better, but on the whole it must be admitted that he lost ground during treatment, and is not likely now to regain it. At the outset and throughout the course he was urged to go to a sanatorium,

but was unwilling to do so, and he did not live a sufficiently open-air life.

The tendency to bronchitis noted in the history is probably a bad point in the prognosis.

Interval.	Prep.	Dose.	Temperature.	Weight.		Notes.
Days.		c.c.	Degrees.	st.	lbs.	
7	TAF	•003		10	6½	
4	"	•0036	100•2			Temperature normal between the reactions. Patient feeling fairly well; still cough and sputum.
	"	•01				
4	"	•15	102•8			Dose given by mistake; satisfactory counter-reaction, when temperature improved.
7	"	•015				
3	"	•018	99•4			
4	"	•022	99•4			
3	"	•03	100•2			
5	"	•034				
3	"	•05				
3	"	•07	100•2			
4	"	•07	00	10	2¾	Patient losing weight.
4	"	•09	102			
5	"	•09	99•4			
5	"	•11	100•2			
5	"	•11	99			
4	"	•15	99•6			
5	"	•18	100			
4	"	•18	100			
7	"	•18	99•6			
4	"	•24	101•8			
5	"	•24	100•2			
5	"	•24	101			
5	"	•1	101•4			

CASE 64.—M., aged thirty-two; occupation, dockyard. Off work two weeks.

Family History.—None of phthisis.

Symptoms complained of.—Cough; sputum, the sputum occasionally streaked with blood; lassitude.

Reasons for Application.—Sent by doctor for treatment.

Onset and Course of Disease.—Tubercle bacilli had been found in sputum.

Previous Health.—Good.

Home Conditions.—Good.

Examination.—Loss of resonance, and poor air entry all over right lung. Patient ill, with pulse 92; temperature to 100°.

Temperature sank slightly, and treatment was begun with PTO 0•0005; temperature 100•8°; weight 9 stone 9¼ pounds.

He was then ordered to stay in bed, and the next few doses were given him at home. Temperature continued regular, and he improved very rapidly, and gained in weight.

After a month's time he returned to work; weight, 10 stone. Temperature then became more irregular again, and after a fortnight, although weight increased to 10 stone 5 pounds, he had another hæmoptysis (about 2 pints), and stayed in bed a few days.

Although temperature became irregular, he went back to work. It would have been advisable to have insisted upon absolute rest, and to have stopped the tuberculin, a few doses of which were given at rather irregular intervals. After a few days' work, with high temperature, he gave it up, and was admitted to the observation hospital. He continued to have an unsettled temperature, and the dose was increased at irregular intervals on account of this. He gained in weight, and after three weeks, temperature settled again, and the dose was increased more rapidly. After five weeks at the hospital he returned home. Treatment was continued, and he returned to work.

After a short time he did not seem quite so well, there being some evidence of mischief in the larynx, and he was readmitted at the observation hospital, where treatment was continued. He had occasional hæmoptysis, and was for a time sensitive to tuberculin. PT was changed to TAF, which he took better. After two months at the observation hospital he went to Brompton (March, 1912). He seemed at this time to be in perfectly good health; no signs of active mischief in the lungs, and no sputum; but after such repeated relapses it was thought advisable to secure thorough treatment with graduated labour before he returned to work, and it was hoped he would be sent to Frimley. He was, however, sent home from Brompton in a week as being fit for work. Directly he got back a severe hæmoptysis occurred, and he was readmitted. After two months at Brompton he was sent to Frimley, and had a full course of graduated labour, interrupted by several attacks of hæmoptysis. He returned in October, 1912, fit for full work; weight, 11 stone 5 pounds. He continued treatment at the dispensary, occasionally interrupted by an attack of hæmoptysis, until it was decided to stop without reaching the dose of OT (1.0 c.c.) that was usually attained.

This case has proved the value of constant care through many relapses. He has kept well, and does not appear to suffer much from hæmoptysis, which still occurs occasionally to a slight extent. No tubercle bacilli have been found in the

sputum for a long time. He is liable to get irregular temperature occasionally when he gets a cold, and the disease cannot be considered to be completely arrested in his case. In July, 1914, he is apparently well and at full work.¹

CASE 65.—The case, discharged "B," had treatment for prolonged periods at the observation hospital and at a sanatorium. This was a boy of eighteen, who suffered from an abscess in the lung, which discharged by the air passages much foul pus, in which acid-fast bacilli were reported in one examination only, while at Mount Vernon Hospital. He was extremely sensitive to tuberculin, and improved markedly under it; but although a vaccine, kindly prepared from his sputum by a pathologist interested, was administered also, the amount and character of the pus was very little affected. This made it difficult for the patient to secure work, and so to obtain further improvement, for which long treatment and avoidance of bad conditions, were necessary.

CASE 66.—The case, who got worse, was a man of forty-seven, who had been off work for two years. He improved markedly under treatment, and returned to work, but unfortunately relapsed very shortly after; and although he was admitted at the observation hospital, there was so much bronchitis that little good could be done.

Of the other cases, one, discharged "P," had nine weeks at the observation hospital.

CASE 67.—M., aged twenty-five; occupation, publican.

Symptoms complained of.—Loss of flesh, 2½ pounds. Slight hæmoptysis.

Onset and Course of Disease.—Had been suffering from emphysema and bronchitis for some months.

Reason for Application.—Sent by doctor to have a test dose.

Examination.—Loss of resonance and moist sounds over the left upper lobe. Tubercle bacilli in the sputum. Temperature irregular, 96° to 100·4°. After a little time it settled.

TEST DOSES.

Interval.	Preparation.	Dose.	Notes.
Days.		c.c.	
3	TAF	·001	No reaction.
	"	·005	Needle-track reaction.

After this, tubercle bacilli were found in the sputum.

¹ This patient was in the R.N.R., and was passed as fit for service on mobilization.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
4	PTO	·001		
3	"	·0016	100 (2nd day)	
4	"	·002	100	
5	"	·0024	101·4	
5	"	·001	100	Temperature up several days.
8	TAF	·0001	Irregular	
12	"	·0001		
3	"	·00014		
3	"	·0002		

Patient's general condition was bad, and it was decided to admit him at the observation hospital. Temperature was 99·6° on the day of admission, 99° next two days, then 99·8°. Next day PBE was given, and patient put on absolute rest.

Two doses were given, but the temperature rose steadily after this, and patient seemed very ill for three weeks. After a week pneumosan was given, and after the first course the temperature fell slowly, and continued to fall during two days' interval. During the second course of twelve days it also remained rather better.

Two days after temperature settled, PTO 0·0001 was given, without reaction. On the day on which the next dose should have been given the temperature began to rise, and patient was so acutely ill that it was not possible to arrange for his nursing at the observation hospital. After two or three weeks he improved, temperature settled to normal, and remained so for two or three weeks.

Tuberculin was tried again:

Interval.	Preparation.	Dose.	Temperature.
Days.		c.c.	Degrees.
	PTO	·0001	
10	"	·0002	slight
4	"	·0003	99·8
3	"	·0003	
4	"	·0004	
3	"	·0006	99·8

Patient's general condition appeared to be worse while continuing tuberculin. There was little definite reaction, and

no counter-reaction. On the whole he seemed better without it.

Patient was later sent to Brompton Hospital, where he made some improvement and gained weight, but came back without any sign of real arrest of the disease, and with the verdict that this was not likely to be obtained by sanatorium treatment. He continued for some time slightly better than he was when he first applied at the dispensary, and then got worse.

TYPE (TB+) 13.

ADVANCED, RECENT AFEBRILE (TUBERCLE BACILLI PRESENT).

		<i>Results.</i>			
Fully treated	3	A (laryngeal)	1		
		P	1		
		B	1		
Partly treated	4	P (sent to sanatorium, both discharged "A")	2		
		Refused treatment	1		
		Died	1		
Under treatment, June, 1913	2				
Total	9				

CASE 68.—The case who died improved very markedly under treatment in 1911, and was discharged "P," although the course was not complete, because further arrangements could not be made for treating her. She returned to work for a year, and then relapsed and died. She had previously been treated in a sanatorium without much improvement, and the prognosis on leaving was bad.

The case discharged "A" has kept well and free from sputum.

The case discharged "P," a very severe one, concerning whom a bad prognosis was given by two experienced doctors who examined him, kept well and at full work in Wales for two years, but relapsed in the summer of 1913, when he refused to see a doctor for fear of being sent to a sanatorium. He is reported to be off work in 1914.

The next group of cases appears to be a serious type. One case sent to a sanatorium after some improvement got worse there, and the other relapsed on return, both dying. Both these cases had treatment first at the observation hospital.

TYPE (TB+) 14.

ADVANCED, RECENT, FEBRILE (TUBERCLE BACILLI PRESENT).

		<i>Results.</i>					
Fully treated..	.. .. 2	A	..	..	..	..	1
		W	..	..	..	..	1
Partly treated	.. .. 14	Reasons:					
		Refused treat- ment	..	P. -	B. 1	S. 1	W. -
		Sent to sanator- ium	..	1	2	-	-
		Unsuitable..	..	-	-	5	4
		Total	..	1	3	6	4
Under treatment, June, 1913	6						
Total	.. .. 22						

CASE 69.—The case who got worse after full treatment was a man of very poor general development, and evidence of tertiary syphilis, possibly inherited. His illness commenced with a very severe pleurisy, and he improved considerably under treatment. He was very insistent on returning to full work, and continued at it after he had relapsed, although almost incapacitated by diarrhoea. Tuberculin was stopped, and he died in a few weeks.

Both cases who refused treatment died.

Of the cases discharged worse, two are described below, and the other two were very advanced cases, with a hopeless prognosis, who were admitted at Langstone to see if tuberculin could possibly have any effect. Both died after their return home.

CASE 70.—M., aged twenty-three; occupation, painter. Off work some weeks.

This patient was very acutely ill, and unable to attend the dispensary. The case was too advanced for any sanatorium and no observation hospital was available. Tuberculin was commenced at home as an experiment, and three doses given, but it was decided that it was not advisable to continue it without more supervision. He got worse, and although he rallied after this relapse, he died some months later.

CASE 71.—M., aged eighteen; occupation, dockyard.

Family History.—One sister, one brother treated at dispensary for phthisis (Cases 1 and 19); one brother, one sister died of phthisis.

Symptoms complained of.—Cough, pain in chest, slight loss of voice.

Onset and Course of Disease.—Cough nine months before.

Seen by doctor three months later; was then all right. Cough again shortly before application; seen by doctor, who found one lung affected.

Reason for Application.—Sent by doctor for treatment.

Previous Health.—Good; no definite illnesses, but never robust.

Home Conditions.—Good.

Examination.—Extensive infiltration in whole of right lung and left upper lobe. Slight, dry cough; no sputum. Temperature, 100.4° . Pulse 100. Urine contained a haze of albumin. Patient gaining slightly in weight.

Patient was sent home to bed. It was recommended that he should go to a sanatorium as soon as possible, and that tuberculin treatment should be begun at home if he improved sufficiently to make it advisable.

The temperature settled with rest in bed, and when it had not been above 99.4° for four days, PTO 0.001 was given; reaction to 100.4° . After this, patient expressed himself feeling much better than he had done for months.

After six days the same dose was given, and was followed by severe hæmoptysis, followed by high fever, and patient became rapidly worse. There was no sputum until the day before he died, about two weeks later, when a mass of tubercle bacilli was coughed up.

The prognosis in this case was practically hopeless at the outset. One curious fact was that the boy was not aware of being particularly ill, and was at work until a few days before he came to the dispensary. The mischief in the lung must have increased extraordinarily rapidly, as he had been examined by three doctors three months before.

It is possible that tuberculin hastened the end, although the fact that there was a slight and favourable reaction to the first dose rather suggests that this was not the case, and that the hæmoptysis was an accident.

CASE 72.—M., aged sixteen; applied, October, 1911; occupation: pastry-cook; obliged to stop work on application.

Family History.—Sister has phthisis.

Symptoms complained of.—Cough, sputum, loss of weight, pain, loss of voice three months ago for a few days.

Onset and Course of Disease.—Has had heavy cold on chest for a few weeks.

Reason for Application.—Sent by doctor for diagnosis.

Previous Health.—Good.

Condition on Admission.—Lungs: infiltration of both lungs,

with moist sounds in upper lobes and in upper halves of lower lobes. Pulse: 72, febrile.

Patient stayed in bed three weeks, and the first dose was given at home. Temperature settled, and he then attended the dispensary.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Highest Temperature.	Days Temperature raised.				Weight.
				1	2	3	4	
Days.	PTO	c.c.	Degrees.	1	2	3	4	st. lbs.
		·001	99·4	-	+	-	-	6 6
4	"	·0014	99·2					6 11 $\frac{1}{4}$
5	"	·002	100					
5	"	·002	99·6					
4	"	·0024	100					6 12 $\frac{1}{2}$
5	"	·0024	100					
3	"	·0024	99·6					
4	"	·0024	99					
3	"	·003	100					6 13 $\frac{1}{2}$
5	"	·003	99·2					
4	"	·004	99·8					
5	"	·005	102					
5	"	·005	100·8					
5	"	·005	101	-	+	+	-	
6	"	·005	100	-	+	-	-	7 1 $\frac{1}{4}$
3	"	·005	100					
4	"	·002	99·2					6 13 $\frac{1}{2}$
3	"	·003	99·2					
4	"	·0035	99·2					
3	"	·0045	99·					7 1
4	"	·006	99·2	-	+	-	-	7 1 $\frac{1}{2}$
3	"	·009						
4	"	·014	100	-	+	+	-	
7	"	·014						7 1 $\frac{1}{2}$
5	"	·018	101	+	+	+	+	7 1 $\frac{1}{4}$
7	"	·018						
3	"	·022						
5	"	·03						7 2 $\frac{1}{2}$
3	"	·05						
3	"	·08						7 4 $\frac{1}{4}$
3	"	·12						
5	"	·18						7 5
3	"	·26						7 7
4	"	·4						
3	"	·6						7 8
4	PT	·01						
6	"	·02	98·8					7 11 $\frac{1}{4}$
3	"	·03						
3	"	·045						7 8
4	"	·066						7 8 $\frac{1}{4}$
5	"	·09						
3	"	·13						7 11
5	"	·2						
5	"	·3						7 13
4	"	·44						
5	OT	·05						
6	"	·07						7 11 $\frac{1}{4}$
6	"	·12						
5	"	·2						
	"	·4						7 9

Patient improved steadily, lost cough, and after some time lost sputum. Gained 17 pounds. Returned to work as an errand boy, and continued well and was in full work in January, 1914.

CASE 73.—M., aged twenty-one; occupation: dockyard; off work five days.

Family History.—One brother died of phthisis, one sister died of heart disease.

Symptoms complained of.—Slight cough, sputum, hoarse with talking.

Onset and Course of Disease.—Slight cough for six months, worse two weeks ago, when he went to his doctor, who stopped his work five days ago and sent him to the dispensary.

Reason for Application.—Sent by doctor for treatment.

Previous Health.—"Strained heart" three years ago.

Examination.—Lungs: infiltration of whole right lung and upper half of left upper lobe. Loss of movement over right lung and upper half of left upper lobe. Loss of movement over right lung, with deficient air entry and soft crepitations. Tubercle bacilli found in the sputum. Pulse: 120, febrile. Teeth: good. Weight: 8 stone 5 pounds. Height: 5 feet 6½ inches.

Treatment.—Patient was sent home to bed, the conditions there being good, and when the temperature fell he was able to sit in his garden. He returned in seven weeks looking much better. Weight: 10 stone. Temperature: to 99·2° daily. Lung condition: absolutely unchanged.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
	PTO	·001			
3	"	·0015	99·6		
4	"	·002	99·6	10 2	
6	"	·0025	99·8		
6	"	·0026	99·8	10 0	
5	"	·0026	99·6		
4	"	·003	99·8	10 1	
4	"	·003		10 0	
6	"	·004	99·8		
5	"	·004	100·2		
4	"	·004	99·6		

Throughout this time the temperature kept rising to 99·2° between the reactions, which were never typical in character, although the patient felt better after them.

TUBERCULIN TREATMENT—Continued.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
4	PTO	.0055	100	10 0	
4	"	.006	101		
8	"	.006	100	9 12½	
5	"	.006	100		
3	"	.008	100		
4	"	.008	100	9 11½	
5	"	.008	100.4		
4	"	.01	101	9 10	
7	"	.01	100		
3	"	.014	100	9 8½	
4	TAF	.001	103	9 9¼	Temperature falling gradually to 99° on sixth day.
10	"	.00015	101	9 8½	
6	PTO	.005	101		Temperature settled to a maximum of 99°.

It was found that the home conditions had been adversely affected by illness, and the observation hospital being then available, patient was admitted there. The temperature between the doses immediately settled. The lung condition had begun to show signs of clearing.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
14	PTO	.002	100	9 7½	
7	"	.002	99.4	9 1¼	
3	"	.003	99.6		
4	"	.004		9 3¼	
3	"	.006			
4	"	.009	100	9 4	
5	"	.009	100		
3	"	.01		9 4½	Active exercises and work.
5	"	.014	99.4	9 4	
4	"	.018			
4	"	.025	99.8	9 4¼	
5	"	.03	100.4	9 3	
5	"	.03	100		Patient then left the hospital and returned to work.
5	PBE	.0001			
3	"	.0002			
2	"	.0004	101		
4	"	.0002			
3	"	.0003			
4	"	.0004			
3	"	.00054			
4	"	.0007			
3	"	.001			
5	"	.0014			
3	"	.002			

TUBERCULIN TREATMENT—Continued.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
4	PBE	.003	99.6	9 4½	
3	"	.003			
4	"	.004			
5	"	.006	100.2	9 2¼	Slight hæmoptysis.
5	"	.008	100		
6	"	.01			
4	"	.014	100		
4	"	.014	99.8		
4	"	.016		9 0¼	
3	"	.02	100.6	8 13½	
6	PTO	.01			
5	"	.02	99.4		
3	"	.03	100		
4	"	.03	100.4	8 13	
5	"	.03	99.4		
6	"	.036	99.2		
3	"	.05			
4	"	.07	99.2		
4	"	.1			
6	"	.14	99.4		No sputum for 1 month, extensive fibrosis in lungs, with some shortness of breath.
6	"	.14	99		
4	"	.2			
5	"	.3	99.4		
5	"	.4	100.6	9 1	
6	"	.4			
4	"	.56			
6	"	.76	102		
7	"	.2	99.2		Cough increased.
5	"	.3	100.2		
4	"	.3			
4	"	.4			
5	"	.6	100		
5	"	.6	101		Cough and blood-stained sputum.
8	"	.6	100	9 2½	
7	"	.15	100		
7	TAF	.01	99.4		
3	"	.015			
4	"	.02	100		
3	"	.02	99.6		
5	"	.03	99		
5	"	.045	101.4		
8	"	.01	99.4		
4	"	.014	99.4		Still occasional sputum streaked with blood.
9	"	.014	100.6		
4	"	.02	99.8		
4	"	.024	100.2	9 1½	
4	"	.024	99.2		
4	"	.03	100		

After this a few doses of Spengler's IK solution was given without apparent effect, and patient then went away for a fortnight's holiday.

On his return he seemed worse, the temperature being raised, although the lung condition was not aggravated. He was readmitted at Langstone, and the temperature settled immediately, never rising again to 99°, but swinging from 97° to 98·8°.

No more tuberculin was given. After twelve weeks there, he was sent to a sanatorium in June, 1913, where he continued to improve on graduated labour, and returned fit for work, at which he has continued in 1914.

All signs point to the disease being at length arrested. It seems probable in this case that prolonged sanatorium treatment at the outset would have been an advantage had it been possible.

TYPE (TB+) 15.

ADVANCED, RECENT, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

				<i>Results.</i>			
Fully treated	6	A (all laryngeal)	4				
		P	2				
Partly treated	9	Left town	2	P.	B.	S.	W.
		Refused treatment	-	2	1	-	-
		Sent to sanatorium	1	-	3	2	-
		Total	3	4	2	-	-
Under treatment, June, 1913	4						
Total	19						

One case under heading "Refused Treatment S" soon got worse, and died; the other remains the same. Both had very few doses. The three who refused because they were better, died, two having been at the observation hospital and the third refusing to go. The case sent to a sanatorium, "P," has kept well and at work since.

The cases discharged "A" are all four extraordinarily successful cases, where the prognosis was very serious at the outset, and yet the arrest of the disease appears to be very complete.

CASE 74 is one of those discharged "P." M., aged thirty-five; occupation: invalided Royal Navy.

Onset and Course of Disease.—Cough and sputum for nine months; now improving.

Reason for Application.—Sent from Royal Naval Hospital to continue tuberculin treatment on his discharge from there.

Previous Treatment.—Treated with tuberculin at Royal Naval Hospital.

Previous Health.—A nervous man; had been treated for functional heart trouble.

Examination.—Lungs: Infiltration of right lung and left upper lobe, crepitations, loss of resonance and harshness. Tubercle bacilli present. General condition: Fair; afebrile.

Tuberculin Treatment.—Treatment commenced while patient at work, but this proved too heavy and had to be stopped, the Care Committee assisting the household.

PTO was then continued, with occasional severe reactions, to 0.5 c.c. PT 0.01, 0.02, 0.04, 0.07 gave temperature to 102°. Same dose in five days gave temperature to 101°. In seven days 0.04 gave no reaction, and was increased to 0.18, temperature to 101°. Patient then got work away from the town and left, the condition being much improved.

He was, however, considered by his employer, a doctor, not to be sufficiently cured, and returned to Portsmouth, where he continued tuberculin. He felt the doses a good deal, and was changed to TAF, the larger doses of which again upset him.

PBE was then tried, and increased very slowly, as he had obtained work, and said he could not manage it if he had reactions. The lung condition was fibrosing satisfactorily. He did not lose his cough, although the sputum now contained no tubercle bacilli. PBE 0.09 gave a reaction to 102.4°. Same dose, no reaction; 0.11, to 99°; 0.14, to 100°, and he felt very bad; 0.01, no reaction, but on reaching 0.11, reaction to 100.6°; 0.11, no reaction; 0.13, to 102°; 0.025, no reaction; 0.03, no reaction; 0.05, no reaction; 0.07, to 101.6°.

It was decided then (May, 1913) to allow an interval, and patient was in fair health and at full work in January, 1914.

CASE 75.—M., aged twenty-seven.

Symptoms complained of.—Cough, tightness on chest, slight sputum, loss of flesh.

Onset and Course of Disease.—Cough for twelve months, getting worse. Bronchitis for two months.

Reason for Application.—Sent by doctor for treatment.

Home Conditions.—Comfortable. Patient and his wife kept fried-fish shop. Was not obliged to do more work than felt fit for.

Examination.—Loss of resonance over right upper lobe; left lung both lobes. Right lung had harsh breathing sounds and crepitations. Respiratory murmur choked. Over the left were sibilant rhonchi and coarse squeaky râles. The larynx showed redness of both vocal cords. Sputum purulent, containing blood. Tubercle bacilli not found on first examination; found on second examination, a week after beginning

treatment. Temperature erratic, occasionally to 99.6° . Pulse: 84. Weight: 10 stone $13\frac{1}{2}$ pounds.

Test Dose.—OT 0.001 gave severe reaction to 102° , lasting three days. During this patient was hoarse, and examination of the chest gave an increase in physical signs.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
	PTG	.0005		11 1 $\frac{3}{4}$	
3	"	.00075			
4	"	.001	99.8		
3	"	.0013	99.8		
4	"	.0016	100		
7	"	.0016	103.4		
7	"	.0016	99.2		
3	"	.0022			
4	"	.0032	99.4 (2 days)		It was probably a mistake to give an increase in dose when the temperature did not subside after the previous dose.
3	"	.004	100		
5	"	.004	100.4		
5	"	.004	99.4		
4	"	.0056	99		
4	"	.0074	99.4		
3	"	.009	99.6		
4	"	.01	99.6		
4	"	.015	102.4		
7	"	.015			
4	"	.025	101.4		Patient better after reaction.
7	"	.025	100.6	11 5 $\frac{3}{4}$	
5	"	.025	99		
4	"	.03	102		
7	"	.03	99.6	11 7 $\frac{1}{4}$	
3	"	.03			
4	"	.04	99.4		
4	"	.05			
3	"	.07			

No further reaction until 0.22, temperature 100.2° .

The dose was steadily increased after this, with no marked temperature reaction, although patient felt each dose, to PTO 0.8, followed in four days by PT 0.01, weight 11 stone $8\frac{1}{2}$ pounds. The dose was increased steadily without reaction to PT 0.18 (temperature, 100.2°). It was then increased without marked reaction to PT 0.8, followed by OT 0.1, increased up to OT 0.4, when patient was discharged.

He was in good health, able to do full work, free from cough and practically free from sputum, which occurred only in the early morning, and no bacilli were detected on repeated examina-

tion. Physical signs showed improved air entry over the right lung, with occasional crepitations, probably pleural in origin.

CASE 76.—M., aged sixteen; occupation: beer-shop; off work some weeks.

Family History.—Father died of phthisis. Phthisis in mother's family.

Symptoms complained of.—Cough, loss of voice.

Onset and Course of Disease.—Ailing for eight months, with cough and loss of voice. Had always been liable to colds and never strong.

Reason for Application.—Sent to dispensary by one of the Poor Law Medical Officers, who had been attending him as an out-patient.

Home Conditions.—Poor, his mother being a widow in receipt of inadequate out-relief. House in worst quarter of the town; clean, but not airy.

Examination.—Loss of resonance and harsh breathing sounds at the right apex anteriorly; posteriorly the same, with crepitations over the middle lobes and the apex of the lower lobes; harshness at the apex of left upper lobe. The vocal cords were a bad colour; there was a granuloma between the arytoids. Teeth bad.

For table of commencement of tuberculin treatment see p. 154.

The dose was increased steadily after this at the usual rate to PTO 0.1 (temperature, 99.6°; weight, increase of 6½ pounds). Patient was better in every way, free from cough, and with very little sputum.

On examination, physical signs showed no moist sound in the lungs, larynx much better, granuloma gone, and cords a good colour; no infiltration of false cords. Treatment continued to PTO 0.9, followed by PT 0.02. Dose was increased steadily without marked reaction, occasionally to 99° after the dose or after severe exercise, to PT 0.6, followed by four doses of OT without reaction (OT 0.2 gave 100° for three days).

Temperature was then irregular for a week, after which TAF 0.1 was given, and the dose increased steadily without reaction to TAF 1.3 (weight, increase of 13¼ pounds).

Patient was then discharged entirely free from signs or symptoms. He has kept well and at work since. The only other action taken in this case was to refer it to the Care Committee to inquire whether the home conditions could be improved. The Guardians were asked to increase the out-relief, and extra milk was given. The home improved slightly as a result of the Health Visitor's teaching, but as the mother was out all day at work, it was not possible to do very much.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
4	PTO "	.001 .002	99.6	6 8	Height, 5 feet 1½ inches. Patient was very hoarse. Weight maintained. During this reaction the larynx showed marked infiltration of the arytenoids, an epiglottic fold with some œdema.
7	"	.002			
7	"	.0025	99.4	6 11¾	Patient felt better after the doses, but suffered from diarrhœa.
3	"	.00325			
3	"	.0045	100.4		Weight maintained.
7	"	.0045	99.8		General condition improving.
4	"	.0045			
4	"	.005	99.4		
5	"	.0055	99.4		
4	"	.007	(3 days) 100.2		In this case it was probably a mistake to increase the dose when the temperature had not fallen after the previous one. The temperature continued to rise to 99.4°.
7	"	.007	99.8		Temperature continued irregular.
4	"	.008	104.6		Temperature fell next day, but rose again three days later, and remained above 100° for three days.
7	"	.008			Temperature remained normal after this.

CASE 77.—F.

Symptoms complained of.—Cough, sputum, hoarseness.

Onset and Course of Disease.—Symptoms for a few months.

Reason for Application.—For diagnosis.

Examination.—Signs at both apices; redness of both cords; loss of movement of left cord. No tubercle bacilli found in sputum on first two examinations. A third examination three months later when the sputum was increased at the beginning of winter showed a few bacilli. It was necessary to settle the diagnosis at the outset with tuberculin. General condition thin. Pulse: 72.

Test Dose.—TAF 0.007. General, needle-track, and focal

reactions. Focal reaction at right apex, left lower lobe, left false cord, and arytenoids.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.
Days.		c.c.	Degrees.
7	PTO	·001	
3	"	·001	
4	"	·002	
3	"	·003	99
4	"	·004	
4	"	·004	

Regular increase to PTO 0·03 (temperature, 100°; weight, + 2 pounds). In seven days 0·03 (no reaction). Regular increase at three and four day intervals without reactions to 0·66 (weight, + 4 pounds), followed by PT 0·01. Regular increase without reactions, except occasional needle-track, which was disregarded, to PT 1 c.c. (weight, + 5 pounds).

After an interval of two weeks OT 0·1 c.c. (weight, + 8 pounds). Increase at diminished rate to OT 1 c.c. (weight, + 8 pounds). Patient discharged.

General condition much improved. Sputum still present, but saliva only. No tubercle bacilli found on two examinations. Physical signs much the same as on admission.

This patient must be considered to have done extremely well, and quite as well as in a sanatorium, where laryngeal cases often do not improve so satisfactorily.

TYPE (TB+) 16.

ADVANCED, ESTABLISHED, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>				
Fully treated	14	A	2			
		P	8			
		B	1			
		S	3			
Partly treated	32	Reasons for stopping:				
		Left town or re-	P.	B.	S.	W.
		fused ..	1	2	—	1
		Sent to sanator-				
		ium ..	—	1	3	2
Discharged for						
interval or as						
hopeless ..	1	—	5	16		
Total		2	3	8	19	
Under treatment, June, 1913	7					
Total	53					

Of the cases fully treated two discharged "P," one discharged "B" relapsed and died, and the three discharged "S" died.

Of those under treatment June, 1913, three have died, and three are doing well and are at work; the seventh is still ill.

The following table shows the additional methods of treatment employed. Nearly all the cases in this type require very prolonged care and persistent treatment.

	Result.					
	A.	P.	B.	S.	W.	Total.
Observation hospital only, 4 weeks and under	1		1	1	5	8
Ditto, 4 to 8 weeks	1	1		1	1	4
Ditto, 8 to 12 weeks				1	1	2
Ditto, over 12 weeks				1	4	5
Observation hospital and sanatorium ..		1	2			3
Sanatorium during course		4				4
Sanatorium after course		1			1	2
Shelter at home					1	1
Infirmery during course					1	1
Assistance from Care Committee only* ..					1	1
Pregnant and confined at end of course ..					1	1
Totals	2	7	3	4	16	32

* Includes those cases only who had no other treatment besides tuberculin. Many cases under other headings were also helped by the Care Committee.

One case sent to a sanatorium from the observation hospital did very well, and would probably have kept well had he not been discharged for misconduct, after which he was ashamed to report, and so could not be kept under treatment. He worked for a year, and then had a serious relapse.

The other case was more severe in type, and did not improve much at the sanatorium.

The cases discharged "S" after full treatment all improved markedly at first, and the same applies to all but seventeen of those partly treated.

These seventeen cases who did not improve may be divided into two classes:

1. Those who received more than four weeks' treatment: ten.

In seven of these there is nothing to suggest that harm was done, although no improvement was observed. All have died except one, for whom there is occasion to regret that the tuberculin was not continued longer.

In three there was some appearance that the tuberculin had done harm, but the prognosis was so bad at the outset that it is impossible to prove this.

2. Those who received not more than four doses: seven.

Six of these were very severe cases, and although two were distinctly worse after one dose only, it is very doubtful that this was the cause. It must be remembered that such severe cases as these tend to get worse rapidly unless a successful treatment is discovered.

The seventh is the following case:

CASE 78.—M., aged twenty-nine; occupation: vocalist.

Family History.—None of tubercle

Symptoms complained of.—Hæmoptysis, cough, pain in side; tubercle bacilli in sputum.

Onset and Course of Disease.—Hæmoptysis two weeks before, followed by cough and pain, and tubercle bacilli found in sputum.

Reason for Application.—Sent by doctor for treatment.

Previous Health.—Good.

Examination.—Infiltration of right lung; three lobes with small patch at the apex of left lower lobe. General condition: fairly good. Pulse: 80. Temperature: 98° to 99·6°; settled to 99·2° for five days before first dose.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Temperature.
Days.	PTO	c.c.	Degrees.
		·002	100
4	„	·0024	100·2
7	„	·0024	
3	„	·003	Record not obtained

Patient then had another hæmoptysis, and did not attend the dispensary. He improved again from this hæmoptysis, and obtained admission to Ventnor Sanatorium, where he did extremely well, and on his discharge there were no signs of active mischief.

While this case did not appear to have got any harm from tuberculin, it would not have been wise for him to have continued at the dispensary, as the hæmoptysis both before and after treatment was of a severe type.

CASE 79.—F., aged twenty-seven.

Symptoms complained of.—Cough, sputum, night sweats, loss of voice.

Onset and Course of Disease.—Had been ill six months, never in bed, but never able to do hard work.

Reason for Application.—Sent for treatment from hospital out-patients.

Previous Treatment.—Out-patient at hospital.

Home Conditions.—Rather cramped; clean, not very airy. A sister able to look after her. No children.

Examination.—Right lung: loss of resonance and crepitations over three lobes. Left lung: crepitations upper lobe and apex lower. Air entry left lower lobe posteriorly fairly good. Larynx: both cords red. Arytenoids normal, except a rounded, pedunculated granuloma on right arytenoid, which sometimes slipped behind and out of sight. General condition: poor and ill. Temperature: 100° to 102° daily. Pulse: 112. Weight: 6 stone $9\frac{1}{2}$ pounds. Height: 5 feet 1 inch.

Treatment.—Patient was quite unfit to attend dispensary, and was told to stay in bed at home and given a formalin inhalation.

After a fortnight temperature settled. The first doses of tuberculin were given her at home.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.
Days.		c.c.
4	PTO	·002
	„	·003

After this she attended the dispensary, and it was found that she had gained 12 pounds in weight.

For a while temperature was very irregular, and it was difficult to tell whether definite reactions occurred or not.

Interval.	Prep.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
5	PTO	·0044		
4	„	·0046		
7	„	·005		
3	„	·006	101	
7	„	·0064	100	Temperature settled after this.
4	„	·007		
3	„	·009		Weight increased 18 pounds.

The dose was steadily increased after this (temperature slightly irregular, weight steadily gaining, reactions not marked) to PTO 0·09 (weight increased 20 pounds). Patient then became very hoarse, lost her voice altogether, and was having rather troublesome cough.

Treatment was continued, and in five weeks' time she was admitted at the observation hospital for three weeks.

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.	PTO	c.c. ·8	Degrees. No reaction	Weight maintained.
	PT	·01		
4	"	·02	99·8	
7	"	·02		

Patient continued very hoarse, and about this time it was noticed that the tongue was markedly fissured. She was referred to the hospital for a course of mercury and iodide. At this time she had almost entirely lost sputum, and the lung condition had improved very much.

PT was continued up to 0·5 c.c. Then TAF was given, and continued with steady rates of increase up to 1 c.c.

For a time the voice became again very hoarse, and was almost lost. The general condition had improved, however; cough and sputum had disappeared, and the sensitiveness to tuberculin was entirely lost.

On discharge, physical signs showed some loss of resonance over the right apex, with somewhat diminished air-entry at both sides. Weight: 8 stone 6½ pounds. No cough, no sputum, quite well. Voice clear, though not very strong. Granuloma on arytenoid in larynx thick and fissured. A month later this was found to be healed.

Patient has remained perfectly well since, entirely free from any signs or symptoms of tuberculosis or syphilis.

This case was interesting in that the laryngeal condition was much more suggestive of syphilis than of tubercle. The lung condition was much more like tubercle, and the bacilli were found in the sputum on several examinations. As in several other cases where the diagnosis of tubercle has been definite and the suspicion of syphilis strong, the prognosis of the case did not appear to have been affected by the latter, and the time when tertiary symptoms showed themselves coincided with a loss of sensitiveness to tuberculin rather than with an increase.

CASE 80.—M., aged thirty; occupation: dockyard labourer.

Family History.—Mother, brother, and sister died of phthisis.

Symptoms complained of.—Cough, sputum, shortness of breath, weakness.

Onset and Course of Disease.—Weakness of five months' duration.

Reason for Application.—Sent by doctor for treatment.

Home Conditions.—Patient, wife, and two children living in

two rooms, kept clean and tidy, but not large enough. The family were unwilling from first to last to co-operate with the attempts made to improve their conditions.

Examination.—Infiltration of the whole of the left lung and the right upper lobe. Temperature: 99° to 100·8°.

As it was urgent for this patient to be removed from his family at once, he was recommended to apply for admission to the infirmary; but the Relieving Officer objected that he was not a pauper, as he was having sick pay.

The sick pay, however, was not sufficient to enable them to remove house, and after he had shown some signs of improvement with rest, he was admitted at the observation hospital. Here the temperature fell to normal, and tuberculin was commenced.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PTO	·001	No reaction	Dose increased without reaction to—
	"	·003	101·4 (second day)	Temperature did not settle completely.
7	"	·003	Irregular	Increased in two doses to—
	"	·006		Coincident with patient taking rather more exercise.
7	PBE	·001		Increased steadily without marked reaction; temperature almost normal.
	"	·1	100·6	Followed by—
	TAF	·005		Increased rapidly with slight reactions.

Patient began to make very marked improvement with gain in weight, loss of cough and sputum, improved air-entry, and loss of moist sounds. On reaching a dose of TAF 0·04 he was discharged from the observation hospital after fifteen and a half weeks there.

Unfortunately, he had to return to the same home conditions, and the extent of the mischief in the lung made it impossible to restore his full working capacity in the space of time, so that he was only fit for light work. As usual, this was difficult to obtain. Some help was obtained from a former employer, and he obtained a part time job. This he gave up in a week or two, although he was continuing to improve, as he said he did not care for the work. It was impossible to do more to help him after this, and he probably suffered from insufficient nourishment.

TAF was continued, with only slight reactions at first, after which he became sensitive.

Interval.	Prep.	Dose.	Highest Temperature.	Notes.
Days.	TAF	c.c.	Degrees F.	
		·2	99·6	
4	..	·26	99·8	
4	..	·26	99·8	Patient not so well.
4	..	·3	100	Increase in cough and sputum.
7	..	·3	Irregular	

Patient was then unable to attend the dispensary for two weeks. This was certainly partly due to his home conditions.

Two weeks 0·05.

Dose increased, with temperature rather more irregular and slight reactions only, until—

Interval.	Prep.	Dose.	Highest Temperature.	Notes.
Days.	TAF	c.c.	Degrees F.	
		·18	100·4	
5	..	·18	101	
5	..	·2	100·6	Patient not improving.
10	PBE	·01	Irregular	

Three doses of this were given, temperature continued irregular, and treatment was stopped.

The chief interest of this case lay in the fact that a most unlooked for improvement was obtained by the combination of tuberculin with sanatorium treatment.

Physical signs, cough, sputum, and the general sense of well-being and fitness for work indicated a very high degree of immunity.

CASE 81.—M., aged nineteen; off work one week.

Symptoms complained of.—Cough, sputum, pain in right side, slight hæmoptysis.

Onset and Course of Disease.—Pleurisy a year ago in left side. Had been in bed seven weeks, and had never been well since. Three months ago slight hæmoptysis after exercise.

Reason for Application—Sent by doctor for diagnosis.

Home Conditions.—Satisfactory.

Examination.—Right lung: three lobes physical signs. Left lung: loss of resonance and moist sounds, crepitations in upper lobe, harshness in lower, with some loss of expansion and loss of respiratory murmur. Area of cardiac dulness was diminished. Pulse: 84. Temperature to 100°. General condition: was poor, ill, and very pale. Teeth in good condition except two.

After a fortnight in bed the temperature settled to below 99°, and two weeks later treatment was begun at the dispensary.

Tuberculin Treatment.—Commenced with PTO 0·001 (temperature, 99·6°; weight, 8 stone 5 pounds).

The doses were steadily increased, and no reaction higher than 99·6° occurred. There was marked redness of the arm after some of the doses, but increase of from 25 to 50 per cent. was continued steadily to—

Interval.	Preparation.	Dose.	Temperature.	Weight.
Days.		c.c.	Degrees.	st. lbs.
	PTO	·0044	100	8 10
7	"	·048	99·2	
4	"	·052		

After this work was resumed, and the usual increase in dose maintained. Patient continued to gain weight slightly, till he reached 8 stone at a dose of PT 0·09.

Most of the doses showed a slight reaction in the temperature chart, but the patient was not much upset by them.

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PT	·74	100·4	
7	"	·074	99·4	
7	OT	·01	99·4	Dose repeated three times before increasing.
	"	·16	100	
3	"	·3	100	

The dose was increased slowly at long intervals, and the last doses of OT 0·5 and OT 0·6 gave no reaction.

Patient reached a weight of 9 stone, and improved in every way, cough and sputum being diminished, capacity for work satisfactory, and the temperature continuing normal. He remained somewhat anæmic and below his correct weight.

As friends were anxious to send him to a sanatorium, arrangements were made for this, and it was no doubt a great advantage to him. He remained four months, and has continued well and in full work till 1914.

CASE 82.—F., aged twenty-one; occupation: dressmaker.

Symptoms complained of.—Indigestion, swollen throat, amenorrhœa, slight cough and sputum.

Onset and Course of Disease.—Had lost health two and a half years before. Had been obliged to give up her work, and was rapidly getting worse.

Reason for Application.—Sent by doctor for diagnosis.

Examination.—Lungs: coarse râles all over the left upper lobe, fine crepitations left lower lobe, harsh breath-sounds left upper lobe, right upper and lower lobes. Sputum crowded with tubercle bacilli. Patient anæmic and acutely ill. Temperature: 102°. Pulse: 100.

She was sent home to bed, and it was thought unlikely that tuberculin could be used. Rest in bed brought about a slight improvement in the temperature, which came down to below 100° in five weeks, after which she was admitted at the observation hospital. Weight: 5 stone 12 pounds.

Tuberculin Treatment.—Commenced on day of admission. PTO 0·001 (temperature, 100·8°; rather high for a week).

Patient put on absolute rest, and temperature improved slightly. After a week she was allowed to move about in bed, and given an inhalant. Temperature settled to 99°.

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PTO	·0005	99·6	Normal next day.
3	"	·0006	99·6	
5	"	·0008		

Doses continued at the usual rate of increase, with slight reactions, till PTO 0·015, when, after nine weeks at the observation hospital, she was allowed to go home, having gained 9 pounds in weight. She attended the dispensary for treatment. Temperature normal. General condition improved. Became very sensitive to tuberculin treatment:

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
	PTO	·2225	99·6	Patient was gaining weight throughout, and had gained 11 pounds in a month since leaving the observation hospital. General condition was improving markedly, although the doses upset her very much.
3	"	·03	99·8	
5	"	·03	99·4	
3	"	·04	102·2	
7	"	·04	103	
8	"	·04	103	
7	"	·04	102·6	
5	"	·01		
4	"	·02	100·2	
4	"		102·8	
7	"	Distilled water		
3	"	·01	100·4	

A change was made to TAF 0.0002. Dose increased regularly, without marked reaction, to 0.005 (weight, 8 stone 8 pounds), followed by PBE 0.001, increased, with slight reactions, to 0.024 (temperature, 100.4°; weight, 9 stone 2 pounds). Patient very well, little cough, no sputum.

Sensitiveness to PTO was overcome, and dosage continued to PTO 0.2 (temperature, 102°).

Interval.	Preparation.	Dose.	Highest Temperature.	Weight.	Notes.
Days.		c.c.	Degrees F.	st. lbs.	
	PTO	.2	102		
7	"	.2			
3	"	.26	102.4		
4	"	.26	102		
	TAF	.01			
	"	.3	100.8	9 6½	Continued without reaction until—
7	"	.01	99.2		
6	"	.34	101.6		
5	"	.34	101.8		
5	"	.34			

Patient was then discharged, the disease being apparently completely arrested. Faint crepitations could be heard over the left lung, probably due to pleural adhesions.

Patient suffered slightly during treatment from nasal trouble, for which she had treatment at the Eye and Ear Infirmary. There was nothing to indicate that this was tubercular.

Weight on discharge was 9 stone 7½ pounds. She has continued to gain weight since, up to 9 stone 12 pounds, making a gain of 4 stone since first admission to the observation hospital. She is now (1914) in good health, and fit for full work.

This case illustrates the possibility of giving tuberculin in spite of severe reactions when there is clear evidence that the patient is making a satisfactory response. The response was shown by the gain in weight, loss of cough and sputum, and marked improvement in general health.

The original improvement in the temperature may have been due to rest rather than to tuberculin. But the patient certainly did not respond at once to the former, and it is doubtful if she would have done as well finally without the tuberculin. It certainly would not have been likely that sanatorium treatment alone would have achieved such a result unless prolonged for many months.

TYPE (TB+) 17.

ADVANCED, CHRONIC, AFEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>				
Fully treated..	.. .. 13	A .. .. .	..	..	3	
		P .. .. .	..	..	7	
		S .. .. .	..	..	2	
		W .. .. .	..	..	1	
Partly treated	.. .. 18	Reason:	P.	B.	S.	W.
		Refused treat-				
		ment ..	3	2	3	-
		Left town ..	1	-	1	-
		Interval ..	1	-	-	-
		Discharged ..	-	-	2	5
		Total ..	5	2	6	5
Under treatment, June, 1913	11					
Total	42					

All doing fairly well.

Of the cases fully treated, one discharged "P" had seven weeks at Langstone, followed by sanatorium; one had surgical treatment.

CASE 83.—This case was a girl of nineteen who had a history of cervical glands removed and sanatorium treatment for pulmonary phthisis four years before.

On examination, glands in the neck were found to be enlarged and a swelling was present on one rib. The signs in the lungs were those of fairly extensive but quiescent disease.

After prolonged treatment, her general health improved greatly; but the lump on the rib did not disappear, and she went back to London to the hospital where the glands had been removed to have this operated on.

After her return, before any more tuberculin had been given, she had a severe attack of what appeared to be influenza, when tubercle bacilli were found in the sputum.

She was admitted at the observation hospital, where she improved very much, and continued to lead an open-air life afterwards. She has kept better, but refused sanatorium treatment, and the prognosis does not appear good.

Both the cases discharged "S" fully treated were helped by the Care Committee, one being also treated at the observation hospital.

CASE 84.—The case discharged "W" fully treated was one who began treatment soon after his return from a sanatorium, the disease being still quite active. He continued to improve to some extent, but after a time relapsed, and the disease was too advanced to give much hope.

He was at the observation hospital for four weeks near the end, and then went to a sanatorium for advanced cases, where he got worse and died.

The other case discharged "W," partly treated only, went twice to the observation hospital, once for three and once for thirteen weeks.

One case discharged "P," partly treated, had extensive help from the Care Committee.

CASE 85.—M., aged forty-nine; married; four children. Applied July, 1911.

Family History.—One uncle, one cousin died of phthisis.

Symptoms complained of.—Cough, sputum, night sweats, shortness of breath, pain, slight hoarseness.

Onset of Disease.—Gradual for the last eighteen months.

Reason for Application.—Sent for treatment by doctor.

Previous Health.—Good. Had had winter cough for five years.

Condition on Admission.—Lungs: moist sounds over right lung (three lobes) and left upper lobe. Larynx: arytenoids infiltrated; ulcer in interarytenoid space.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Height of Temperature (if raised).	Days Temperature raised.	Weight.	Notes.
Days.	PTO	c.c.	Degrees.	1 2 3 4	st. lbs.	
		·001			8 4	
5	"	·00175	98·6	- + - -		
3	"	·003	99·2	- + - -		
4	"	·004	99·6	- + + +	8 2	
5	"	·005	100·4	+ + + +		Febrile.
7	"	·005	100·2	+ + + +	8 5½	
8	"	·005			8 2½	
3	"	·0064	100·2	- + - -	8 1	
5	"	·0064	101·4	- + - -	8 3½	
5	"	·0064	100·4	- + + -		
4	"	·007	100·4	- + + -		
5	"	·008	100·4	- + - -	8 3½	
6	"	·008				Temperature settling below 99°.
3	"	·01	99·8	- + - -	7 13	
5	"	·0125	99·6	- + - -		
3	"	·015				
4	"	·0225	99·4	- + - -		
3	"	·03	99·6	+ + - -	8 0½	Better; less cough and sputum.
4	"	·035				
3	"	·05	99	- + - -	8 1¾	
4	"	·075	99·8	- + + -		
7	"	·075	99·8	- + - -		
4	"	·075	99·2	- + - -		
4	"	·1	99	- + - -	8 0¼	

TUBERCULIN TREATMENT--Continued.

Interval.	Preparation.	Dose.	Height of Temperature (if raised).	Days Temperature raised.				Weight.		Notes.
				1	2	3	4	st.	lbs.	
Days.		c.c.	Degrees.							
3	PTO	.15								
4	"	.225	99.2	-	+	-	-			
5	"	.3	99.2	-	+	-	-			
5	"	.45	99	-	+	-	-			
4	"	.6	99	-	+	-	-	8	5½	
5	"	.8	99.4	-	+	-	-	8	5½	
5	PT	.01						8	5½	
									Temperature very steady (98° to 98.4°).	
4	"	.02						8	6¼	
3	"	.03								
4	"	.045	98.6	-	+	-	-	8	6¼	
4	"	.06	98.8	-	+	-	-			
4	"	.08						8	5¾	
3	"	.12	100	-	+	-	-	8	5¾	
7	"	.12	99	-	+	-	-	8	4¼	
3	"	.12								
4	"	.16								
3	"	.22	99.8	+	+	-	-			
7	"	.22						8	2¾	
3	"	.28	99.6	+	+	-	-	8	2¼	
5	TAF	.01						8	1¾	
3	"	.02	100.2	+	+	+	-			
									Occasional slight rise of temperature.	
16	"	.005						8	1	
									Temperature steady.	
3	"	.007	98.8	-	+	-	-	8	3¼	
4	"	.01						8	1	
3	"	.015								
4	"	.025	98.8	-	+	-	-			
4	"	.036	99	-	+	-	-			
4	"	.05	99.8	-	+	-	-	8	0¼	
4	"	.05	99	-	+	-	-			
7	"	.05	99	-	+	-	-			
3	"	.06	99.2	-	+	-	-			
4	"	.08	99	-	+	-	-			
3	"	.11	100.2	-	+	-	-			
7	"	.11	99.2	-	+	-	-	8	0½	
3	"	.12	99.4	-	+	-	-			
4	"	.16	100.2	-	+	-	-			
7	"	.16	100.4	-	+	-	-	8	2	
5	"	.04	99.2	-	+	-	-			
3	"	.046	99.2	-	+	-	-	8	2	
4	"	.04	100.2	-	+	-	-			
7	"	.01	100.4	-	+	+	-			
7	PBE	.001	99.2	-	+	-	-	8	0	
3	"	.002	99.8	-	+	-	-	7	13½	

On discharge (May 11, 1912), condition of lungs improved and general condition slightly better, temperature normal.

Since discharge patient has kept much the same, but has never been fit for work.

CASE 86.—F., aged thirty-nine; applied for treatment in 1910. *Symptoms complained of.*—Cough, sputum, lassitude.

Onset and Course.—Sudden, at twenty-one years of age, with hæmoptysis, followed by pleurisy, and sputum found to contain tubercle bacilli. Patient had prolonged and repeated sanatorium treatment, but never regained satisfactory health nor became able to resume any form of work. She had several attacks of hæmoptysis, the last being in 1908.

Examination.—Cavity in left upper lobe, fairly dry. Crepitations at right apex, with loss of resonance over right upper lobe. General condition: well-nourished, flabby, unfit for exertion. Temperature: normal.

Treatment.—No treatment other than tuberculin was used, and no change was made in the patient's life until she became well enough to take up work.

TUBERCULIN TREATMENT.

Number.	Interval.	Preparation.	Dose.	Highest Temperature.
	Days.		c.c.	Degrees F.
1		PTO	·001	
2		"	·0025	
3		"	·005	
4		"	·0065	99·6
5	4	"	·0075	100·4
6	4	"	·0075	99·2
7	4	"	·0085	99·6
8	5	"	·009	
9	5	"	·01	101·2
10	7	"	·01	
11	4	"	·013	
12	3	"	·02	100·6
13	5	"	·02	
14	5	"	·025	100·8
15	4	"	·025	99·4
16	5	"	·035	101·2
17	5	"	·035	
18	5	"	·045	
19		"	·05	
20		"	·06	

PTO was then continued at the usual rate and intervals to 0·55, when it was followed by PT, beginning with 0·01 and continuing without reaction to 0·55, when treatment was stopped for a time on account of a small cold abscess which formed at the site of a needle-track reaction. This soon healed, and patient took up some work, having improved very markedly and entirely lost her sputum. She declared that she had never realized before what it meant to feel well.

A second course was given six months later of TAF, from 0·001 to 1·0. Patient has kept perfectly well and at full work ever since.

TYPE (TB+) 18.

ADVANCED, CHRONIC, FEBRILE (NO TUBERCLE BACILLI DETECTED).

		<i>Results.</i>				
Fully treated	9	A (I laryngeal)	..	..	2
		P (I " )	..	..	4
		B (I " )	..	..	1
		S .. .. .	..	..	1
		W .. .. .	..	..	1
Partly treated	45	Refused treat- ment ..	P.	B.	S.	W.
			3	2	2	-
		Sent to sanator- ium ..	-	5	-	-
		Interval or dis- charge ..	2	-	11	19
		Total	5	7	13	19
Under treatment, June, 1913	10					
Total	64					

Of the cases fully treated, one discharged "P" was at the observation hospital six weeks; one discharged "B" was at the observation hospital three weeks; one discharged "B" was at the observation hospital twelve weeks, and sent to sanatorium; one discharged "S" was at the observation hospital three weeks; one discharged "W" was at the observation hospital six weeks.

Of the cases partly treated, the following had laryngeal infiltration: Result "P," four; result "B," two; result "S," three; result "W," eight.

Four result "B" were at the observation hospital and sent on to sanatorium (one for four weeks, the others for twelve weeks each). Three result "S" were at the observation hospital four, four, and seven weeks respectively. Eight result "W" were at the observation hospital two, four, five, six, eight, ten, and twelve weeks respectively. One result "W" was at the observation hospital four weeks, and sent on to a sanatorium. One result "S" and four result "W" were treated at home.

Three who had not been at the observation hospital were at sanatoriums for varying periods: One discharged "P," now "S." One discharged "B," now dead. One discharged "W."

Besides these, one case result "P," one case result "S," two cases result "W" were extensively helped by the Care Committee.

CASE 87.—M., aged twenty-five.

Family History.—Father and mother died of tubercular meningitis; three brothers, two sisters died of phthisis; one brother weak chest; one brother, one sister well.

Previous Treatment.—Family learnt fresh-air treatment in 1908. Patient particular since then.

Examination.—Lungs: respiratory murmur deficient over chest; signs very marked at right apex, but the disease probably not localized to this. Both arytenoids enlarged. Anæmic and unfit for work. Evidently suffering from definite relapse when applied.

Treatment.—Sent to observation hospital; improved quickly.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Highest Temperature.	Notes.
Days.	PTO	c.c. ·001	Degrees F. Rise	Rise probably due to coincident tonsillitis.
10	„	·001		
3	„	·0016	99·8	
5	„	·002	99·6	
4	„	·003	100·8	
5	„			
5	„	·004	101·2	
8	„	·0045	99·4 (2 weeks)	
5	„	·006		
4	„	·008	Falling	
4	„	·012		

Steady increase without reaction to 0·9. PT 0·01; steady increase without reaction to 0·8. Temperature during this time generally normal, occasionally to 99°. TAF 0·1; steady increase to 1 c.c. in one month. After a month's interval patient still had sputum, though general condition very good.

TAF 0·1 given, and dose doubled to 1·8 a month later; weight remained stationary. Stopped treatment for four months. Weight increased by 4 pounds; still sputum.

OT 0·01 given, and increased to 0·8; temperature, 100°. Increased to 0·26; temperature, 100°. Increased to 1 c.c.

Discharged. Much improved; weight increased by 3 pounds; still sputum.

This case would probably benefit by sanatorium treatment. Failing that, another course of tuberculin would probably be advisable, and it might be well to try the bacillary emulsion.

CASE 88.—M., aged twenty-six; occupation: steward in Royal Navy, non-continuous service.

Family History.—None of phthisis.

Symptoms complained of.—Cough, sputum, shortness of breath, hoarseness.

Onset and Course of Disease.—Attack of pleurisy three years before. He then left the service, and was sent to Bourne-

mouth Sanatorium. He improved there, but did not get well. He did not put himself under a doctor in Portsmouth.

Reason for Application.—For diagnosis.

Home Conditions.—Good. Rest of family in good health.

Examination.—Extensive mischief in left lung; fibrosis present. Both cords were red, and did not approximate well. Pulse: 110. Patient, a tall, round-shouldered, delicate-looking youth with a nervous temperament. Temperature was generally above 99°, sometimes to 99·8°. Appeared ill. Was ordered to rest for a few days, and the temperature settled somewhat.

Diagnosis was made of active pulmonary and laryngeal mischief of a chronic type, but with a tendency to progress. The prognosis appeared to be unfavourable. He entirely refused to go away to a sanatorium, and as sanatorium treatment had not benefited him to any great extent, it was not urged, although it was felt to be very doubtful if he could safely have treatment while attending the dispensary.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Highest Temperature.	Weight.	Notes.
Days.	PTO	c.c.	Degrees F.	st. lbs.	
		·0005		9 7 $\frac{1}{4}$	
3	"	·001			
4	"	·002	99·8		
6	"	·002			
4	"	·003	100		
7	"	·003	99·2		
4	"	·004			
3	"	·006	99		
4	"	·008	100·4		
7	"	·008	99·6		
4	"	·01	99·6		
4	"	·014			By this time temperature was normal between the reactions, always as low as 96° in the morning.
3	"	·02	100	9 9	
5	"	·02			
3	"	·03	100·0		
5	"	·03			
4	"	·045	99·6 (2nd day)		
4	"	·06	101·8		
5	"	·06			
5	"	·06			
5	"	·075			
3	"	·08			
6	"	·1			
3	"	·15	101		
6	"	·15	101·6		
6	"	·1			
5	"	·13			

During the past three weeks temperature rose to 99° daily between the doses. Weight +3 pounds.

Interval.	Preparation.	Dose.	Temperature.
Days.		c.c.	Degrees.
3	PTO	·18	
5	"	·25	
5	"	·34	101·4

Between these three doses the temperature was normal. Weight, +4 pounds. Patient was improving in every way, except that the physical signs in the larynx showed no improvement.

After the last reaction subsided patient had a cold and a sudden rise in temperature, and the doses were suspended for eighteen days till the temperature became normal.

Interval.	Preparation.	Dose.	Temperature.
Days.		c.c.	Degrees.
18	PTO	·05	99·4
3	"	·1	
3	"	·16	101·8
8	"	·05	
6	"	·08	

The dose was increased at a regular rate with normal temperature to PTO 0·8, when the temperature rose to 100·6°. PT 0·1 was then given; weight +3½ pounds.

PT was increased steadily, the temperature remaining fairly satisfactory, with occasional rises to 99·4, but no definite reactions until—

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.	PT	c.c.	Degrees.	
		·1	103	By this time there was little cough and no sputum.
5	"	·1		
5	"	·14	99·4	
5	"	·18	99·8	
6	"	·2		
4	"	·3	101·4	
7	"	·3	99·6	
5	"	·32		
3	"	·36		
3	"	·5	99·8	
4	"	·62		
5	"	·8	99·8	

After this the temperature was from 96° to 98° as a rule. General condition much improved; little cough and no sputum for three months.

OT was then given, and increased steadily, with occasional slight reactions the same night, until a dose gave a reaction to 101.6°, when a change was made to TAF.

Interval.	Preparation.	Dose.	Temperature.	Weight.
Days.		c.c.	Degrees.	st. lbs.
7	TAF	?		
4	"	.8		
5	"	.9		
5	"	1.2		
7	"	1.3	99.6 (same night)	
6	"	1.6	99.6	
6	"	1.6	101	
7	OT	.1		
6	"	.15	99.6 (same night)	
7	"	.3		
4	"	.6		
7	"	1.0	99.6 (same night)	9 10½

Patient discharged.

General condition good, doing more work than on first application. Free from cough and sputum. The larynx still showed signs of infiltration; physical signs in the lungs showed loss of air entry in the left lung, adhesion at the base, no moist sounds. He is reported well and at full work in 1914.

While this case would probably have gained more weight at a sanatorium, it is unlikely that any greater improvement than this could have been obtained, considering the activity of the disease.

It is a case which should have a second course of treatment, to which he is likely to submit. His only objection was leaving home and work, although he had no one dependent on him, and could be supported by his parents. His mother did not like the idea of his losing his work, which was very light, as she said he moped when he had nothing to do.

At an earlier stage graduated labour and physical drill might have had an excellent effect upon the chest development, and so made relapse far less likely; but with the extent of fibrosis that no doubt had taken place, it would have been impossible to restore the natural condition of the chest.

CASE 89.—F., aged fifty.

Symptoms complained of.—Cough, sputum, night-sweats, shortness of breath, some indigestion.

Onset and Course of Disease.—Slight hæmoptysis twenty-eight years ago; severe one two and a half months ago, continuing for a week. She had always been liable to winter cough; worse last two years.

Reason for Application.—For treatment.

Previous Treatment.—Under doctor. Had been told by him what was the matter, but had not been sent to dispensary by him.

Home Conditions.—Comfortable.

Examination.—Extensive mischief over left lung; suspicious signs at the right apex. Pulse, 110. Temperature irregular, occasionally to 100°, observed for ten days; for four days not above 99·2°.

TUBERCULIN TREATMENT.

Interval.	Preparation.	Dose.	Highest Temperature.	Notes.
Days.		c.c.	Degrees F.	
	PTO	·002		
4	"	·0035	100·6	
7	"	·0035		
4	"	·005	99·4 (2nd day)	
3	"	·0062	99·2	
4	"	·008		
3	"	·012		The dose was increased at the usual rate to—
	"	·075		Patient feeling much better. Weight + 1 pound.
4	"	·08		
3	"		102 (3 days)	Temperature fell gradually to normal; treatment continued.
3	"	·04		
3	"	·06		
4	"	·075		Slight hæmorrhage; better after.
3	"	·08		
4	"	·1		The dose was increased steadily without reaction up to—
	"	·1		
6	PT	·03		
4	"	·05	99·4	
4	"	·06	102	Weight + 3 pounds.
6	"	·06	99	
4	"	·08	99·2	
6	"	·09	100	
7	"	·1	102	
7	"	·1	100	
4	"	·1		
4	"	·12		
7	"	·15	99·6	
5	"	·18		
4	"	·25	100	
5	"	·25		
5	"	·3	100	
8	"	·3	100·4	

After this, patient was not so well, and had increasing cough. Interval, ten days; dose, PT 0.3; temperature, 100.8°. After this she felt ill, and stayed in bed, although the temperature remained normal.

Interval.	Preparation.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
14	PTO	.03	100	Temperature down next day.
3	"	.06	(2nd day) 100	
3	"	.1	(same day) 102	
	"		(same day) 100	
6	"	.05	(3 days) 100	
6	"	.07	(2 days) 99.2	
3	"	.09		
4	"	.12		
3	"	.16		
4	"	.25	99.4	
3	"	.3		
4	"	.4	100.2	
5	"	.4	100	
5	"	.4	101	
5	"	.1	99	
3	"	.2		
4	"	.3		
3	"	.4		
5	TAF	.1	99.4	
3	"	.12	100	
4	"	.03		

Doses were then increased rather slowly, without definite reaction, and with fairly steady temperature, but the weight which had been gained was lost. General condition was improving; cough and sputum were greatly decreased. There was no reaction until dose—

Interval.	Preparation.	Dose.	Temperature.
Days.		c.c.	Degrees.
4	TAF	.7	100
	"	1.2	99.6
7	"	1.4	100.4

Patient was then discharged.

General condition was much improved, far more than was thought likely at the outset. She had no cough, and practically no sputum. She was still somewhat short of breath. Physical signs showed no definite signs of activity.

She reported regularly during the following four months, each

time expressing herself to be very well, with very little cough and sputum.

She lost 1 or 2 pounds weight during the winter, but had no illness or set-back until, in February, she had a sudden attack of bronchitis, and died in a few days.

There is no doubt that advanced cases of tuberculosis, however well the disease may be arrested, are more liable to secondary infection than is the case with healthy lung tissue.

It is unlikely in this case that death was due to a relapse of the tuberculosis alone, as this would not have caused such a rapid illness. The age of the patient would have made an attack of acute bronchitis serious in any case. The extent of the lung tissue involved would have been a serious impediment to respiration.

The sensitiveness to PT is an interesting feature in this case. It was probably unwise to increase the dose gradually with increasing reactions. Under those circumstances it is better either to repeat the same dose or to make a marked diminution, and it is only when sensitiveness has persisted for some time that it is successful as a rule to increase in spite of it.

It has been found in other cases that sensitiveness to PT can best be overcome by changing to TAF, after which patients will often take either PT or OT much more readily, if it be thought necessary to give it.

CASE 90.—Another case in this type illustrates well the possibility of increasing the dose while fever is present. The case was one of a man aged fifty, the subject of very extensive disease in an acute phase, seen in 1911.

The temperature settled to 99.6° with rest, and treatment was commenced in his home for the first few doses, after which he attended the dispensary.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Days Temperature raised (Degrees F.)—						
			Same Night.	1st.	2nd.	3rd.	4th.	5th.	6th.
Days.		c.c.							
	PTO	.002	99.8	98	99.4	98	99.4		
5	"	.003	99.4	98.8	99.6	98	99.8	98.4	99.2
7	"	.004	99.6	98	99.8	98	99.6	98.4	99
7	"	.006	99	98	100	98	99.8	98	99.4
7	"	.006							
4	"	.006							
3	"	.007	99.8	97	99.2	97	99	97	99
7	"	.0094	99	97	99.2	97	98.8		
6	"	.014	99	98	100.4	98	99		
5	"	.014	98.9	97	99				
4	"	.02							

A very remarkable degree of improvement was obtained, and continued in 1914, the patient having been at full work for two years.

C, Children.

Analysis of all Cases to whom Tuberculin was administered.

Tested with negative result 44

This does not include one child who was negative when first tested, and positive a year later, after prolonged exposure to infection (see p. 261).

No other case has shown further evidence of tubercle.

Tested and diagnosed as tubercular 247

Analysis of the cases according to type (see p. 20), and the nature of treatment employed.

The decision as to the necessity for treatment was arrived at by a consideration of the symptoms, of the nature of the reaction to tuberculin, and of the circumstances of the patient.

TYPE I. "CONTACT."

Cases brought to dispensary primarily on account of having been in contact with a known case of phthisis, and not on account of symptoms.

Total number, 32:

Treated 16

SUMMARY.

Results, A 13
 B (1 now well) 2
 S (now well) 1

Intercurrent treatment (other than tuberculin): none in any case except help from Care Committee for three whose mother was phthisical.

ANALYSIS.

(a) *Cases with no signs or symptoms of illness* .. 9
 Treated and discharged: Results, A .. 4
 Not treated 5
 Reason, unnecessary.

(b) *Cases with slight signs, but no symptoms of disease* 12
 Treated and discharged 6
 Results, A 5
 B (left town, and keeping well) .. 1
 Under treatment, June, 1913 3
 Not treated 3
 Reasons: Observation 2
 Refused treatment 1

(c) Cases with slight symptoms, but no physical signs of disease	6
Treated and discharged	3
Results, A	2
S (sent to country, but refused to continue treatment; improved later; now well) ..	1
Under treatment, June, 1913	2
Not treated	1
Reason, unnecessary.	
(d) Cases with both slight symptoms and slight physical signs of disease	5
Treated and discharged	3
Results, A	2
B	1
Tested only, not treated	2
Reason, unnecessary.	

TYPE 2. "DELICATE."

Children who had been delicate since birth, the date of onset of the symptoms suggestive of tubercle being quite uncertain.

Total number, 52:

Treated	41
Well in 1913	31

ANALYSIS.

(a) Cases with no history of previous signs of tuberculosis, but with slight signs on examination	27
Under treatment June, 1913	6
Treated and discharged	21

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	15	A, 14 B, 1	Country, 3
P	2	Well	Country, 2
S	4	3 no worse; condition not serious; 1 untraced	Country, 3

CASE 91.—M., aged seven.

Onset and Course of Disease.—Always delicate. Chest on the whole better now than formerly. Was short of breath, but active and energetic; good appetite.

Reason for Application.—Sent by school medical officer, with the consent of his doctor, who, however, had said that they should wait and see before taking any steps.

Home Conditions.—Fairly comfortable; standard high. Four other children; patient appeared to be well fed. Was sleeping with two brothers, but at opposite end of the bed. Through ventilation of house not complete, but in healthy part of town. They had a garden, and had learnt to keep the windows open.

Examination.—Dulness and moist sounds at right apex. Respiratory murmur over right lung poor. Chest expansion poor. Slight expansion of cervical glands.

Attack of fever after first examination, temperature rising to 104°; but after a few days it settled to below 99·6°.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.		c.c.	Degrees.	st. lbs.	
	PTO	·001		3 1½	
3	"	·0015	99·4		Temperature varying. No definite reaction.
3	"	·002	99		Morning temperature next day.
4	"	·002	99·4		Morning temperature next day.
4	"	·003	—		Child better.
3	"	·0044	100		
4	"	·0044	—		

After this, dose increased at about 30 per cent. rates of increase, with definite reaction and slightly unsteady temperature, in 4½ weeks to 0·04; temperature 102·4 next day. Weight 3 stone 3½ pounds. Child better. Temperature raised a week; appeared to be an attack similar to that before treatment began.

After two weeks, treatment continued and dose increased steadily, with no reaction. Temperature better, to 99° only for two weeks, then normal; on reaching PTO 0·66, changed to PT 0·01. Child returned to school. Four doses of PT were given in two and a half weeks, then TAF 0·01. Dose increased regularly to 0·07, temperature remaining normal (weight, 3 stone 3½ pounds).

Child well, with no symptoms whatever.

As he was still thin and pale, it was suggested he should be sent to the country for a month, and this was arranged, with the help of the Care Committee. He has remained well since.

(b) Cases with no history of previous signs of tubercle, but with marked signs on examination	15
Treated and discharged	12

Result.	Number.	Reported since Discharge.
A	7	All remained well
P	1	Left town
B	3	2 still delicate; 1 well
S	1	Refused further treatment

DISPENSARY TREATMENT OF

Under treatment June, 1913 2
 Tested only 1

Reason: Left town.

Intercurrent treatment: 3 cases sent to country or sanatorium. Results: A, 2; B, 1. 1 discharged, B, sent to sanatorium, now well.

(c) *Cases with a history of previous signs of tubercle and slight signs on examination* 7
 Treated and discharged 5

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
B	4	Refused further treatment; 3 well now; 1 same	None
S	1	Non-tubercular complication; fairly well now	None

Tested only 2

Reason:

Refused treatment 1

Unsuitable 1

(d) *Cases with a history of previous signs of tubercle and marked signs on examination* 3
 Treated and discharged 3

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	2	Remained well	None
B	1	Well now	None

CASE 92—*Family History*.—Father's health good. Mother, patient at the dispensary; diagnosis, doubtful, laryngeal; had short course of tuberculin, and preferred to stop; probably not infective.

Onset and Course of Disease.—Puny, delicate child. Pneumonia, December, three months before.

Previous Treatment.—Adenoids and tonsils removed two years before.

Examination.—Chest, nothing definite. Dulness at right apex.

Test.—TAF 0.01; reaction on third and fourth days. Crepitations at right base. Considered at the time that this might be simple bronchitis, and a coincidence. Needle-track reaction never marked.

Tuberculin treatment commenced two weeks after reaction with PTO 0.001 c.c.; four doses given; no rise of temperature. Three days after fourth, rise to 101°. Interval, ten days, temperature settled. Dose increased again, without rise of temperature, to PTO 0.004 c.c.; reaction to 101°. Same

dose in seven days gave no reaction. Dose increased again, with normal temperature, to PTO 0.01, which was followed by temperature 102° on second day. Interval thirteen days; PTO 0.0025 then gave no reaction. Dose increased again; weight increased 1 pound, then stationary.

At this time it was recommended that the child should be sent to the country, but this was not arranged.

Tuberculin continued to PTO 0.54 in five months since treatment began. PT then given, 0.02; weight increased 2 pounds since start.

When dose 0.06 was reached, the child was sent to the country for a fortnight, and gained $\frac{3}{4}$ pound.

Treatment then continued with TAF 0.001; but four days later child was taken ill, with temperature 104°, apparently not connected with the dose. This subsided in four days, and PT was then given, from 0.01 to 0.028, four days after which the child again became ill, with cough, pain in the chest. This subsided in five days, without loss of weight, and PBE was given, from 0.001 to 0.009 c.c., the latter dose causing a reaction to 102.2°, although the weight increased another pound.

It was then decided to send the child to a sanatorium, as, although she had improved to some extent, it was thought she was the type likely to need very prolonged care and every advantage.

It should be noted that the distinction between this type (2, a, b, c, d) and the next (3, a, b, c, d) is not well marked, except in a few cases, where the tendency to chronic bronchitis is very pronounced, and it might be better to put these in a separate class from those whose bronchitis is only a sign of general delicacy.

TYPE 3. "BRONCHITIC."

Cases in which the main symptoms and physical signs were those of chronic or recurring bronchitis, which had usually been present since babyhood.

Total number, 30:

Treated 20

SUMMARY.

Result.	Number.	Intercurrent Treatment.
A	8	1 Care Committee
P	5	4 sanatorium or country
B	3	2 sanatorium or country
S	4	2 sanatorium or country

ANALYSIS.

(a) Cases with no impairment of resonance	16
Treated and discharged	9

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	4	Remained well	None 1 country 1 country
P	2	Well now	
B	2	1 improved in country 1 refused treatment and died	
S	1	No better; refused to continue	

Under treatment June, 1913	1
Tested only	6

Reasons:

Unnecessary	2
Refused treatment	2
Country	1
Left town	1

(b) Cases with impairment of resonance	11
Treated and discharged	9

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	4	Well	None Country Country Country
P	2	Improved	
B	1	Improved	
S	1	Improved	

Under treatment June, 1913	3
------------------------------------	---

(c) Cases with severe symptoms	3
Treated and discharged	3

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
P	1	Delicate	Sanatorium 1 to sanatorium
S	2	1 no better; 1 untraced	

CASE 93.—F., aged thirteen.

Family History.—Father, brothers, and sisters died of phthisis.

Onset and Course of Disease.—Tendency to bronchitis, with recurrent attacks of tonsillitis. Tendency at time of application to raised temperature.

Reason for Application.—For treatment.

Previous Treatment.—Had had six months' sanatorium treatment, and had improved greatly while away, but relapsed very shortly after her return.

Previous Health.—Child of a fair, rather ruddy type, generally considered unfavourable to phthisis.

The case was difficult to deal with, as the mother had to go out to work, and could not look after her at home. The rise of temperature made it necessary that care should be taken. She was admitted at the observation hospital, and the temperature responded to nursing and absolute rest.

It is difficult to tell whether the tonsillitis in such a case as this is due to tubercle or to a coincident infection.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Weight.	Notes.
Days.			Degrees.	st. lbs.	
	PTO	·0005		5 8	
3	"	·0008	100 (2nd day)		No reaction. Probably no reaction.
5	"	·001			
3	"	·0012	100 (2nd day)		
5	"	no dose	100		
6	"	·0012			
4	"	·0018	100 (2nd day)		
3	"	·0026			
4	"	·0034	100		Temperature remained up and alveolar ab- scess developed.
3	"	·004			
4	"	·006	100 (2nd day)		
3	"	·008	100		Followed by acute ton- sillitis.
1					

A consideration of these doses and temperatures suggests that the occasional rise to 100° was not always due to reaction to the dose.

Treatment for the next three weeks was rather irregular, owing to occasional rises of temperature.

Patient was then admitted to the observation hospital, where treatment was continued.

Interval.	Prep.	Dose.	Temperature.	Notes.
Days.			Degrees.	
?	PTO	·002	101	
5	"	·002	103	
6	"	·003	103	
6	TAF	·0001		
3	"	·0002	99·6	
4	"	·0003	99·2	
4	"	·0004	100	
5	"	·0004		
6	"	·0005		Patient returned home.
4	"	·0006	100	
4	"	·0006		

The dose was increased at the usual rate, with occasional reactions and continued improvement up to TAF, 1 c.c., which gave no reaction (weight, 6 stone 6 pounds), followed in seven days by TO 1 c.c. (temperature, 100.4°). This was not repeated, and patient was then discharged well.

In this case the response to tuberculin was pretty clear, and there is every reason to expect that the improvement could be maintained by giving a second course of tuberculin, if necessary.

There is no evidence of destruction of lung tissue.

TYPE 4. "RECENT."

Cases with a history of recent onset (within six months).

Total number, 14:

Treated 8

SUMMARY.

Result.	Number.	Intercurrent Treatment.
A	4	1 hospital
P	2	
S	2	2 to sanatorium or country

ANALYSIS.

(a) *Acute cases, well-marked* 6
 Treated and discharged 5

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	4	All well now	1 hospital and country
P	1	Well now	

Under treatment June, 1913 1

(b) *Cases with a gradual onset of definite signs and symptoms* 5
 Treated and discharged 3

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
P	1	Fairly well now	Sanatorium
S	2	No better; worse and died	1 to country

Under treatment June, 1913 1

Tested only 1

Reason: For observation.

- (c) *Cases with a gradual onset of indefinite signs and symptoms* 3
 Under treatment June, 1913 3

TYPE 5.

Cases with a History of Symptoms extending over a Definite Period of over Six Months.

Total number, 39:

Treated 27

SUMMARY.

Result.	Number.	Intercurrent Treatment.
A	13	2 to country
P	5	2 to sanatorium and country
B	4	2 to sanatorium
S	5	2 to sanatorium

ANALYSIS.

- (a) *Cases who had had a definite illness leaving slight or indefinite signs of chronic disease* 6
 Treated and discharged 4

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	3	All well now	1 country
P	1	Still delicate	Sanatorium three months

Under treatment June, 1913 1
 Tested only 1
 Reason: For observation.

- (b) *Cases who had had a definite illness leaving definite signs of chronic disease* 9
 Treated and discharged 8

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	3	Well now	Sanatorium
P	1	Well now	
B	1		
S	3	2 refused treatment, no better; 1 left town	

Under treatment June, 1913 1

- (c) *Cases of gradual onset with slight signs of disease* .. 11
 Treated and discharged 7

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	4	1 not traced; 3 well now	
B	2	Left town	1 sent to sanatorium
S	1	Now better	Sent to country

Under treatment June, 1913 2
 Tested only 2

Reasons:

Observation 1
 Left town 1

(d) *Cases of gradual onset with slight signs of disease* .. 13
 Treated and discharged 8

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	3	All well now	1 to country
P	3	All well now	1 to country
B	1	Left town	
S	1	Better now	To sanatorium

Under treatment June, 1913 3
 Tested only 2

Reasons:

Refused treatment 1
 Unsuitable 1

CASE 94.—M., aged twelve.

Family History.—Both parents phthisical.

Symptoms complained of.—Slight cough, lassitude.

Previous Treatment.—Two and a half years before had been boarded out in the country by the Charity Organization Society on the advice of a doctor, but the parents would not co-operate. The mother had always spoiled the child, and she insisted on having him home sooner than was advised. It was reported that when he came home the disease appeared to be arrested, but it was thought impossible that the family income could provide suitable environment, and that it was likely that he would lose all the good he had obtained.

Previous Health.—Delicate child, sallow complexion, extremely nervous and sensitive.

Home Conditions.—Family had had considerable help from charity, having come down in the world through ill-health; but the house was clean and airy.

Examination.—Loss of resonance and harsh breathing-sounds at right upper lobe. No sputum. Slight cough. Teeth in good condition. General condition fair. Trace of albumin in urine. Difficult to say that there were definite

signs of tubercular infection. The most general symptom was lassitude, which might have been due to the attention that had been called to his health.

Test.—Slight reaction.

Tuberculin Treatment.—PTO was given, and increased rapidly at the usual rate, the boy showing slight sensitiveness. Three days after a dose of PTO, 0.1 c.c., to which there was no apparent reaction; he had a rise of temperature for a few days. This appeared to be a kind of attack to which he had been accustomed, with no special symptoms. It occurred again with a reaction to a dose of PTO, 0.8 c.c.

He was then sent to the Eye and Ear Infirmary, in order to ascertain whether the headaches were due to his eyes. He was provided with glasses, and after this he was better. He still got headaches after doses, but they must be discounted on account of his neurotic condition.

On reaching a dose of TAF 0.16, it was decided to keep him under observation without further treatment for the present.

During this time he had varied in health, but on the whole had kept pretty well. The condition remained the same throughout, and there is every reason to suppose that he is still exposed to infection. It is quite possible that his present fair health is due as much to his stay in the country as to the tuberculin he has had since.

TYPE 6.

Cases showing Advanced Signs of Disease.

Total number, 12:

Treated 10

SUMMARY.

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	1	Both well now	1 sent to country
B	4	3 fairly well now; 1 same	
S	4	1 better now; 3 worse	

ANALYSIS.

(a) *Cases of children who have always been delicate* .. 7

Treated and discharged 6

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	1		None
B	3	2 fairly well now; 1 same	"
S	2	1 worse; 1 better now	"

Under treatment June, 1913 1

(b) <i>Cases in which there was a definite onset</i>	5
Treated and discharged	4

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	1	Well now	Sent to country
B	1	Fairly well	
S	2	1 worse; 1 left town	

Under treatment June, 1913 1

TYPE 7.

*Cases similar to the Adult Type of Pulmonary Tuberculosis :
No Tubercle Bacilli detected.*

Total number, 15:

 Treated 14

SUMMARY.

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	7	1 Died since	1 to country
P	1		2 country or sanatorium
B	4		1 sanatorium
S	2		

ANALYSIS.

(a) <i>Recent, afebrile</i>	6
Treated and discharged	5

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	2	Well now	1 country Sanatorium
B	2		
S	1		

Under treatment June, 1913 1

(b) <i>Established, afebrile</i>	3
Treated and discharged	3

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	3	All well now	None

(c) <i>Recent, febrile</i>	5
Treated and discharged	5

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	2	Well now	1 country; 1 sanatorium
B	2	Well now	1 sanatorium
S	1	Dead now	—

(d) *Established, febrile* 1
 Treated and discharged 1
 Result: P.

CASE 95.—M., aged thirteen.

Family History.—Patient professed to be in good health, though he looked delicate. No sputum or cough.

Examination.—Loss of resonance at the apex of the left lower lobe, with harsh breath sounds. Pulse, 72. Temperature normal.

Test.—OT 0.0005 gave needle-track reaction.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.
Days.	PTO	.001	Degrees.
	"	.002	To 99.4
	"	.0025	To 102
7	"	.0025	

The dose was increased steadily, generally with no reaction, sometimes a slight one. Patient gained in weight and improved in health. He was discharged after thirty-three weeks' treatment on attaining dose TAF 0.8, and has kept well since.

CASE 96.—F., aged fourteen.

Family History.—Mother suffering from advanced phthisis.

Onset and Course of Disease.—Health not very good lately; had grown thinner, and had occasional cough.

Previous Health.—Good, except for influenza two years ago, and tendency to cough in winter.

Reason for Application.—Brought on request for examination by her mother. Not under doctor.

Home Conditions.—Good.

Examination.—Loss of resonance both apices and left lower lobe, with harsh inspiration and prolonged expiration. A few crepitations were heard at the right apex. Pulse, 80. Temperature, 102°. Patient was sent home to bed. Temperature was irregular, 97° to 102° on some days; on others, only 99°.

After two weeks, treatment was begun at home.

Tuberculin Treatment.—PTO 0.001 was given, and the dose increased steadily without reaction to 0.004, temperature having improved. After this, temperature was again irregular, patient suffering a good deal in the hot weather.

Treatment was continued at home until September 13, when the observation hospital was opened, and she was admitted there. Temperature became normal at once.

Tuberculin was continued steadily; patient was discharged after one month, and continued treatment at home, with slight reaction. A month after her discharge from the hospital she had a slight relapse and rise of temperature.

Treatment was suspended for a fortnight, then continued up to PTO 0.8 c.c.

PT was then given, and continued up to 0.6 c.c.

OT was then given, and continued, with rather more reactions, up to 0.16 c.c.

TAF was given, and continued, with reactions generally to 100° or under, up to 0.34 c.c.

After this, patient was ill with pneumonia. Unfortunately, a specimen of the sputum was not obtained.

On recovery, she was kept busy nursing her mother, who was worse.

On examination at the dispensary, no signs of activity were found in the lungs. A small cavity had formed in the lower part of the right upper lobe. She was sent to the country for a fortnight, but could not remain away longer.

She has kept in good health since, in spite of her mother's increasing illness and death.

TYPE 8.

Cases in whose Sputum Tubercle Bacilli were found.

Total number, 11:

Treated 7

SUMMARY.

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	3	3 well now	
P	3	2 fairly well 1 probably well	1 to sanatorium
S	1	Same	Sanatorium

ANALYSIS.

(a) *Cases in which there were slight signs of disease* .. 4
Treated and discharged 3

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	1	Well now	Sanatorium
P	2	1 fairly well; 1 not traced.	

Under treatment June, 1913 1

(b) *Cases in which there was a definite onset of illness* .. 6

Treated and discharged 3

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	1	Well now	Sanatorium
P	1	Fairly well	
S	1	No better	

Under treatment June, 1913 3

(c) *Cases with signs of advanced disease* 1

Treated and discharged 1

Result: A (has remained well).

CASE 97.—F., aged fourteen.

Onset and Course of Disease.—Had been in poor health for six months, and had left her situation as servant on that account. She had not gone to a doctor at first, and even when she did the physician had some difficulty in making a diagnosis. He reported very indefinite signs in the chest, and failed to find tubercle bacilli in the sputum.

Reason for Application.—Sent by doctor for diagnosis.

Examination.—Some loss of resonance and harshness at both apices. No signs of active mischief. No tubercle bacilli found in sputum on several examinations. Larynx: arytenoid red, cords white. General condition good, but suspicion of early phthisis. No anæmia, but girl flabby, and evidently unfit for work. Teeth good. Cardiac condition: area of dulness normal; first sound blurred at apex; pulse, 80. Temperature rising to 100° occasionally. In spite of irregular temperature, doses were given.

Tuberculin Test.—TAF 0.001 gave no reaction, the temperature not being higher than before. Four days later temperature rose to 101.2°. Four days later again 0.004 was given. The morning temperature next day was 101.2, with needle-track reaction. Focal reaction not well marked.

The conclusion was that tuberculin should be tried. It was necessary to give this under observation, and she was admitted at the observation hospital. Here her temperature was steady, not going above 99°.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.
Days.			Degrees.
	PTO	·001	
3	"	·002	
3	"	·003	
3	"	·005	100
4	"	·005	
3	"		99·8
1	"	·007	100, 99·2 2nd and 3rd days.

After this, the temperature became more regular.

Patient was discharged from the observation hospital, as she was considered well enough to attend the dispensary.

She began at once to suffer from sore throat, and the temperature was raised. There was no definite tonsillitis present, but the general redness over the epiglottis was suggestive of early tuberculosis.

The tuberculin was continued without reaction. Temperature continued to rise to about 100°.

After two weeks, she was readmitted at the observation hospital. Temperature soon settled again, but continued to rise to 99·4° or 99·6°. The tuberculin was pushed steadily, in spite of this.

At a dose of PTO 0·13 absolute rest was tried, and the temperature fell slowly, not rising above 99·4°. PTO was continued up to 0·5, then PT 0·01 was given. Patient was then allowed up, and put on walking exercise.

Tuberculin was continued at 50 per cent. rates of increase. The condition was not entirely satisfactory, the temperature continuing irregular, and liable to rise to 99·8°.

When the dose PT 0·06 was reached, she left the observation hospital to go to the country. Just at this time she had more sputum, and a few tubercle bacilli were found in it.

While away the temperature remained at a high level, rising to nearly 100° daily.

Patient returned to the observation hospital, and TAF 0·001 was given, and increased at the usual rate.

There was no definite reaction to tuberculin, but the temperature remained unsatisfactory, though not so high as when away, and rest appeared to make little difference to it.

On reaching dose TAF 0·009, a vacancy was obtained at Ventnor Sanatorium, where she remained four months. Weight increased at first, but then decreased, resulting in a

loss of 2 pounds. She was in bed a large part of the time at Ventnor and no other treatment was given there.

Physical signs showed no alteration. No signs of active disease were ever detected in the lungs, and the condition in the throat showed no progress.

In this case there was practically no response to tuberculin, patient never appeared to be either better or worse when taking it.

She was distinctly better on the whole when at the observation hospital than when at home.

Since discharge she has kept fairly well, though liable to rheumatic pains and a tendency to faint. She has had no sputum since the one occasion when bacilli were found.

CASE 98.—M., aged eleven.

Symptoms complained of.—Throat symptoms, fainting attacks.

Onset and Course of Disease.—Symptoms for eighteen months.

Examination.—Loss of resonance and harshness in the right upper and middle lobes and the apex of the lower. Sputum present, containing tubercle bacilli. Slight redness of the arytenoids. Temperature, 99.6°.

Tuberculin Treatment.—He was not sensitive to tuberculin, and improved fairly steadily under treatment, temperature becoming normal. He reached a dose of TAF 1 c.c. in thirty weeks, when he was discharged quite well, free from cough and sputum, and from pain in the throat. The arytenoids remained a little red.

He has remained well since.

TYPE 9.

Cases of Non-Pulmonary Tubercle.

Total number, 28:

Treated 18

SUMMARY.

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	14	14 well now	1 operation 1 sanatorium
B	2		
S	2		

ANALYSIS.

- (a) *Cases in which the glands were affected* 17
 Treated and discharged 12

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	9	All well	1 operation
B	2	Both well	
S	1	Refused treatment; no better	

Under treatment June, 1913 4
 Tested only 1
 Reason: Sent to country.

- (b) *Cases in which the abdomen was affected* 6
 Treated and discharged 6

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
A	5	All well	1 had relapse; sent to sanatorium and recovered
S	1	Under 1 year; not traced	

- (c) *Cases in which the skin was affected* 1
 Treated and discharged (lupus) 1
 Result: S (refused to finish course).

- (d) *Cases in which the joints were affected* 3
 Treated and discharged 3

Result.	Number.	Reported since Discharge.	Intercurrent Treatment.
B	2	Better	1 sanatorium To sanatorium, improved; not traced since
W	1		

- (e) *Cases in which the spine was affected* 1
 Treated and discharged 1
 Result: S. Died.

TYPE 10. "PLURAL FOCI."

Total number, 14:
 Treated 9
 Results:
 A 1
 P 2
 B 3
 S and W 3

(a) *Cases in which the disease was of an early or doubtful nature in both foci* 6
 Treated and discharged 5

SUMMARY.

Result.	Number.	Reported since Discharge.
A	4	All well
B	1	Not traced

Under treatment June, 1913 1

ANALYSIS.

(b) *Cases in which the disease was definite in one focus, with suspicious signs of its presence in another :*
 One case only, under treatment in June, 1913.

(c) *Cases of disease in two or more definite foci* .. 7
 Treated and discharged 5

Result.	Number.	Reported since Discharge.
A	1	Well in November, 1913
P	2	Left town; 1 reported well
B	1	Much better; also treated at hospital
W	1	Better in November, 1913; also sent to sanatorium

Under treatment June, 1913 2

Of the surgical cases, it should be noted that the serious ones are in Classes 9 (d) and (e) and 10 (b) and (c). The total treated and discharged is 9, 8 of whom improved finally, several having other treatment before this occurred.

CASE 99.—F., aged seven.

Family History.—None of tuberculosis.

Symptoms complained of.—Cough, night-sweats, lassitude, sleeping badly, poor appetite, discharge from right ear.

Onset and Course of Disease.—Adenoid had been removed when two years old, and she had not been strong since. She suffered from swollen glands and cough every winter. There had been sputum the year before, not since. Surgeon at Eye and Ear Infirmary said she had tubercular otitis media. Always delicate.

Previous Treatment.—Had been under several doctors.

Examination.—Dulness both apices, with faint, frequent crepitations, especially at the right. Cervical glands enlarged. Temperature normal.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature.	Weight.
Days.			Degrees.	
	PTO	·001		
4	"	·0015	100	
5	"	·0022	102·2	
9	"	·0022	101·6	
7	"	·0022	102·2	Increased 1 lb.
10	TAF	·002	103·4	

Temperature remained at 100° for three days after this. Child then ceased to attend on account of measles. When she returned, she was sent to the Eye and Ear Infirmary to have ear examined, as it had become worse after measles. The surgeon reported that he found a small perforation in the right membrane, surrounded by a small reddened area, the whole of the membrane swollen. He concluded it to be tuberculous. It improved under treatment.

Patient returned for tuberculin treatment, the temperature being still irregular.

Interval.	Prep.	Dose.	Temperature.	Notes.
Days.			Degrees.	
	PBE	·00001		
4	"	·00014	101	
5	"	·0001		
4	"	·00012		
4	"	·00012		Temperature slightly irregular.
3	"	·000014	101·6	
7	"	·000014	100·2	Glands in neck larger.
4	"	·000014	99·8	
3	"	·000018	99·8	
4	"	·00002	99·4	
3	"	·000024	100	
5	"	·000024	99·8	
3	"	·00004		Patient much better.
5	"	·00005		
3	"	·00006		No definite reaction.
4	"	·000074	99·8	
4	"	·00008	99	
3	"	·00001	100·4	
3	"	·00012	99·4	
4	"	·00016	99·8	
3	"	·0002		
7	"	·0003		
3	"	·0004		Temperature slightly irregular.
8	"	·0004	100·8	Diarrhœa and sickness.

Temperature subsided, but afterwards rose again, and patient was in bed for a few days.

It is probable that these doses were increased too slowly. With a temperature that returned to normal after slight reactions, it is probable that better results might have been obtained by more regular increases.

After three weeks, TAF 0.0001 was given, and the dose increased regularly at the rate of 30 to 50 per cent. up to .0036. Weight, 2 stone 11½ pounds. Patient was less sensitive, and appeared to take the doses well. A vacancy was then obtained at a children's sanatorium, after thirty-three weeks' treatment.

This was a case showing definite sensitiveness to tuberculin, in which the temperature tended to be normal, and with whom the response was fairly satisfactory.

CHAPTER VI

SPECIAL COMPLICATIONS

Adult Cases showing Signs of Tubercular Infiltration in the Larynx.

INQUIRY as to alterations of the voice was made in all cases who applied for examination, and the larynx was examined as a routine, whether suggestive symptoms were present or not. When a test dose of tuberculin was given, the larynx was examined if a reaction occurred, whenever possible. Re-examinations were made during treatment if laryngeal symptoms were noticed.

The diagnosis of laryngeal tubercle was made on a consideration of the appearance of the larynx, together with the reaction to tuberculin. Dispensary conditions do not allow of repeated examination during reactions, and swabbing of the larynx to examine for tubercle bacilli was not practised. The diagnosis cannot be taken as absolutely without question.

The numbers of cases showing signs which were considered to indicate that the larynx was infiltrated with tubercle are as follows:

Types.		Laryngeal.	Total.
	TUBERCLE BACILLI PRESENT:		
1-6	Lesion in the lungs limited	3	21
7-12	Lesion in the lungs medium in extent ..	18	76
13-18	Lesion in the lungs extensive	104	209
	Total	125	306
	NO TUBERCLE BACILLI FOUND:		
1-6	Lesion in the lungs limited	14	157
7-12	Lesion in the lungs medium in extent ..	47	158
13-18	Lesion in the lungs extensive	18	56
	Total	79	371

The results obtained by treatment of these cases are as follows:

	All Cases treated.	Cases treated over 13 Weeks.	Cases fully treated.
TB positive:			
A	11	11	11
P	28	23	12
B	12	9	2
S	17	8	3
W	25	17	1
TB negative:			
A	31	30	30
P	17	13	9
B	7	6	3
S	9	6	1
W	1	1	0

The general lines of treatment of these cases have been very similar to the others, except that patients have been advised to rest the voice, and where the diagnosis seemed clear that active mischief was present in the larynx, complete silence has been urged, and in a few cases was carried out with some care. In two or three severe cases Bier's bandage was applied to the throat in order to relieve pain. This was not resorted to, however, in any of the successful cases.

Cases of Pulmonary Tuberculosis in Adults where Another Focus of Tubercle was present in Some Part other than the Larynx.

In four cases where tubercle bacilli were present in the sputum, another focus of tuberculosis, other than laryngeal, was present. In three the lesion was advanced in the lungs, in the other of medium extent.

The results were—One partially arrested; one better; one worse; one under treatment in June, 1913, slowly improving in 1914.

In twenty-four cases where tubercle bacilli were not found, other lesions diagnosed as tubercular were present. In some of these the lesion was slight and the prognosis good. Even where the lesion appeared to be severe, either in the lung or in the other part, better results were seen than in the cases where tubercle bacilli were present; but the numbers are too small for conclusions to be drawn.

Tuberculin Treatment in Pregnancy.

Thirteen women were treated during pregnancy, the tuberculin being continued after the confinement in nine.

Tubercle bacilli were found in seven, all of whom made very striking improvement at first, although five were the subjects of very advanced disease.

Case 102—Type (TB+) 16: Treatment was commenced in the first month of pregnancy, and when the condition was recognized, the patient was admitted to the observation hospital, where she improved so much that she was allowed to go home. Relapse occurred in the seventh month, and she was readmitted at the observation hospital; but as she did not improve, she was advised to go into the general hospital for induction of labour. This she refused to undergo, but shortly after her return home she was prematurely confined of a healthy child. She died a few weeks later.

Case 103—Type (TB+) 17: This case was in her first pregnancy. The family history was very bad, both parents and several brothers and sisters having died, and a brother being under treatment for advanced disease.

Patient improved very rapidly, and lost all signs of active tubercle under tuberculin. It was thought desirable to continue treatment, but patient objected to attending the dispensary, as there was not a separate waiting-room for women patients. This was perhaps fortunate, as pernicious vomiting set in later, from which tuberculin would hardly have saved her. It necessitated the induction of labour; the baby was still-born, and the mother did not recover.

Two other cases, in one of which, Type (TB+) 18, the disease appeared to be checked, and in the other, Type (TB+) 16, to be practically arrested when the confinement occurred, relapsed during the puerperium and died. In the former case the baby died, in the latter it appeared healthy. The remaining three TB+ cases (Types 17, 9, 3) made excellent recoveries, and the babies are healthy.

The six cases in whose sputum no bacilli were found belong to the following types: Type 5 (two cases), Type 9 (two cases), Type 11, and Type 17.

All these cases did well and gave birth to healthy babies except one, in whom there was a suspicion of syphilis. In this case the baby died, and the mother's health is still not very good, though there is nothing further to suggest tubercle.

Besides these thirteen cases, three women married while

under treatment, and became pregnant before the course was finished; but the disease appeared to be arrested before this occurred. One of these had tubercle bacilli. In a fourth case abortion was induced on account of spinal caries (see Case 24).

Syphilis and Tubercle.

There was nothing to prove that syphilis added more to the gravity of tubercle than is inevitable from its own seriousness when uncomplicated (see Cases 21, 43, 79).

The chief importance in the undoubtedly high incidence of this disease in such a town as Portsmouth was in the diagnosis of doubtful chronic cases.

It would have been of inestimable value to secure the routine use of the Wassermann test, for which, however, facilities were not available.

A few of those patients reacting to tuberculin, whose condition seemed most suggestive of syphilis and least typically tubercular, did not improve with tuberculin, but were treated with mercury and iodide, also without effect.

The majority of the Street patients were unlikely to have been exposed to infection by syphilis.

One man, who was an ex-soldier, was found to have definite signs in one lobe, but was negative to the tuberculin test (see pp. 78-81), while another case who was negative to the tuberculin test, in spite of symptoms pointing to tubercle, was found on post-mortem examination to be syphilitic and not tuberculous.

On the whole, the present series of cases does not support the contention that tuberculin is useless in distinguishing between tubercle and syphilis.

CHAPTER VII

NON-PULMONARY TUBERCULOSIS IN ADULTS

TWENTY-FOUR cases only have been dealt with. It was not considered advisable to rely solely on tuberculin in treating the majority of cases of this type, and no provision was made for surgical treatment in co-operation.

Lupus, three cases: One fully treated. Slight improvement only (see Case 100). Two had been treated in infirmary, and would not attend on discharge.

CASE 100.—M., aged sixteen. Applied in 1911 for treatment for a patch of lupus on the left cheek. This had begun ten years before as a pimple, and had grown to the size of a five-shilling-piece. It had been scraped twice at the hospital, eight years before and three years before, without improvement. The nose was not involved. Temperature was normal, general condition good, and there was no sign of any other focus of tubercle.

TUBERCULIN TREATMENT.

Interval.	Prep.	Dose.	Temperature (Mouth).	Notes.
Days.		c.c.	Degrees.	
	OT	·001	99·2	
3	"	·003	100·8	
7	"	·004	102·2	Remained up several days, patient at work, and did not seem to feel it. Patch of lupus inflamed, and then improved second day.
7	"	·004	100	
4	"	·006	99·2	
3	"	·01	99·6	
3	"	·02	99·4	Second day.
4	"	·04	99·2	Same night.
4	"	·06		No reaction. Lupus appeared better, colour less deep, some scaling at the edges.

Doses increased rapidly after this in the following series: 0.1, 0.2, 0.4, 0.6, 1.0 c.c. Temperature subnormal, showing reactions after doses to normal line. Weight was slightly increased.

It was then decided to inject under the patch, beginning with OT 0.001. Doses were doubled till 0.008, when temperature rose to 102° for three days, though patient did not feel ill, and continued to gain weight. After seven days TAF 0.01 was given, under the patch, and increased at 50 per cent. increases to 0.07, after which PT was tried, starting with 0.01, and increasing without marked reaction to 0.9, when a definite local reaction occurred, followed by slight improvement. The same dose given in eleven days gave a temperature of 101°, repeated in seven days. Temperature again 101°.

Interval.	Prep.	Dose.	Temperature.	Notes.
Days.		c.c.	Degrees.	
11	PT	.09	101	
7	"	.1	101	
7	"	.1	99.8	
10	"	.2	101.6	
8	"	.2	99.8	
7	"	.4	99.4	
5	"	.6		Interval of one month. As improvement did not continue, pure carbolic was applied to the patch, and continued while the next doses were given, these being injected in the arm.
	PBE	.00001	100	
11	"	.00001		
3	"	.00002		
7	"	.00004	99.6	
4	"	.00005	99	Reaction in lupus patch.
7	"	.00064	99.6	
7	"	.00074		
11	"	.00086		Patient away for a time.

On return a few more doses of PBE were given to 0.01, with one reaction. The condition of the lupus patch did not improve further, and, indeed, some of the improvement obtained at first was lost. It is difficult to see why the cure noted by many observers after reactions did not occur, but it is interesting to notice that the patient did not suffer in any way from the reactions, and that these were overcome to a considerable extent by boldly pushing the dose—a procedure which could hardly have been risked with a pulmonary case.

Glands, six cases: One, glands disappeared with first course.

but returned, and a second course was in process in June, 1913. Three under treatment June, 1913. Two refused treatment.

Pelvic organs, three cases: all much improved. Two apparently completely arrested.

Of these cases, one was operated on for a tumour which proved to be a tubercular abscess; source not ascertained, probably Fallopian tube. A course of tuberculin was given following the operation, and the patient's health entirely restored, with gain in weight of 2 stone. Another had slight indefinite symptoms with history that one ovary had been removed. During the reaction to a test dose, tenderness and enlargement of the remaining ovary and tube were found. Recovery was apparently complete. The third was very seriously ill, with marked toxæmia and progressing weakness. A test dose of tuberculin, given after three months' rest in bed, while patient was getting steadily worse, gave a focal reaction in the right Fallopian tube, accompanied by severe pain and swelling of the tube. A steady improvement followed the administration of tuberculin, resulting in the restoration of general health and of working capacity, as far as this was possible, on account of cardiac trouble. Reactions during treatment were accompanied at first by focal reactions in the tube.

Kidney, one case.

CASE 101.—F., aged forty. This patient applied for diagnosis in January, 1911, on account of a recent breakdown in health, which had not improved after a holiday. On examination no clue could be obtained as to the cause except that of somewhat heavy work. The chest and urine were normal.

The second test dose of tuberculin (OT 0.003) gave a reaction to 102°. No focal reaction was observed in the lung, but the urine became thick and contained albumin. This was examined by the Lister Institute, and the report was made that tubercle bacilli were present in fair numbers.

Treatment was commenced with PTO. The urine never contained albumin except during one reaction, and a specimen sent a few weeks later was reported negative. Treatment was continued for twenty-five weeks, when a pause was made; then for twenty weeks, and another pause.

A severe reaction in May, 1912, brought albumin again in the urine, and the report was made that tubercle bacilli were present. A month later the report was again negative. Three more weeks' treatment was given.

The patient is now quite well and free from all signs and symptoms of tubercle, the urine being invariably normal.

An examination under an anæsthetic failed to reveal any signs of mischief in 1913.

Iritis, two cases: Both healed satisfactorily.

Nose, one case: Under treatment, June, 1913.

Bone and joint, nine cases: One was treated without effect and sent on to an institution. One, who appeared to be healed, was fully treated on suspicion of lung mischief, the knee being quite stiff. Patient is reported to have had a relapse of the knee since, but medical report has not been obtained. One who appeared to be healed was not treated. Four refused treatment, or were unable to attend. Two, diagnosis doubtful, not seen again.

The experience of treatment, taken in conjunction with that of cases in children and of pulmonary cases where another focus is present, suggests that much more investigation is needed into the use of tuberculin in joint and bone disease before this method should be employed as a routine.

CASE 102.—Another example of non-pulmonary tuberculosis is of interest for several reasons. Since the treatment was completed subsequent to June, 1913, the result was not included in the tables given above.

The patient gave a history of good health up to the spring of 1913, except for a tendency to severe colds in the head, for which he had been treated by vaccines with slight effect. There was no immediate history of pulmonary tuberculosis in the family, but the patient had been in close contact with a case in childhood, and another member of the family had suffered from non-pulmonary tubercular lesions.

In 1913 the patient began to suffer from severe gastric pain after food, accompanied by loss of weight and some debility. This was treated symptomatically for some months, and the patient had two holidays in the hope that this would cure the trouble. The pain was somewhat less when he was resting, but was readily increased by the least exertion. On examination after the second holiday, no signs whatever could be found in the chest or abdomen. Some constipation was present, which had been treated inadequately, so that a regular evacuation had not been secured.

The temperature was below normal. Test doses of tuberculin were given (TAF 0.0005 and 0.002 c.c.). A well-marked needle-track and general reaction was obtained, with an attack of gastric pain. This recurred after many subsequent doses, even when the pain was lost at other times, and was considered to be the sign of a focal reaction. No other signs were discovered on repeated examinations.

The patient was then advised to adopt an ordinary diet, only omitting obviously unwholesome things, to drink enough water, and to take cascara regularly to insure a daily action of the bowels. He then had a more complete holiday, and returned slightly better, but relapsed shortly after returning to work.

Treatment by tuberculin was then commenced, with PTO 0.001, and continued at the usual rate of increase. Very few temperature reactions occurred, but the patient often complained of relapses of pain after the doses, and once or twice was quite incapacitated by this. He gained the weight that had been lost, and recovered complete health while at work, so that after three months he was able to take active exercise, and pain only occurred when overtired and run down.

The result of testing by tuberculin in this case seems to be considerably more satisfactory than any that could have been attained by an exploratory operation, which was the alternative that presented itself.

CHAPTER VIII

ANALYTICAL TABLES

ANALYTICAL tables referring to the following points:

Type.	Age and sex.
Period of treatment.	Family history.
Sensitiveness to tuberculin.	Previous treatment.

THE RELATION OF TYPE OF DISEASE TO SEX AND AGE—CHILDREN.

	Females.				Males.				Total Males and Females.
	Under 5.	5 and under 10.	10 to 16.	Total.	Under 5.	5 and under 10.	10 to 16.	Total.	
1a		2		2	1	4	2	7	9
1b			4	4	1	5	2	8	12
1c		2		2			4	4	6
1d		1	3	4			1	1	5
2a	1	6	3	10	1	9	7	17	27
2b		5	3	8		4	3	7	15
2c	1	2	2	5		2		2	7
2d		1	1	2			1	1	3
3a	2	1	4	7		9		9	16
3b		2	5	7		4		4	11
3c		1		1		1	1	2	3
4a		3	2	5		1		1	6
4b		2	1	3			2	2	5
4c	1	1		2			1	1	3
5a		2	2	4		2		2	6
5b		2	1	3	2	2	2	6	9
5c		3	4	7	1	2	1	4	11
5d		2	4	6		4	3	7	13
6a		1	2	3	1	2	1	4	7
6b	1	2		3		1	1	2	5
7a		1	2	3			3	3	6
7b			1	1			2	2	3
7c			4	4			2	2	6
8a		1	1	2			2	2	4
8b		1	2	3		1	2	3	6
8c							1	1	1
9a	1	8	1	10		5	2	5	17
9b	1	2		3	1	1	1	3	6
9c						1		1	1
9d			1	1		1	1	2	3
9e							1	1	1
10a		3	2	5		2		2	7
10b							1	1	1
10c		2	2	4		1	1	2	6
Total	8	59	57	124	8	64	51	123	247

THE RELATION OF TYPE OF DISEASE TO SEX AND AGE. ALL CASES TESTED OR TREATED WITH TUBERCULIN—ADULTS.

Type TB+.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	Total.
FEMALE.																			
Under 20	1				1								1	2		3	2	4	14
20 and under 30	2	2	1		4			2	4	2	3		1	3	2	11	3	7	47
30 and under 40			1		2			1	1	2	9	1		1		4	4	8	33
40 and under 50					1			3	3	1	1				3		2	4	15
50 and over																	1	2	3
Total	3	2	2	0	8	0	0	2	8	5	13	1	2	6	5	18	12	25	112
MALE.																			
Under 20								1	1	1		1		7	1	4	1	1	19
20 and under 30	1		1		1		1	2	6	1	4	2	2	5	7	11	6	10	60
30 and under 40	2				1		3	1	3	1	5	2	3	3	5	15	12	16	72
40 and under 50								1	2			3	1	2		5	6	8	28
50 and over							1	1	3				1		1		5	3	15
Total	3	0	1	0	2	0	6	6	15	3	9	8	7	17	14	35	30	38	194
Total, male and female ..	6	2	3	0	10	0	6	8	23	8	22	9	9	23	19	53	42	65	30

THE RELATION OF TYPE OF DISEASE TO SEX AND AGE. ALL CASES TESTED OR TREATED WITH TUBERCULIN—ADULTS.

Type TB —	No Focus.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	Total.
FEMALE.																				
Under 20 ..	1	7	1	2	4				2	1		6	1	1				1	1	28
20 and under 30 ..	1	9	3	14	1	21		4	2	4	3	14	6				1	1	4	88
30 and under 40 ..	5	4	1	4	2	28	2	2	2	10	4	17	6	1	2	2		8	6	106
40 and under 50 ..	4			4		2			1	3	1	9	2			1	1	2	1	31
50 and over ..		1		1				1			3	1	1			1		1		9
Total ..	11	21	5	25	3	55	2	7	7	18	8	49	16	2	2	4	2	13	12	262
MALE.																				
Under 20 ..		3		4		3		4		6	1	1					2			24
20 and under 30 ..	2	6		5		6		3	1	4		7	1		1	3	2	1	2	44
30 and under 40 ..		1	2	1		9		1	1		1	9			1			3	1	30
40 and under 50 ..	2	2				4		1		2		6						1	1	19
50 and over ..										1		3		1				2		7
Total ..	4	12	2	10	0	22	0	9	2	13	2	26	1	1	2	3	4	7	4	124
Total, male and female	15	33	7	35	3	77	2	16	9	31	10	75	17	3	4	7	6	20	16	386

DISPENSARY TREATMENT OF

THE RELATION OF PERIOD OF TREATMENT TO TYPE OF DISEASE—ADULTS.

Type.	No Focus.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	Total.
TB negative cases:																				
Under 4 doses												2	1				1			4
4 doses and under 13 weeks	2	5	3	1		5	1	1		2	2	7	3						4	36
13 weeks and under 26 weeks	3	9	1	9	1	19		4	2	7	2	14	4	1		2		1	2	81
26 weeks and over ..	3	4	3	8	1	34		8	5	14	4	37	7	1	3	2	4	14	3	155
Total	8	18	7	18	2	58	1	13	7	23	8	60	15	2	3	4	5	15	9	276
TB positive cases:																				
Under 4 doses		1								2			1		4		4	3	5	20
4 doses and under 13 weeks		1				2				1	1	2	3	2	3	6	11	5	16	53
13 weeks and under 26 weeks		2				2		1	3	6		4			5	3	11	7	11	55
26 weeks and over ..			1	3		3		1	2	11	5	14	5	5	4	6	20	16	21	117
Total		4	1	3		7		2	5	20	6	20	9	7	16	15	46	31	53	245

Family History.—This has been considered in relation to the type of disease for all cases tested or treated with tuberculin. Those who were too ill to treat are considered separately, as the notes are not so complete:

	Adults.		Children.
	TB -.	TB +.	
	Per Cent.	Per Cent.	Per Cent.
(0) No history of tubercle known, or only one case, and this not in immediate family	55	56	38
(1) Slight history of tubercle known; one case in family or more than one among relations	25	25	38
(2) Marked history of tubercle known; two to three cases in family	17	15	26
(3) Bad history of tubercle known; more than three cases in family or near relations	3	4	3

The question of direct infection has not been fully investigated.

RELATION OF EXTENT OF LESION AND DURATION OF SYMPTOMS TO FAMILY HISTORY IN ADULTS.

(See Key to Terms and Figures, pp. 19, 20, and above table.)

	Extent of Lesion.				Duration of Symptoms.			Total.	
	No Focus.	Limited.	Inter-mediate.	Extensive.	Recent.	Inter-mediate.	Chronic.	Actual Numbers.	Per Cent.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.		
TB + Cases.									
0		52	57	59	68	57	57	178	56
1		33	24	24	22	20	29	75	25
2		15	16	14	18	18	12	45	15
3		0	3	3	2	5	2	8	4
Totals (actual numbers)		21	76	209	54	106	146	306	
TB - Cases.									
0	60	47	63	59	48	60	55		55
1	13	33	19	22	29	24	25		25
2	27	17	16	14	22	14	16		17
3	0	3	2	5	1	2	4		3
Totals (actual numbers)	15	157	158	56	73	92	206	371	

Of 92 cases with tubercle bacilli in the sputum, who were too ill for tuberculin treatment, 20 gave a family history of phthisis, 8 reporting the death of more than one near relative, 3 of more than three. The histories of many of these cases were not taken carefully.

Sensitiveness to Tuberculin.

This is considered first in relation to the type of disease, with regard to—

1. The extent of disease.
2. The duration of symptoms.
3. The presence or absence of fever immediately before tuberculin treatment was commenced.

Taking all cases together the sensitiveness works out as follows:

Sensitiveness.			TB -	TB +
			Per Cent.	Per Cent.
Low	..	..	64	62
Medium	..	..	15	9
High	..	..	21	29

TABLE TO SHOW RELATION OF SENSITIVENESS TO EXTENT OF DISEASE AND TO LENGTH OF SYMPTOMS.

(See Key to Terms, pp. 19 and 20.)

Sensitiveness.	Extent of Disease.				Duration of Symptoms.			Total.	
	Limited.	Inter-mediate.	Advanced.	Contact No Focus.	Recent.	Inter-mediate.	Chronic.	Number.	Per Cent.
TB - Cases.									
1. Slight	..	..					
2. Medium	..	..					
3. High	..	..					
Total (actual numbers)	129	143	53	9	55	78	182	324	
TB + Cases									
1. Slight	..	..					
2. Medium	..	..					
3. High	..	..					
Total (actual numbers)	20	73	191		48	99	137	284	

On comparing the febrile cases with the afebrile, the percentage in each degree of sensitiveness is identical in the TB + cases. The TB - cases give the following figures:

Sensitiveness.			Febrile.	Afebrile.	Total.
			Per Cent.	Per Cent.	Per Cent.
Slight	..	..	55	66	64
Medium	..	..	14	15	15
High	..	..	30	18	21

When the total number of cases in each degree of sensitiveness is considered, and the percentage worked out for the numbers occurring under each heading of length of symptoms, the following table is obtained:

SENSITIVENESS.

Length of Symptoms.				Slight.	Medium.	High.
TB- Cases:				Per Cent.	Per Cent.	Per Cent.
Recent	..	..	..	17	15	16
Intermediate	..	..	..	35	26	36
Chronic	..	..	..	48	59	48
TB+ Cases:						
No focus	..	..	..	2	2	
Recent	..	..	..	16	19	19
Intermediate	..	..	..	24	23	25
Chronic	..	..	..	57	56	56

The question of the relation of sensitiveness to the activity of the disease has been considered with regard to the period of time elapsing between the injection of the dose and the occurrence of the maximum temperature.

No difference whatever could be detected between the following groups: (1) TB+ cases. (2) TB- cases clinically active. (3) TB- cases clinically quiescent. (4) TB- cases clinically healed. The point is, however, worth further observation.

The time of occurrence of the needle-track reaction is difficult to investigate in dispensary work, and has not been noted.

Result.	Slight.		Medium.		High.		Total.	
	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.
TB+ Cases:								
A	18	19	2	11	12	20	32	18
P	34	36	12	63	19	32	65	38
B	8	9	3	16	11	18	22	13
S	11	11	1	5	6	10	18	10
W	24	25	1	5	12	20	37	21
Total ..	95		19		60		174	
TB- Cases:								
A	86	62	24	55	15	33	125	55
P	19	14	12	27	20	43	51	22
B	25	18	7	16	6	13	38	17
S	9	6	0	0	5	11	14	6
W	0	0	1	2	0	0	1	0.5
Total ..	139		44		46		229	

Sensitiveness is above considered in relation to results, those adult cases being taken who have undergone at least thirteen weeks' treatment:

The following tables are drawn up to show the relation between the treatment which patients had undergone prior to their attendance at the dispensary and the type of case under which they were classified on first examination there.

Previous treatment has been noted in all cases, and is probably fairly correct.

The question as to whether a patient is sent by a doctor or not can only be decided roughly, and was not worth tabulating for the Street cases, for reasons explained in the chapter where they are described.

In the Portsmouth work the conditions changed considerably during the two years. Many of the cases who professed to have been advised to come by a doctor had really suggested the dispensary to him in the first place.

TABLE TO SHOW RELATION OF TYPE OF DISEASE TO PREVIOUS MEDICAL ATTENTION (PORTSMOUTH CASES).

	Extent of Lesion.			Duration of Symptoms.		Total. Per Cent.
	Limited.	Interme- diate.	Ad- vanced.	Recent.	Estab- lished.	
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	
(1) TB +						
Cases sent by doctors	43	58	73	80	64	67
Cases under medical supervision since symptoms appeared, but not sent by doctor	38	31	23	12	29	26
Cases who had not been to a doctor since symptoms appeared	19	11	4	8	7	7
(2) TB - .						
Cases sent by doctors	45	47	60	46	49	48
Cases under medical supervision since symptoms appeared, but not sent by doctor	22	34	30	15	32	28
Cases who had not been to a doctor since symptoms appeared	33	19	10	39	19	24

TABLES TO SHOW THE RELATION OF TYPES OF DISEASE (AS CLASSIFIED ON ADMISSION) WITH THE HISTORY GIVEN OF PREVIOUS TREATMENT, IN ALL ADULT DISPENSARY CASES TO WHOM TUBERCULIN WAS ADMINISTERED.

Previous Treatment.	No Focus.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	Total.
TB - cases:																				
1. None	9	25	4	20	1	30		10	7	16*	3	24	3	3	3	1	1	2		162
2. Indefinite .. .	2	4		5		14	1	2		8	2	15	4			3	3	2	7	71
3. Diseases of lungs not thought to be tuberculous .. .		1		3		7	1	2	1	1		6	3		1	1		2	1	29
4. Other definite diseases .. .	1	1		2		1					1	3						1		10
5. Poor Law infirmary .. .	1	1						1				4					1	2	1	11
6. Voluntary hospital .. .		0	1	2	1	6		1		3	3	11	5					4	4	41
7. Royal Navy .. .																				1
8. Army .. .						1														1
9. Phthisis (not sanatorium) .. .			1		1	6			1	2	1	9	1					3	1	26
10. Sanatorium .. .		2		1		9				1		3	1			1	1	3	2	24
Total .. .	13	34	6	34	3	74	2	16	9	31	10	75	17	3	4	6	6	19	16	378

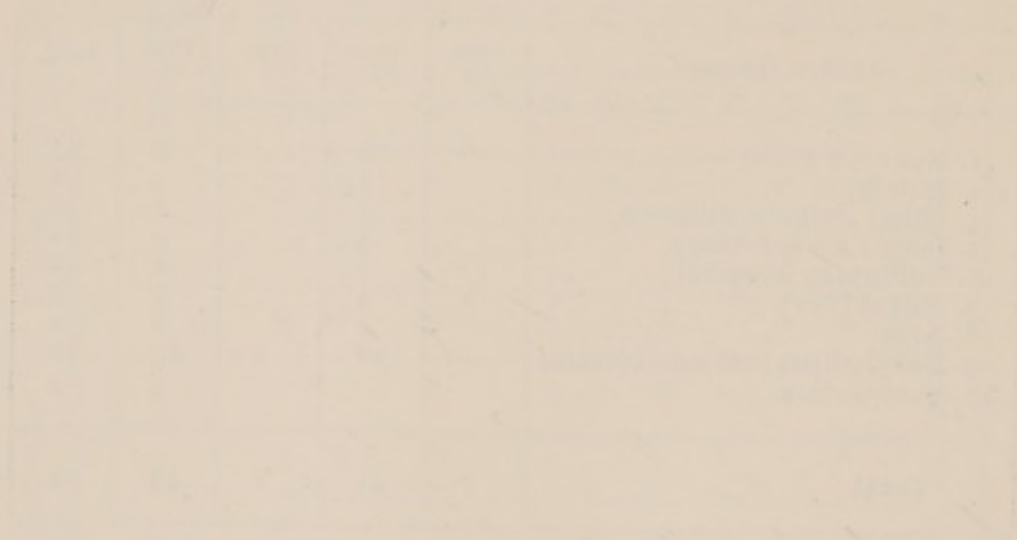
TABLES TO SHOW THE RELATION OF TYPES OF DISEASE (AS CLASSIFIED ON ADMISSION) WITH THE HISTORY GIVEN OF PREVIOUS TREATMENT, IN ALL ADULT DISPENSARY CASES TO WHOM TUBERCULIN WAS ADMINISTERED.

Previous Treatment.	1.	2.	3.	5.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	Total.	Total TB-.	Grand Total.
TB + Cases:																			
1. None	4	2	2	2	3	3	7	3	6	1	6	12	7	18	5	13	94	162	256
2. Indefinite			1	2	1	1	1	2	1	2		6	1	8	7	11	44	71	115
3. Diseases of lungs not thought to be tuberculous				1	1	2	2		3	2		1	2	6	4	2	26	29	55
4. Other definite illnesses ..						1	2								1		4	10	14
5. Poor Law infirmary ..				1			2	1		2		2		2		3	13	11	23
6. Voluntary hospitals ..				1			1		3	1			1	5	3	3	18	41	59
7. Royal Navy	2			1	1	1	6		3	1	2	1	6	6	5	7	42	1	43
8. Army							1					1	1			1	4	1	5
9. Phthisis (not sanatorium)				1				1	2				1	3	4	8	20	26	46
10. Sanatorium				1				1	4					4	11	14	35	24	59
Total	6	2	3	10	6	8	22	8	22	9	8	23	19	52	40	62	299	378	677

TABLE SHOWING CASES WITH TUBERCLE BACILLI IN THE SPUTUM WHO WERE TOO ILL TO TREAT.

(Considered separately because the notes were not taken so carefully as in the other cases.)

Previous Treatment.	Type 14.	Type 16.	Type 17.	Type 18.	Total.
1. None (or brief)	6	20		9	35
2. Indefinite		2			2
4. Other definite illnesses ..		1		1	2
5. Poor Law infirmary		3		9	12
6. Voluntary hospital				1	1
7. Royal Navy	1	3		5	9
8. Army		1		1	2
9. For phthisis (not sanatorium)		10	1	15	26
10. Sanatorium				4	4
Total	7	41	1	45	94



SECTION III

DISCUSSION

SECTION III

DISCUSSION

CHAPTER I

THE VALUE OF TUBERCULIN FOR THE INDIVIDUAL

IN discussing the application of tuberculin treatment to individual patients, the first necessity is to have what may be called a working conception of the usual behaviour of tuberculosis and of the action of tuberculin upon it.

It is difficult to know at what point in the circle of cause and effect to place the evidence that has been obtained from the study of the cases described above; for while a knowledge of tuberculosis must be presupposed in discussing the action of tuberculin, the study of the latter has thrown considerable light upon the behaviour of tuberculosis.

Since the object of this section of the book is to discuss the material set forth in the preceding chapters, and not to give a complete account of present knowledge of tuberculosis, the plan adopted is to discuss the action of tuberculin, first, on the basis of certain general assumptions, and to postpone the consideration of the incidence and behaviour of tuberculosis to a later chapter.

It is assumed that tuberculosis is the process of warfare between the tubercle bacillus and its host, in the course of which a varying degree of immunity to the bacillus and its toxins is produced by the host.

The power to produce this immunity is variable and inheritable, but there is no method known of demonstrating its existence until infection has occurred. The scope of its action is greatly affected by other factors in environment, and is also difficult to measure.

The object of treatment is twofold—first, to destroy the tubercle bacilli, either directly or by stimulating the production of immunity; second, to assist in the removal of dead matter and the establishment of healthy conditions where the disease has been.

Tuberculin treatment aims at stimulating the production of

immunity, and is limited in two ways: it cannot stimulate into efficient activity a power that does not exist or is very feeble; nor can it remove dead matter or assist the body to any marked extent in reviving the surrounding tissues.

Other tissue capacities are called on to complete the cure, requiring, perhaps, external assistance for their effective action, and surgical intervention may be needed to remove dead tissue, or to remove a focus where the bacilli are so strongly entrenched that they cannot be much affected by the tissues.

Tuberculin of Definite Value.

In studying the cases described above with a view to obtaining evidence as to the action of tuberculin, the first general impression must certainly be that the remedy has been of use. It is difficult to account otherwise for the proportion of TB+ cases who are well six months later, and the results in the TB- cases, while they await the test of time, are at least suggestive that good has been obtained from the treatment.

Criticism of this opinion by those who are prepared to accept the medical statements are directed chiefly to one point: Is there sufficient evidence that the same number of cases would not have recovered completely without the tuberculin that was given and without any measure in its place? Now, this is difficult to prove, since there has been very little observation of similar cases left untreated. To say that even any considerable portion of the TB+ cases described above as showing the disease arrested, who received no other treatment than tuberculin, would have recovered and maintained their recovery without it, is to go against the general opinion of those accustomed to the behaviour of tuberculosis. It is the rule for cases of active tuberculosis to show temporary improvements, but, though it is not unknown, it is certainly an exceptional thing for complete arrest of the activity to occur without special treatment when a patient is continuing to live under ordinary working-class conditions. Cases 72, 53, and 59 illustrate some whose complete recovery was obtained in this way after tuberculin alone, and who have kept well for two years since their discharge, while Case 86 illustrates astonishing success in an example of the partial failure of sanatorium treatment.

As regards the auxiliary measures used, to which the success obtained has been attributed by some critics, these may be considered under three headings:

First, the general hygienic advice and oversight given to all

cases. This has been directed chiefly towards the prevention of infection, and there has never been sufficient staff at the Portsmouth dispensary for much influence to be obtained beyond this. At Street, and to some extent at Portsmouth, a good deal had already been done in teaching people the value of fresh air. While there is no doubt that a certain number of cases would have recovered with the slight changes in habits that they were induced to make, it is quite unreasonable to suppose that this materially affects the conclusions drawn, in which it has always been admitted that this might have happened.

The second variety of auxiliary measures consists of other definite medical measures, the chief of which has been sanatorium treatment. The extent to which this has been used is carefully described throughout the present study.

The third complication in estimating results lies in the co-operation of the Care Committee. This has been included wherever the action taken was obviously affecting the results, and it has already been pointed out that the work of this body was chiefly concerned with advanced cases and with the children. Little attempt has been made in the present analysis to determine the effect of the tuberculin treatment on children, this being a very difficult matter, requiring a special study of a long series of cases continued over a long period.

The work of the Care Committee must be admitted by those who have watched it closely to have more influence in such places as Street and Portsmouth from the humanitarian side, and thus indirectly on the tuberculosis problem, than direct on the results recorded in these pages. It is true that a few cases have been placed in a position which enabled them to benefit from treatment, who would not otherwise have been among the successes, but these were patients about whom there could have been no possibility that the Care Committee's help alone could have been sufficient, or even have staved off death. In the majority of successful cases help, other than medical, was not necessary. The untiring assistance given to cases in whom the chance of recovery was slight had certainly a great effect upon the confidence inspired by the dispensary, and also was of the utmost assistance to the steps taken to reduce infection.

Having admitted that tuberculin treatment has a certain possibility of value, the evidence as to its range and scope must be considered.

It must be admitted that the cases quoted show much scope for improvement in treatment. Is this proof that the limits of

tuberculin were reached with the successful ones, or is it likely that further experience will increase the scope of this remedy?

Many people speak as though tuberculin did either good or harm, the chief difficulty lying in selecting the cases for which to use it, and in avoiding killing patients by wrong methods of dosage. This is not the conclusion to which I have been led by the present study.

Taking into consideration the behaviour of tuberculosis untreated and the course of the disease in all the patients treated, both during the period while doses are being injected and afterwards, a more reasonable inference would seem to be that tuberculin shows some influence for good in so many instances that where this does not occur the method of handling it and the combination with other remedies must be blamed, in part at least, for the failure; that, within certain limits of administration at any rate, tuberculin is not very likely to do harm, but that it may fail to stimulate, so that the patient is left at the mercy of a disease usually progressive in character; that the extent and frequency of this failure has a close connection, probably with the rate of increase of dosage given, certainly with the environmental conditions of the patient, and so varies very greatly in the hands of different doctors and according to the control that can be exercised over other factors.

In the method of dosage and in the adjustment of treatment to the conditions, the present series of cases shows some justification for the policy which has been adopted of making free use of tuberculin, and pushing it with, what some considered, boldness.

It has already been pointed out that the general method of dosage adopted has been comparatively uniform, the number of preparations used small, and the routine sequence very generally followed. It is therefore for other workers to compare the effects by other methods or on different types of case, with due care to exclude the influence of other factors. Small variations have been tried in many instances where progress under the routine seemed unsatisfactory, but it is very difficult to generalize or to form any definite rules on the evidence so far obtained as to the value of such changes.

The next point to which criticism is naturally directed is the question whether greater success could have been attained by other methods of treatment. This must be considered from two points of view. First, are other methods more successful? Second, are they applicable? The second question is discussed in another chapter.

Unfortunately, the question as to the relative efficacy of

different methods of treatment is not very easily answered. The selection of cases at a dispensary is different from the selection at a sanatorium, and while treatment is attempted on many cases who are in too advanced disease to be admitted to a sanatorium, the worst of these are probably not found among those who complete their course at the dispensary. On the other hand, some of the successful sanatorium cases in whose sputum tubercle bacilli are found, are probably similar in prognosis to TB negative cases in the present series, since the facilities for sputum examination are much less in the latter.

The question of the combination of methods, although it concerns the individual, is considered in Section III., Chapter III.

In reviewing the cases showing tubercle bacilli in the sputum, and considering the probable influence of tuberculin upon the results which have been obtained, as compared with the effect which sanatorium treatment without tuberculin might have been expected to show, one may claim that in a number the results could not possibly have been better, while the cost would have been very much more. It is impossible to believe that the later results are likely to show any larger proportion of relapses than would occur after sanatorium treatment where a similar arrest had been obtained. There are a few who had not attained arrest at a sanatorium, and who did so from tuberculin, and there are a few others who did not benefit from tuberculin, but who were apparently cured at a sanatorium. Then there are the failures. It may be said that these would have recovered if they had been sent straight to a sanatorium. In only two cases could this criticism fairly be made (Cases 28 and 29). In the former the diagnosis remained doubtful to the end, and the case may be compared with the girl quoted in the report on the Street cases, who died of tubercular meningitis before a dose of tuberculin had been given.

Case 29 was still in a very early doubtful stage when she went to a sanatorium, from which she was discharged as "arrested" and fit for work; she must be considered as a failure of sanatorium treatment as well as of tuberculin.

For the more advanced cases, in whom the prognosis was very serious when they were first seen at the dispensary, sanatorium methods and home methods alike need improvement.

The problem could have been dealt with statistically if complete series of cases had been published by those who have been treating dispensary patients suffering from pulmonary tuberculosis by other methods than tuberculin. Unfortunately, this has not been done to any extent, and since nearly everyone

responsible for the home treatment of large numbers of these cases appears to be using tuberculin, it will be necessary for the same minute analysis that has been made in the present series of cases to be practised by all who are using different methods of treatment.

The exclusive use of tuberculin for all cases of tuberculosis, unassisted by any other measures, is defended by no one, and the whole question is one of relative merits and expediency.

In the management of early and doubtful cases of tuberculosis the use of tuberculin is recommended partly in order to remove the risk of phthisis developing, and partly in order to cure the symptoms caused by chronic tuberculosis.

The chief difficulty arises when a patient is examined for some other reasons and suspicious signs of early tubercle are found, although there have been no definite symptoms; here, even at the best, tuberculin treatment by the method described will cause some inconvenience, and may make the victim think that the practitioner is manufacturing fees.

Whatever the prophylactic value—that is to say, whatever the chance of preventing the onset of phthisis by treatment before the disease is active in those who would otherwise have become phthisical—there is no doubt as to the clinical therapeutic value of tuberculin in many types of ill-health, and particularly in those generally associated with chronic or commencing phthisis. This cannot be adequately shown by selected cases, as such might always be due to coincidence, but Cases 2, 6, 19, 26 and 27 illustrate it, and the opinion is supported by nearly all who have much experience of the remedy. Improvement in health after testing, even when the result is negative, is very commonly noticed.

In view of the state of affairs described in the first chapter, where attention was drawn to the results of a “wait and see” policy with regard to early diagnosis, the experiment of using tuberculin for doubtful cases appears to be doubly justified.

The responsibility of the surgeon confronted with acute abdominal symptoms is now fully recognized. That of the physician with regard to the doubtful early signs of phthisis is equally great, and the use of tuberculin, if less certain in its benefit than an abdominal operation in a suitable case, is at any rate safer and less unpleasant when unnecessary.

Much emphasis is laid by some workers on contra-indications, which are dealt with as though the matter could be settled once and for all as soon as the examination of the patient is complete.

The large experience of Pottenger and other workers con-

firms my conclusion that absolute contra-indications to tuberculin are possibly non-existent and practically unproved.

While it is certainly open to question whether some cases have been injured by tuberculin, there is nothing at present to justify any absolute statements that such injury could not have been avoided by greater skill in handling the remedy or better judgment as to when to use it.

In place of absolute contra-indications should be considered the modifications of method and the accessory measures which must never be forgotten from the first interview with the patient to the last. For this purpose it is convenient to consider, in groups, first, the cases where tuberculin appears to have been of use, relying for evidence chiefly on those in whose sputum tubercle bacilli were found, and then the failures.

1. Those who improve from the outset, and lose all signs and symptoms of active mischief within a moderate length of time. While in early cases this may happen in a very few weeks, even in advanced cases a few months may suffice. When a patient is improving steadily, the dosage and general treatment are both easy. In some cases it seems as though any preparation of tuberculin given by any method would probably have a sufficiently stimulating effect upon the process of immunity, while it must be admitted that it is possible that some of these cases might have recovered without special treatment. In the records of some cases treated by an English doctor in 1891, the writer saw one chart in which the dosage and the intervals alike were amazing, the increase being far more than is ever attempted now. The case was a very serious and advanced one and yet got perfectly well in a few weeks, remaining well till death was caused by an accident some years later.

Besides the Cases 53, 59, 72 already referred to, Cases 75, 79, 82 illustrate this type among the serious TB+ patients, while 6 and 14 are examples of a large number without bacilli, who recovered rapidly from serious symptoms. Case 25 represents many who apply at a dispensary for relief of symptoms of chest trouble without any particular reason to think that they are consumptive. It will be admitted that such cases should be tested with tuberculin if possible. It would be easier to settle the diagnosis if the patient were under continuous observation, but a certain amount may be learned from the less refined methods possible at a dispensary, and effective treatment may be instituted provided that care be taken not to overlook any intercurrent cause of the symptoms.

2. The next group are cases with a tendency to relapse. These are the cases who have brought tuberculin into discredit.

The initial improvement seems to make both patient and friends more inclined to blame the tuberculin if a relapse occurs. They need the most careful handling, because if the tuberculin is carelessly pushed at the beginning of a relapse, it is extremely probable that harm can actually be done, although it is always difficult to prove in any individual case to what extent the relapse has been increased by the tuberculin. It is obvious that if the patient is not really responding well to treatment, and there is any serious extent of mischief in the lungs, that a relapse is bound to occur at some time or other. These cases well repay great care and supervision if the slightest signs of relapse occur. It is absolutely necessary, if a patient comes for a dose looking a shade worse or with the complaint of not feeling quite so well that day, to take the temperature and make sure that some passing cold or other cause of relapse is not beginning, and to postpone the dose until one is satisfied that this is not the case. At the same time, if the dose is postponed for too long an interval, hypersensitiveness may be induced. If, in spite of precautions, a serious relapse should occur, the patient should be kept quietly resting, and it is generally wiser to wait until it is over before giving tuberculin again, while other factors that may be influencing the case are considered. Some cases who succumb to a relapse might probably be saved if there were sufficient accommodation in institutions where patients can be under careful supervision, not only for the sake of using sanatorium methods of treatment, but also so that tuberculin may be given a further trial. This is well illustrated by Case 64.

3. The third group of cases are those who do not respond at all to tuberculin treatment at first, and in whom the improvement is delayed until after months of treatment, and even then is slow. These cases require every additional form of treatment that can be provided, particularly with regard to supervision of rest and exercise. It is undeniable that the power of producing immunity can be influenced by the environment, and where this is weak, it may be rendered effective by measures directed to the general health. Cases 55, 57, and 73 illustrate the type.

Turning to the failures, first, because largest in number, are those in whom at the outset of treatment the disease was advanced. All the tables show a considerable percentage of bad results among these, but in studying the individual cases it is very striking that nearly all show an initial improvement, sometimes slight, sometimes marked.

The following cases illustrate the different types of failure:

(1) Serious relapse after a few doses (Cases 70, 71, 78). The history suggests a very low resisting power, and a consideration of this type of case leads to the supposition that the symptoms associated with phthisis are almost always due to the process of producing immunity rather than to the toxæmia of the disease itself. There is no doubt that cases, where the disease has progressed very much beyond the extent that the symptoms suggest, have a bad prognosis. They certainly respond less readily to tuberculin than cases where the symptoms of illness are more severe than the extent of the disease would warrant.

Here it must be remembered that the probability of relapse, if no treatment had been given, is very great; it certainly occurred in many cases, no worse than these, for whom treatment was not attempted. The selection of these bad cases for treatment was almost entirely accidental as regards the medical condition, and depended chiefly on the number of cases under treatment at the moment, the possibility of a vacancy at the observation hospital, and the attitude of the patient towards tuberculin. Thus at Street, and during the first few months at Portsmouth, the attempt was made to treat all cases, however advanced, in their homes; then, for a time, nearly all cases acutely ill were refused on account of over-pressure of work. There is, therefore, no evidence that tuberculin did harm in the few cases discharged worse after using it, although the possibility that it did so cannot be disproved.

(2) Failure to improve after prolonged treatment (Case 63). This type is dealt with later in discussing the failure to improve of less severe cases.

(3) Fatal relapse after initial improvement. Here it can hardly be urged that the tuberculin used at the outset has done harm; in considering whether the improvement and relapse were coincident natural variations of the disease, it is well to divide the cases in two classes:

(a) Those who relapse under the same conditions as the ones under which they improved at first (see Case 47). Such a relapse as this frequently occurs in institutions where advanced cases are admitted whatever the treatment adopted.

There are no illustrations in this series of cases coming under this class after prolonged treatment, but this may be because there were no facilities for prolonged sanatorium treatment, and prolonged home treatment leaves so much opportunity for variations in the conditions.

These cases taken alone scarcely suggest that tuberculin has had much influence either for good or evil, and further investi-

gation is needed under sanatorium conditions. It would be of great value if some method could be found of ascertaining beforehand whether these relapses were likely to occur, though no doubt prolonged clinical experience of tuberculin may yield this to individual doctors.

None of these cases support the contention that failure was due to surpassing an "optimum" dose.

(b) Those who relapse on returning to less favourable conditions than the ones under which they improved (Case 80). This is the largest class of failures, and while it must be supposed to include some who would still have relapsed under good conditions, the fact that a large number remained well for considerable periods while under good conditions suggests that the relapse was chiefly due to the change. The point is discussed in the next chapter.

The other group of cases where tuberculin has failed partially or completely is that in which no evidence of advanced disease was detected.

This may be subdivided into cases where there is now evidence of tuberculosis and cases where the diagnosis remains doubtful.

The former are naturally the most interesting class, and must be subdivided again into—

(i.) Those who refused to continue treatment or obey orders when it was considered that more treatment was advisable, and who afterwards relapsed (Cases 5, 24, 52, 54).

(ii.) Those who continued to follow advice (Cases 28, 29, 44, 49, 60, 62, 83). These are the only cases in the whole series, to be included in this group of failures, and are not selected examples. One (28) has been added because of its exceptional interest, although the relapse did not occur until later than June 1, when the patient was still under treatment, and the case is not included in the statistics of results. This and Case 29 are the only ones not showing advanced signs on first examination, in whom death from tuberculosis or definite advance of the disease, has occurred after prolonged treatment.

It must be observed that in the case of 28, although the clinical evidence showed extension of the disease, there is no certainty that this was the cause of the death, which may have been due to sunstroke.

The group of cases where the diagnosis remains doubtful obviously does not include any serious failure that can at present be attributed to tuberculin, though it is possible that some may later show this.

There have been no deaths from other causes in the series so far as they have been traced.

There has been no evidence that the patients were worse after tuberculin, and in many cases the nature of the causes of the symptoms became apparent and other treatment appropriate to this could be recommended.

For those cases where the presumption of a tubercular basis still remained, advice as to supporting treatment was strongly urged and help in obtaining it secured by the Care Committee or through admission to a sanatorium.

A study of the summaries given of the cases treated shows that the proportion of failures so far in TB negative cases is very small, but obviously a longer time of observation is needed before final conclusions can be drawn as to the certainty of preventing the onset of phthisis by tuberculin treatment at this doubtful stage.

Considerable use has been made of tuberculin as a safeguard against relapse in cases apparently recovered, and the present series shows many examples of these in different stages of improvement.

Three cases only have been seen by the writer where good authority could be obtained for the existence at some time of bacilli in the sputum, but where no signs or suspicions of a potential activity could be detected on examination or questioning. All had been treated (without tuberculin) at different sanatoriums. One of these was treated with tuberculin by his own wish and kept well. The others remained well without.

Several other cases applied for treatment, with the history that tubercle bacilli had been found in the sputum while in the Navy, and that they had improved in health considerably under treatment (some with tuberculin, some without) at Haslar. In their sputum no bacilli could be found on application at the dispensary, although there was some reason to suspect that the disease was not completely arrested.

These cases have all done well, and fears that have been expressed that tuberculin might wake up a latent focus have not been borne out in my experience. Where tuberculin has failed to arrest the disease, the latter has sometimes broken out in a fresh focus, but this has not occurred more often than would be found in non-treated cases. In no instance has an old healed focus broken down.

Tuberculin treatment may be recommended, therefore, as a possible safeguard against relapse, while the lapse of time sufficient to prove its effect in this direction is awaited.

The use of tuberculin for purposes of alleviation of symptoms in hopeless cases must be left to the personal judgment of each doctor, and is not important in a scheme except in so far as its success may gain confidence in those who are using it. In my experience little value has been found in the worst cases beyond what could be attributed to suggestion and hope of recovery, though in a few cases there appeared to be a "counter reaction" sufficiently well-marked and pleasant to counteract the pain and distress of the reaction.

A group of cases which present special points for consideration are those belonging to Types (TB-) 17 and 18. These are the cases showing widespread pulmonary lesions of a chronic nature, in which no tubercle bacilli have been demonstrated. It will probably be agreed that these are cases which do not die of phthisis, but of some complication or intercurrent disease.

On the whole, the results of treatment may be regarded as fairly satisfactory and suggestive that further good might be obtained by combination with more complete investigation and treatment of complicating diseases. Possibly this chronic condition in advanced disease, where no bacilli are found, but where the reaction to tuberculin and general character suggests a tubercular basis, is due to a very low virulence, extending the physical signs and yet not setting free the tubercle bacilli from the curative fibrosis (see Cases 38 and 39).

CHAPTER II

THE REACTION TO TUBERCULIN

The Diagnostic Value of the Tuberculin Reaction.

It is not proposed here to discuss the evidence bearing on the nature of the tuberculin reaction, but to show in what way the study of the present series of cases throws light on the question of its clinical meaning.

The needle-track reaction is sometimes absent after the first dose, but it is rare for it to fail at the second in a tuberculous case, and if it fails at the third, the probability of the case being tubercular is very slight. It cannot, however, be considered that a complete failure to react to tuberculin is complete proof of the absence of any tubercular focus.

Case 29 is one where the conclusions drawn from the reaction were misleading. Possibly the needle-track was not watched closely enough, since it was stated that the patient felt ill after the doses.

Another case with extensive disease in both lungs was considered to be certainly tubercular, and tuberculin treatment was begun and continued at the usual rate of increase without any attempt to force reactions for diagnostic purposes. No reactions of any kind occurred, and the patient reached a dose of 1.0 c.c. of OT without anything happening to confirm the diagnosis, on which doubt was cast too late for it to be possible to dispel it by tuberculin. The patient made remarkable improvement in health, and this has been maintained for two years since her discharge.

It is evident that the 50 per cent. rate of increase may in some cases allow of a reactionless course even in a patient who has tubercle bacilli in the sputum; but if a much greater rate than this be given, and no needle-track reaction should accompany the general one, the latter should not be considered to be specific.

The necessity for obtaining a general reaction in all cases

in order to form a diagnosis of the condition present is open to considerable doubt. As a matter of fact, it is not usually possible to obtain a focal reaction without a general reaction occurring, and in dispensary conditions or those of working-class practice, the confirmation of a general reaction coincident with the needle-track reaction is most valuable in showing when an examination for focal reaction is desirable. The most important thing to remember is that needle-track and general reactions never prove that symptoms are due to the tuberculosis present, and even the focal reaction may occasionally leave this in doubt.

The focal reaction cannot always be detected, even when there is clear evidence of a focus which afterwards heals under treatment. This focal reaction may appear later, after the elapse of many general reactions. In one case where injections were given in order to form a diagnosis as to the nature of an iritis, a severe general reaction occurred, but no focal reaction in the eye could be detected, although the condition, which had been refractory to previous treatment, improved rapidly under a course of tuberculin, and a Wassermann reaction was negative. In another case, treated for tubercular salpingitis, a small lump in the breast of doubtful nature remained unaffected through some months of treatment, although many reactions occurred, and only showed signs of focal reaction during a severe general one in the second course of treatment, after which it swelled several times during reactions, and finally shrank in size till it could no longer be felt.

The focal reaction may be quite definite even when no general one occurs; but it is not likely to be present if no needle-track reaction can be seen.

There is, of course, a possibility of coincidence, leading to a wrong conclusion being drawn as to the occurrence of a focal reaction, just as in the case of a general one. This can be guarded against to some extent by the continued observation of the patient and of subsequent reactions. For this purpose the local reaction at the needle-track is very useful.

It has already been pointed out that failure to react to tuberculin should not be taken as absolute proof that no tubercular focus is present, but it is quite justifiable to take it as very strong evidence, and in conjunction with other clinical evidence, if the case is watched with sufficient care, it is possible to make a diagnosis quite as definite as can be made in most medical conditions.

A sister of Case 102 was suffering from symptoms suggestive of tuberculosis, and was brought to the writer for diagnosis.

As in the case of her brother, no physical signs could be detected, but in this case the result of a tuberculin test was completely negative. In consequence of this she was assured that a good holiday would remove the symptoms, and this proved correct.

In another family three members were tested. One had suffered recently from slight ill-health. The result was negative, and the symptoms were soon relieved by other measures. Another had been treated in boyhood for phthisis, and had recovered, though still liable to severe bronchial colds. He was examined while recovering from one of these, and there seemed every reason to suppose that the tuberculosis was still active. The temperature was unsettled.

After a few weeks' rest, diagnostic injections were given, with the somewhat astonishing result that no reaction of any sort was obtained. On examination, no signs whatever were found in the chest. The test was pushed to 0.1 c.c. of TAF.

A third member of the family, who had not been suffering from any symptom except slight pain in the left side, was then tested. Slight loss of resonance and pleural crepitations were detected in the left lower lobe. She reacted sharply to the first dose of TAF 0.0001 c.c. Treatment was given, and no further signs of activity have been noted. In several other cases the writer has found the tuberculin test of the utmost service in obtaining a clue to successful treatment.

Reactions.—In the consideration of evidence as to the way in which tuberculin acts, the methods of utilizing it to the best advantage and the adaptation of these methods to different cases, the first debatable point is the nature and importance of reactions.

Most writers on the question state that reactions causing discomfort to the patient ought to be avoided when possible; but while some take it for granted that these are always harmful, others admit that this is not the case.

Some theoretical evidence is produced to show that reactions are harmful, much of which could be used just as well to support the opposite contention. The clinical evidence does not appear to have been published in detail.

The most careful study of the series of cases here described, both while under treatment and in retrospect by means of the charts, fails to convince the writer that the reactions therein shown have done harm. It is difficult even to find any reason for the suggestion that better results would have been obtained had reactions been avoided. It is true that some cases who have experienced no discomfort after the doses have done well,

but others have done badly, and there has been no obvious reason for the difference in result.

A number of cases are given to illustrate how little difference can be detected in the charts between those who do well and those who do badly, and tables are also given showing comparisons between the degree of sensitiveness, roughly estimated, and the type of case; also between this and the results. It is clear from these that further observation and analysis is needed before many conclusions could be drawn as to rules that would help the judgment in deciding on the best procedure for any particular case.

In discussing the evidence as to the harm that may be done by the reaction method of administering tuberculin, it is absolutely necessary to remember that when a patient is having frequent doses, the chances in favour of any relapse having an apparent relation in point of time to a dose of tuberculin are very great.

Dr. Bardswell considers that because a complication occurs in a case undergoing tuberculin treatment which has not happened to occur during three previous years at a particular sanatorium, it must be attributed to the tuberculin. This can hardly be taken as evidence by anyone acquainted with the vagaries of tuberculosis.

It must not be forgotten that there may be an advantage in obtaining definite reactions, and that the failure experienced by some in treating cases with tuberculin may be due to the fact that the particular cases treated were ones which would only respond to vigorous treatment. The responsibility incurred by the cautious administrator may thus be just as great as that run by the advocate of more drastic measures, even as the surgeon who spends time in thoroughly removing axillary glands after removing a tumour of the breast may run less risk than the one who is afraid that the patient will not stand it.

In the present series of cases there are many, especially among those where tubercle bacilli were found, in whom sensitiveness occurred after some weeks of treatment, when larger doses were reached, at a time when the prognosis seemed very serious, but who responded to increased doses, and finally did well.

Among the cases whose doses are given in full in Section II., Chapter IV., a number are included in the course of whose treatment mistakes were made in the dose given, in order to show what may be learnt from the response that occurred to a very large increase in the size of the dose. In only one case (No. 63)

does the subsequent history allow one to suppose that harm could have been done, and in several the patient was distinctly better afterwards. It may be said that this looks as if the method of dosage was of very little importance; but it will be observed that it was not found to be possible to continue the increase at the higher rate, except in cases where complete tolerance to any dose of tuberculin had been obtained. It is probable that prolonged experience of the use of reactions might lead to the formation of rules whereby the beneficial effects of severe ones might be obtained with certainty and without risk.

It is difficult to understand why it should be impossible to overcome the tendency to reaction that occurs after these abnormal increases without reducing the dose; but Case 7 illustrates that it is wiser to reduce and work up rapidly again.

As long as some cases improve well without reactions, it is difficult to persuade oneself that it is safe to force reactions by enormous increases of dose in cases who are not doing well, and the evidence so far suggests that in cases who are not doing well it is important to avoid mistakes in dose. Where the patient is doing well, but is suffering from sensitiveness, it might be justifiable to try a sudden increase.

While some particulars that might be pertinent to this inquiry have not been recorded in such a way as to make them available for statistics, there are certain impressions derived from the observation of cases under treatment which may be worth describing both as being of some possible use to beginners and as making a starting-point for discussion by those who have been using similar methods.

The importance of a reaction to the first dose depends on the size of the dose, the condition of the patient, and the nature of the reaction.

My own practice is to decrease at once if a relatively large initial dose (over 0.001 c.c.) has been given; but to repeat the same or increase if a very small one has caused the reaction, such as 0.0001 c.c.

Where there is a definite sensitiveness to small doses, it appears as a rule to occur also with doses a tenth of the size. This hypersensitiveness is overcome just as readily by increasing, so that nothing is gained by repeating very small doses, and time is lost in reaching the larger and more effective ones.

This applies particularly to cases where there is well-marked, but not acutely active, mischief. Where there is no evidence of activity, and the patient is at work, it is worth while to try

the decreased dose, noting that as a rule no decrease short of one-tenth is effective. Where there is evidence of activity, it is very urgent to make sure that the effect of a reaction has passed off before giving any dose at all.

If the reaction is followed by any signs of relapse, absolute rest in bed should be insisted on before another dose is given. A decrease is then advisable, because a relapse generally means increased sensitiveness, and it is reasonable to suppose that the production of immunity has just been strained to its utmost.

If the reaction is followed by a sense of well-being, and any evidence of improvement, there seems to be no reason for decreasing the dose, and the same one may be given again. The third day of improvement, generally the fifth from the dose, is usually a good time to give the next.

The interval is undoubtedly a very important matter, and when it is correct, a patient benefits from a dose that would be too large if given either sooner or later. This experience entirely confirms the interesting description, given by Pottenger in his monograph on tuberculin treatment, of the mechanism of the stimulation of the production of immune bodies by tuberculin.

As a rule the first reaction occurs after several doses have been given, and this appears to occur with considerable variety of initial dose and of increase. The same precautions are needed, but an additional clue is obtained to the advisability of increasing or decreasing the dose. If the previous increase has been very rapid (see Case 7), it is worth while to decrease at once and work up more slowly, while if it has been slower than usual, the sensitiveness may be overcome by pushing the dose. If the disease is not active and the patient is intolerant of reactions, it is better to give an interval and then start again, working up more slowly.

Where the same dose is repeated after a reaction, another reaction often occurs, and if severe, it is well to repeat the same dose again at a longer interval.

If this does not succeed, the same dose may be given at a shorter interval, and this may be repeated till the sensitiveness is overcome, provided that the patient is not losing ground meantime.

When a very slight increase in dose produces a more severe reaction than the preceding one, even if the reaction is still only a comparatively slight one, it is well not to continue the slight increase, which usually ends in a severe reaction (see Case 7).

The same dose after an increased interval (five to six days) is the safest proceeding, though a considerable reduction after a short interval, followed by rapid increases at short intervals, is sometimes more successful.

The relationship of sensitiveness to other factors is discussed in Section II., Chapter VIII., where the difficulties of drawing definite conclusions are set forth.

In regard to Case 1, it should be noted that clinically there appeared to be no reason for treatment, and that while, in spite of the bad family history, it would probably have been sufficient to keep the patient under observation, yet sensitiveness to tuberculin at the outset, such as occurred here, is held by some to be suggestive of active mischief. It is held by others to be connected with the time since infection occurred, and that any person whose production of immunity has been recently stimulated will be more sensitive to a fresh stimulation. Against this may be set the fact that this patient apparently had not received a recent infection, though it is possible that tubercle bacilli had been coughed up by the brother who died, even though he was not conscious of any definite sputum.

Sensitiveness to tuberculin should certainly be considered in relation to the type of case, and it is to be hoped that after prolonged observation more definite knowledge of its meaning may be attained.

Meanwhile, there is little evidence to suggest that severe reactions, in cases where the disease appears to be quiescent or not markedly active, are liable to do harm.

One case among the failures (No. 28) suggests the possibility of this, but cannot be taken very seriously as long as it stands alone. It may be compared with Case 1, and there are many other successful examples not fully reported.

Cases showing marked activity necessitate greater caution until the nature of the sensitiveness is better understood. Where the extent of the disease makes the outlook appear hopeless, it may be advisable to run the risk of reactions if the patient is not improving without.

Case 82 was very suggestive that the patient owed her life to the fact that the tuberculin was continued in spite of reactions.

There are no excessive reactions to blame in the disappointing Cases 47 and 62, or in the majority of cases not quoted where treatment was attempted as an experiment for a condition apparently hopeless, many of whom improved to a quite unexpected extent.

It is in the cases of victims of active disease, where the

prognosis appears fairly good, that most anxiety is naturally felt as to a method that is described by some as "kill or cure."

The medical attendant must consider the evidence as to the resisting powers of the patient, and must remember that if this is absent, without cause that can be remedied, no treatment is likely to have permanent effect. Therefore in a patient living under tolerably good conditions, if the progress of the disease is steadily downhill, tuberculin is unlikely to have a stimulating effect, and may be toxic. Relatively large doses could hardly be safe in such a case unless a marked response had been obtained to smaller ones.

In cases showing a tendency to improve with liability to relapses, severe reactions might overtax the immunizing response, and in practice it is certainly wise to avoid them.

It is here that clinical experience and knowledge of tuberculosis is of inestimable value, and it is necessary to appreciate correctly the nature of the reaction, to know if it is a true immunizing response or a toxic phenomenon, and to understand the methods by which it can be made curative.

To stop the administration of tuberculin just as the tissues are requiring the maximum stimulation in order to storm the position of the enemy, may result in an ineffective entrenchment behind fibrous tissue, and a postponement of the decisive action till the immunity attained has again been lost, when the bacilli have the advantage.

On the other hand, to push tuberculin when there are no signs that it is acting as a stimulant may possibly interfere with the process of fibrosis on which the defences of the body depend while the immunizing response is developing.

In some cases it is certainly possible to distinguish between the two, and though most contradictory exceptions are found, it must be hoped that these will be explained as experience of the action of tuberculin increases.

The first essential in a difficult case is to be able to observe the patient during a period of rest, when evidence may be obtained as to the limits of the immunizing response that may be utilized in deciding the effect of tuberculin injections, and the extent to which these must be pushed to secure adequate stimulation.

Success in this does not lie in dosage of tuberculin alone, but depends also on the way in which the environment, or other treatment, affects it.

It may happen, even in a case with a bad prognosis, that seems to demand careful supervision, that the environment

suits the routine method of dosage, and that steady improvement is obtained without special care (see Case 88).

Sensitiveness occurring later in the course of treatment must be carefully considered with regard to the general condition and progress of the case. Patients who are doing well often show an occasional marked reaction, but if it is not repeated, it cannot be called sensitiveness, and it need cause no anxiety. It is probably due to changes in the circulation and in absorption which upset the calculations as to the exact increase of doses. If the patient has not been doing well, improvement may date from the onset of this later sensitiveness; but on the whole it should be considered as a danger-signal, and every consideration given to the progress of the case, to work, and to other factors.

This is the point at which the intensive dose method is generally accused of doing harm, and at which some advocates of its use recommend that treatment should be stopped.

In the writer's experience there is just as much risk in stopping treatment here as in continuing it.

As a rule cases that obviously improve through this sensitiveness, or in whom any set-back is very brief, so that the anxiety of a confident tuberculin administrator is not aroused, do well in the end, while those who cannot be got to take any further increase are liable not to improve further unless the tuberculin is supported by other measures.

It is difficult to tell whether these cases would have done better had no attempt been made to push past what some would call their "optimum dose." Statistics of results from those who follow the rule of not exceeding such a dose, would be of value in comparison with those whose treatment has been pushed to an arbitrary maximum.

No doubt this recurrence of sensitiveness and tendency to relapse is a phase of the same periodicity that is noted in untreated phthisis, and shows some degree of failure of the treatment. It does not follow, however, that it is impossible to render future treatment more effective; and though a pause in tuberculin administration may be advisable while arrangements are being made to support the response to it by other measures, I have frequently obtained further improvement by continuing it as soon as this could be done.

Case 27, it will be noticed, relapsed, although sanatorium treatment had been used to supplement the improvement made during tuberculin treatment, and this was not pushed beyond the doses to which secondary sensitiveness occurred. Treatment was stopped in this case before the usual maximum dose

was reached, because the dispensary was closed; the disease was apparently quiescent, but the condition was not entirely satisfactory.

Alteration in rates of increase and in intervals may be found to suit individual cases, but there is far too much tendency among those who are using tuberculin to draw hasty conclusions as to the necessity for these changes. The course of the disease is so varied that a long experience of the usual response to tuberculin is necessary before one can say what the indication for and effect of a difference in method may be.

The most important matter to consider in forming a judgment as to the nature of the reaction, and as to what the succeeding dose should be, is the estimate of the occurrence of a "counter-reaction," as the temporary improvement which should follow it may be termed. A good deal of stress has been laid on the character of the reaction itself, the height of the temperature, the time of occurrence of its maximum, and the nature of the fall. No doubt something can be learned from this, but it is of less importance than the period following it, which should be chiefly studied to guide further treatment, both specific and general.

Fortunately for dispensary work, this is the period at which a patient is regularly seen, and with care and individual knowledge of each case, a correct estimate should be possible.

Some people always insist that they are better, and these must be closely watched to see if this is borne out by other evidence. But the depression following a dose is sometimes so severe that even where the temperature has not risen much, the patient is still overwhelmed by it when the time for the next dose comes, and is quite oblivious of an improvement that may be obvious to the onlooker. If a patient comes cheerfully to the dispensary after a severe reaction, it is generally a sign that the counter-reaction is satisfactory. When it is ascertained that the counter-reaction is absent, the case should be seriously considered with a view to improving the patient's conditions or using auxiliary treatment. If very little tuberculin has been given, every effort may be made to continue it, reducing the dose by a tenth if necessary and working up more slowly, since in this way a satisfactory result has often been obtained.

If tuberculin has been given for some time, an interval may be advisable. In the present series this has generally occurred in cases where the diagnosis was doubtful, and cases where no

improvement occurred, have frequently been those who did react at all markedly to tuberculin.

It is difficult to give examples that are of much use in showing where treatment should be suspended before the usual course is completed, in cases that are not quite satisfactorily recovered. It is done for two different reasons, in different types of case: Sometimes because a patient seems to have become fairly well, and there is a suspicion that the symptoms, though not those of any other definite cause that would alter the diagnosis or require other definite treatment, are not those of active tubercle, and may improve more rapidly if the strain of reactions to tuberculin is stopped. These are generally neurotic cases. The question of stopping or continuing is not very urgent if the diagnosis and prognosis are correct; but if treatment is continued and the opinion as to the activity of the disease is at all uncertain, it is important to be very careful in regulating the life of the patient.

It is in cases where the disease still shows signs of activity, and the patient feels worse after the doses, although he has improved on the whole during treatment, that the greatest difficulty arises as to whether tuberculin should be continued or not.

The question of the possibility of there being an optimum dose for each patient beyond which it is not wise to go, has already been considered, and the method of testing it suggested.

If patients stopping at smaller doses should really do as well, in a long series of cases, as those who could continue to bigger ones, there would be a strong argument for the "optimum dose" practice.

In the present series a considerable effort has been made to continue in spite of difficulties, provided that the patient was improving on the whole, so that it is open to argument that the cases who stopped at smaller doses for other reasons were not a fair selection.

It is true that many cases who improved at first have relapsed later on in the course; but there have been so many other factors to account for this, and the cases in whom it happened were so advanced, that it must be considered that the same thing would probably have occurred, had treatment been stopped at the moment when the greatest improvement was obtained.

The only instances in which treatment has been deliberately stopped in this type of case, have been those who have kept steadily well and at work for some time, and where several different preparations have been tried over considerable periods of time. Cases 64 and 74 illustrate this point.

There were no cases of active tubercle for whom tuberculin was found to be unsuitable after a few doses only, except some who were in a very advanced stage, or who could not be placed in suitable conditions to give it a fair trial. It cannot be doubted that in a longer series of cases, some would occur.

The type of case in which it is considered advisable to suspend the tuberculin because the patient is worse, has caused less doubt as to the best procedure. Here the chief warning necessary is that it is not advisable to tell the patient without qualification that tuberculin does not suit. It should be remembered that it is quite probable that it was the method of dosage that was at fault, and that with further experience the tuberculin may be given to the patient later both safely and successfully, and in any case that the patient's condition or environment may change.

While a doctor, inexperienced in the use of tuberculin, may have to withhold tuberculin in many cases for fear that it may be doing harm, continued familiarity with the variegated course of tuberculosis, the use of other supporting measures, the methods of handling tuberculin, and the nature of reactions, greatly increases the scope of the remedy.

I have been obliged to withhold tuberculin in many cases on account of the limited provision of suitable conditions for severe cases, and the series described, where tuberculin has been attempted in acute advanced cases, does not cover a sufficient experience of those treated under close supervision for further conclusions to be drawn concerning them.

CHAPTER III

THE POSITION OF TUBERCULIN IN DISPENSARY WORK AND IN COMBINATION WITH OTHER METHODS

IF the foregoing description of the action and scope of tuberculin treatment by the intensive dose method be accepted, those who have experience of dispensary conditions will draw their own conclusions as to the position it should hold in their work. At the risk of some repetition it seems, however, to be worth while to deal with the question separately from the point of view of dispensary organization.

There can be no doubt that the first line of attack of preventive medicine on those diseases where early diagnosis is both difficult and important, and where the causes cannot be completely controlled, is to be developed through sociological science. There must be a certain level of intelligence, a certain possibility of co-operation on the part of the patient, a certain degree of familiarity on the part of the medical officer with the actual conditions of life of those who are exposed to the disease in question.

This intimate relationship is often obtained between a doctor and his private patients. It is sometimes said that it is unattainable for the official who has to deal with a large number. If this were so, it would be a strong argument against the centralization of tuberculosis work which appears to be necessary to efficient administration. The difficulty is met if the arrangements for medical treatment are brought into close touch with agencies that deal with other aspects of the patients' lives, so that a knowledge which cannot be acquired personally by doctors and nurses may be built up by the help of a large number of social workers, each of whom knows a few patients in some other way.

It is not only the personal relationship between the doctor and each case that is thus improved, but a broader outlook and more effective grasp of the measures possible for the prevention of disease and the furtherance of health become

possible to a medical officer whose specialization is thus strengthened by the experience of experts in social work.

Hitherto preventive medicine, as officially recognized in the medical profession, has been concerned with acute illnesses, and though the measures employed for the control of these certainly have social bearings, they are comparatively simple, and may be dictated from the strictly medical point of view, to which, in urgent illness, all else readily gives way. The case of acute phthisis, for example, will go to a sanatorium for six months without demur, and will be ready on returning to adopt the life of a valetudinarian rather than risk relapse; to accept charity, or to let the children go short while he, or she, drinks the milk that they should have; to let the wife, or husband, continue overworking to keep things going, so that infection is likely to occur which might have been prevented by timely rest or medical advice; to overcrowd the rest of the family in order to sleep alone, or to use up the yard where the children should be playing, and darken the kitchen window by the erection of a sleeping shelter.

Such measures cannot be applied to persons in the earliest stages of the disease.

Now that we have realized that acute phthisis is a phase of a chronic illness, we find ourselves confronted by a problem in preventive medicine for which the medical officer is unprepared by medical training and experience—a problem of very special importance, because we shall meet it in the prevention of other chronic illnesses.

Drastic and arbitrary measures defeat their own object when success in treatment depends on inducing people to obtain skilled advice at a very early stage of the disease, and the difficulty is increased when, as in the case of tuberculosis, diagnosis and prognosis are unreliable. When infallible diagnosis and rapidly acting curative treatment are available for tuberculosis, medicine will be able to stand alone; as it is, the doctor is helpless without the intelligent co-operation of those among whom the disease occurs. To what social measures shall we turn to build up this co-operation? to bring those exposed to infection in touch with the doctor and health visitor, who can advise them individually? to increase the experience of the medical teachers so that they can advise on actual conditions, and not on conventional, pre-conceived ideas, and so that they can choose a line of treatment that has some chance of success?

It is encouraging to find that in many places so much constructive work has been done by workers trained in social

problems that the medical specialist can at once obtain information and co-operation of expert character, making it possible to build up schemes for the prevention of disease. The secret of this social work seems to lie in the intimate knowledge of problems of poverty which is obtained through regular visiting, combined with careful inquiry into the causes of distress in individual cases, and into the means of restoring each family to its normal social position. Even if this be carried out from a centre chiefly devoted to distribution of assistance in some form, where experience naturally tends to be limited to social failures; and certainly when connected with an organization dealing with the average working-class family, and not confined to relief work, much experience of normal and average conditions may be gained. If the work is organized, it becomes possible to build up generalizations from the individual cases, which may be applied to constructive social work.

Where such work is in its infancy, where social work is undertaken by untrained volunteers who attend to it spasmodically, and whose energies are chiefly absorbed in jealousy or personalities, preventive medicine is sorely handicapped and is unlikely to succeed. If this is fully realized by those responsible for the medical administration, an impetus may be given to the development of sociology on scientific lines, and the co-operation between social workers and officials that has proved so stimulating to both may lead to the solution of problems that have defied each when working without the other.

The value of tuberculin treatment in attracting those who have suspicious symptoms to apply for diagnosis has been pointed out. It would probably be noticeable only in dealing with an intelligent class, and depends more on the immediate good effects observed than on the ultimate curative properties of the remedy.

It is quite worth while to bear this in mind in dealing with the multitude of sufferers from chronic ill-health who apply at a dispensary, and it may suggest the use of a few doses, at any rate, concurrently with other treatment, such as dental, in order to increase general confidence, and to persuade patients to submit to the other measures necessary.

This course is the more justifiable when one remembers how many of the greatest lung specialists have seen cases pass this doubtful stage to established phthisis in spite of ordinary general treatment. If tuberculin has any prophylactic value, there is excellent reason for using it in these cases, whether

one believes that the immediate improvement is due to its action or to suggestion.

In the present series no case of this kind has shown further evidence of tubercle.

The warning already given must be repeated that whenever the diagnosis is doubtful, the utmost care should be taken to eliminate other possible causes of the symptoms, as, indeed, should also be done in cases where tubercle bacilli are known to be present, since these do not guard a patient from cancer, syphilis, or other serious diseases.

In no case has there been any suggestion that any concomitant disease has been aggravated by tuberculin.

Where patients feel the doses depressing instead of invigorating, it does not seem justifiable to continue treatment in these doubtful cases in the present lack of statistical proof that well-marked prophylactic value can be obtained. Here improvement often follows the cessation of doses, and if this does not occur, it is still possible to try other measures such as change of air.

In order to obtain statistics as to prophylactic value, to attract cases who prove to be in a serious condition, but who would not otherwise have consulted an expert, and as a lever in persuading patients to undergo other necessary and neglected measures, tuberculin treatment may be recommended as a routine for cases showing doubtful signs and symptoms.

The use of tuberculin for well-marked ambulant cases in a chronic condition presents certain complications in the prevention of the disease. It is easy to obtain a certain amount of improvement, and many patients return to work and probably tend to become forgetful of the possibilities of causing infection. At first many of these cases certainly take more precautions while they are under orders at the dispensary, and so long as they are attending there for regular treatment some influence may be exercised over them. Some, however, are careless throughout, and unless they respond to treatment so well as to lose their sputum early, the improvement in general condition which they experience may certainly result in added risk to others.

It is a disquieting thought that possibly the bacilli remaining in such cases become actually more virulent by a process of natural selection as the immunity of the host rises.

The maintenance of discipline at a dispensary, as at a sanatorium, becomes a serious matter when it is remembered that the cases left to get worse, because they will not submit

to the conditions necessary for treatment, are a fatal menace to the success of preventive medicine.

Fortunately, it is far easier to maintain discipline at a dispensary without "making an example" of offenders than it is at a sanatorium.

In default of compulsory measures that could be applied to cases that are found to be infective, the possibility of treating with some chance of success those who refuse to leave home is certainly a good thing. There is, of course, a risk that too much confidence may be placed in it on account of the influence of a few cases who have refused advice, and yet recovered under tuberculin at home, so that refusal may become more general, and cases who might have recovered, had advice been followed, may be lost.

When the dispensary was first opened at Portsmouth, a good deal of difficulty was experienced on account of the erroneous expectations which were aroused in many whose knowledge of the disease was not thorough enough for them to understand what the claims made for tuberculin by those clinically acquainted with it, really meant.

Many cases therefore applied, or were sent by their doctors for treatment, on the understanding that it would not be necessary to interfere with work or home-life. Some of these were in an acute advanced stage, in which the continuation of work, even for a short time, until they could be disabused of their conviction that they could be treated at work, was a very serious matter. This difficulty was soon overcome as the dispensary methods became better known, and it was not found necessary for the sake of example to refuse all treatment to those who could not or would not follow advice to the last letter.

For early doubtful cases and for chronic advanced ones, who cannot, or will not, be sent away, tuberculin may therefore be used as a routine.

For cases of well-marked disease, not too advanced for probability of cure, and with definite diagnosis of active disease, all must agree that it is particularly important to use effective treatment promptly.

Opinion will always differ as to what method should be used, and it is to be hoped that something will be discovered that will prove more certainly effective and more rapid in action than anything known to-day.

The first thing to consider in a routine for these cases is the provision of suitable conditions for a week while the patient is observed. If the patient is afebrile and in good condition,

this can be carried out while at work, though most would prefer to insure a holiday at once when signs of activity are detected. Careful record of the temperature will probably show slight variations from the normal curve where this is the case. When the temperature is found to rise occasionally, rest should be insisted on as a safeguard.

It is true that many cases have done well under tuberculin treatment, and have lost the tendency to fever, without the help of rest; but there seems to be no general rule by which one can determine which these cases are beforehand, and it is possible that harm may be done by tuberculin under these conditions to those who do not respond.

When the patient is ill, or the general condition seriously impaired, rest is urgently necessary for this period of observation, and much can be learned from watching its effect. I have been accustomed to commence tuberculin as soon as the patient recovered sufficiently to allow of his attending the dispensary without suffering from a marked rise of temperature after the exertion of doing so.

If the case be under supervision either at home or in an observation hospital, tuberculin is commenced as soon as the temperature settles, the patient remaining in bed for the first few doses. While this proceeding has been partly due to the delay in obtaining vacancies at a sanatorium, further experience has confirmed the writer in its advantages wherever the home conditions make it possible for the afebrile cases, or an observation hospital is available for those suffering from fever and its concomitants.

There are two drawbacks to the plan of having sufficient sanatorium accommodation to take every acute early case the moment it is diagnosed. First, the money required is badly needed to give adequate treatment to the more advanced cases; second, the observation of these cases for a few weeks under tuberculin enables one to tell what length of sanatorium treatment will be necessary—a difficult matter for those who go straight to a sanatorium, since the immediate improvement is sometimes lost on returning home after a short stay. If the patient improves under tuberculin without much assistance, a short stay at a sanatorium will be sufficient, while if he does not, arrangements can be made for a prolonged one. It is not likely that a short delay under careful supervision will be detrimental to the patient.

In the present series of cases it will be seen that a considerable series of TB+ cases have recovered health with apparent arrest of the disease without sanatorium treatment. In very

few cases did those who required sanatorium treatment get any worse at all while waiting for it. The only two examples of this have already been described (60 and 62). Both finally got well, and further experience, combined with better facilities for sanatorium accommodation, should save a repetition of the mistake.

The use of tuberculin for these cases of early active mischief while at the sanatorium cannot be enlarged on here as the examples where this could be arranged are too few. Tuberculin has so far failed to convince sanatorium authorities, who seldom have the opportunity of studying the problem of tuberculosis as a whole, and who have not so far made much effort to co-operate with other agencies to secure the prolongation of their patients' treatment.

The cases sent to Winsley from the Street Dispensary continued their tuberculin by the same method while there, by the courtesy and kind co-operation of the Resident Medical Officer, Dr. L. Crossley; but there were no cases among them to illustrate this type, those with tubercle bacilli in the sputum being in a very advanced stage.

The cases treated at the Langstone Observation Hospital at Portsmouth are not available for comparison with sanatorium statistics, not only because the majority were very advanced cases, but because for various reasons already referred to, it was impossible to make full use there of important methods of treatment employed at the best sanatoriums.

The co-ordination of measures other than tuberculin and their relation to the organization of dispensary work has proved to be of great importance with regard to the well-marked and advanced cases of chronic type. These cases come from two sources, and it must be hoped that both will be diminished in time. There are some who were not discovered till this stage was reached, and others who reached this condition while under observation, having been in either an earlier or a more acute stage when first seen.

The chronic nature of these cases is in itself an indication that some degree of resisting power is present, and it may therefore be argued that if tuberculin stimulation is not sufficient alone, it should be possible to put the patient in such a condition, or to give such assistance to its action, as would result in the arrest of the disease, and would make possible the restoration of health. It is necessary to consider the length of time that is required under good conditions, the degree of perfection that is required in the conditions, and the

degree to which this perfection may safely lapse after a given period.

The present series, taken alone, does not give very clear evidence on these points, but taken in conjunction with other experience it supports the following conclusions:

That where there has been much destruction of lung tissue, a longer period is necessary to arrest the activity of the disease than where there is less. About a year may be considered a minimum for practical purposes.

That during this period sufficiently good conditions must be obtained to assist a steady rate of progress; and, if this be subject to relapses, the patient should be placed under ideal conditions to check extension of the disease in the relapses, and to avoid other infections.

That after activity has been arrested, a considerable period is necessary to build up healthy tissue where the disease has been, and to accustom the other organs to the changes due to loss of lung tissue. Another year may be allowed for this.

That during this period ordinary hygienic conditions of life are sufficient, provided that excessive strain be avoided, and idiosyncrasies of the patients be provided for.

That if the disease then shows no evidence of activity, and complete health is attained, the danger of relapse becomes very slight.

The estimation of the value of tuberculin treatment, when combined with the other methods of improving the general health and of graduating auto-inoculation that are available at a sanatorium is beset with difficulty, as has been pointed out by Professor Pearson in his prefatory note to the report on the use of tuberculin recently published by Dr. Bardswell.

While some of these difficulties may be overcome by the scientific analysis of the statistics that are being prepared at the King Edward VII. Sanatorium, it is clear that some will remain insurmountable on account of the impossibility of obtaining parallel series of cases.

The personal factor cannot be eliminated in the diagnosis and treatment of tuberculosis, and the element of time which is so necessary for a correct estimation of the results of treatment adds to the possibility of variation in the personal equation.

The experience of those who see cases before and after their sojourn in a sanatorium may therefore be of some assistance in the solution of this problem, if taken in conjunction with the reports from the sanatorium medical officers.

First, as regards admission of cases to sanatoriums. In

the writer's experience this has become easier to obtain for advanced cases, not more difficult, as Professor Pearson suggests. This applies, however, to those sanatoriums which cater for working-class patients, and possibly not to such as Midhurst, where the selection appears to have been fairly uniform in method.

I have been responsible for the previous treatment of two cases who were afterwards admitted at this institution, but in both the prognosis appeared to be hopeless, and I did not feel justified in recommending such expenditure, which was undertaken by others interested in the cases.

In each case tuberculin treatment was tried as the only chance that did not involve useless expense, and marked improvement followed its use. One of these is quoted by Dr. Bardswell (No. 28), with some of my notes on the previous tuberculin treatment. He does not, however, mention the condition of the patient when this treatment was commenced,

The notes on the case papers are as follows:

Condition on First Examination.—Type (TB+) 18. Infiltration of the whole of the right lung, with harsh breath-sounds at the left apex. Infiltration of both vocal cords. General condition poor, temperature (mouth) over 100° daily. Unsuitable for recommendation to a sanatorium.

Patient was advised to rest in bed, and the temperature settled to 99.4° and below. She then attended the dispensary for tuberculin injections, which were continued for seventeen weeks. During this time some improvement occurred, and she gained 6 pounds in weight. She then went to Midhurst. The prognosis was still very serious, and the marked increase in the extent of the disease, which was found on her return from the sanatorium, would possibly have occurred even if the tuberculin had been continued. The case may, however, be compared with another, who appeared similar in many ways, except that she was younger and had a very bad family history and very unsatisfactory home conditions. This case was treated for several months at home, and did not improve very much, although it was satisfactory that she did not get worse. It was impossible for her to leave home, as she was nursing a sister who was very ill with still more advanced tubercle. The sister improved so much, however, under tuberculin, that it became possible to send both to Winsley Sanatorium, where the writer was able to obtain the chance of improvement even for very serious cases, such as must usually be refused. Tuberculin was continued by the same method as before in each case, in spite of continued

reactions, and both patients made most unexpected and marked improvement.

The one who had been worse, and whose lungs were almost destroyed, relapsed on her return, although the larynx, which had been ulcerated at the commencement of treatment, remained healed.

The sister has kept fairly well and at full work during the two and a half years since her return, and is to have a second course at the sanatorium in the hope that complete arrest may be obtained.

In another case, the subject of advanced disease, for whom a vacancy was obtained in a small sanatorium where tuberculin is used according to the same general method as has been described above, the response to the combined treatment was very slow, and cannot be considered satisfactory, although no increase in the extent or activity of the disease occurred. Tuberculin was stopped some months after his return, and a vacancy obtained at a sanatorium in a more bracing place where tuberculin was not given, and where care is given to the graduation of labour. No further improvement was obtained, and the prognosis remained serious, if not hopeless, till the patient ended it by taking his own life.

In considering the combination of sanatorium treatment with the use of tuberculin, attention must be paid to five factors in the influence of sanatorium residence on the disease. First comes the provision of healthy conditions of life; second comes the regulation of rest and exercise suitable for the physical condition of the particular patient; third is the exact supervision and graduation of exertion so as to regulate auto-inoculation and produce a specific immunity; fourth is the protection against other infective organisms; fifth is the opportunity for close observation of complications and idiosyncrasies.

The first and second of these can be obtained at home, and any scheme which fails to promote the development of the first at home must be condemned. The second is aimed at when an attempt is made to give "sanatorium treatment" at home. It is required as a rule in the treatment of well-marked cases of tuberculosis by tuberculin, but is not asked for in the treatment of the average early case who is able to remain at work while under treatment. It must be admitted that it is a good thing to dispense with it, as the alteration of normal life for months makes people hypochondriacal, a condition well known in those who have been treated in sanatoriums where graduated labour was not employed. The third factor can only be given in a sanatorium, and must always be expensive,

since a very high degree of medical skill is required, with very close individual attention to the patients, so that one expert doctor can only supervise a comparatively small number of patients. This method of treatment must be considered as an alternative to tuberculin, although it is possible to combine the two. In watching cases who come away from sanatoriums, it is often difficult to decide whether the additional advantage that had been obtained by graduated labour in sequence to tuberculin is due to the improved general condition or to the specific effect of the auto-inoculation which has succeeded when tuberculin has not.

Case 62 appears to be an example of one who responded better to graduated labour than to tuberculin, since the improvement did not begin during a prolonged stay in the country in the interval between stopping tuberculin (and work) and admission to the sanatorium.

The fifth factor in sanatorium treatment may be better provided at a properly equipped observation hospital, especially if this be in charge of a resident medical officer, who is placed in a position to obtain consultative advice from specialists in different complications. It has not been carried out to the extent that might be expected in sanatoriums for working-class patients, many of which make no attempt to co-operate with those who treat their cases before and after residence. In some, no doubt, the medical officers have not sufficient experience outside tuberculosis to make use of the opportunity for studying their patients, or are expected to treat too large a number to give adequate time for this.

While it is difficult to prove whether those who relapse after a course of tuberculin would have been any less likely to do so after sanatorium treatment, the question of time does not appear to have been given sufficient importance by some writers. It is a great mistake to overlook the necessity for this factor in obtaining permanent arrest in advanced cases, and the use of tuberculin in these does not seem to affect it. The chief differences to be claimed for the results of tuberculin plus sanatorium treatment in comparison with those of sanatorium treatment alone are—

1. That some respond who fail to do so to sanatorium treatment alone; these are difficult cases, and on that account take longer to get well than those do who respond well to sanatorium treatment alone.

2. That a sense of well-being and fitness for work may be obtained by tuberculin in patients who had not been able to attain it with graduated labour.

3. That there is a great difference in the facility with which treatment can be given. However valuable a month or two at a well-organized sanatorium may be, it must be admitted that lengthy or repeated sojourns and interruptions of the patient's occupation are unsatisfactory, and should be avoided if possible. The question of whether liability to relapse is affected is not yet open to proof.



CHAPTER IV

TUBERCULOSIS AND TUBERCULIN TREATMENT IN CHILDHOOD

THE period over which the children in this series have been observed and treated is too short to give scope for much investigation at this juncture, and there has been no opportunity for the use of many valuable methods of diagnosis, such as X-ray examination.

Less is known about the subject than about the disease in adults, and the object of this chapter is to suggest lines of further research, and to point out a few observations which have been made that may help to clear the ground for this purpose. The conditions found in the examination of school-children have been quoted in discussing the conditions at Street and at Portsmouth. It is not intended to deal here with the question of surgical tubercle.

Considering the extreme difficulty that is admitted by all to exist in forming a definite diagnosis of pulmonary tubercle in childhood, the figures given all over the country and in different years are strikingly similar, with the exception of a very few instances, where it is clear that a different standard has been adopted.

Comparing these results with post-mortem observations, with series tested by tuberculin, and with the experience of chest experts, who have had the opportunity of examining large numbers of these same children, it is clear that the usual school standard aims at diagnosing as tubercular only those presenting very clear signs. There can be no doubt that the number of children suffering from latent tubercle is very much larger, and that this latent tubercle is likely to have some effect on the health and development of the child, to say nothing of the possibilities of activity arising during adolescence.

Children are brought to a dispensary for two reasons—first, and most usual, because of ill-health; second, because of con-

tact with an infectious case or because signs were detected accidentally in the school routine examination. Very rarely are tubercle bacilli discovered, and only occasionally are there signs detected in the chest that point to tubercle with anything approaching to the same certainty that may often be felt in the case of adults. This is partly because tubercle has an even more varied course in children, its most usual manifestations being difficult to define, but also because nearly all of them may be due to other causes which are far more common in children than in adults.

It should be realized that children are passing through a period of adaptation and of development which is deeply concerned with germs of all sorts. The robust child may, indeed, suffer from acute illnesses, but when it is seen at a dispensary with health unimpaired and temperature normal, and presenting to the finger and stethoscope unmistakable evidence of localized disease in the lung, it becomes difficult to estimate the full bearing of the lesion. No doubt this will be cleared up by the study of the after-histories of such cases. The writer is inclined to think that this lung condition is one likely to be recovered from completely when it is due, as is usually the case in the absence of a history of definite illness, to a localized bronchitis, whether tubercular or not, but that when it occurs as a result of a more serious and acute lung condition, so that some lung tissue has been definitely damaged, the prognosis is worse, the local disease tends to become chronic, and the general condition suffers.

A more difficult study, however, is that of delicate children, especially where chronic bronchitis, repeated attacks of bronchitis, or asthma occur. It is difficult to judge to what extent such delicacy is due to the overpowering strength of infection that has been met with or to inherited defect, which continually allows the infection that another child might readily overcome to gain a foothold.

A certain proportion undoubtedly recover from infection without any steps being taken, and it is impossible to tell until adult life whether recovery has been complete or not. These cases are a continued anxiety to their medical attendants and to the charitable organizations which are constantly asked to assist them. It is extremely difficult to tell when sufficient treatment has been given, and if those responsible wait until more definite signs of mischief can be detected, irreparable harm may have been done; yet early symptoms are sometimes extremely difficult to remove.

Observation of well-to-do cases, who can afford every care

of delicate children, shows how difficult it is to obtain that robust health which removes any suspicion of tubercular activity.

The difficulty is greater than in the case of adults for the following reasons:

The symptoms are much more difficult to remove, and when removed they are much more liable to recur. Children being much more liable to other infection, may easily lose what had appeared to be a satisfactory immunity.

In children, we are dealing with a power of producing immunity which is absolutely unknown, and for the detection of which we have at present no means at our disposal.

In treating adult patients, who have almost invariably been exposed to infection in childhood, we have the certain knowledge that some power of immunity is present, as otherwise they would not have survived.

It is generally found that children from good homes respond less readily to treatment than do the poorer ones, and when it is remembered how much higher the infantile mortality is in the latter, and how certain all are to meet large doses of infection, it is pretty clear that the problem of the delicate child is due to the survival of those who would have succumbed to worse conditions and that the delicacy is primarily an inherited defect. It is not necessary to conclude that the latter is an absolute bar to the attainment of a fair degree of health, and in many cases the power to resist disease is not absent, but simply develops more slowly than normal and is more dependent on the environment. It is reasonable to expect that many of these children will respond to prolonged care, but it is not probable that any method of treatment will bring robust health at all quickly. Careful observation is to be recommended first, and such diagnosis should be made as is essential to the selection of treatment.

The conditions to be noted for this reason are—

1. The digestive apparatus, with regard to teeth and suitable diet, and the condition of the tonsils and adenoids.
2. Evidences of rheumatism.
3. Evidences of tubercle.

It may be justifiable in adults to hasten the treatment of suspected tubercle rather than risk the progress of the disease, while other possible causes of the symptoms are eliminated, but in children it is imperative to deal with the general condition first.

All experienced in the treatment of children will probably agree that a child suffering from rheumatism in any of its

forms should be treated in a different way from one suffering from tubercle, whether in a slight or well-marked degree, and that a child is likely to suffer seriously if the diagnosis is not made correctly. Although the two do not often coexist, this possibility must not be overlooked, and while the treatment appropriate to rheumatism may be given first place, it can be modified in certain ways to help the child in overcoming the tubercular infection.

It has often been noted that children suffering from chorea react to tuberculin, but there does not seem to be so much note of reactions to tuberculin in the subjects of acute rheumatism. I have seen acute rheumatism develop in children who reacted to tuberculin, while several cases sent for treatment without any doubt on the part of previous doctors that the case was tubercular, have failed to react to tuberculin, and have been found on observation to show symptoms of rheumatism.

When the digestion and gross enlargement of the tonsils and adenoids have been attended to, and the diagnosis made that the case is probably not one of rheumatism in any form, the urgency and nature of both lung and general condition must determine whether any minor enlargements of tonsils and adenoids should be dealt with, or whether these should wait until the child is stronger.

If the child reacts to tuberculin, it has been my practice to try the effect of treatment by it, and no harm has been observed to follow this. The value is extremely difficult to estimate, and although the mothers have usually been much impressed with the apparent improvement, the series is hardly long enough to prove much. Where there is much tendency to bronchitis, the results have not been satisfactory, even when sanatorium or country treatment has been added. These children, like many of the others, are much better while they are away, and relapse persistently every time they come back, even though Portsmouth has many advantages for children over the usual large town. In some cases bad home conditions are sufficient to account for the relapse, in others it appears to be partly a matter of climate; of course, if a child has always been delicate in a particular place, there is some reason to assume that the climate does not suit it, even though it is perfectly suited to the average child, and the death-rate is low.

The use of tuberculin before and after a change in the country has not appeared to influence this tendency to relapse, but this is a matter which would require a longer period of time to estimate, and the data would need very careful analysis. Tuber-

culin has not been given the children in this series while they were away.

In one case only has a definite negative result of a tuberculin subcutaneous test been followed at a later date by a positive one. In this child the year intervening between the two tests was spent in contact with a brother dying of phthisis. The symptoms and physical signs were very little different on the second occasion from those observed on his first application, when he was sent by a doctor for diagnosis because his mother had died of phthisis. The condition of the brother, who was older, had not been diagnosed at that time, and he was brought to the dispensary at my request, when I heard that he seemed ill. He was already in a very advanced stage, and expectorating tubercle bacilli. The general condition of the younger boy and of another brother, who came later for diagnosis, was good.

The administration of tuberculin to children, especially at a dispensary, is made more difficult than in the case of adults by the greater variability of the temperature. Some children who appear to be in good health get rises of temperature after exercise, and many delicate ones have a daily rise, the meaning of which does not seem similar to that found in adults. Possibly in children, as occasionally in women, an irregularity of temperature occurs more readily as a nervous symptom of chronic toxæmia, and should not be interpreted as being directly dependent on the activity of the focus in the way that it almost constantly should in men. Certainly these continued slight temperatures often do not yield to physical rest, and can be disregarded to some extent in the administration of tuberculin.

The repeated feverish attacks experienced by some children are different, and it is important to guard against the chance of giving a dose of tuberculin during one of these; while there is no sufficient clinical evidence that harm has followed this, it is so likely to be dangerous that every precaution should be observed. For this reason it is a great mistake for any doctor administering tuberculin to allow the rush in dispensary work to lead to giving patients doses without sufficient individual attention. This is not a matter of time only, as the alert mind will detect the important points in a very brief interview if the routine is properly planned, especially in the case of children where intentional deception is generally easy to detect. Wherever any suspicion occurs of the child's condition at the time intended for a dose, a fuller investigation should be made, the temperature taken, and if any doubt remains, the dose should be deferred till the next day; while to increase the in-

terval by one day seldom matters much, it is a great drawback to the intensive dose method to be obliged frequently to postpone it a week or even half a week beyond the usual time, so that many of these cases cannot be treated satisfactorily if arrangements allow only of bi-weekly administration.

When children suffer from repeated illnesses, it is more difficult to decide to what extent these are dependent on the chronic tuberculosis detected between them, or whether they are pure coincidences. Even if the illness is recognizable as a distinct infection, the susceptibility to it may have been increased by the tubercle, or may have been an inherited matter, or the infection may have been a particularly virulent one. This greatly increases the difficulty of judging the effect of any remedy for tubercle in children; even if it has been successful, the new infection may destroy all the good that has been done, and pave the way for a relapse. In some cases, however, a child has improved remarkably after an attack of fever, generally when this was of uncertain origin. Although these attacks are not at first sight like those in adults, which are now considered to indicate auto-inoculation, it is possible that the same interpretation might be given, and that the greater length of fever observed in them is due to the thermal instability of the child.

In considering the prognosis of tubercle in childhood, it must be remembered that not only is the susceptibility for certain common and serious infections greater than in adults, but that there is always the possibility in any individual case that the power of producing specific immunity to tubercle may be very deficient, and that local immunity seems to be less readily attained. In adults there is less susceptibility to most infections that might complicate the disease, and localized immunity is commonly produced, making the spread to other foci unusual.

On the other hand, if a power of producing immunity does exist, it can probably be turned to more effective use by the growing child, and may result in more complete cure.

There seems to be no reason for altering the routine administration of tuberculin for children from that used in the case of adults, and no difference has been observed in the sensitiveness or other indications of response to the remedy.

The series of cases under consideration includes very few cases under five years of age. The few who were treated did not give the impression that tuberculin was of much value at this period.

APPENDIX A

CASE-PAPERS IN USE AT PORTSMOUTH DISPENSARY

1. Reference sheet in loose-leaf ledger—for every person applying—arranged alphabetically.
2. Medical case-paper—a double quarto sheet folded—with (A) notes made on questioning patient on outside of first page, and (B) notes made of physical examination on outside of second page, leaving inside blank for notes.
3. Temperature chart, eight weeks to a sheet (quarto size).
4. Health visitor's report of home—single sheet (quarto size). Front, first report; back, subsequent reports.
5. Instructions given to all patients attending dispensary.
6. Card given to patient for the home record of temperature.
7. Certificate given to Care Committee when a case was referred to them for help (quarto size).
8. Form used by Care Committee in reference to cases helped (quarto size).

1.

REFERENCE SHEET

Name.....Age....Sex....M.S.W.....Date.....

Address.....Application No.

Occupation.....Off Work.....Treatment No.

Diagnosis.....{ Under }
 { Sent by } Dr.

Notified by Dr.

Insurance.....Sanatorium benefit

Decision

Progress

2.

(Quarto Size.)

PORTSMOUTH TUBERCULIN DISPENSARY

Name Age Sex M.S.W.Ch..... Date

Address Height Weight

Occupation Off Work

 Previous—Service ?

Recommended by Dr.

Present condition — Reason for coming

 Chief symptoms

 Onset

 Course

 Cough

 Sputum Already examined

 Hæmoptysis

 Loss of flesh Max. known Weight

 Night-sweats Lassitude

 Shortness of breath

 Pain

 Appetite Digestion

 Voice—hoarseness Weakness Loss

Present appearance and capacity for work

Previous Health— Winter Cough Pleurisy Influenza

 Bronchitis Pneumonia Rheumatism ...

Family History

Relations seen at Dispensary

 found to be tuberculous

Conditions of employment

Reference to Health Visitor's Report

PHYSICAL EXAMINATION

Date.....

Signature.....

(Here come diagrams showing thorax, back and front view, and the larynx.)

General condition

Muscular developmentDeformities.....

PulseSputum

Glands

TeethUrine—Sp. Gr.....Reaction ...

Tongue..... Alb.....Sugar

Tonsils.....

Nasal breathing

Abdomen.....

.....

Blood condition

Menstruation

Summary: Active—Pulmonary alone. Pulmonary+.....

Progressive. Quiescent. Non-pulmonary

Intensity.....Extent.....Duration.....

(Here comes Temperature Chart, eight weeks to a sheet.)

5.

BOROUGH OF PORTSMOUTH MUNICIPAL
TUBERCULIN DISPENSARY

(Supplied in the form of a pamphlet, with stiff cover, 4" x 6".)

WHY ARE RULES NECESSARY ?

Consumption is a disease that is generally infectious, and the infection can be prevented entirely if certain rules are followed. There are a great many forms of the disease, but they are not all infectious, and some patients are only infectious for part of their illness.

Do not hesitate to ask the Doctor at the Dispensary if you do not understand exactly what precautions are necessary in your own particular case.

WHERE DOES THE RISK OF INFECTION LIE ?

Consumption is caused by a tiny living creature called a germ, so small that it cannot be seen without a powerful microscope. These germs may attack any part of the body, but it is only when the lungs or throat are affected that the sufferer is likely to pass the disease on to others.

The reason is, that when the lungs are affected the disease generally, sooner or later, makes the patient cough and spit up stuff from the lungs, which may contain thousands of these tiny germs. Although so many are spit up, the ones in the lungs keep growing and multiplying as long as the patient is ill.

Thus the mouth of a consumptive patient, and whatever he coughs or spits over, gets crowded with germs, which may cause the same disease in others.

Patients who have no disease in the lungs or throat, or in whom the disease is slight, or nearly cured, so that there is no sputum at all, especially if there is not much cough, cannot cause any infection to anyone.

People catch the disease by breathing or swallowing the germs. This is most likely to happen when the sputum which contains them gets dried and scattered in the dust.

RULES TO PREVENT INFECTION.

If these are carefully carried out, the risk of infection to others may be completely prevented, and the patient also will benefit, since he is less likely to get fresh infection himself.

1. The sputum must be destroyed by burning, or by boiling, or by washing it down the drain with disinfectant. *It must never be allowed to dry first.* A consumptive patient should always carry a sputum-flask. At night it is better to use a

wide-mouthed cup with a lid. Both must be washed out down the w.c. drain with strong disinfectant, and boiled frequently.

Never spit anywhere, except into flask or into paper, that can be put straight in the fire.

2. A consumptive patient should always hold the handkerchief to the mouth in coughing, and the handkerchief should be kept in a separate washable pocket-lining, which can be boiled. The handkerchief must never be used to spit into, and must be boiled.

3. The teeth must be kept clean, a disinfectant mouth-wash used, and the moustache should be shaved, so that germs do not catch in it. The patient should not kiss or be kissed on the mouth.

4. All cups, spoons, forks, etc., should be kept separate and put in boiling water directly after use, and dried with a separate cloth.

5. Patients must try not to let clothes which cannot be boiled get infected with sputum. No clothing which cannot be boiled must be washed with the patient's linen. A consumptive patient should always sleep in a separate bed, and if possible in a room alone.

6. Rooms occupied by consumptive people should have as few curtains and rugs as possible, and no ornaments to catch dust. They should be kept spotlessly clean and free from dust, using a damp duster, which should afterwards be boiled; tea-leaves or damp sawdust, which must be burned, should be used when sweeping the floors.

7. Rooms occupied by a consumptive patient should always be disinfected and scrubbed before they are used by anyone else.

Please tell Nurse at once if you are moving house or changing your room, so that this can be arranged for.

GENERAL RULES FOR PATIENTS.

1. Keep your windows wide open night and day, and let the sunlight in if possible.

2. Take your meals at regular times, and eat wholesome food and plenty of it. Take no beer or spirits or other form of alcohol, as this is bad for consumptive patients.

3. Excessive smoking is bad for consumptive patients, and it is better not to smoke at all.

4. Go early to bed, and avoid all crowded indoor places, and particularly excitement and close air at night.

5. If you need rest, the best time for it is before meals, as this increases appetite. Avoid hurrying over meals.

6. Breathe through your nose, and teach the rest of your family to do so. The nose can deal with germs and dust better than the throat can.

Be sure to take the Doctor at the Dispensary into your confidence, and tell the truth about your symptoms and habits of life.

7.

MEDICAL CERTIFICATE

Name.....Age.....Address

Reason for which case is referred.....

History—Length of illness

Length and nature of previous treatment

Other illness in patient or family.....

Condition—Part affected

Stage of disease: Early,—intermediate,—advanced,—
acute,—subacute,—chronic,—relapsing,—quiescent

Complications.....

Infectivity—sputum.....T.B.'s present absent.....

General condition

Capacity for work

Temperament.....

Medical orders

Probable treatment

Prognosis—

(a) Control of infectivity

(b) Return to work

(c) Arrest of disease

(d) Permanent arrest of disease

APPENDIX B

TABLE of all cases fully treated—*i.e.*, all cases discharged after at least two months' treatment with the disease apparently arrested, together with all cases treated up to at least 0.5 c.c. of human old tuberculin, either Koch's or the albumose-free, or of human bacillary emulsion (cases summarized in Chapters II. and IV.).

EXPLANATION OF THE TABLE OF CASES.

The following particulars are given, in order from left to right of the page:

1. Number.
2. Date of first examination at Dispensary.
3. Sex and age; reference to cases Sect. II., Chap. V.
4. Married (M.) or single (S.); occupation. As far as possible the occupation before the onset of serious symptoms is given, and not an occupation to which a patient has been obliged to turn on account of the disease.
5. The presence of tubercle bacilli in the sputum, either determined at the Dispensary, or at some other time of which reliable information could be obtained. It would no doubt be of value to give accurate information as to the sputum at the time of admission, quite distinct from any other evidence as to the presence of bacilli either at an earlier date or after treatment had begun. Unfortunately, the staff at the Dispensary was not sufficient to secure the examination of several good specimens of sputum in every case between the date of application and the date of the first dose, and it was not thought desirable in the interests of the patient to postpone treatment until this could be done.
The presence or absence of tubercle bacilli at any stage of the patient's illness is, however, of definite importance in clinching the diagnosis. + = presence. o = absence.
6. Presence or absence of sputum on first examination. + = presence. o = absence.
7. Special symptoms on first admission. Those symptoms are mentioned which specially affect any estimate of the type of case—*e.g.*, fever or larynx.
8. Notes on previous treatment.
9. General course of treatment.

10. Number of weeks during which tuberculin was actually given.

11. Particulars of test-dose. The preparation and the dose giving the first reaction is given, the dose being entered in terms of decimal parts of 1 c.c. of the pure preparation. Where this is not the first dose given the patient, it is preceded by the ordinal number to indicate which dose it was. It is followed by the temperature observed during the reaction in degrees Fahrenheit. In some cases where this reaction was not regarded as specific the amount and effect of the next dose is then noted. The expression NT+ indicates that the "needle track" infiltration was the chief sign of reaction observed.

12. Particulars of tuberculin treatment under headings: Preparation—minimum (commencing) dose; number of doses; maximum dose injected. The preparations used, with their particulars following, are placed one below the other in the order in which they are given.

13. A rough indication of the degree of "sensitiveness" to tuberculin shown by the patient. This is expressed in figures from 0 to 5:

0—No definite reaction.

$\frac{1}{2}$ —Very slight reaction (generally "needle track").

1—Definite but slight reaction.

And so on up to 5, which indicates the most severe experienced, the temperature frequently rising after doses to over 103° F. The sensitiveness often varies during treatment, and this is indicated by a series of figures.

14. Gain or loss in weight during treatment.

15. Particulars of work capacity before, during, and after tuberculin treatment. The words used explain themselves. "Fit" indicates that the patient was fit for work but not actually engaged in it, and "unfit" the reverse.

16. General condition before and after treatment.

17. Indications of active tuberculosis at the conclusion of treatment.

(a) Symptoms.

(b) Physical signs. The estimation of the meaning of physical signs is undoubtedly a matter of personal opinion. Loss of resonance and harshness of breath sounds or other signs of fibrosis were not considered evidence of activity, and adventitious sounds were passed as not active in a few cases where they were considered to be pleural.

(c) Sputum.

18. Summary of estimated condition of disease on discharge.

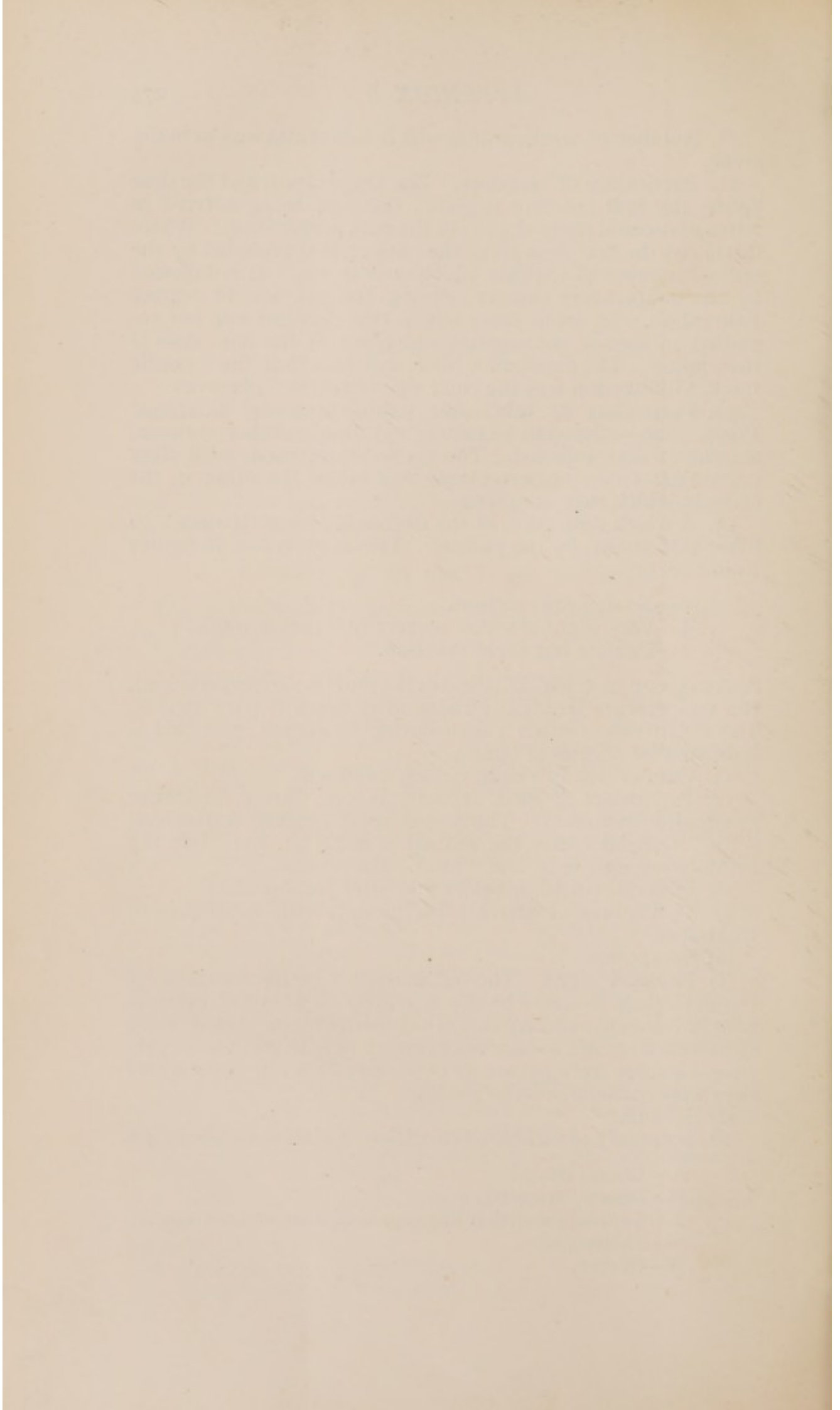
A—Lesion healed.

P—Disease arrested.

B—General condition improved, disease less active.

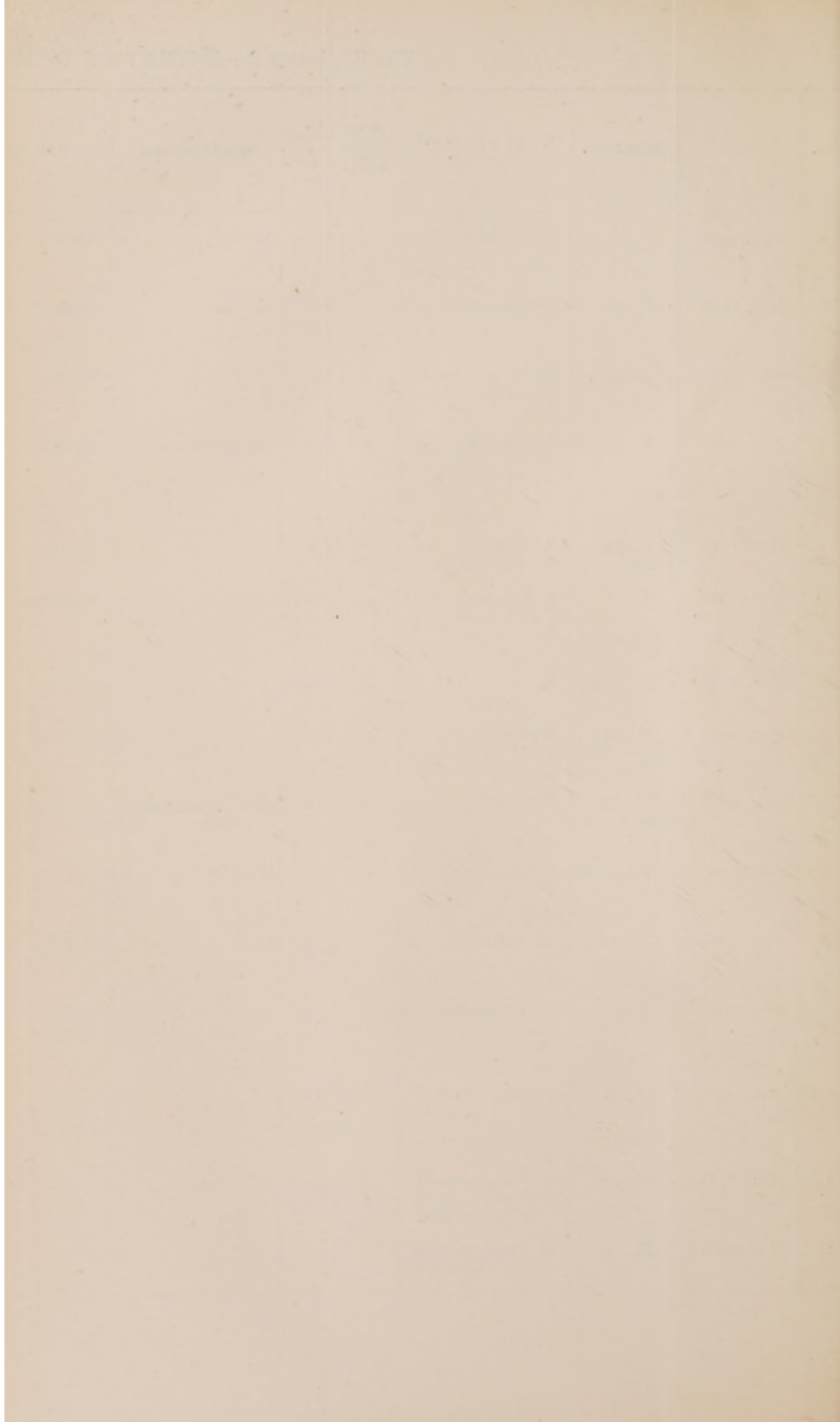
S—Unchanged.

W—Worse.



TYPES 1 AND 2.—EXTENT OF DISEASE LIMITED (NOT MORE THAN HALF LOBE). DURATION OF SYMPTOMS SHORT (UNDER THREE MONTHS).

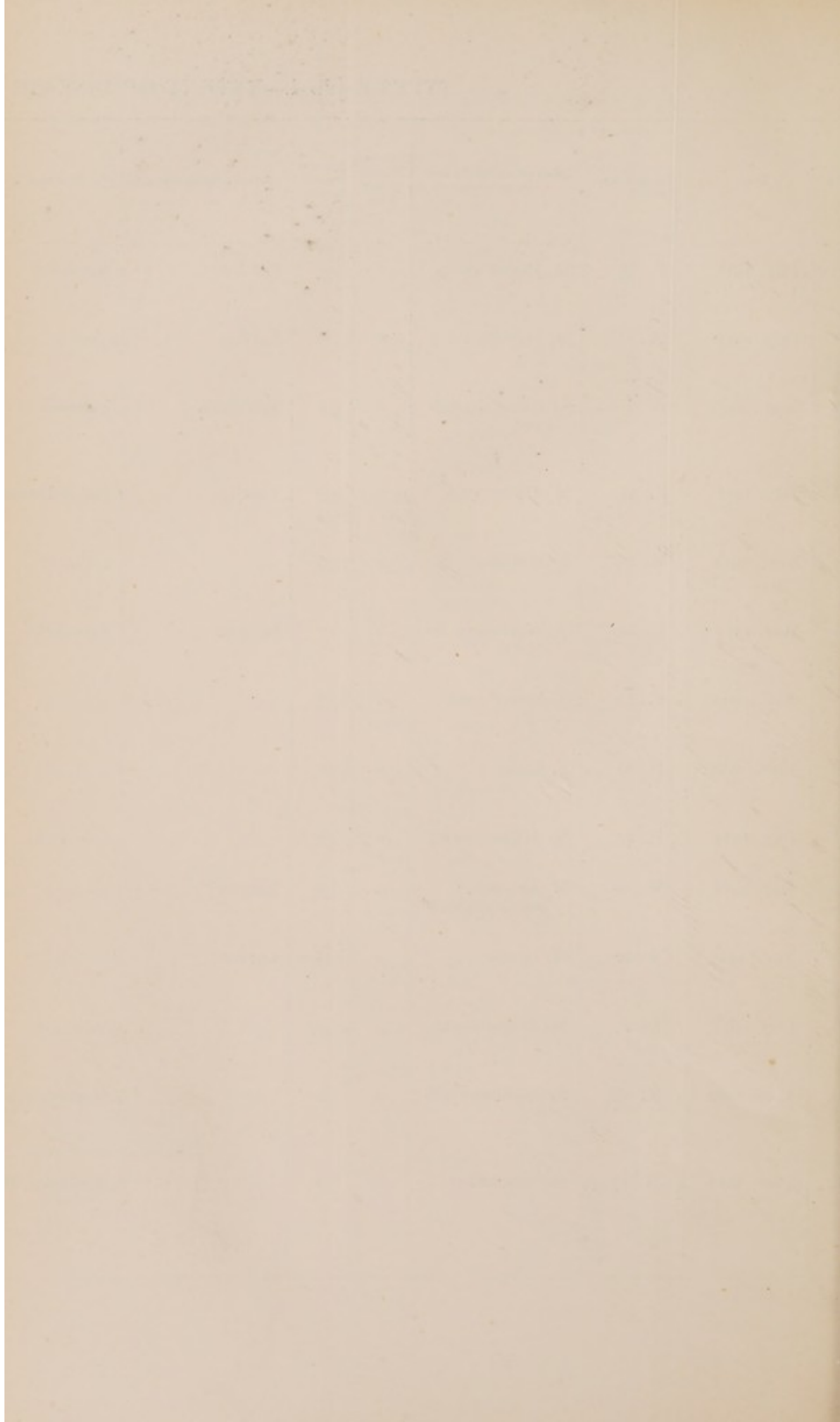
No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	System or A.G. reaction.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.										
									Test.			Treatment.			Sensitization (see p. 273).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.				
									No. of Weeks.	Preparation.	C.C.	Preparation.	Minimum.	No. of Doses.			Maximum.	Before.	During.	After.	Before.	After.	Symptoms.	Signs.		Spitum.	1911.	1912.	
1	Sept., 1910	F., 49	M. House work	o	o	Debility	None	Dispensary	16	OT	-001-001 -01-1-01 No focus	Diagnos. Nil To 101 NT+	PTO PT TO	-005 -005 -01	10 13 1	-1 -6 1	3-1-0	Fair	Fair	Fair	Fair	Fair	Fair	None	None	None	A	A	
2	July, 1910	F., 32	S. Companion	o	o	Cardiac	Cardiac	Dispensary	29	OT	-001 -005	Nil To 101+ NT+	PTO PT TO	-0025 -01 -01	24 17 14	-7 -45 -7	0	Off	Off	Off	Poor	Poor	None	None	None	S	S		
3	July, 1910	F., 33	M. House work and factory	o	o	Contact	None	Dispensary	24	PT	-001	NT+	PTO PT TO	-0025 -01 -01	24 17 14	-6 -5 -1	0	Full	Full	Full	Fair	Impr.	None	None	None	A	A		
4	Feb., 1911	F., 35	S. Teaching	o	o	Neurasthenia	None	Tuberculin	32	OT	-0005 -0015 -004	Nil Nil To 101+ same night	PTO PT OT	-001 -001 -1	30 18 9	-45 -05 -9	2-0	Part	Off	Part	Poor	Fair	None	None	None	B	B		
5	Dec., 1911	F., 22 Case 1, p. 76	S. Shop	o	o			Dispensary	24	TAF	-001 -005	Nil To 1000	PTO PT	-001 -01	30 9	-04 -15	1-0	-3	Full	Full	Full	Good	Good	None	None	None	A	A	
6	Aug., 1910	F., 16	S. Factory	o	o		Influenza	Dispensary	24	OT	-001 -005	Nil To 998	PTO PT TO	-1 -005 -15	9 22 8	-9 -4 -75	1-0	+3	Off	Part	Full	Poor	Fair	None	None	None	A	A	
7	Mar., 1911	F., 15	S.	o	slight			Dispensary	133	OT	-0005 -004	Nil To 101	PTO	-001	20	-07	1	0	Off	Full	Full	Fair	Good	None	None	None	A	A	
8	Aug., 1911	M., 23 Case 2, p. 77	Factory	o	o			Dispensary	21	OT	-001 -005	Nil To 100	PTO PT TO	-0025 -01 -5	11 18 5	-085 -7 1	1-0	+5	Full	Full	Full	Fair	Good	None	None	None	A	A	
9	Oct., 1910	M., 32 Case 6, p. 84	Factory	o	o	Emaciation; subfebrile		Tuberculin at home; dispensary	38	OT	-001	To 100	PTO PT TO	-001 -01 -1	17 18 8	-75 -7 1	3-1	+14 +11	Off 2 weeks	Returned in 3 months	Full	Very poor	Good	None	None	None	A	A	
10	Feb., 1911	M., 30-40	School, M.O.	o	o	Febrile		Tuberculin	41	OT		NT	PTO PT TO	-003 -01 -1	25 14 14	-75 -8 -8	1	0	Full	Full	Full	Fair	Good	None	None	None	A	A	
11	June, 1912	M., 41	M. Carpenter	o	o		Tuberculin at sanatorium	Dispensary	12				PTO PT OT	-15 -01 -1	4 10 5	-48 1 1	0 (while at dispensary)	0	Fit	Full	Full	Good	Good	None	None	None	A	A	
12	Dec., 1912	F., 31	M. House work	o	+			Dispensary Care Committee	35	3rd PTO	-0022	To 991	PTO PT OT TAF	-001 -01 -1 -01	28 15 7 12	-06 -56 1 -15	+2	Part		Full	Fair	Good	None	None	None	A	A		
13	Nov., 1911	F., 29	S. House work	o	o			Dispensary	39	TAF	-0005 -001	To 995 To 995 NT+ cough	PTO PT TAF	-0005 -01 -2	30 66 4	-06 1 1	3-0	+2	Full	Full	Full	Fair	Good	None	None	None	A	A	
14	Mar., 1912	M., 41	S. Dockyard shipwright; Inval. R.N., accident	o	o			Dispensary	25	3rd PTO	-003	To 100	PTO PT TAF	-001 -01 -0001	8 1 36	-003 1 1	3-1	+10	Off 2 weeks to full		Full	Fair	Good	Good	None	None	None	A	A
15	May, 1912	M., 16	M. Dyeing apprentice, shipwright	o	o			Dispensary	25	TAF	-001	To 100+6						3-1-0	+9	Full	Full	Full	Fair	Good	None	None	None	A	A



The history of the United States is a complex and multifaceted story that spans centuries. It begins with the early Native American civilizations, such as the Mayans, Aztecs, and Incas, who built sophisticated societies in the Americas. The arrival of European explorers in the late 15th and early 16th centuries marked the beginning of a new era of discovery and conquest. The Spanish, French, and British established colonies across the continent, each with its own unique culture and traditions. The struggle for independence from British rule culminated in the American Revolution, which led to the birth of a new nation. The young republic faced numerous challenges, including the Civil War, which tested the nation's unity and commitment to the principles of liberty and equality. The Reconstruction era followed, as the nation sought to rebuild and integrate the newly freed African American population. The late 19th and early 20th centuries saw rapid industrialization and westward expansion, leading to the rise of a powerful nation. The United States emerged as a global superpower after World War II, playing a central role in the Cold War and the development of the modern world. Today, the United States continues to shape the global landscape through its economic, political, and cultural influence.

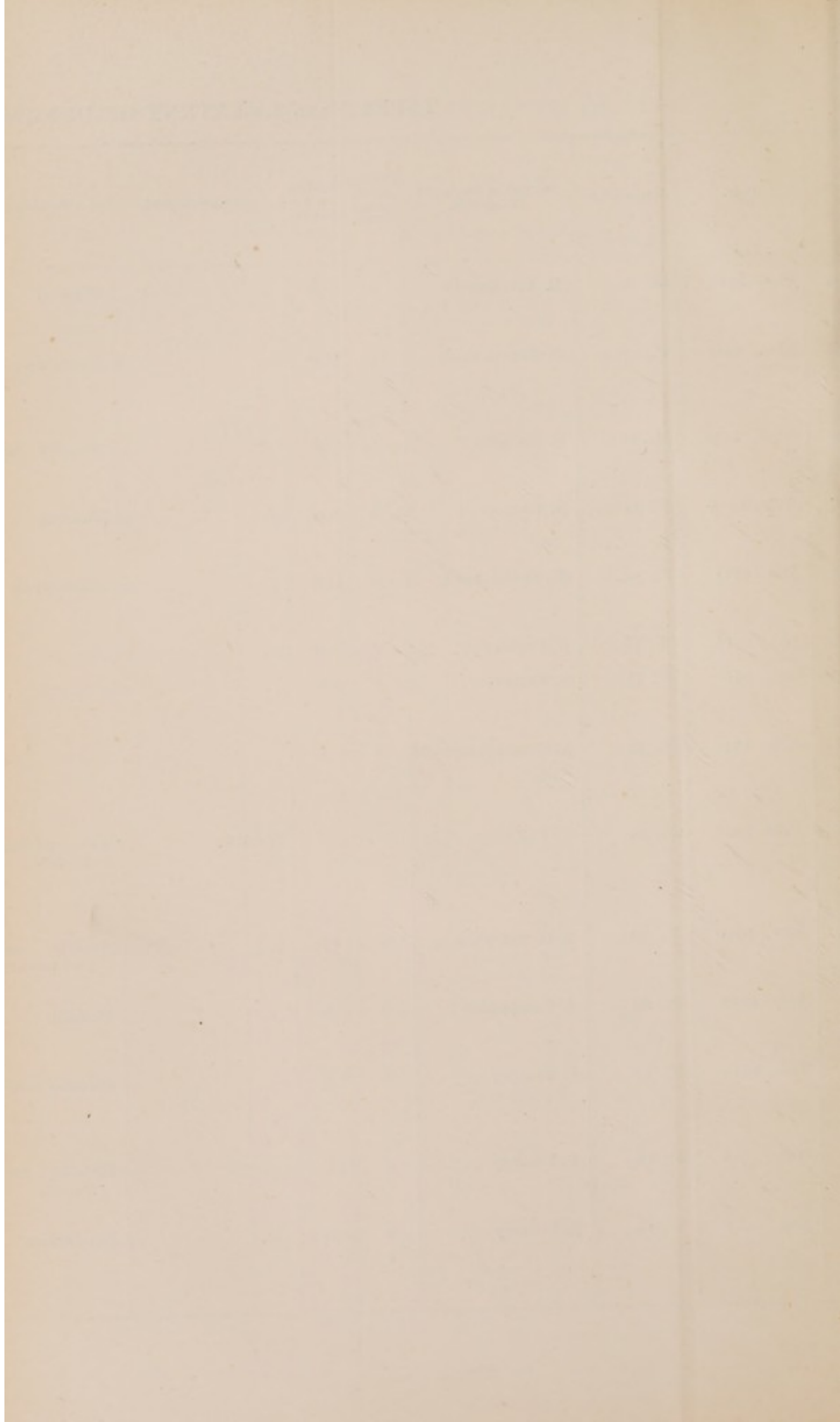
TYPES 3 AND 4.—EXTENT OF DISEASE LIMITED (NOT MORE THAN HALF LOBE). DURATION OF SYMPTOMS THREE TO TWELVE MONTHS—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Spontaneous Admissions.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.												Condition on Discharge.						
									No. of Weeks.	Test.			Treatment.				Sensitization (see p. 173).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.
										Preparation.	C.C.	Temperature.	Preparation.	Minimum.	No. of Doses.	Maximum.			Before.	During.	After.	Before.	After.	Symptoms.	Signs.	Spots.		1911.	1912.
30	July, 1911	F., 48	M. House work	o	+	For heart	For heart	Dispensary	22	TO	001	Diagn. NT+	PTO 001	14	-5	1	+9	Full	Full	Full	Fair	Better	None	None	Present	A	
31	July, 1911	M., 18	M. Hairdresser	o	+	Larynx		Dispensary	54	TO	001	NT+	PTO 0005	39	7	1-5-2		Full	Full	Full	Fair	Better	None	None	None	A	
32	Sept., 1912	F., 33	S. Domestic servant	o	o	Subfebrile	Dispensary	Dispensary	37	TAF	001	NT+ (local reaction)	PTO 001	21	1	1-0	+3	Off	In 1 mo. Full	Full	Fair	Good	None	None	None	A	
33	July, 1911	F., 37	M. House work	o	+	Febrile	For influenza	Dispensary	27	TO	001	101	PTO 001	13	-7		+11	Off	Part	Full	Poor	Good	None	None	None	A	
34	Nov., 1912	M., 19	S. Milkman	o	o			Dispensary	23	TAF	001	NT+ (local reaction)	PTO 001	20	-5	1-1		Full	Full	Full	Good	Good	None	None	None	A	
35	May, 1912	F., 21	S. Warehouse assistant	o	+	Larynx	Bronchitis	Dispensary	28	TAF	001	99-5	PTO 001	15	-5	1	+4	Off 2 years	Off	Fit	Fair	Good	None	None	None	A	
36	Nov., 1911	F., 22	S. House work	o	+			Dispensary	24	TAF	001	99-6	PTO 001	18	-8	1-0		Full	Full	Full	Fair	Good	None	None	None	A	
37	June, 1912	F., 26	S. Nurse	o	o			Dispensary	12	TAF	001	NT+ 102	PTO 001	17	-18	1-0	+2	Off 4 weeks	Off	Full	Good	Good	None	None	None	A	
38	July, 1911	F., 27	M. House work	o	o			Dispensary	24	TO	001	100-4	PTO 001	30	-6	1-0	+4	Full	Full	Full	Fair	Good	None	None	None	A	
39	July, 1911	M., 28	M. Labourer; army reservist	o	+	Larynx		Dispensary	16	TO	001	101-4	PTO 001	18	-4	1-0	+6	Full	Full	Full	Fair	Good	None	None	None	A	
40	Nov., 1911	M., 26	M. Groom	+	+	Larynx		Dispensary	36	TAF	001	NT+ 102	PTO 001	43	-18	3-1		Full	Full	Full	Good	Good	None	None	None	A	
41	July, 1912	F., 40	M. House work	o	+			Dispensary	13	TAF	001	NT+ 102	PTO 001	15	-5	1		Full	Full	Full	Fair	Good	None	None	None	A	
42	April, 1912	M., 18	S. Invalided R.N. boy	o	o		Hadar; tubercula	Dispensary 6 months, discharged well Dispensary 2 months Sanatorium 2 months	31				PTO 0025	19	-5	2-0		Off	Part	Full	Fair	Good	None	None	None	A	
43	June, 1911	M., 17	S. Shoemaker	o	+	Asthma and bronchitis		Dispensary	19-30				PTO 005	15	-9	0	+14	Off 7 weeks	Part in 1 mo.	Full	Poor	Fair	Asthma better	None	None	P	



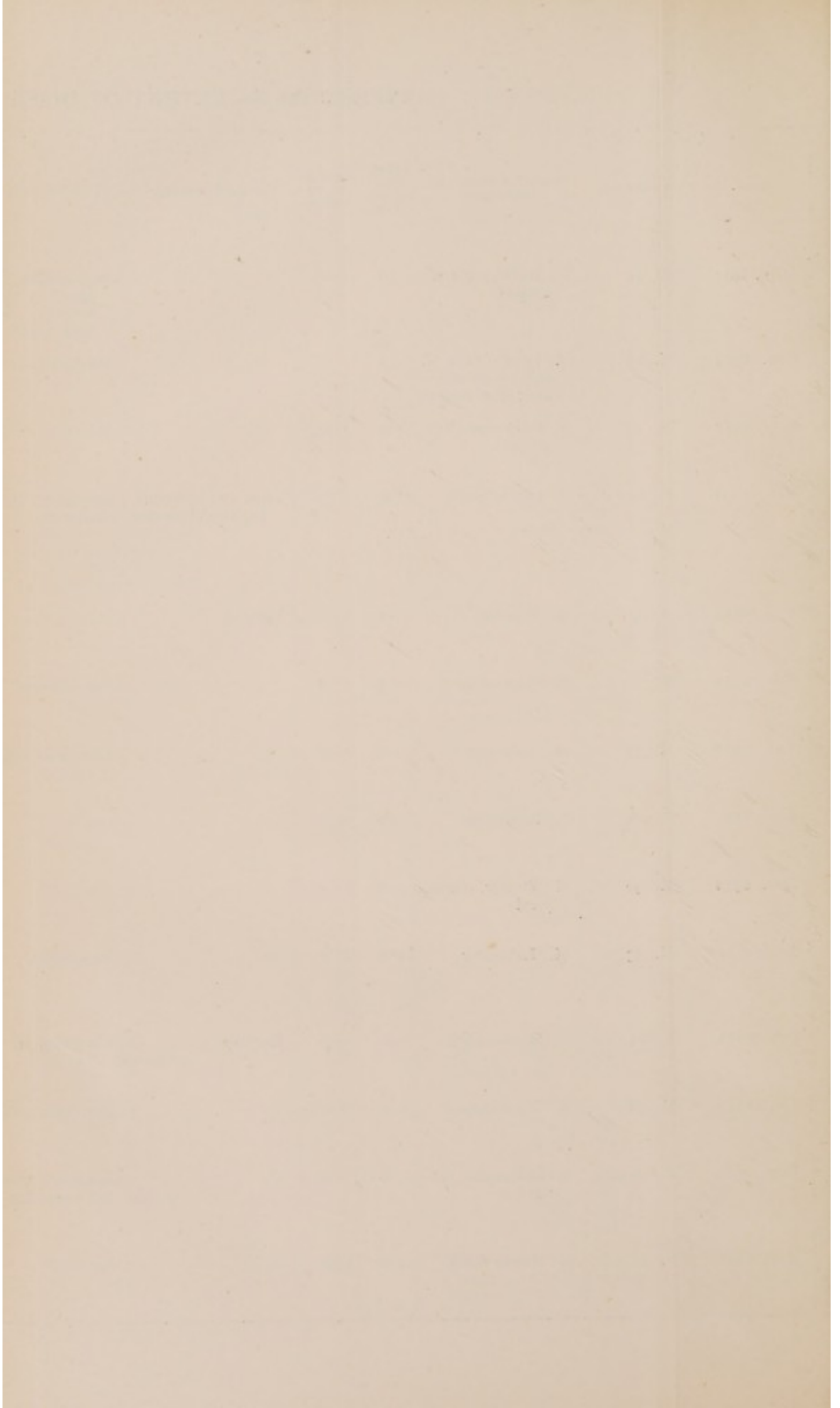
TYPES 3 AND 4.—EXTENT OF DISEASE LIMITED (NOT MORE THAN HALF LOBE). DURATION OF SYMPTOMS THREE TO TWELVE MONTHS—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli Found at any Time.	System on Admision.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.										
									No. of Weeks.	Preparation.	Tot.			Treatment.			Sensitivity (see pp. 272).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.		
											CC.	Tempera- ture.	Prepara- tion.	Minimum.	No. of Doses.	Maxi- mum.			Before.	During.	After.	Before.	After.	Symptoms.	Signs.	System.	1911.	1912.	
44	Oct., 1910	M., 29	M. Blacksmith	o	o		Pleurisy	Dispensary, 11 weeks; Winsley, 4 weeks; shelter	35	OT	-001	Degrec. Nil	PTO	-0025	34	7	3-1-0	+4	Off 3 mos. Winsley 4 weeks	Full	Fair	Good	None	None	None	A	A		
45	Mar., 1911	F., 37	M. House work	o	o		Bronchitis	Dispensary	36	OT	-0005	Nil	PTO	-001	29	5	1-0	+4		Part	Part	Full	Fair	Impr.	None	None	None	P	P
46	Sept., 1910	M., 17	S. Factory	o	o		Winsley; back 4 months	Dispensary	24	PTO	-009	NT+	PTO	-0025	19	5	2-0		Full	Full	Full	Good	Good	None	None	None	A	A	
47	Aug., 1910	F., 34	S. Factory	o	o		Pleurisy	Dispensary	27	OT	-001	To 996	PTO	-0025	26	2	1	+4	Full	Full	Full	Fair	Good	None	None	None	A	(Case 9)	
48	Jan., 1911	F., 30	M. House work	o	o		Sanatorium	Tuberculin	14	OT	-001	To 102	PTO	-0002	47	5	1	-2	Part	Part	Full	Fair	Good	None	None	None	A	A	
49	Jan., 1911	M., 18	S. Factory	o	o			Dispensary	10	PTO	-0035	To 100	PTO	-001	18	-009	1	-3	Full	Full	Full	Fair	Good	None	None	None	A	A	
50	Oct., 1910	F., 35	S. Factory	o	o			Tuberculin	34	OT	-001	To 100	PTO	-001	29	7	3-2-1		Fair		Impr.	Fair	Impr.	None	None	None	A	A	
51	Aug., 1910	F., 34	S. Domestic servant	o	o			Tuberculin; teeth	41	OT	-0001	To 102 1/2	PTO	-001	22	4	0		Off 2 years	Off	Part	Poor	Fair	Impr.	Impr.	None	B	B	
52	June, 1911	F., 35	S. Teaching	o	o	Neuritis	For phthisis when twenty	Tuberculin	27 20 8	OT	-0025 -0012 -0025	To 994 To 1002 To 1012	PTO PT TAF	-001 -01 -05	3 2 2	7 12 1	1		Off	Off	Full	Fair	Impr.	None	Still neuritis	B	B		
53	Nov., 1910	F., 30	S. House work	o	o		Attacks of asthma and pneumonia	Tuberculin	34	By Dr. 2nd and 3rd	Wilkinson: To 996 To 1002	PTO PT OT	-0025 -01 -1	22 14 7	6 75 8	0		Varies		Fair		Varies; still attacks of illness				B	B		
54	July, 1910	F., 26	S. Companion	o	o		Winsley	Tuberculin	32	OT	-001	To 994	PTO PT TAF	-002 -01 -001	23 9 5	5	3-0	+14	Full		Full	Fair	Good	None	None	None	A	A	
55	Dec., 1910	F., 17	S. Factory	o	o		Pleurisy one year ago	Dispensary	35	OT	-001 -005 -008 -01	Nil To 100	PTO PT OT	-0025 -01 -1	24 21 9	7 75 -05	1 till near end		Fair	Full	Full	Fair	Good	None	None	None	A	A	
56	Nov., 1910	F., 18	S. Factory	o	o		Pleurisy repeated; influenza	Dispensary	34	OT	-001	To 1004	PTO PT OT	-001 -01 -1	13 15 11	5 6 1	3-1-0 1-0	-10 +12	Full	Full	Full	Good	Good	None	None	None	A	A	
57	Jan., 1911	F., 16	S. Factory	o	o		Indigestion	Dispensary	32	OT	-001 -0025 -0125 -006	To 99 To 992 To 99 To 1006	PTO PT OT	-001 -01 -1	25 15 11	7 6 1	1-0	+6 +7	Full	Full	Full	Good	Good	None	None	None	A	A	



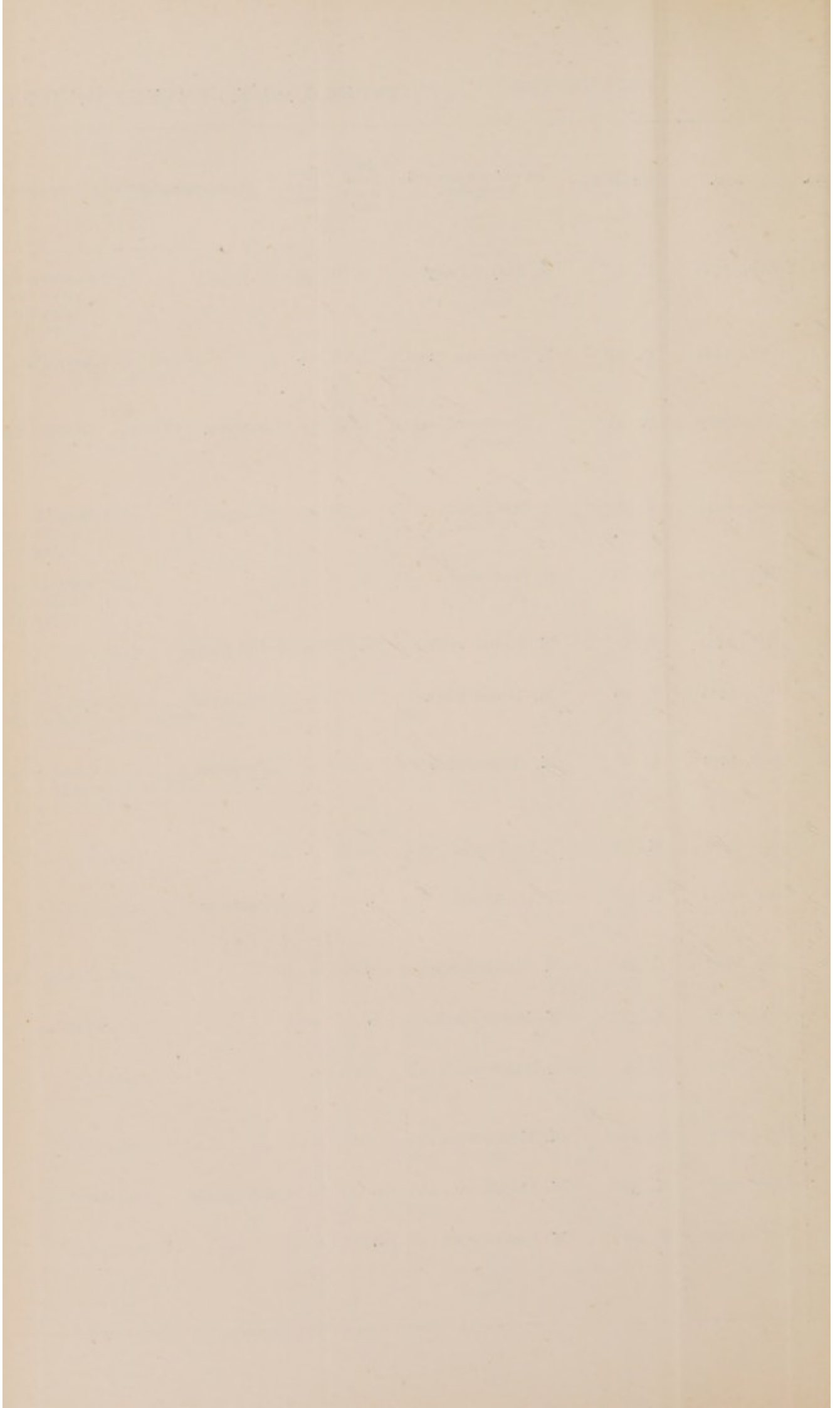
TYPES 5 AND 6.—EXTENT OF DISEASE LIMITED (NOT MORE THAN HALF LOBE), DURATION OF SYMPTOMS (OVER TWELVE MONTHS).

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle bacilli at any time.	System in Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.											Condition on Discharge.							
									Test.			Treatment.				Sensitivity (see p. 175).	Weight (Gain or Loss in Lbs.).	Working Capacity.			General Condition.		Active Disease after Course.			Summary.	
									No. of weeks.	Preparation.	C.C.	Temperature.	Preparation.	Minimum.	No. of Doses.			Maximum.	Before.	During.	After.	Before.	After.	Symptom.	Signs.		Spot.	1911.	1913.
38	Aug., 1911	M., 34	M. Dockyard time-keeper	o	+		Sanatorium 2 years ago; no tub. bacilli found; now getting cough again	Dispensary	30	2nd TAF	001	100	PTO 001 PT 04 TAF 04	28 12 11	-3 -4 -9	1		Full	Full	Full	Fair	Good	None	None	Present	A	
39	Dec., 1911	M., 36	M. Invalided R.N. sick-berth steward; storekeeper	+	+		Haslar; tuberculin	Dispensary	18				PTO 005 PT 01 OT 01	11 11 6	-9 -6 1	1	-6	Full	Full	Full	Fair	Good	None	None	None	A	
60	July, 1911	M., 23	S. Dockyard shipwright	o	o			Dispensary	33	OT	001	101	PTO 0005 PT 02 OT 01	20 14 9	1 -7 1	0-1		Full	Full	Full	Fair	Good	None	None	None	A	
61	Nov., 1911	F., 16	S. House work	+	+	Pain and thickening round caecum	Operation for cervical glands	Dispensary 6 weeks Langstone 2 weeks Dispensary 10 weeks Interval 8 weeks Dispensary 8 weeks Sanatorium 1 month	26	TAF	001	NT+	PTO 0002 PT 01 TAF 01	24 9 15	-5 -15 1-2	1-0	+4	Unfit	Part	Fit	Fair	Fair	None	None	None	A	
62	Aug., 1912	F., 24	S. Teacher	o	o	Larynx		Dispensary	19	TAF	005	NT+	PTO 0002 PT 01 OT 01	26 12 10	-6 -5 -8	1-0	-4	Full		Full	Good	Good	None	None	None	A	
63	Feb., 1912	F., 21	S. Stay factory	o	o		For anaemia	Dispensary; teeth attended to	32	TAF	001	99-6 (focal reaction)	PTO 0014 PT 04 OT 01	27 11 8	-9 -9 -9	2	+4	Part	Part	Full	Fair	Fair	None	None	None	A	
64	Aug., 1911	M., 35	M. Labourer	o	+		Pneumonia 17 months ago	Dispensary	36	TO	001	NT+	PTO 001 PT 01 OT 01	24 22 10	-5 -9 1	1	+4	Full		Full	Fair	Good	None	None	None	Later developed G.P.I.	A
65	Jan., 1912	F., 16	S. Boxmaker	o	+			Dispensary	27	2nd PTO	002	102-2	PTO 001 PT 01 OT 02	25 17 5	-7 1 1	1-0	+3	Full		Full	Good	Good	None	None	None	A	
66	Dec., 1911	M., 40	M. Driller, dockyard	o	o			Dispensary	19	TAF	001		PTO 001 PT 01 TAF 01	19 7 1	-7 -6 -6	1	+3	Full		Full	Good	Good	None	None	None	A	
67	April, 1912	M., 33	M. Labourer	o	+		Bronchitis	Dispensary	28	PTO TAF PTO	001 0004 002	NT+	PTO 001 PT 01 OT 01	21 14 5	-66 -13 -16	1-0	+2	Full	Full	Full	Poor	Good	None	None	None	A Left town	
68	Oct., 1912	F., 24	S. House work	o	o	Larynx	For neuritis	Dispensary; country while attending	27	3rd TAF	01	99-6 (focal reactor)	PTO 001 PT 01 OT 01	17 12 9	-5 -6 1	1-0	+2]	Off		Fit	Poor	Fair	None	None	None	A	
69	Jan., 1912	M., 38	M. Timekeeper	o	+		For bronchitis	Dispensary	29	3th PTO	006	99-6	PTO 001 PT 01 TAF 04	20 10 10	-7 -24 1	1-0	+6	Off	Full	Full	Fair	Good	None	None	None	A	
70	July, 1912	F., 28	S. Domestic servant	o	o		Sanatorium 6 months 3 years ago	Dispensary Care Committee	18	4th PTO	007		PTO 002 PT 01 TAF 01 OT 03	18 6 2 4	-44 -2 -9 -6	1	+8	Off	Off	Full	Fair	Good	None	None	None	A	
71	Mar., 1912	F., 30	S. House work	o	o			Dispensary	32	TAF	001	NT+ (focal reaction)	PTO 001 PBE 00001 KE 01	6 43 2	-801 -52 -2	1-0 1-2 3-1	+4	Full	Full	Full	Good	Fair	None	None	None	A	



TYPES 5 AND 6.—EXTENT OF DISEASE LIMITED (NOT MORE THAN HALF LOBE). DURATION OF SYMPTOMS OVER TWELVE MONTHS—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	T-tubercle health at any time.	Scars on Ad. minis.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.												Condition on Discharge.							
									No. of Weeks.	Test.			Treatment.			Sensitivity (per 100)	Weight Gain or Loss in Lbs.	Working Capacity.			Gen. Condition.		Active Disease after Contr.			Summary.		
										Preparation.	C.C.	Temperature.	Preparation.	Amount.	No. of Doses.			Maxim.	Before.	During.	After.	Before.	After.	Symptoms.	Signs.		Spines.	
72	Feb., 1912	F., 37	S. Stay factory	o	+		Hemoptysis at 19; bronchitis and pleurisy two years ago	Dispensary	33	TAF	-001	Dign. 992 (local reaction)	PTO PT TAF OT	-001 -015 1 1	34 13 1 1	-6 1 1 -6	1-0	+10	Full	Full	Full	Fair	Good	None	None	None	A	
73	Dec., 1911	F., 22	S. Domestic servant	o	+		Delicate	Dispensary; married during course	25	TAF	-001 -005	105	PTO PT OT	-0005 -01 -1	23 14 7	-44 1 1		-5	Full	Full	Full	Fair	Good	None	None	None	A	
74	Aug., 1911	M., 21	S. Dockyard upholsterer	o	+	Larynx	Pleurisy two years ago	Holiday 3 weeks Dispensary	29	rd PTO	-008	101	PTO PT OT TAF	-002 -01 -1 -8	21 16 3 3	-5 -9 -8 -2	1-1-1	+10	Off 2 weeks	Full	Full	Fair	Good	None	None	+	A	
75	Mar., 1913	F., 23	S. Machinist	o	o	Larynx	Hospital out-patient; sanatorium 1 mo.; tuberculin	Dispensary	12			No reactions	OT KE	-01 -1	14 4	1 3	Had been sensitive		Off 2 years	Fit	Full	Good	Good	None	None	None	A	
76	Feb., 1913	F., 22	S. Machinist	o	o		Sanatorium 4 mos.; hospital out-patient; tuberculin	Dispensary	12			No reactions	OT	-01	18	-8	Had been sensitive		Off 2 years	Fit	Full	Good	Good	None	None	None	A	
77	Nov., 1911	F., 27	M. House work	o	o	Old glands		Dispensary	21	th PTO	-0045	103	PTO PT	-001 -01	39 4	-9 -36	3-0		Full	Full	Full	Good	Good	None	None	None	A	
78	July, 1911	F., 26	M. House work	o	+	Pregnant	One year ago for tightness of chest	Dispensary; interval after 7 months for confinement	20 46	TO ..	-001 -003	NT+ 102	PTO PT TAF	-002 -01 -01	39 16 7	-7 -7 -8			Pregnant		Full	Fair	Good	None	None	None	A	
79	July, 1911	F., 28	M. House work	o	+	Pregnant	Pleurisy eight years ago	Dispensary; interval after 5 months for confinement	37	TO ..	-001 -003	99-6 100-6	PTO PT TAF OT	-001 -001 -001 -01	39 14 9 20	-74 -91 -91 -1	1-2-1 1-0		Full	Full	Full	Pregnant	Good	Slight cough	None	+	A	
80	Jan., 1912	M., 18	S. Coal store	o	+			Dispensary	15	TAF	-001	99-2 100-6	PTO	-001	22	-01			Full	Full	Full	Fair	Good	None	None	None	A	
81	Nov., 1911	M., 22	S. Dockyard	o	o	Deafness		Dispensary	28	TO	-001	101	PTO PT TAF	-0005 -01 -01	39 9 4	-86 -2 -03	1	+3	Full	Full	Full	Good	Good	None	None	None	A	
82	July, 1912	F., 41	M. House work	o	+		Pleurisy 11 years ago	Dispensary	32	TAF	-001	99-5	PTO PT	-0002 -015	37 9	-7 -66	4-0-1		Full	Full	Full	Fair	Fair	None	None	None	A	
83	Feb., 1912	F., 33	M. House work	o	+		Pleurisy	Dispensary	6	TAF	-001	NT+ 99-6	PTO	-001	9	-01	1		Full	Full	Full	Poor	Fair	None	None	None	A	
84	July, 1912	F., 24	S. House work	o	o			Dispensary	15	TAF	-001	NT+ 102	PTO	-001	18	-5	1	+7	Off	Fit	Full	Fair	Good	None; head-aches	None	None	None	A
85	Dec., 1911	F., 30	M. House work	o	+			Dispensary	20	TAF	-001	99	PTO PT	-001 -01	21 7	-9 -14	1		Full	Full	Full	Fair	Good	None	None	None	A	
86	June, 1911	M., 38	M. Decorator	o	o	Indigestion	Lead colic	Dispensary	20	TO ..	-001 -003	NT+ 102	PTO PT	-002 -01	25 5	-5 -075	1		Full	Full	Full	Fair	Fair	None	None	None	A	
87	Nov., 1912	F., 28	M. House work	o	+			Dispensary	15	TAF	-001	NT+ 102 (local reaction)	PTO	-001	24	-32			Full	Full	Full	Fair	Good	None	None	None	A	



TYPES 5 AND 6.—EXTENT OF DISEASE LIMITED (NOT MORE THAN HALF LOBE). DURATION OF SYMPTOMS OVER TWELVE MONTHS—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle bacilli in sputum or A.S. reaction.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.									
								No. of Weeks.	Test.			Treatment.			Sensibilization (see p. 175).	Weight gain or loss in lbs.	Working Capacity.			General Condition.		Active Disease After Course.			Summary.		
									Preparation.	C.C.	Temperature.	Preparation.	Substance.	No. of Doses.			Insol.	During.	After.	Before.	After.	Symptoms.	Signs.	System.		1911.	1912.
88	Nov., 1912	F., 23	S. Draper's assistant	0	0	Larynx	Dispensary	22	TAF " " " "	-002 -007 -001	Degrees 99.8 103 Focal reaction	PTO PT	-001 -001	27 5	'4 '16	1		Off 2 weeks	Off	Full	Fair	Good	None	None	None	A	
89	Feb., 1912	M., 35	M. Mason (R.E.)	0	0	Malaria in South Africa	Dispensary	26	TAF " " " "	-001 -005 -001	100 103	PTO OT	-001 -001	25 12	'2 '1	1-1	+8	Full	Full	Full	Good	Good	None	None	None	A	
90	June, 1911	F., 46	M. House work	0	+		Tooth Country Dispensary	31	TO " " " "	-001 -001	99.8	PTO PT TAF	-002 -001 -001	31 5 23	'74 '24 '35	1	+15	Part		Full	Poor	Fair	None	None	None	A	
91	June, 1911	F., 24	S. House work	0	0	Otitis media	Double mastoid	29	TO " " " "	-003	99.4	PTO PT OT	-001 -02 -1	21 14 6	'7 '9 '5	1	+11	Oil		Poor	Poor	Fair	Discharge from ear	Cephalo-tons in lungs	None		P
92	Nov., 1911	F., 28 Case 43 p. 117	M. House work	+	+	Bronchitis (in firmity)	Dispensary 6 weeks Observation hospital weeks Dispensary Hospital out-patient (for syphilis)	43	3rd PTO " " " "	-0045	101	PTO PT TAF OT TAF	-002 -01 -1 -14	31 15 11 4	'7 '46 '44 '6	2-1		Fair		Full	Poor	Fair	None	None	None	P	
93	Sept., 1911	M., 33	S. Insurance agent	0	+	Asthma	Bronchitis and asthma	38				PTO PT KE TAF PBE	-0005 -01 -01 -001 -001	3 8 5 16 14	-0015 '1 '93 '1 '11	1		Part		Part	Poor	Poor	Im- proved No fur- bercle	Re- lapsed signs bacilli	+		S

TYPES 7 AND 8.—LESION EQUALS MORE THAN HALF AND NOT MORE THAN ONE LOBE. DURATION UNDER THREE MONTHS.

94	Nov., 1910	M., 19	S. Factory	0	0	Neuritis	Dispensary	19	OT " " " "	-001- -005 -01	Nil	PTO PT	-005 -01	14 14	'7 '3	1-0	+3	Full	Full	Full	Good	Good	None	None	None	A	A	
95	Sept., 1910	M., 19 Case 14, p. 93	S. Factory	0	0		Dispensary 2 weeks Windsley 6 weeks Dispensary	29	PTO " " " "	-0025	To 100	PTO PT TO	-001 -02 -1	19 19 11	-65 '8 '1	0	+18 -6	Off 8 weeks	Returned in 2 mos.	Full	Poor	Good	None	None	None	A	A	
96	Aug., 1910	M., 18 Case 15, p. 94	S. Clerk	0	0		Dispensary Windsley Dispensary Surgical Dispensary	41 16 1/2	PTO " " " "	-006	To 100	PTO PT TO	-0025 -01 -1	35 25 10	'5 '7 '625	1-2-2	+6 101 G. +10 2nd c.	Full	Oil 2 mos.	Full	Poor	Fair	None	None	None	A	A	
97	July, 1910	F., 18	S. House work	0	0	Subfebrile	Anaemia	31	Von Pirquet positive			PTO PT TO	-002 -04 -1	33 10 10	'65 '75 '8	1-0	+5	Part	Full	Full	Poor	Fair	None	None	None	A	A	
98	July, 1910	F., 33 Case 13, p. 93	S. Factory	0	0	Lupus of nose	For lupus	47	PT " " " "	-0015	To 100	PTO PT PT PT TO	-0015 -015 -02 -005 -05	14 2 2 28 23	'15 '015 '7 '8 '1	1	+1	Oil 2 weeks	Part	Full	Poor	Fair	None in lung; lupus improves	None	None	None	B	B

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311

LECTURE 1

LECTURE 2

LECTURE 3

LECTURE 4

LECTURE 5

LECTURE 6

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LECTURE 10

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LECTURE 29

LECTURE 30

LECTURE 31

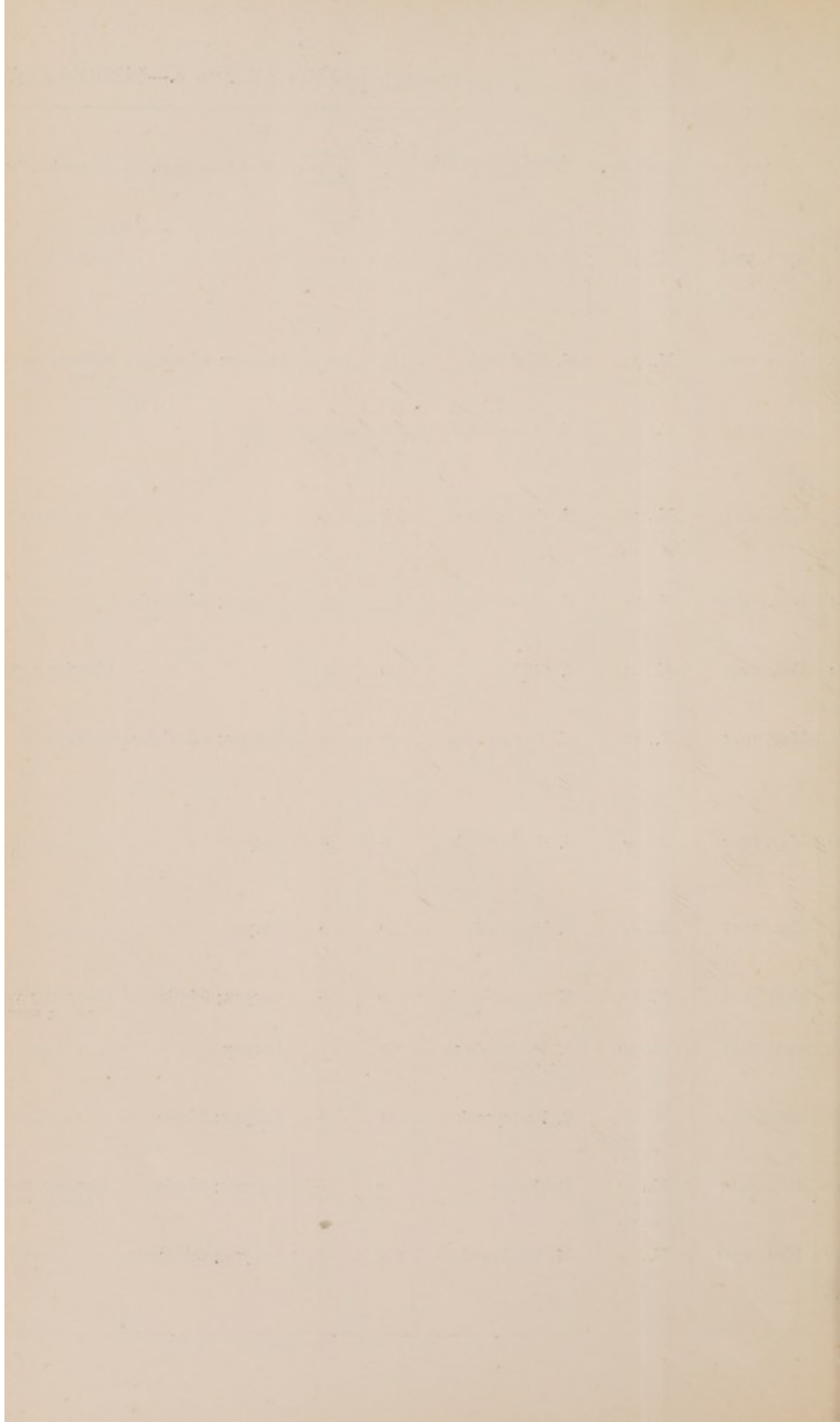
LECTURE 32

LECTURE 33

LECTURE 34

TYPES 7 AND 8.—LESION EQUALS MORE THAN HALF AND NOT MORE THAN ONE LOBE. DURATION UNDER THREE MONTHS.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli of any Time.	Spitting on Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.												Condition on Discharge.								
									No. of Weeks.	Test.			Treatment.				Sensitization (see p. 125).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.		
										Preparation.	C.C.	Temperature.	Preparation.	Minimum.	No. of Doses.	Maximum.			Before.	During.	After.	Before.	After.	Symptoms.	Signs.	Sputum.	1911.	1912.	
99	April, 1911	M., 41	M. Woodman	o	o			Dispensary	32	OT	-001	To 100	PTO PT TO PT TO	-002 -054 -01 -01 -1	33 9 1 5 4	4 7 1 -6 -4	2-1-0	+7	Full	Full	Full	Fair	Good	None	None	None	A	A	
100	June, 1912	M., 33	M. Dockyard	o	+	Larynx; febrile	Hemorrhage 8 days ago	Langston 7 weeks Dispensary 18 weeks Care Committee	25	4th PTO	-005	99-8	PTO PT OT	-001 -01 -1	18 12 10	-66 -45 1	1-0	+5	Off	After 2 mos. full	Full	Fair	Good	None	None	None	A		
101	Jan., 1912	F., 28	M. House work	o	o			Dispensary	25	ind TAF	-001 -005 -007	100	PTO PT OT TAF	-001 -015 -25 -25	10 11 1 6	-6 -56 1 1-2	0-1-0		Full	Full	Full	Good	Good	None	None	None	A		
102	Feb., 1912	M., 36	M. Corporation sweeper	+	+			Dispensary	30	TAF	-001 -005 -01 ind PTO	1004	PTO PT OT TAF	-001 -01 -05 -05	23 13 -5 7	-1 -54 1 -9	2-1	+16½	Off 1 mo.	Soon returned	Full	Fair	Good	None	None	None	A		
103	Nov., 1911	F., 38	M. House work	o	+	Larynx; subfebrile		Dispensary Care Committee	28	nd PTO	-0014	99-6	PTO PT OT	-001 -01 -1	25 17 8	-8 1 1-2	3-0-0 1-0-0		Part		Full	Poor	Fair	None	None	None	A		
104	Dec., 1911	M., 21	S. Clerk	o	+		Pleurisy 3 months ago	Dispensary	38	6th PTO	-0016	100-4	PTO PT OT	-0005 -01 -1	36 14 10	-7 1 1-6	1-2-0 3-1-0	+4	Full	Full	Full	Fair	Good	None	None	None	A		
105	May, 1912	F., 42	M. House work	o	+	Larynx; subfebrile	Dedicate	Dispensary	35	rd PTO	-004	1-1	PTO PT OT PBE KE	-001 -01 -1 -01 -01	23 7 1 11 14	-6 -64 1 -7 1	2-1-0	+4	Full	Full	Full	Fair	Good	None	None	None	A		
106	May, 1912	F., 20	S. House work	o	+	Larynx		Dispensary	20	TAF	-001 -003	NT+ NT+ (local action)	PTO PT OT	-002 -01 -1	18 7 1	-5 -1 1	1-0		Full	Full	Full	Fair	Good	None	None	None	A		
107	Oct., 1911	F., 29	S. Dressmaker	o	o	Larynx		Dispensary	26	TO	-001	101	PTO PT TAF	-001 -01 -01	29 4 5	-6 -93 -93	1-1-1	+1	Full	Full	Full	Fair	Good	None	None	None	A		
108	Sept., 1912	F., 27	M. House work	o	+	Larynx; febrile	Pleurisy 3 years ago and 3 months ago	Dispensary	22			Febrile	PTO PT OT	-001 -01 -1	24 14 5	-44 -5 -3	1	+14	Off	Full	Full	Fair	Good	None	None	None	A		
109	Oct., 1912	M., 19	S. Founder's apprentice	o	+	Larynx		Dispensary	28	PTO	-001	99-6	PTO PT OT	-001 -01 -1	34 12 1	-32 -5 1	1-1-1	+6	Full	Full	Full	Fair	Good	None	None	None	A		
110	Nov., 1911	M., 17 Case 45, p. 118	S. Pastrycook	+	+	Larynx; febrile		Dispensary	33				PTO PT OT	-001 -01 -1	22 12 15	-8 -9 2	0-1	+11	Off	Full	Full	Fair	Fair	None	None	+ No TB	P		
111	Oct., 1912	M., 27 Case 16, p. 96	Dockyard	o	+	Larynx; febrile	Pleurisy and bronchitis 7 weeks ago	Dispensary	35	rd PTO	-004	100-4	PTO PT OT	-001 -01 -1	26 13 13	-5 -52 -52	4-0	+3	Off 7 wks.	Full	Full	Poor	Fair	None	Larynx still in- flamed!	+	P		
112	Nov., 1911	M., 44	M. Dockyard	+	+	Larynx; subfebrile		Dispensary	61	6th PTO	-0075	99-8	PTO TAF PBE KE	-001 -01 -01 -06	20 11 11 11	-63 -18 -6 -4	0-2	+7	Full	Full	Full	Fair	Good	Little cough	Still crepitations	None		P	



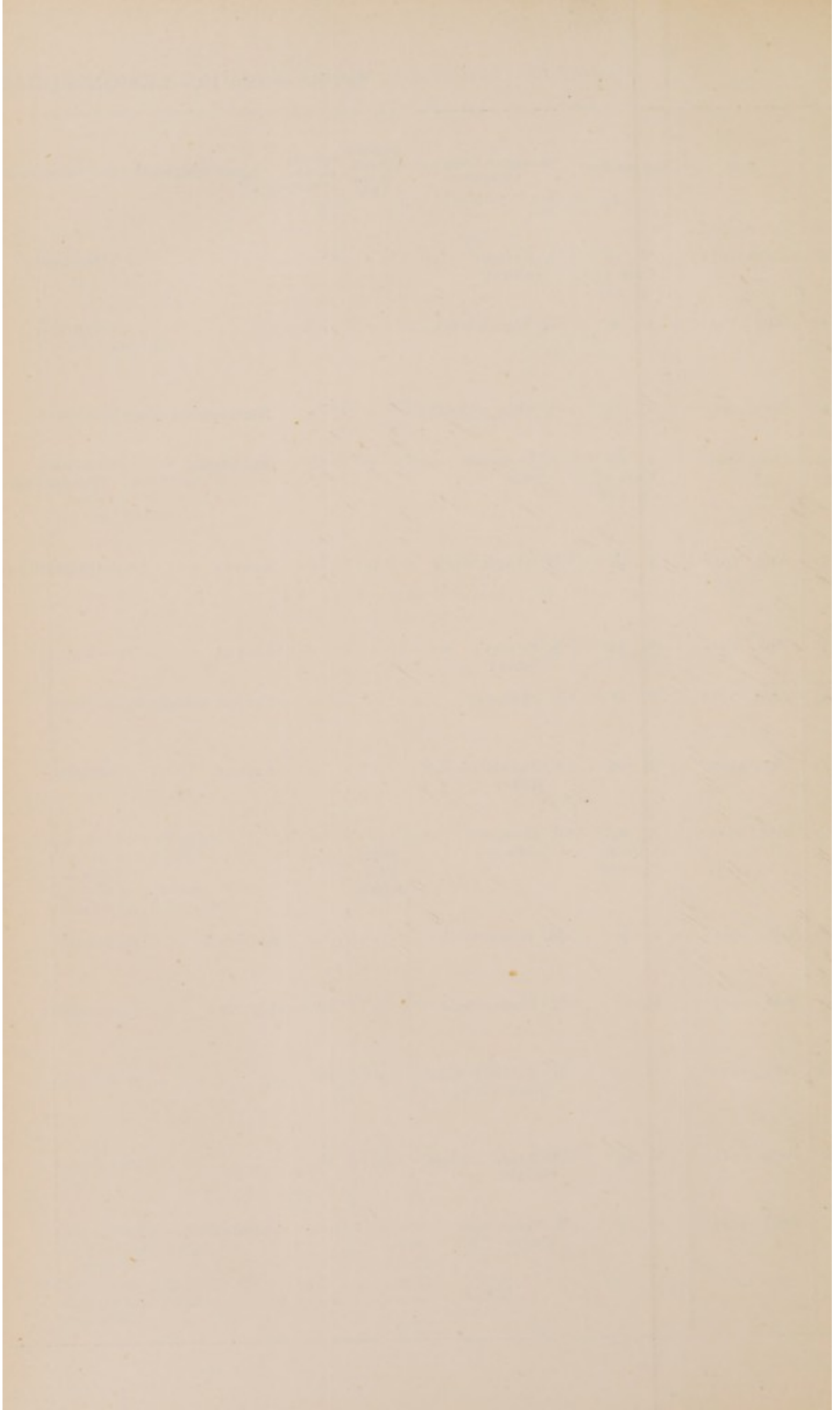
TYPES 9 AND 10. LESION EQUALS HALF LOBE AND NOT MORE THAN ONE LOBE. DURATION THREE TO TWELVE MONTHS

No.	Date	Sex and Age	Married or Single and Occupation	Tubercle bacilli at any time	Sputum on admission	Special Symptoms	Previous Treatment	General Course of Treatment	Tuberculin Administration										Condition on Discharge									
									No. of Weeks	Test			Treatment				Sensitivity (resp. 275)	Weight Gain or Loss (in Lbs.)	Working Capacity			General Condition		Active Disease after Course			1911	1912
										Preparation	C.C.	Temperature	Preparation	Minimum	No. of Doses	Maximum			Before	During	After	Before	After	Symptoms	Signs	Sputum		
113	Mar., 1911	M., 25	M. Quarryman	0				Dispensary	32	OT	001 005	Nil To 102	PTO PT TO	001 001 01	31 15 13	3 5 1	3-1-0	-4	Off 6 mos.	Part	Full	Fair	Good	None	None	None	A	A
114	Dec., 1911	M., 39	M. Porter; ex-soldier	+	+		Hemorrhage	Tuberculin by own doctor	41				PTO PT TO	001 001 01	8 14 13	009 2 2	0		Full	Full	Full	Good	Good	None	None	None	A	A
115	Dec., 1910	F., 33 Case 17, p. 97	S. Factory	0	0	Otitis media; larynx		Dispensary 17 weeks Burnham 2 weeks Dispensary 15 weeks Winsley 2 months Dispensary	50			NT+	PTO PT TO	001 001 02	91 14 9	35 55 9	1-0	+3	Full Winsley 2 mos.	Off 1 mos.	Full	Poor	Poor	Uncertain	None	None	B	B
116	Sept., 1900	M., 17	S. Factory	0	0			Winsley	36	PTO	005	To 100	PTO PT TO	001 002 01	25 12 17	85 75 1	1-0	+1 +2	Full	Full	Full	Fair	Fair	None	None	None	A	A
117	July, 1910	F., 35 Case 18, p. 96	M. House work	0	0			Dispensary	24			NT	PTO PT TO	001 002 02	22 12 12	4 3 3	1	+6	Full	Full	Full	Fair	Fair	None	None	None	A	slight relapse
118	Nov., 1911	F., 29 Case 55, p. 128	M. House work	+	+	Subfebrile	Under doctor	Dispensary 6 months Sanatorium 1 month Dispensary 2 1/2 months Care Committee	12	6th PTO	0046	Febrile 101	PTO PT TAF	001 001 01	17 18 16	31 32 12	1-1-0		Poor	Part	Fair	Poor; sub-febrile	Good	Polvic trouble	None	None	A	
119	Sept., 1911	F., 19 Case 19, p. 97	S. Shop	0	0			Dispensary	36				PTO OT	001 001	1 1			-3	Off	Part	Full	Poor	Fair	None	None	None	A	
120	July, 1911	M., 20	S. Invalided R.N. E.R.A.	+	0	Larynx	Haslar Operation Hospital for fistula	Dispensary	38				PTO PT OT TAF	001 002 01 01	26 19 2 14	73 55 14 9		+2	Off		Full	Fair	Good	None	None	None	A	
121	Mar., 1912	M., 34	M. Invalided R.N. A.B.	+	+		Haslar; tuberculin	Dispensary	25				PTO PT OT TAF	001 001 01 01	11 15 6 12	10 12 12	0-1-0	+2	Off	Full	Full	Good	Good	None	None	None	A	
122	July, 1912	F., 48	M. House work	0	+			Dispensary	11	5th TAF	008	102 1/2	PTO PT OT	001 001 01	13 7 11	45 31 6	1-2-1	+0 1/2	Poor		Full	Poor	Good	None	None	None	A	
123	Feb., 1912	F., 34	M. Charwoman	0	0		Lungs bad before and after last confinement one year ago	Dispensary; interval after 7 months for confinement	23	2nd PTO	002	99 1/2	PTO PT TAF	001 001 01	21 13 7	44 27 66	1-0		Part		Full	Poor	Good	None	None	None	A	
124	Jan., 1912	M., 26	S. Dockyard shipwright	0	+	Larynx		Dispensary	19				PTO PT TAF	001 001 01	20 17 5	6 5 5	1	-4	Full	Full	Full	Fair	Good	None	None	None	A	
125	April, 1912	F., 30	M. House work	0		Pregnant	Cough during last pregnancy one year ago; pneumonia and haemoptysis after. Doctor said phthisis	Dispensary; interval for confinement after 4 months	34	(After 2 TAF)	does PTO	NT+	PTO PT TAF OT	001 001 01 01	16 16 3 20	44 1 8 5	1-0		Pregnant		Full	Fair	Good	None	None	None	A	
126	Mar., 1912	F., 29	S. Domestic servant	0	+	Larynx		Dispensary; silence ordered	31	TAF	001	NT+ (focal reaction) 99 1/2	PTO PT TAF OT	001 001 01 01	11 16 1 1	7 1 1 1	+1	Part		Full	Fair	Good	None	None	None	A		

The first part of the report
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TYPES 9 AND 10.—LESION EQUALS HALF LOBE AND NOT MORE THAN ONE LOBE. DURATION THREE TO TWELVE MONTHS—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Sputum on Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.									
									Test.			Treatment.				Smaller-ness (see p. 375).	Weight Gain or Loss (in Lbs.).	Working Capacity.			General Condition.		Active Disease after Course.			Summary.		
									No. of Weeks.	Preparation.	C.G.	Temperature.	Preparation.	Minimum.	No. of Doses.			Maximum.	Before.	During.	After.	Before.	After.	Symptoms.	Signs.		Sputum.	1941.	1942.
127	June, 1911	M., 19	Case 53, p. 127	S. Greaser on railway	+	+	Infirmary	Dispensary	26	TO	'0005	102	PTO PT OT	'001 '02 '2	28 8 3	1 -8 1		+22	Off 3 mos.	Returned	Full	Poor	Good	None	None	None	A	
128	Nov., 1911	F., 26		M. House work	+	+	Infirmary	Dispensary Care Committee	41	2nd PTO	'001	100	PTO PT TAF OT	'002 '01 '01 '1	15 10 19 1	-6 -2.5 1 .5	3-1	-7	Off	Full	Full	Fair	Good	None	None	None	A	
129	May, 1912	M., 19		S. Shop assistant	o	+	Hæmoptysis, slight	Dispensary	20	TAF	'001	102	PTO PT	'0001 '015	26 8	-5 .11	1-0	+6	Full	Full	Full	Fair	Good	None	None	None	A	
130	Oct., 1911	F., 27	Case 57, p. 128	S. Domestic servant	+	+	Sublelele	Country Sanatorium 3 months Dispensary 7 months Interval Langstone 7 weeks Care Committee	35	3rd PTO	'002	99-8	PTO PT PBE	'001 '01 '01	12 15 12	-5 .5 -5.6	2-1	-6	Off 1 year	Off	Full	Fair	Good	Slight cough; blood-stained sputum	None	+ No TB	P	
131	Aug., 1912	F., 42		M. House work	o	+	Larynx	Hospital out-patient	26	TAF	'001	NT + 100-6 Focal	PTO PT	'0002 '01	49 19	-5 -94.5		+4	Off	Fair	Fair	Poor	Fair	Slight cough; voice varies	None	None	None	P
132	Nov., 1912	M., 19		S. Grocer's assistant	o	o	Larynx	Dispensary	19	TAF	'001	99	PTO PT	'003 '012	26 5	-4 -95	2-0		Full	Full	Full	Fair	Good	None	None	None	A	
133	Sept., 1911	F., 21		S. Millinery	o	o	Larynx sublelele	Dispensary	33	TO	'001	NT + 99-4 101-4	PTO PT OT	'001 '01 '01	17 18 15	-6 -5 -5	1		Off	Part	Full	Fair	Fair	None	None	None	P	
134	Oct., 1912	M., 20		S. Invalided R.N. stoker	+	+	Larynx	Haslar	25		'001	100	PTO PT OT	'001 '01 '1	16 12 8	-7 -5 1	1	-41	Off	Part	Full	Fair	Good	None	None	+ 4TB	P	
135	Mar., 1912	F., 26	Case 49, p. 122	S. Domestic servant	+	+	Sublelele	Langstone 2 months Country 2 months Dispensary Langstone 3 weeks Sanatorium 8 months	3	1st PTO	'002	100	PTO PT OT	'001 '01 '1	22 12 9	-6 -9 -1	3-2-1	+12	Off	Off	Full	Poor	Good	None	None	None	P	
136	Oct., 1911	F., 41		M. House work	+	+	Sublelele	Dispensary	26	4th PTO	'0045	100	PTO PT OT	'001 '05 '1	26 12 13	-4 -7.2 2	2-1	+2	Fair		Full	Fair	Good	None	None	+ No TB	P	
137	Feb., 1912	F., 32		M. House work	o	+	Larynx	Dispensary	31	3rd PTO	'003	101	PTO PT OT	'001 '01 '1	25 19 8	-6 -8.4 1	2-0		Fair		Full	Fair	Fair	None	None	None	P	
138	Aug., 1911	M., 39		M. R.M.S.P. Co., Seaman	o	+	Larynx	Dispensary	27	(After TO)	3 doses '001	PTO 99-6	PTO PT OT	'002 '01 '1	16 6 6	-6 -6 1	1-0		Off	Off	Full	Poor	Fair	None	None	None	P	
139	Aug., 1911	M., 40		Dockyard shipwright	+	+	Larynx	Dispensary	47	4th PTO	'0075	100	PTO PT TAF	'002 '02 '01	21 14 34	-1 -2 1-8	1-2	+1	Full	Full	Full	Fair	Good	Little cough	None	+ No TB	P	
140	Sept., 1911	F., 25		M. Music-hall singer	+	+	Larynx	Dispensary 3 months Interval for confinement Dispensary 3 months Langstone 3 weeks Dispensary	49	TO	'001	NT +	PTO PT TAF	'002 '01 '01	18 11 11	-5 -5 -2.5	1		Off		Full	Fair	Good	None	None	None	P	

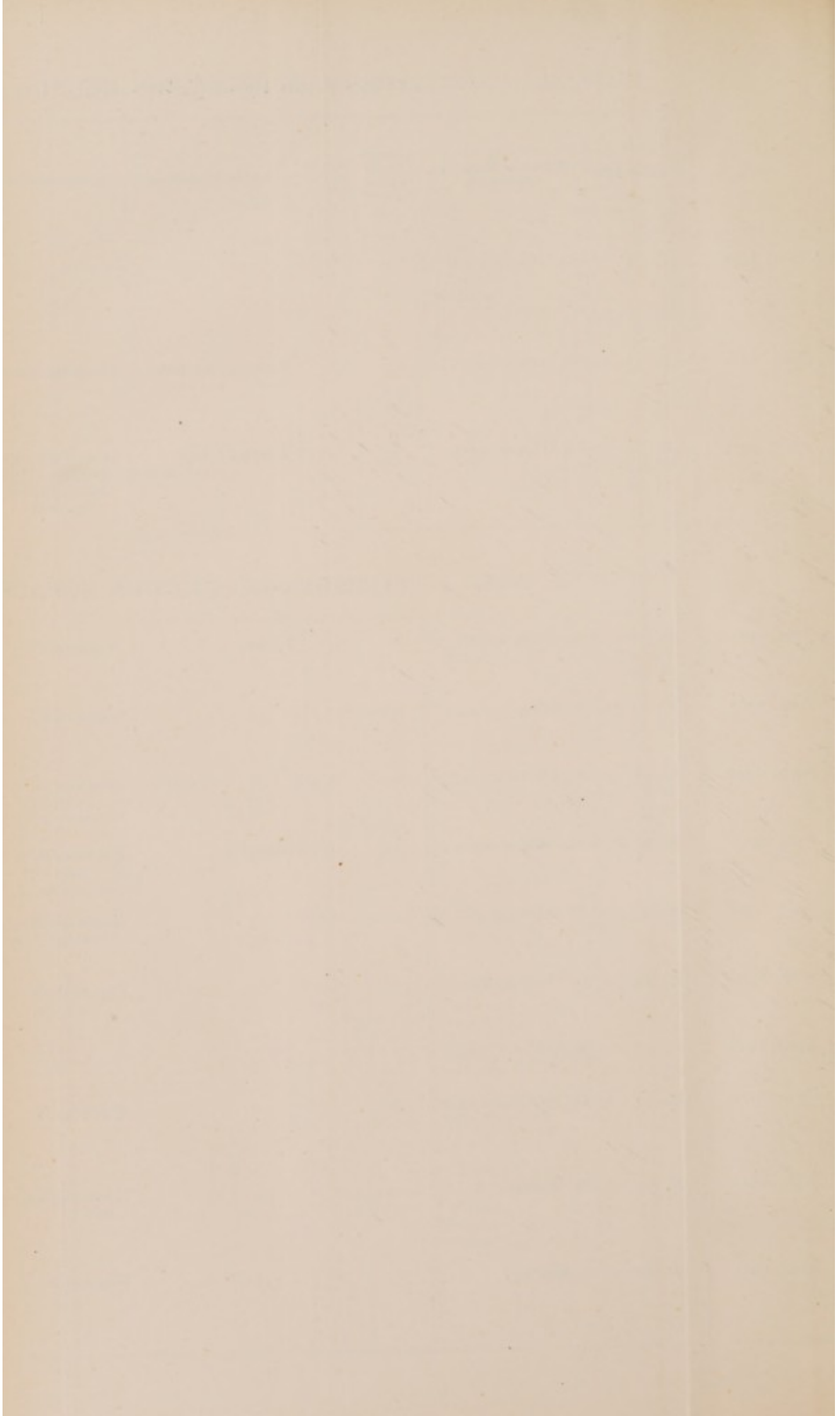


TYPES 9 AND 10.—LESION EQUALS HALF LOBE AND NOT MORE THAN ONE LOBE. DURATION THREE TO TWELVE MONTHS—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli in any Tissue.	Spontaneous A.E. reaction.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	No. of Weeks.	Tuberculin Administration.										Condition on Discharge.							
										Test.			Treatment.				Sensitivity (see p. 573).	Weight Gain or Loss (Lbs.).	Working Capacity.			General Condition.		Active Disease after Course.			Summary.
										Preparation.	C.C.	Temperature.	Preparation.	Minimum.	No. of Doses.	Maximum.			Before.	During.	After.	Before.	After.	Symptoms.	Signs.	Spots.		1911.	1913.
141	May, 1912	F., 31	M. House work	o	+		Dispensary	49	TAF	'001	Degm. N1 + (local reaction)	PTO '002 33 '7 PT '01 13 '6 OT '1 5 '1 PBE '01 14 '4 KE '01 7 '04	'002 33 '7 '01 13 '6 '01 14 '4 '01 7 '04	1	0	Full	Full	Full	Fair	Fair	None	None	None	P			
142	July, 1911	F., 33	M. House work	o	+	Larynx; hysteria	Hospital out-patient	Dispensary	41			PTO '001 24 '6 PT '01 24 '7 OT '1 9 '1.2 TAF '1 11 '1	'001 24 '6 '01 24 '7 '01 9 '1.2 '01 11 '1	1-1	+3	Part		Full	Poor	Fair	Little cough	None	+	P			
143	July, 1911	F., 39 Case 21, p. 99	M. House work	o	+	Larynx febrile	Hospital out-patient; surgical tuberculous tumour on clavicle removed	Dispensary Treated at hospital for syphilis	40			PTO '002 35 '4.6 PT '01 15 '5 TAF '01 11 '0.6 OT '8 2 1	'002 35 '4.6 '01 15 '5 '01 11 '0.6 '8 2 1	1	+9	Off	Part	Full	Poor	Fair	Impr.	Impr.	+	P			

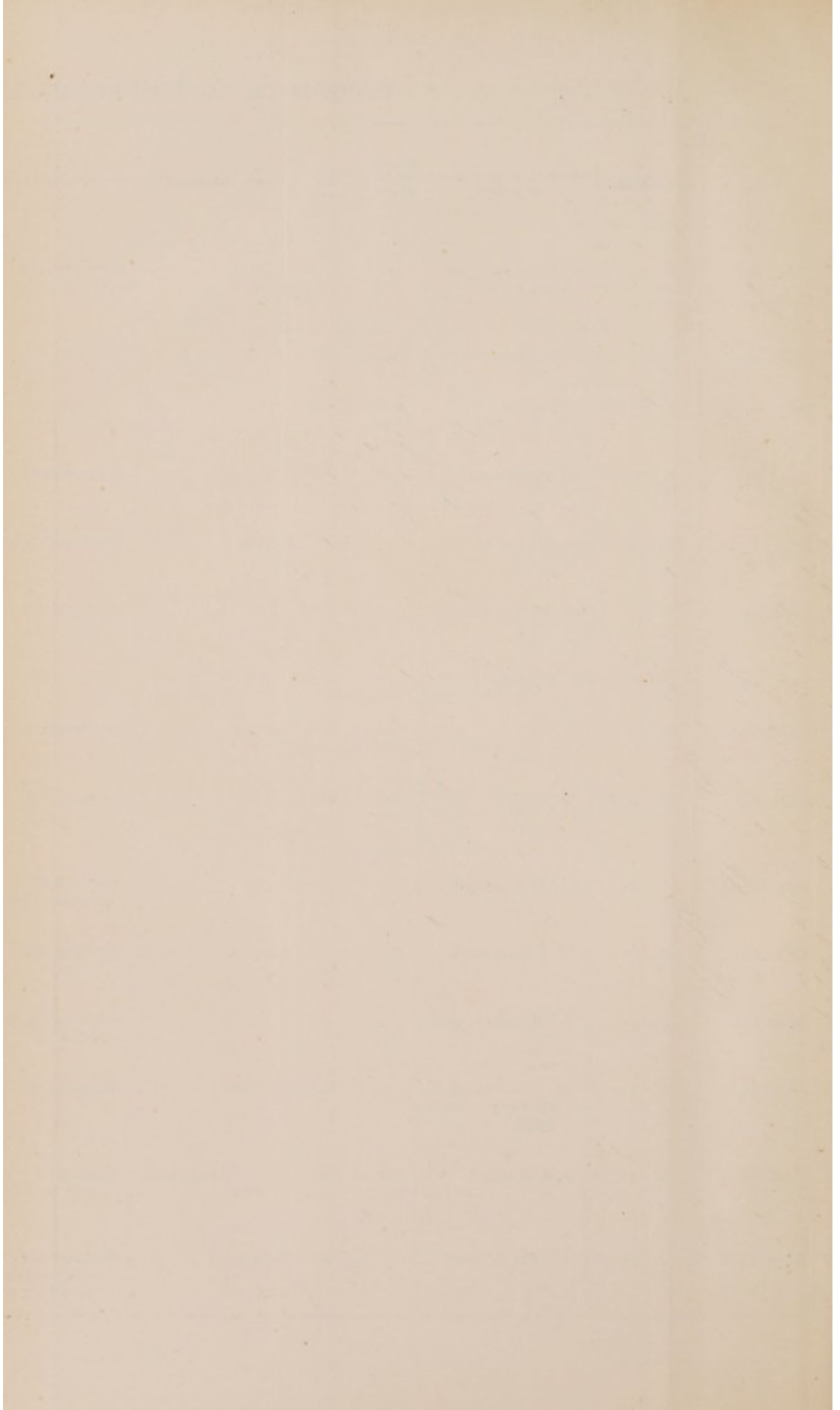
TYPES 11 AND 12.—LESION EQUALS HALF LOBE AND NOT MORE THAN ONE LOBE. DURATION OF SYMPTOMS OVER ONE YEAR.

144	July, 1910	F., 22	S. Dressmaker	o	o	Febrile	Winsley	Dispensary	44			Febrile, to 100 PTO '0015 23 '4 PT '02 27 '8 TO '1 20 '9.5	'0015 23 '4 '02 27 '8 '1 20 '9.5	0	+2	Off	Part	Part	Poor	Fair	Impr.	Impr.	None	B	B	
145	Aug., 1910	F., 17	S. Shop	o	o		Glands at 7 years	Dispensary	34	OT	'001	To 100 PTO '0025 26 '5 PT '01 29 '8 TO '1 13 1	'0025 26 '5 '01 29 '8 '1 13 1	1-0	+2 +1.1	Off	Full	Full	Fair	Good	None	None	None	A	A	
146	Aug., 1910	F., 25	S. Factory	o	o	Deafness	Dispensary, 12 weeks Winsley, 4 weeks	Dispensary	42	PTO	'008	To 101 PTO '005 29 '7 PT '01 29 '8 TO '1 14 '8.5	'005 29 '7 '01 29 '8 '1 14 '8.5	0-2-1 1-1	+5	Part	Off 1 month Winsley 5 weeks	Full	Poor	Fair	None	None	None	P	P	
147	Oct., 1910	F., 31	M. House work	o	o	Knee (?)	Rheumatism; fever	Dispensary Bristol Hospital for observation	38	PTO	'004	To 100-6 PTO '0025 33 '7 PT '01 24 '7.5 TO '1 10 '8	'0025 33 '7 '01 24 '7.5 '1 10 '8	3-2-0	-2 +1.1	Part		Part	Poor	Fair	Un- changed. No further evidence of TB	Impr.				
148	Sept., 1910	M., 44	M. Factory	o	o	Repeated illness every year for 5 years	Dispensary	34	OT	'001	To 99-6 PTO '0025 25 '5.5 PT '01 15 '7 TO '1 12 1	'0025 25 '5.5 '01 15 '7 '1 12 1	3-0	+7	Full	Full	Full	Fair	Good	None	None	None	A	A		
149	Sept., 1910	F., 22	S. Dressmaker	o	o	For phthisis	Dispensary Winsley	37	PTO	'0035	To 99-6 PTO '0025 32 '7 PT '01 18 '7 TO '1 10 1	'0025 32 '7 '01 18 '7 '1 10 1	1-5-0 3-1-0	+2 +6	Off	Part	Full	Poor	Fair	None	None	None	A	A		
150	April, 1911	F., 48	M.	o	o		Dispensary	30			Not accurate. PTO '001 31 '5 PT '01 12 '5 TO '1 10 1	'001 31 '5 '01 12 '5 '1 10 1	1-0	+2	Part		Full	Poor	Fair	None	None	None	A	A		
151	Dec., 1910	M., 31	M. Insurance agent	+	o		Winsley	Dispensary	37	OT	'002 '005	NB To 100-4 PTO '0025 27 '7 PT '01 16 '7.5 TO '1 9 '8	'0025 27 '7 '01 16 '7.5 '1 9 '8	1-0		Full		Full	Good	Good	None	None	None	A	A	
152	Sept., 1910	F., 53	M. Factory	o	o		Hæmorrhage 3 years ago	Dispensary	41	OT	'0001	Bad (breaks thermometer) PTO '0025 21 '6 PT '01 20 '6 TO '05 14 '9	'0025 21 '6 '01 20 '6 '05 14 '9	1	4.8 -3	Part		Full	Poor	Fair	None	None	None	A	A	
153	Aug., 1911	M., 29	S. Factory	o	o		Winsley	Dispensary	34			PTO '0025 17 '5 PT '02 7 1 PTO '01 15 1 PT '01 14 '0.4	'0025 17 '5 '02 7 1 '01 15 1 '01 14 '0.4	0		Full	Full	Full	Fair	Good	None	None	None	A	A	



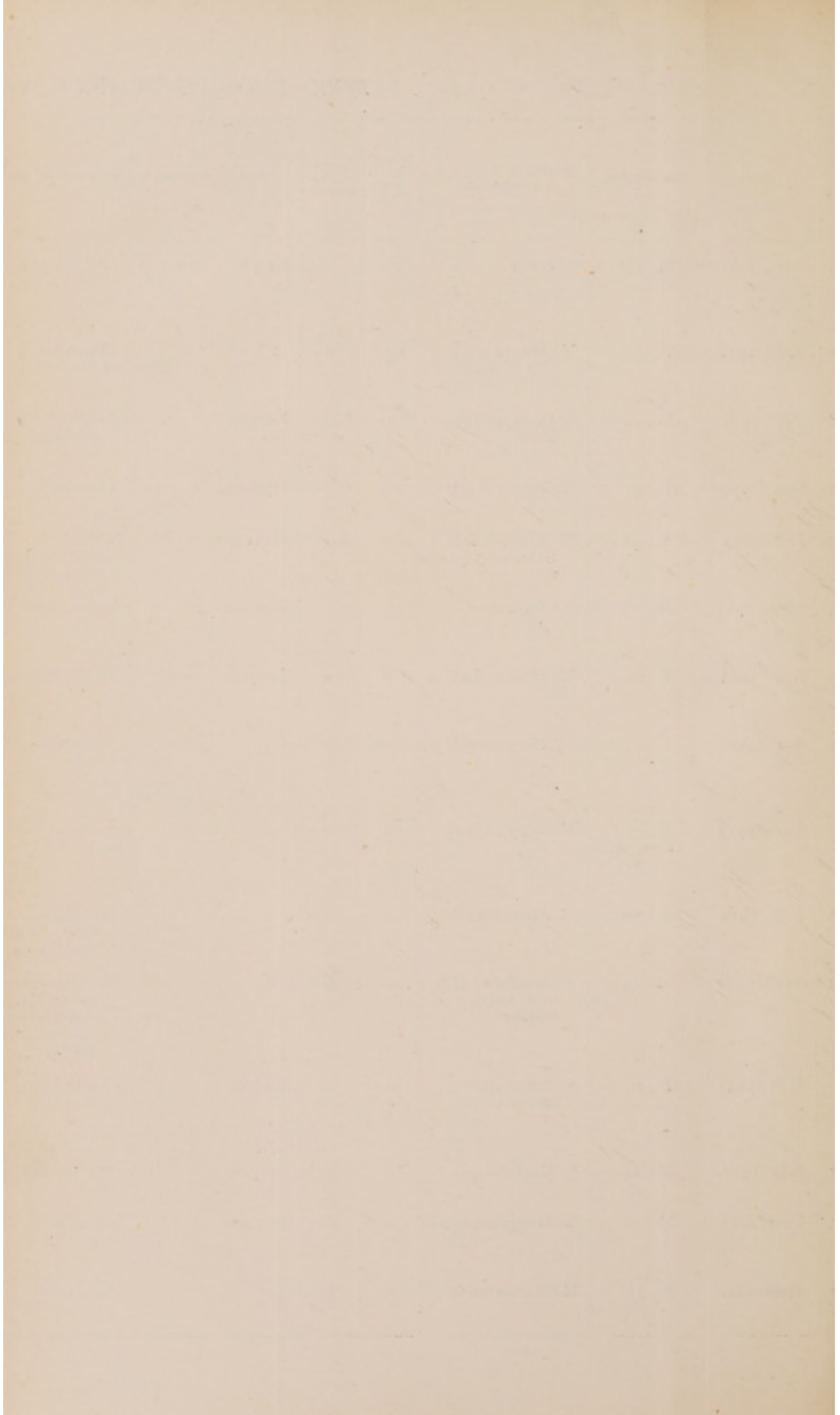
TYPES 11 AND 12.—LESION EQUALS HALF LOBE, NOT MORE THAN ONE LOBE. DURATION OF SYMPTOMS OVER ONE YEAR—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle bacilli at any time.	Spiculum on A.E. sputum.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.									
									Test.		Treatment.				Sensitivity (see p. 173).	Weight (Gain or Loss in Lbs.).	Working Capacity.			General Condition.		Active Disease after Course.			Summary.			
									No. of Weeks.	Preparation.	Temp. C.C.	Preparation.	Maximum.	No. of Doses.			Maximum.	Before.	During.	After.	Before.	After.	Symptoms.	Signs.		Sputum.		
154	Feb., 1911	F., 35	S. Domestic servant	o	o		Hemorrhage	Dispensary	20	OT	•001	Dipnes. Nil	PTO	•002	26	•5	1—0	+4	Full	Full	Full	Fair	Fair	None	None	None	P	S
							Change of air	Dispensary	12	NT	•005	To 100	PT TO TAF	•005 •01 •001	14 16 20	•55 •8 1												
155	Nov., 1910	F., 17	S. Factory	o	o			Dispensary	32	PTO	•0035	To 1000	PTO PT	•0025 •01	45 9	•6 •94	4—2—0 1—2—0	+3	Off 1 month	Full	Full	Fair	Good	None	None	None	A	A
156	July, 1910	F., 25	S. Factory	o	o			Dispensary	36	PTO	•005	NT+	PTO PT TO	•005 •01 •01	30 13 13	•75 •6 1	3—2—0	+7	Full	Full	Full	Fair	Good	None	None	None	A	A
157	Aug., 1910	M., 33	M. Shopkeeper	o	o		Hemorrhage; pleurisy	Dispensary	33	PTO OT	•0035 •001	Nil To 99.6	PTO PT TO	•0035 •01 •01	25 15 11	•75 •8 1	2—1—0	+5	Full	Full	Full	Poor	Fair	None	Impr.	Present	B	B
158	Sept., 1910	F., 35	M. House work	o	o	Feeble	Bronchitis and asthma	Dispensary	39	VP+	•001	Nil	PTO PT TO	•001 •01 •01	30 25 12	•7 •7 1	2—3—0		Off 5 weeks	Part	Full	Poor	Fair	Impr.	Impr.	+ No L. bacilli	B	P
159	Sept., 1910	F., 34	M. House work	o	o		Pleurisy	Dispensary	39	OT	•007	To 103.4	PTO PT TO	•004 •01 •01	59 15 17	•75 •6 1	1—1—0	+6	Full	Full	Full	Poor	Good	None	None	None	A	A
160	Dec., 1910	F., 16	S. Factory	o	o			Dispensary	30	OT	•001	Nil	PTO PT TO	•005 •01 •01	38 14 14	•7 •7 •5	2—1—1	+4	Full	Full	Full	Fair	Good	None	None	None	A	A
161	Sept., 1910	F., 33	M.	o	o	Larynx	Hysteria; laryngitis	Dispensary	38	VP	•001	Nil	PTO PT TO	•0025 •01 •01	25 29 7	•65 •8 •55	1	+3	Fair	Full	Full	Fair	Impr.	None	None	None	A	A
162	July, 1911	F., (I)		o	o			Dispensary	21	OT	•0001	Nil	PTO PT TO	•0025 •01 •01	19 12 3	•5 •75 1	0	+1	Fair	Full	Full	Fair	Impr.	None	None	None	A	A
163	Aug., 1911	F., 36	M. House work	o	o		For weak chest in South Africa	Dispensary	27	2nd TAF	•003	102	PTO PT OT	•001 •01 •01	17 13 8	•5 •5	1	+2	Fair		Full	Fair	Good	None	None	None	A	
164	Oct., 1911	F., 23	M. House work	o	o	Larynx	For anemia	Dispensary; married during course	27	TAF	•001	NT+	PTO PT TO	•002 •01 •01	20 16 8	•9 1 1	1	+6	Full		Full	Fair	Good	None	None	None	A	
165	May, 1912	M., 33	M. Railway porter	o	o		Pleurisy 4 years ago; debility	Dispensary Care Committee	32	TAF	•001	101.2	PTO PT TO	•001 •01 •01	28 14 8	•6 •7 1	1		Off 3 weeks	Off part	Full	Poor	Good	None	None	None	A	
166	Feb., 1912	M., 33	M. Invalided R.N. stoker; dockyard	+	+	Larynx	Tuberculin, Haslar	Dispensary	18	3rd PT	•024	101.6	PT PTO PT OT	•01 •05 •01 •01	3 4 15 8	•024 •8 •6 •42	1	+4	Full		Full	Good	Good	None	None	None	A	
167	Jan., 1912	M., 41	S. Dockyard	o	o	Tubercle of scrotum	Operation for tuberculous testicle	Dispensary	51	TAF	•001	102.6 (local reaction)	PTO TAF OT	•0001 •0001 •01	3 48 23	•0001 •1 •5	3—1	—8	Part Unit	Full	Full	Poor	Fair	None	None	None	A	
168	May, 1912	F., 18	S. Stay factory	o	+	Stiff knee	Sanatorium for tuberculous knee for 8 1/2 months 2 years ago	Dispensary	31	2nd PTO	•0004	99.6	PTO PT OT	•0002 •01 •01	11 10 8	•6 •34 •74	1	+6	Off		Fit	Fair	Good	None	None	None	A	



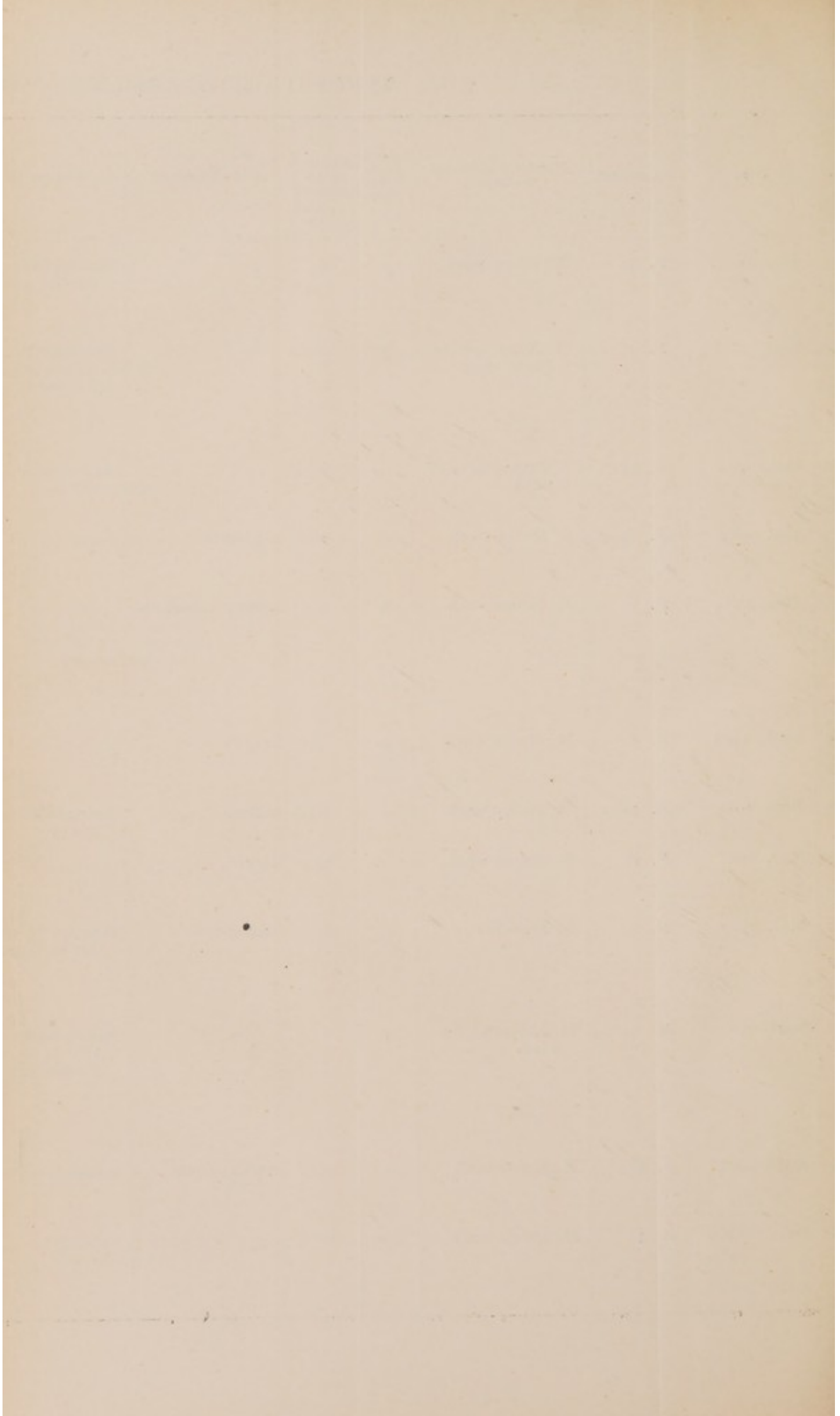
TYPES II and 12.—LESION EQUALS HALF LOBE, NOT MORE THAN ONE LOBE. DURATION OF SYMPTOMS OVER ONE YEAR—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	System of Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.				Summary.					
									Test.			Treatment.				Sensitiv- ity (see p. 173)	Weight (Gain or Loss in Lbs.)	Working Capacity.			General Condition.			Active Disease after Course.				
									No. of Weeks.	Prepara- tion.	Tempera- ture.	Prepara- tion.	Minimum.	No. of Doses.	Max- imum.			Before.	During.	After.	Before.	After.		Symptoms.	Signs.	System.	1911.	1912.
169	Sept., 1911	M., 31	S. Clerk	o	o	Larynx		Dispensary 12 weeks Country	31	TO	001	101	PTO PT TAF	0001 01 05	15 17 17	8 5 9		+12	Full Not very fit	Off 3 months	Full	Fair	Good	None	None	None	None	A
170	April, 1912	F., 37	M. House work	o	+	Delicate		Dispensary Care Committee	23	TAF	001	NT+ (focal reaction)	PTO PT TAF	0001 015 1	23 12 4	5 72 5	1	+2	Part		Full	Poor	Fair	None	None	None	None	A
171	July, 1911	M., 22	S. Dockyard engine fitter	o	+	Larynx		For kidneys and indig- estion	26	3rd TO	003	104	PTO PT OT	0001 02 1	20 13 6	6 9		+3	Off 2 weeks	Full	Full	Poor	Good	None	None	None	None	A
172	Dec., 1912	F., 40	M. House work	o	+	Hysteria		Pleurisy	17	2nd PTC	005	996	PTO PT	0001 01	20 1	6 91	1	-2	Part		Full	Fair	Fair	None	None	None	None	A
173	Jan., 1913	M., 44	M. Invalided R.N. Reserve 5 years ago	o	+	Hemoptysis		Chronic tuberculosis and severe illnesses with hemoptysis	12	1th TAF	005	101-8	TAF	01	13	4		+2	Off 5 years	Part after 5 weeks	Full (dock- yard)	Poor	Good	None	None	None	None	A
174	Sept., 1911	M., 19	S. Carpenter	o	o	Asthma		For asthma	27	2nd TO	003	102	PTO PT TAF	0005 01 0001	14 18 25	6 85 9	0-1	+4	Off	Part	Full	Fair	Fair	Less asthma.	None	None	None	A
175	Aug., 1911	F., 29	M. House work	+	+	Larynx		Hospital out-patient	48	1st TO	001	100	PTO PT TAF	0001 01 0001	30 9 25	8 1 9	1-1		Poor	Fair	Fair	Poor	Fair	None	None	None	None	A
176	Aug., 1911	F., 42	M. House work	o	+			Hospital out-patient	37	2nd PTO	0014	100-8	PTO PT TAF OT	0001 015 1 3	33 19 7	77 5 7	2-0-1	+21	Poor		Fair	Poor	Fair	None	None	None	None	A
177	June, 1911	F., 37 Case 39, p. 132	M. Stay factory	+	+			Dispensary Care Committee	38	2nd PTO	002		PTO PT OT TAF	0001 01 1 0001	26 10 6 25	6 3 3 9		+10	Full	Full	Full	Fair	Good	None	None	None	None	A
178	Feb., 1912	F., 38	M. House work	+	+			For pleurisy 2 years ago; bronchitis 2 months ago	49	TAF	001		PTO PT OT TAF	0001 015 1 0001	41 18 13	55 4 1	3-1	+8	Full		Full	Poor	Good	None	None	None	None	A
179	April, 1912	M., 34	S. Invalided R.N. Sick berth steward	+	+			Mediterranean fever, 1905; Malta fever 3 months ago; tuberc- le bacilli found at Haslar	22	5th PTO	001		PTO PT PT	0001 01 05	20 15 2	56 1 1	1		Off	Full	Full	Good	Good	None	None	None	None	A
180	Sept., 1911	F., 22	S. Domestic servant	+	+	Larynx		Dispensary; married during treatment	25	TAF	001	NT+ 100 (focal reaction)	PTO PT TAF	0001 01 01	20 11 16	8 48 2	1-2-1	+6	Full		Full	Good	Good	None	None	None	None	A
181	July, 1911	M., 24	S. Carter	o	+	Larynx		Dispensary	16	1th PTO	0005	100	PTO PT	0001 01	59 10	55 6	1-0	+8	Full	Full	Full	Fair	Good	None	None	None	None	A
182	June, 1911	M., 28	S. Insurance agent	o	+	Larynx		Dispensary	23	TO	001	102	PTO PT TAF	0002 01 02	20 14 3	77 7 4	1-0	+1	Full	Full	Full	Fair	Good	None	None	None	None	A
183	April, 1912	F., 33	M. House work	o	+			Dispensary	20	6th PTO	003	100	PTO PT	0001 015	31 4	66 4	1	+6	Full	Full	Full	Fair	Good	None	None	None	None	A



TYPES 11 AND 12.—LESION EQUALS HALF LOBE, NOT MORE THAN ONE LOBE. DURATION OF SYMPTOMS OVER ONE YEAR—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Sputum on Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.								
									Test.		Treatment.				Sensitization (see pp. 472).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.		
									Preparation.	C.C.	Temperature.	Preparation.	Exclusion.	No. of Doses.			Max. Reaction.	Before.	During.	After.	Before.	After.	Symptoms.	Signs.		System.	1911.	1913.
184	July, 1911	F., 34	M. House work	+	+		For phthisis; sanatorium advised	Dispensary	42			PTO PT TAF	-002 -01 -01	25 17 16	96 22 204	2-3-1		Part	Full	Fair	Good	None	None	None	A		
185	Sept., 1911	F., 32	M. Army sewing; house work	+	o		Pleurosy 18 months ago after confinement; TB+ then	Dispensary Care Committee	50	4th PTO	-0028	101-1	PTO PT TAF OT Sp. IK OT	-001 -01 -01 -01 -01 -1	23 17 10 18 6 13	8 44 1 56 204 22	2-0		Part	Full	Poor	Fair	None	None	None	P	
186	Mar., 1912	F., 34	S. Domestic servant	+	+		For phthisis	Dispensary Care Committee	31	3rd PTO	-002	100-2	PTO PT OT	-001 -01 -1	24 20 7	4 1 1-1	2-0	+1	Off	Off	Full	Poor	Good	Little cough	None	Present No TB	P
187	Jan., 1912	F., 25	S. House work	o	+		Subfebrile	Dispensary	40	PTO	-001	100	PTO PT OT	-001 -01 -1	39 15 6	44 86 4	2-0	+2	Full	Full	Full	Fair	Good	Little cough	None	Present	P
188	June, 1911	F., 37	M. House work	o	+		Larynx subfebrile	Dispensary 6 months Langstone 19 weeks Dispensary 12 months Langstone 7 weeks Teeth	100	TO	-001	100	PTO TAF PBE TAF OT Sp. IK RE	-001 -001 -005 -005 -1 -001 -01	41 3 22 12 3 10 19	5 0018 25 14 3 56 56	2-3- 2-1	-6	Off	Part	Full	Poor	Fair	Little cough	None	None	P
189	Sept., 1911	F., 32	M. House work	+	+		Larynx	Dispensary	28	TO	-001	NT+	PTO PT OT	-001 -02 -1	10 13 8	1 76 1	1-0	+8	Fair	Full	Full	Fair	Good	None	None	Present	P
190	Aug., 1912	F., 30	M. House work	o	+		Asthma	For asthma and nasal polypi Dispensary	42	TAF	-001	100-2	PTO TAF PBE TAF OT	-005 -001 -005 -001 -1	19 42 1 15 4	504 1 1 15 44	4-1		Poor	Impr.	Impr.	Poor	Impr.	Asthma	None	Present	S
191	Mar., 1912	F., 31	M. House work	o	o		Larynx	Dispensary; rest for voice	34	TAF	-001	NT+	PTO TAF OT	-001 -001 -1	12 36 4	502 15 44	2-0	+4	Part	Full	Fair	Good	None	None	None	P	
192	Mar., 1912	M., 24	S. Traveller	+	+		Hæmoptysis	Advised to come south for phthisis Dispensary	60	TAF	-001	100	PTO PT TAF OT RE	-001 -01 -01 -2 -01	13 17 8 6 23	26 72 1 41 73			Full	Full	Full	Fair	Good	Little cough	Still crepitations	None	P
193	Sept., 1911	M., 30	M. Labourer, dock-yard	+	+		Sanatorium 15 weeks; left at own request 5 years ago	Dispensary	50		-001		PTO PT OT PBE TAF OT RE	-001 -01 -1 -001 -01 -1 -05	22 15 17 7 10 9 5	73 1 72 012 1 1 15	1-0	+1	Full	Full	Full	Poor	Fair	Unchanged	Impr.	Present No TB	P
194	April, 1912	F., 50	M. House work	o	+		Larynx; bronchitis	Asthma Dispensary	36	TAF	-001	99	PTO PT OT	-001 -01 -1	15 15 9	5 8 8	1-0	+1	Part	Full	Poor	Fair	Impr.	Impr.	Present	P	
195	Oct., 1911	F., 30	M. House work	o	+			Dispensary; interval for confinement	46	PTO	-008	100	PTO PT TAF OT	-0005 -01 -1 -1	28 6 14 2	96 1 1 1	2-0		Part	Full	Poor	Fair	None	None	None	P	

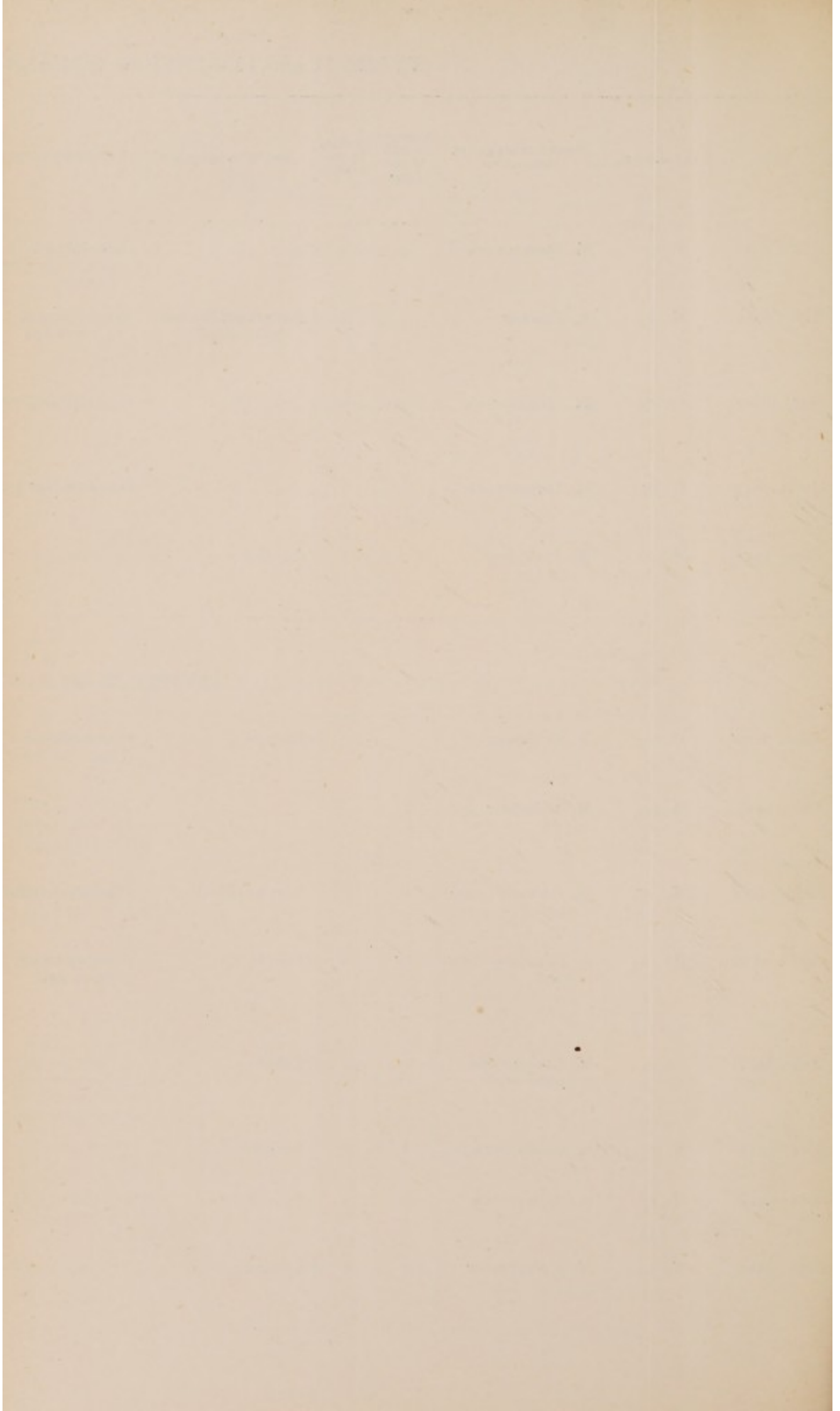


TYPES 11 AND 12.—LESION EQUALS HALF LOBE, NOT MORE THAN ONE LOBE. DURATION OF SYMPTOMS OVER ONE YEAR—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Sputum on Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.									
									Test.			Treatment.				Working Capacity.			General Condition.		Active Disease after Course.							
									No. of Weeks.	Preparation.	C.C.	Temperature.	Preparation.	Minimum.	No. of Doses.	Maximum.	Sensitization (see p. 271).	Weight Gain or Loss in Lbs.).	Before.	During.	After.	Before.	After.	Symptoms.	Spas.	Sputum.	1911.	1912.
196	June, 1911	F., 40	M. House work	o	+		Hemoptysis 9 years ago; pleurisy, recurrent	Dispensary	40	2nd PTO	0015	Diagnos. 99-8	PTO PT TAF	001 01 1	33 18 12	7 7 1	2-0		Part		Full	Poor	Fair	Less cough	None	+		P
197	Feb., 1912	M., 23	S. Teacher	+	+	Recurrent hemoptysis, slight	Sanatorium 3 months 2 years ago	Dispensary	33	3rd PTO	001	101	PTO PT TAF OT	001 015 01 1	24 13 8 10	94 7 12 1	2-1-0	-5	Off		Fit	Fair	Good	None	None	None		P
198	Jan., 1912	F., 39	M. House work	+	+		Hospital out-patient	Dispensary	35	4th PTO	007	103	PTO PT TAF OT	002 022 1 2	23 14 6 7	9 36 6 12	2-1	+6	Part	Full	Full	Poor	Fair	None	None	None		P
199	June, 1911	F., 49	M. House work	o	+		Hospital out-patient	Dispensary	23	3rd PTO	003	100	PTO PT TAF	0025 01 2	19 13 6	5 17 1	1-0		Part		Full	Poor	Fair	Impr.	Impr.	+		P
200	Aug., 1911	M., 23	M. Fish shop	o	+	Larynx		Dispensary	26	TO	0005		PTO PT OT	001 02 01	27 13 4	1 7 4	1-0	+4	Full	Full	Full	Good	Good	None	None	None		A

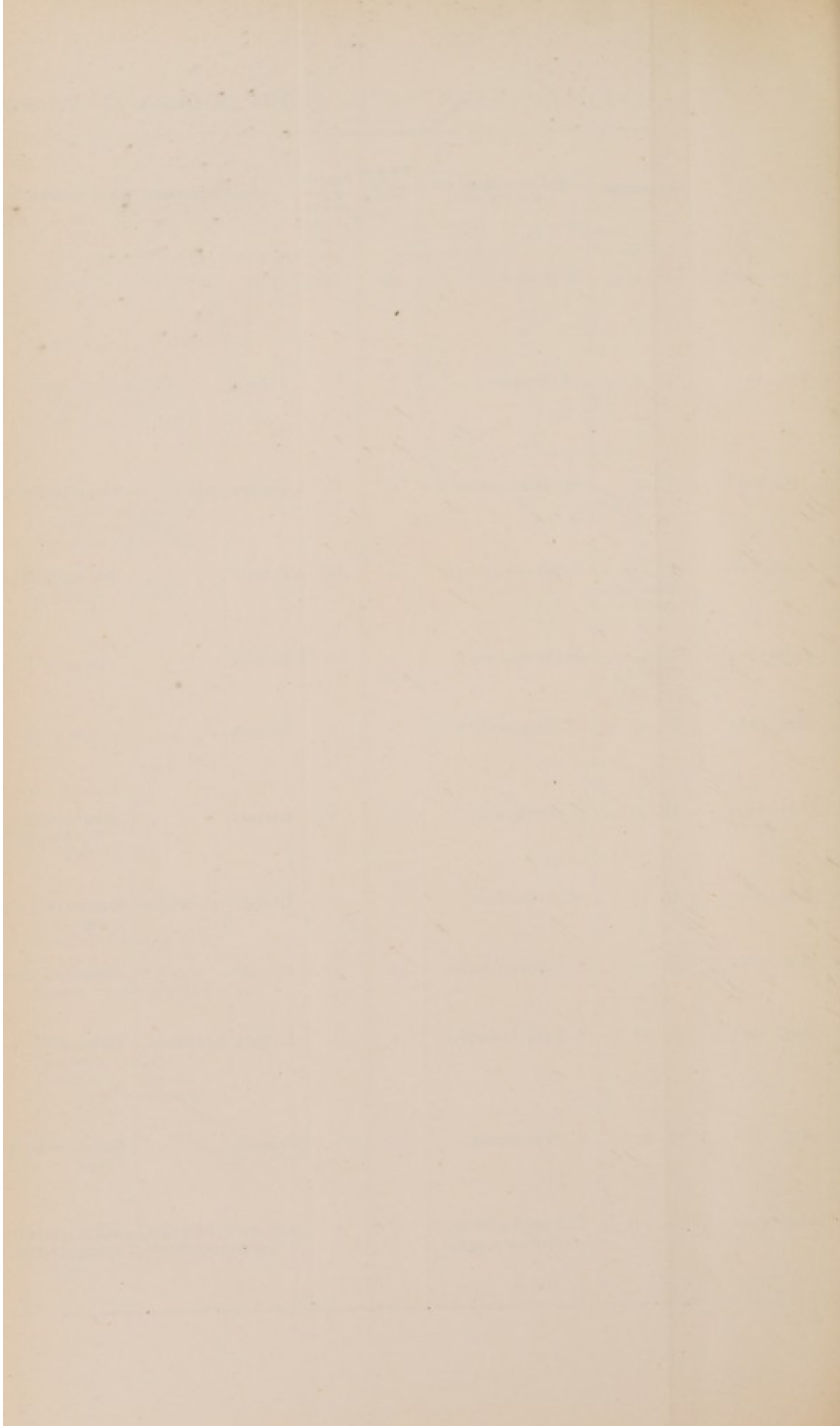
TYPES 13 AND 14.—LESION EQUALS MORE THAN ONE LOBE. DURATION UNDER THREE MONTHS.

201	Sept., 1910	M., 34	M. Drayman			Larynx	Hemorrhage 2 weeks ago	Dispensary Shelter	39	PTO	001	To 99-8	PTO PT TO	001 01 1	31 2 11	7 75 1	1-0-0	+14	Off 5 weeks	Off	Full	Poor	Good	None	None	None		P	B
202	Dec., 1910	M., 55	M. Labourer					Rest in bed Tuberculin at home Dispensary	40			Febrile	PTO PT TO PT	0025 01 1 1	32 18 4 7	75 95 1 3	1	-9	Off 2 months	Off	Part	Poor	Fair	Impr.	Impr.	Less		B	B
203	Sept., 1911	M., 32	M. Grocers' assistant	o	o	Larynx febrile	Pleurisy 1 month ago	Dispensary Langstone, 6 months	53				PTO PT TAF	001 01 05	31 22 15	7 46 5	2-1		Off	Off	Fit	Poor	Good	None	None	None		P	
204	April, 1912	F., 30	S. Domestic servant	o	+	Febrile	Pleurisy twice, 5 and 3 years ago	Dispensary	56	3rd PTO	002	100-8	PTO PT TAF	001 01 05	27 10 18	3 33 1	3-1	+8	Off	Off	Full	Poor	Fair	Impr.	None	None		P	
205	Feb., 1912	F., 35	M. Charwoman; house work	o	o	Febrile		Rest in bed Langstone 4 weeks Dispensary Care Committee	58	4th PTO	004	100	PTO PT TAF OT	001 015 1 1	31 14 5 30	6 8 4 75	3-1	+4	Off	Part	Part	Poor	Fair	Impr.	Impr.	None		B	
206	Oct., 1911	F., 22	S. House work	+	+	Larynx		Dispensary	30			Febrile	PTO TAF	001 005	19 39	0064 1	0-3-0		Off	Off	Fit	Poor	Fair	None	None	None		A	
207	Oct., 1911	M., 16 Case 72, p. 145	S. Pastry-cook	+	+	Febrile		Rest in bed 3 weeks Dispensary	30				PTO PT OT	001 01 05	26 19 5	6 44 4	2-0	+17	Off	Off Part	Full	Poor	Good	None	None	None		A	
208	May, 1912	M., 55	M. Upholsterer	o	+	Larynx		Dispensary	22	3rd PTO	0014	102	PTO PT OT	001 01 1	25 17 4	66 7 4	2-0	-5	Off		Full	Poor	Good	None	None	None		A	



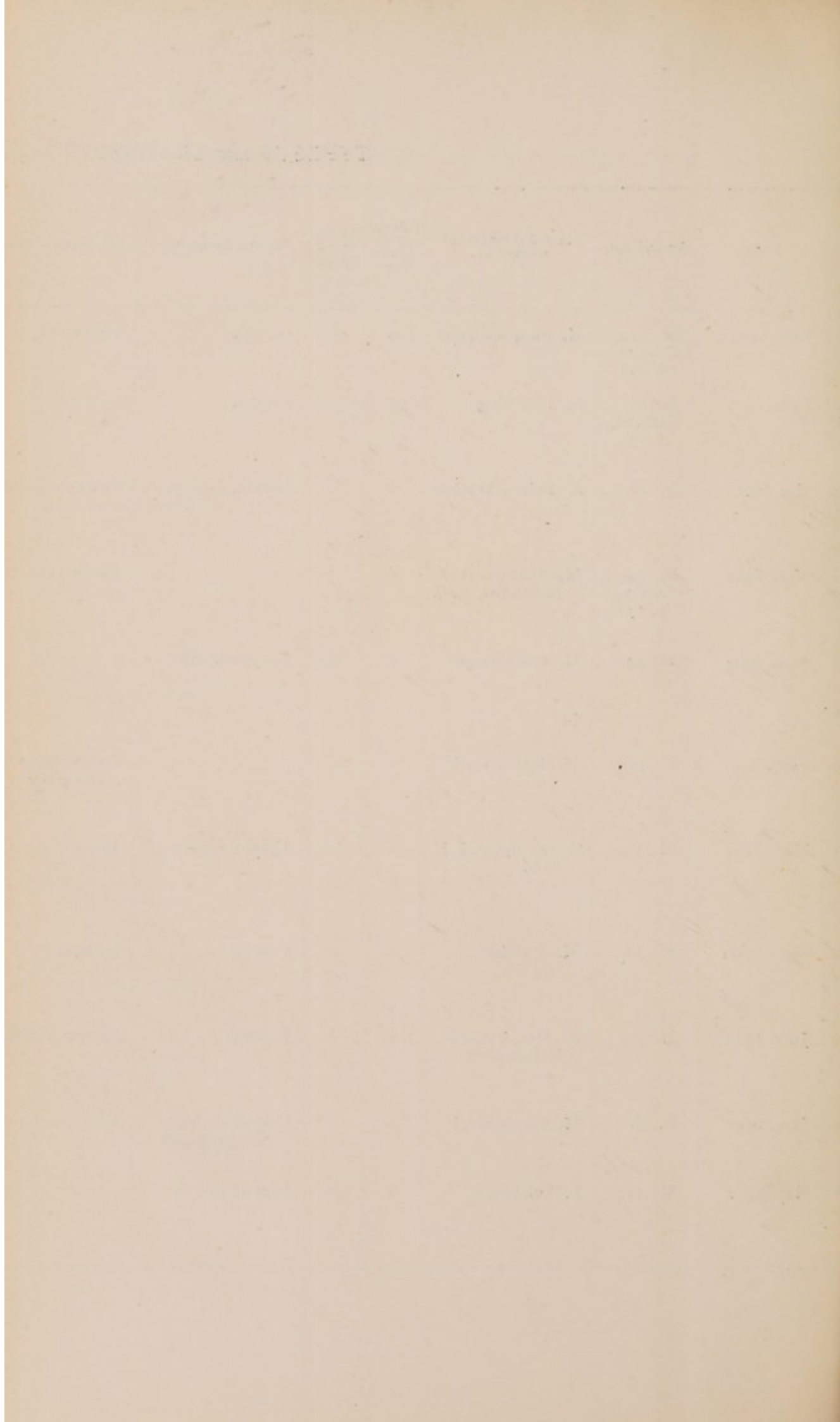
TYPES 15 AND 16.—LESION EQUALS ONE LOBE OR MORE. DURATION OF SYMPTOMS THREE TO TWELVE MONTHS.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Sputum on Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	No. of Weeks.	Tuberculin Administration.										Condition on Discharge.										
										Test.		Treatment.				Sensitization (see p. 275).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.				
										Preparation.	C.C.	Temperature.	Preparation.	Minimum.	No. of Doses.			Max. temp.	Before.	During.	After.	Before.	After.	Symptoms.	Signs.	Spots.	1911.	1912.		
209	Sept., 1910	M., 15½	S. Factory	0	0			Dispensary and shelter	33	PTO	0035	Degm. To 102	PTO PT PTO PT TO	0025 055 01 01 01	27 1 18 25 18	06 7 7 5 1	3-1	+7	Off	Part	Full	Poor	Good	None	None	None	A	A		
210	Jan., 1911	M., 29	M. Engineer			Febrile		Dispensary 29 weeks Wasley 14 weeks Tubercula at home	44				PTO PT PT TO TAF	0025 055 01 01 005	37 17 11 9 22	5 2 7 2 1	0-1-1 1-0		Off	Off	Full	Poor	Fair	Impr.	Impr.	None	A	A		
211	July, 1911	F., 27 Case 79, p. 157	M. House work	+	+	Larynx febrile	Hospital out-patient	3 weeks in bed Dispensary 4 months Langstone 3 weeks Dispensary 5 months	41			Febrile	PTO PT PT TAF	002 01 01 005	32 18 11 22	8 5 5 1	0-1-1 2-0	+25	Off	Part	Full	Poor Febrile	Good	None	None	None	A			
212	Sept., 1911	F., 21 Case 82, p. 162	S. Dressmaking	+	+	Febrile	For indigestion	Dispensary Langstone 8 weeks	38	3rd	PTO	0006	99-6	PTO TAF PBE TAF	001 0002 001 01	24 12 30 16	4 0 0 34	1-3-3 1-3-3	+4 stone	Off	Off Part	Full	Poor Febrile	Good	None	None	None			
213	July, 1912	F., 24 Case 77, p. 154	M. House work	+	+	Larynx		Dispensary	30	TAF	001	101		PTO PT OT TAF	001 01 01 01	20 14 10 8	66 1 8 8	1-0	+7	Fair		Full	Fair	Good	None	None	None	A		
214	May, 1912	F., 28	M. House work	+	+	Larynx		Dispensary	46					PTO PT TAF OT	001 01 01 01	24 41 7 20	9 1 1 7	1	+4	Unfit	Fair	Full	Poor	Good	None	None	None	A		
215	Nov., 1911	M., 23	S. Dockyard	0	0	Larynx	Sanatorium 2 months; discharged unfit for work	Dispensary	30					PTO PT OT TAF	001 01 01 01	21 17 3 7	66 8 25 8	0-1-1 0-1		Off, 7 months	Off	Full	Fair	Good	None	None	None	A		
216	July, 1912	M., 45	M. Decorator	+	+	Larynx febrile	Hemorrhage 4 months ago	Langstone 6 weeks Dispensary Country 1 month	38					PTO PT PT OT	001 01 01 01	21 9 9 16	7 66 5	1-0	+4	Off, 6 weeks	Off Part	Full	Poor	Good	None	None	None	P		
217	May, 1912	M., 19	S. Cabinet maker	+	+	Febrile	Pleurisy 1 year ago	Dispensary 7 months Sanatorium 3 months	30	PTO	001	99-6		PTO PT OT	001 01 01	21 14 13	6 74 6	1	+7	Off, 1 week		Full	Poor	Good	Little cough	None	+ TB+	P		
218	Aug., 1911	F., 20	S. Stay factory	+	+	Larynx febrile	Delicate	Dispensary 8 weeks Langstone 18 weeks Dispensary 2 weeks Sanatorium 4 months Dispensary	36					PTO PT TAF OT KE	002 01 004 01 01	39 16 15 14 8	5 02 054 7 1	0-1	+6½	Off		Full	Poor	Fair	None	None	+ No tubercle bacilli	P		
219	May, 1912	M., 22	S. Warehouse	+	+	Febrile	Sanatorium 3 months ago	Dispensary	42	5th	PTO	0012	100	PTO PT TAF OT	001 015 01 02	30 19 11 4	66 8 1 4	1	+1½	Off, 7 months		Fit	Fair	Good	None	Crepi- tations present	None		P	
220	Aug., 1911	M., 20	S. Yacht steward; insurance agent	0	+	Larynx subfebrile; hemoptysis	Sanatorium 2 months; not arrested	Dispensary 4 months Langstone 3 weeks Dispensary	33			NT+		PTO PT TAF OT	0024 01 01 01	17 25 11 7	5 24 1 1	1	+5	Off	Part	Full	Poor	Good	None	None	None	A		



TYPES 15 AND 16.—LESION EQUALS ONE LOBE OR MORE. DURATION OF SYMPTOMS THREE TO TWELVE MONTHS—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Sputum on Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.			Summary.						
									Test.			Treatment.				Sensitivity (see p. 475).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.					
									Preparation.	C.C.	Temperature.	Preparation.	Maximum.	No. of Doses.	Minimum.			Before.	During.	After.	Before.		After.	Symptoms.	Sputa.	Sputum.	1911.	1912.
221	July, 1911	M., 47 Case 75, p. 151	M. Shop manager	+	+	Larynx	For bronchitis	Dispensary	42	TO	001	Digoxin 100:6	PTO PT OT	0005 01 1	16 19 9	-3 -8 1	4-3 4-1 0-1-0	+8	Off	Part	Full	Fair	Good	None	None	None	A	
222	June, 1911	M., 16 Case 26, p. 153	S. Beer-shop	+	+	Larynx		Dispensary	39	6th PTO	0015	100:4	PTO PT OT TAF	001 02 1 1	20 12 4 2	-9 -6 -2 -2	1	+13	Off	Off	Fit	Poor	Good	None	None	None	A	
223	Mar., 1912	F., 28	S. School-teacher	+	+	Larynx febrile	Pleurisy 4 years ago	Dispensary 6 weeks Sanatorium 3 months	40				PTO TAF OT KE	001 001 1 0.5	12 21 15 18	-0.16 -5 1 1	1	+17	Off	Part	Full	Fair	Good	Little cough	None	Present	P	
224	Mar., 1912	M., 35 Case 74, p. 159	M. Blacksmith; Invalided, R.N.	+			Haslar; tuberculin	Dispensary Care Committee	64				PTO PT TAF PBE	006 01 01 001	24 15 15 36	-5 -18 -6 -14	2	-8	Off	Part	Full	Poor	Fair	Little cough	None	Present No TB	P	
225	Aug., 1911	M., 29	M. Coal-lumper	+	+	Larynx febrile		Dispensary 3 months Sanatorium 3 months Dispensary 3 months	40	PTO	0005	105	PTO PT PT TAF TAF OT	0005 01 01 1 8 4	-5 -0.3 -0.4 1 1 1	2	+11	Off	Part	Full	Poor	Good	None	None	Present TB+	P		
226	Sept., 1911	F., 42	M. House work	+	+		Indigestion; hospital out-patient	Dispensary	41				PTO PT OT OT	001 02 1 1	19 19 8 13	-7 -7 1 1	0	+7	Part		Full	Poor	Good	Slight cough	None	Present No TB	P	
227	Mar., 1912	M., 35	M. Invalided, R.N. A.B.	+	0	Larynx febrile	Royal Navy	Dispensary 7 months Discharged well Langstone 6 weeks Care Committee	32	3rd PTO	002	99:8	PTO PT TAF OT	001 015 1 1	27 11 11 1	-6 -6 -2 -1	0		Off		Full	Poor	Fair	None	None	Relapsed; discharge; went to hospital, but and died	2 months after to observa- tion got worse.	S
228	Sept., 1911	M., 36	M. Butcher	+	+	Febrile	Infirmary	Infirmary Dispensary Langstone 6 weeks Dispensary	31				PTO PT TAF PBE	01 01 1 01	1 13 19 16	-1 -6 1 -18	-17	Off	Fit	Off	Poor	Fair	Improved; relapsed	slightly	Present Could tissue;	S not con-		
229	July, 1911	M., 30	S. Dockyard boiler-maker	+	+	Febrile	For weak chest	Rest in bed 4 weeks Dispensary 2 months Langstone 4 weeks Dispensary	42				PTO PT OT TAF	002 02 05 4	26 18 5 21	1 1 -3 -1	1-1		Off	Part	Part	Poor	Impr.	Less cough; some fibrosis and excavation still active	Present	8	B	
230	Jan., 1912	F., 26	M. House work	+	+	Larynx subfebrile; pregnant	Hospital out-patient	Confinement Dispensary	24				PTO PT TAF	0005 01 04	21 10 9	-8 -3 1.2	0		Preg- nant			Poor	Good	None	None	None	after con- finement	S died
231	May, 1912	M., 20	S. Dockyard	+	+	Larynx febrile		Dispensary	22				PTO PT OT	001 01 1	17 9 8	-7 -6 1.2	0	+4	Off	Full in 1 month	Full	Poor	Impr.	Improved; some fibrosis and excavation still active	Present	Developed ischio- rectal abscess and relapsed	S	



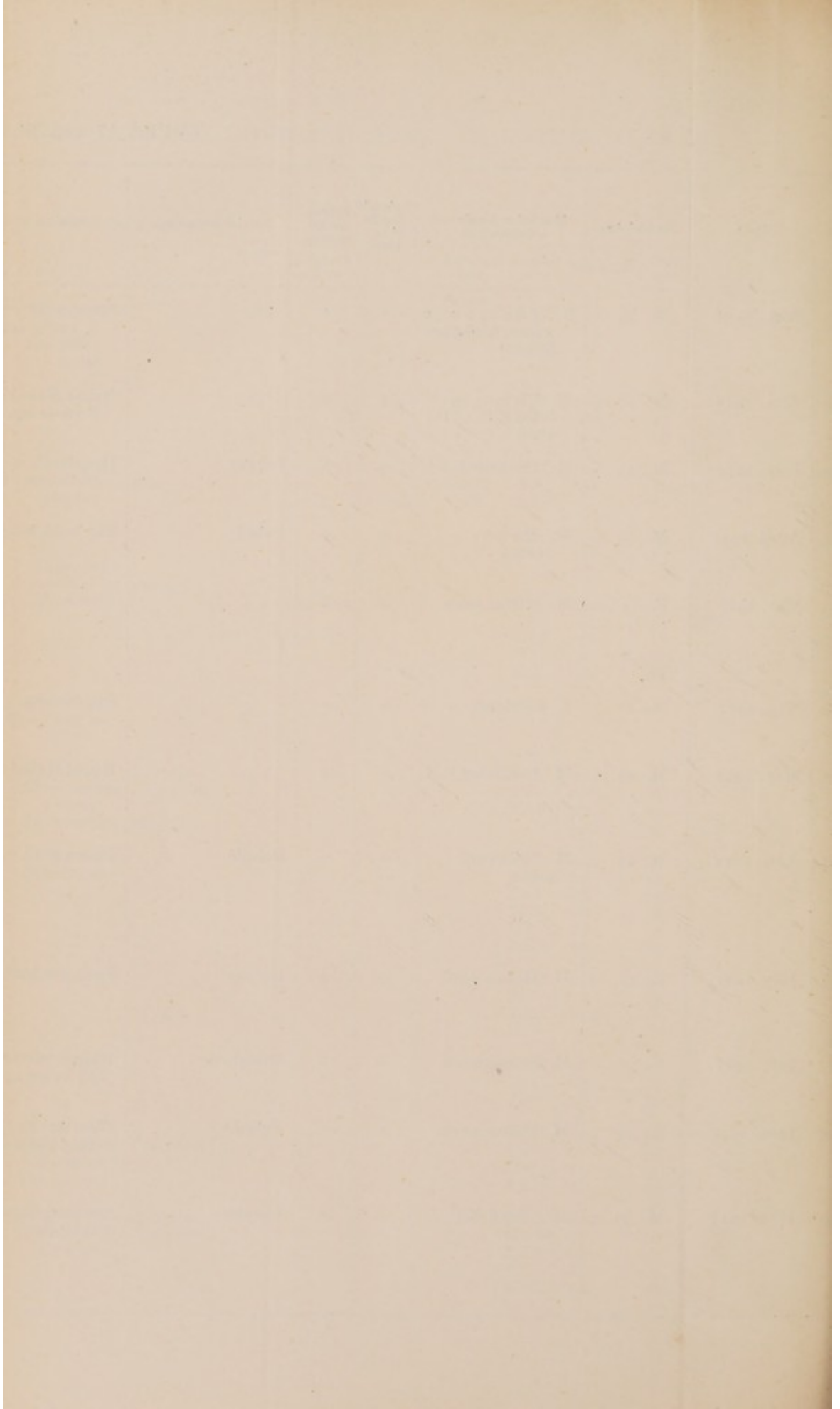
TYPES 17 AND 18.—LESION EQUALS ONE LOBE AND MORE. DURATION OVER ONE YEAR.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle bacilli at any time.	Systemic Admision.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.									
									Test.			Treatment.				Sensitivity (per 100)	Weight Gain or Loss (Lbs.)	Working Capacity.			General Condition.		Active Disease after Course.			Summary.		
									No. of Weeks.	Preparation.	Temp. C.C.	Preparation.	Minimum.	No. of Doses.	Maximum.			Before.	During.	After.	Before.	After.	Symptoms.	Signs.	System.		1911.	1912.
232	Nov., 1911	F., 19	S. None	Present in re-plate	o	Glands; caries of rib	Sanatorium 4 years ago	Dispensary	43	4th PTO	0005	Dipno. 101	PTO PT OT TAF	001 01 01 01	29 25 7 13	74 1 0 0	2	+2	Off	Part	Part	Fair	Fair	abscess on rib; to hospital for operation	None TB+	P	B	
233	Oct., 1911	M., 25	S. Shop manager	+	+	Larynx febrile	For tuberculosis, 1 year ago	Observation hospital, 6 weeks Dispensary	48			PTO PT TAF PT	001 01 01 01	23 13 18 15	9 8 1-8 1	1-1/2-0	+2	Off	After 1 month	Full	Poor	Good	Little cough	None	+ TB+	P		
234	June, 1911	F., 30	M. House work	+		Larynx subfebrile	Hospital out-patient	Dispensary 7 months Observation hospital, 4 weeks Dispensary	78			PTO PT TAF PBE TAF OT	0025 01 01 001 01 01	32 35 14 14 15 0	64 12 04 04 1 4	1	+5	Part	Full	Full	Poor	Fair	None	None	None	P		
235	June, 1911	M., 36	M. Insurance agent; invalided R.N.	+	+	Larynx	Royal Naval Hospital	Dispensary	20 18			PTO PT OT	0025 02 005	24 10 24	7 3 1	1-1	+1	Full	Full	Full	Good	Good	Hoarse	Impr.	None	P		
236	Sept., 1912	F., 38	M. House work	+		Larynx		Dispensary	29			PTO PT PT	001 01 01	23 12 11	06 0 1	3-1-0	+6	Full	Full	Full	Fair	Good	None	None	None	P		
237	Jan., 1912	M., 50	M. R.G.A. messenger	+		Larynx	For tuberculosis	Dispensary	34			PT TAF OT	001 0001	16 6 1	003 1-2 0-8	3-4-2	-6	Full	Full	Full	Fair	Good	Slight cough	Impr.	+	P		
238	Jan., 1912	F., 29	M. House work	+	+	Larynx	Hospital out-patient	Dispensary	47	2nd PTO	0015	995	PTO TAF PT OT	001 0001 01 01	5 6 2 8	002 0004 15 26	3-1		Part	Full	Full	Fair	Good	pregnant	None	None	None	P
239	May, 1912	M., 23	S. Dockyard painter	+	+	Larynx		Dispensary	25	5th PTO	003	100	PTO PT TAF OT	001 01 015 01	21 8 7 11	0 0 0 1	1-0		Off 3 weeks	Full in 2 months	Full	Fair	Good	None	None	+ No TB	P	
240	May, 1912	M., 47	M. Gunwharf fitter	+		Larynx	For pleurisy and pneumonia, 20 years ago; hæmorrhage	Dispensary	38	TAF	001 003	needle-track 100 (local reaction)	PTO PT TAF OT	001 01 03 01	16 14 2 14	7 1 1 0-6	1-0	+4	Off 1 month		Full	Fair	Good	Less hoarse	Impr.	+ No TB	P	
241	Aug., 1911	M., 35	M. Insurance agent	+	+	Larynx febrile	Sanatorium 8 weeks 3 years ago	Rest, 3 weeks Observation hospital Dispensary	41				PTO PT TAF	001 01 01	32 29 11	3 0-6 1	1	+1	Off	Part	Fit Full	Poor	Fair	None	None	None	P	
242	May, 1912	M., 42	M. Dockyard fitter	+	+	Febrile	For tuberculosis 1 year ago	Rest, 4 weeks Dispensary Sanatorium 5 months Dispensary	15				PTO PT	001 01	16 1	7 0	2-1		Off	Full	Full after san.	Poor	Good	None	None	None	A	
243	Sept., 1911	M., 26	S. Insurance agent	+	+	Larynx febrile	Sanatorium 3 years ago	Dispensary	36				PTO PT OT TAF	0005 01 01 01	40 24 8 7	8 0 1-6 1	1-2	+5	Off	Part	Full	Fair	Good	None	None	None	A	
244	Oct., 1911	F., 42	M. House work	o	+	Larynx		Dispensary	36	OT	001	99-6	PTO PT TAF	002 01 01	35 6 26	8 0-5 1		-5	Part	Part	Full	Poor	Fair	None	None	None	A	

The first part of the year was spent in the
 study of the history of the country and
 the progress of the various branches of
 science and literature. The second part
 was devoted to the study of the
 natural history of the country and
 the progress of the various branches of
 science and literature. The third part
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 natural history of the country and
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 science and literature. The tenth part
 was devoted to the study of the
 natural history of the country and
 the progress of the various branches of
 science and literature.

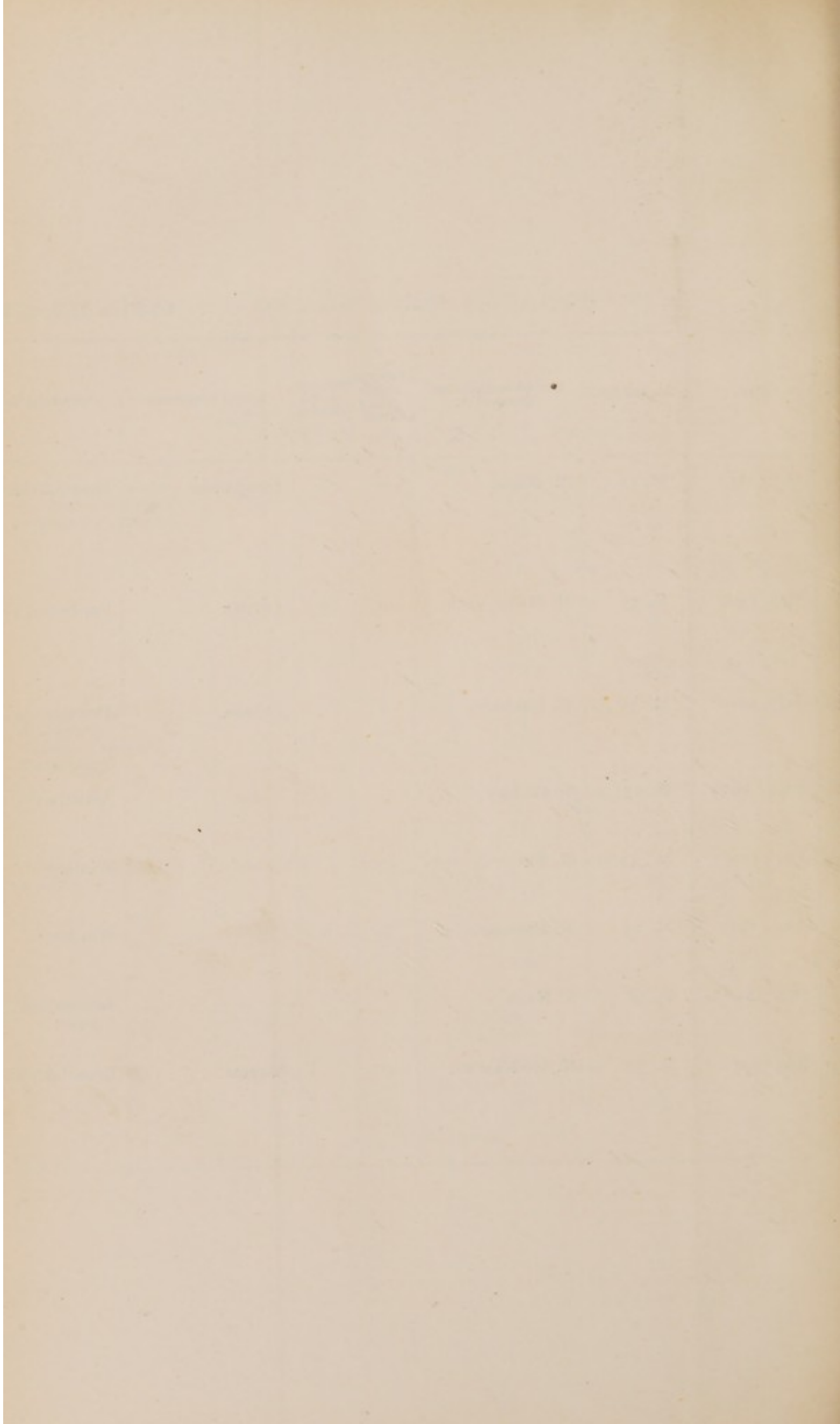
TYPES 17 AND 18.—LESION EQUALS ONE LOBE AND MORE. DURATION OVER ONE YEAR—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Sputum on Admission.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.											Condition on Discharge.							
									No. of Weeks.	Tst.			Treatment.				Sensitization (see p. 275)	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.
										Preparation.	C.C.	Temperature.	Preparation.	Stain.	No. of Doses.	Mask.			Before.	During.	After.	Before.	After.	Symptoms.	Signs.	Sputum.		1911.	1912.
245	Aug. 1911	M., 24	S. Insurance agent (dockyard before)	+	+		Sanatorium 7 months 2 years ago; tuberculin at hospital since	Dispensary	26			Degress.	PTO PT TAF	-01 -01 -1	13 15 8	1 9 1	1-0	+7	Part		Full	Fair	Good	None	None	+ No TB	A
246	Aug. 1911	M., 40	M. Carter; invalided R.N.; TB+ then	+	o		Royal Naval Hospital	Dispensary	33	1st PTC	-002	101	PTO PT OT	-002 -01 -1	33 11 6	-6 -8 -8	4-0	+9	Off 2 weeks	Part	Full	Poor	Good	None	None	None	A
247	Feb. 1912	M., 33	M. Dockyard	o	+	Larynx	Hospital out-patient for 8 years for tuberculosis	Dispensary Care Committee	33	3rd PTO	-003	needle track	PTO PT TAF	-001 -01 -1	28 16 1	-8 1 1	1-0	-6	Off and on		Full	Poor	Fair	None	None	None	A
248	April, 1912	M., 26	M. Brewery bottler	+	+	Febrile	For weak heart	Rest Shelter Dispensary Sanatorium 3 months	22			101	PTO PT TAF	-001 -01 -1	19 16 5	-5 -6 -6	o		Off 3 months	Off	Fit	Poor	Good	Little cough	None	+ TB+	P
249	May, 1912	F., 33	M. House work	o	+			Dispensary	45	4th PTO	-004	101	PTO PT TAF OT KE	-001 -01 -1 -1 -1	25 15 5 1 5	-5 -5 -6 -5 -6	2-1-1	+6	Part	Part	Part	Poor	Fair	Cough Pelvic complications	Impr.	+ No TB	P
250	May, 1912	M., 18	S. Gardener	+	+		Sanatorium 3 months 2 years ago	Dispensary	30				PTO	-001	16	-6	3-1-0	+9	Part		Full	Fair	Good	None	None	+ No TB	P
251	Mar., 1912	M., 29	M. Invalided R.N.	+	+		Royal Naval Hospital	Dispensary 38 weeks Observation hospital 7 weeks Sanatorium 3 months	45				PTO PT TAF	-0014 -01 -01	32 19 23	-11 -38 -5	2-1-2	+4	Off 6 months	Off	Full	Poor	Good	None	None	None	P
252	Aug. 1911	M., 50	M. Dockyard office	+	+	Febrile	Pleurisy 10 years ago	Rest 4 weeks Dispensary	60				PTO PT TAF TAF OT KE	-002 -01 -01 -01 -1 -1	23 19 23 12 9 27	-7 -5 -8 -3 -6 -2	1	+5	Off	Off 1 month	Full	Fair	Good	Impr.	Impr.	None	P
253	July, 1911	F., 35	M. House work	o	+	Larynx	For tuberculosis	Dispensary	58				PTO PT TAF OT	-002 -01 -01 -01	26 19 26 1	-6 -26 -8 -8	1		Part	Part	Part	Varied	Attacks pleurisy asthma	Unchanged	+ No TB	B	
254	July, 1911	F., 50	M. House work	+	+	Subfebrile	Pleurisy and bronchitis 2 1/2 years ago	Dispensary	54				PTO PT TAF	-002 -01 -1	25 34 20	1 -4 14	0-2-3		Part		Part	Poor	Fair	None	None	None	P
255	June, 1911	F., 36	M. House work	+	+	Febrile	Pleurisy and bronchitis 5 years ago	Rest Observation hospital 6 weeks Dispensary	58				PTO PT OT TAF	-002 -01 -1 -1	40 18 4 19	1 -26 -2 1	1-1		Off			Poor	Impr.	Relapsed		Died	
256	June, 1911	M., 39	M. Dockyard sawyer	+	+	Larynx	Sanatorium 6 months; relapsing	Dispensary 14 months Observation hospital 4 weeks	62				PTO PT TAF PT FBE	-0025 -01 -01 -01 -01	36 21 31 14 8	1 -15 14 -14 -08	1-1		Unfit	Part	Off	Fair	Impr. Relapsed	Relapsed			Died



TYPES 17 AND 18.—LESION EQUALS ONE LOBE AND MORE. DURATION OVER ONE YEAR—Continued.

No.	Date.	Sex and Age.	Married or Single and Occupation.	Tubercle Bacilli at any Time.	Sputum on Admision.	Special Symptoms.	Previous Treatment.	General Course of Treatment.	Tuberculin Administration.										Condition on Discharge.									
									Test.			Treatment.			Sensitiv- ness (see p. 272).	Weight Gain or Loss in Lbs.	Working Capacity.			General Condition.		Active Disease after Course.			Summary.			
									No. of Weeks.	Prepara- tion.	C.C.	Tempera- ture.	Prepara- tion.	Minimum.			No. of Doses.	Maxi- mum.	Before.	During.	After.	Before.	After.	Symptoms.		Signs.	Sputum.	1911.	1913.
257	Oct., 1911	F., 43	M. Nurse	+	+	Indigestion	Hospital out-patient	Dispensary 7 weeks Observation hospital Dispensary 7 weeks	58			Degrees.	PTO TAF TAF PT OT KE IK	-002 -001 -001 -01 -01 -01 -004	40 5 16 8 7 17	-66 -0026 -76 12 11 1	4-1- 3-0		Off	Part	Part	Poor	Poor	Relapsed	Un- changed	+ No TB	S	
258	May, 1912	F., 35	M. House work	o	+	Larynx	For loss of voice	Dispensary	42				PTO TAF TAF IK TAF	-001 -01 -01 -001 -01	25 10 3 10 17	-7 -2 -022 -03 -8	0		Off	Part	Part	Poor	Poor	Un- changed	Un- changed	+ No TB	S	
259	July, 1910	M., 36	M. Factory	o		Febrile	Pleurisy	Bed 1 month Dispensary Winsley 2 months Dispensary	54			Febrile	PTO PT TO	-0015 -01 -1	60 18 10	-7 -7 1	0-1- 2-3- 1-0	+19 -2	Off 16 months	Off	Part	Poor	Fair	Impr.	Impr.	None	P	P
260	Sept., 1910	F., 25	S. Factory			Asthma	Dispensary	Dispensary	21				PTO PT TO	-0025 -003 -05	8 21 7	-06 -75 -5	0	+2	Off 2 weeks	Full	Full	Poor	Fair	Impr.	Impr.	None	P	P
261	Dec., 1910	M., 44	M. Factory			Winsley	Dispensary Winsley	Dispensary Winsley	36	OT ..	-001 -001	Nil to 104	PTO PT TO	-0005 -01 -05	39 15 11	-05 -06 1	3-1-0	+2	Full	Full	Full	Poor	Fair	Impr.	Impr.	None	P	B
262	Aug., 1910	M., 24	M. Factory	o	o	Winsley	Dispensary	Dispensary	36	PTO	-05	To 992	PTO PT TO	-001 -01 -1	27 26 16	-15 -7 1	1-2- 3-1-0		Full	Full	Full	Poor	Fair	Impr.	Impr.	None	P	B
263	Oct., 1910	F., 39	S. None			Sanatorium ; ill 20 years	Tuberculin	Tuberculin	30 9				PTO PT TAF	-001 -01 -001	27 21 19	-55 -55 1	1-2- 1-0		Off 20 years	Off	Full	Fair	Good	None	None	None	A	A
264	Aug., 1910	F., 31	M. House work	o		Asthma	Bronchitis and asthma	Tuberculin	44	OT	-0001 -001 -005 -01	To 992 To 103 11 a week	PTO PT TO	-001 -01 -1	21 25 18	-5 -725 1	1-0	+13	Off	Off	Part	Poor	Fair	Impr.	Impr.	None	B	P



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