WORK FOR THE TUBERCULOUS DURING AND
AFTER THE CURE

PART 2

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WORK AFTER THE CURE

In considering the second phase of the subject of this paper, it should be said at the beginning that the whole question of suitable employment for arrested cases of tuberculosis is at present far from having been settled in the United States. Many conflicting opinions are held regarding the question, although, as will be indicated later, "there is a growing body of knowledge with regard to the employment of the tuberculous upon which there is substantial agreement among the best informed." A lengthy bibliography could be compiled of the various investigations made in the United States during the past decade or so in the endeavor to discover what trades or occupations are inhibited by their nature for persons suffering from tuberculosis or likely to develop the disease. The investigations include studies by individual physicians, inquiries by and for the national government, and the work of a special committee appointed by the National Tuberculosis Association in 1917 to investigate the mortality in dusty trades.

1 This is the second part of a paper which was read by the author at the International Congress Against Tuberculosis, held in Brussels in July, 1922. The first part of the paper, "Work During the Cure," was published in Archives, Vol. 1, No. 5, October, 1922. As printed here, the second part has been considerably abridged from the full paper which appeared in the Transactions of the International Congress, but the important "Summary and Conclusions" have been printed in full.

Deleterious occupations

In general, the investigators in the United States have reached the same broad conclusions regarding certain trades as have been reached in other countries. For example, there seems to be general agreement as to the deleterious effects on the lungs of certain forms of dust encountered by workers in granite, and by workers in the trades in which a large use of abrasives is made in their operations. At the same time, it seems equally clear that although serious impairment of vitality, and even death, may result from pneumokoniosis (especially silicosis), these diseases are in many cases not tuberculous in their nature, although they have a marked predisposing influence towards it.

The Committee on Dusty Trades appointed by the National Tuberculosis Association made an exhaustive investigation into the causes of mortality amongst granite cutters at Barre, Vermont, one of the most important centers of this industry in the United States, and its report should be studied by everyone interested in problems of health in industry.

One of the most gratifying facts disclosed by the report was of particular interest and significance; namely, that the manufacturers were making every effort to reduce the hazards involved in the industry. This is also characteristic of practically all the important manufacturing and general industries of the country today, and must in the end result in greatly improved working conditions generally.

Sickness records in industry

It is apparent that careful and widespread investigations must be continued if preventable sickness in industry is to be minimized. The statistical office of the United States Public Health Service made the following important pronouncement on this subject:

No factory management, employees' organization, or public health agency can control or prevent sickness without knowing when, where, and under what conditions sickness actually occurs.
This knowledge is essential, not simply for a single day or month or year, but continuously. Eternal vigilance is never more necessary than in the control and prevention of disease, and this vigilance can be maintained only by the systematic reporting of sickness. The slow influence of many conditions, harmful or helpful, can not be recognized and evaluated unless records of ill health are currently available for observation and study in connection with a knowledge of the conditions under which people work and live. So well recognized is this fundamental principle that the effectiveness of a city health department is judged in a large measure by the accuracy and completeness of its morbidity reports. For without dependable and prompt records of what sickness actually occurs, a public health agency is blind.

The same principle obviously holds true for groups of persons employed in a factory, mine, or store; but it has not been put into practice except in relatively few establishments. This is true in spite of the fact that never before has so much attention been given to the health of workers. Progressive industrial establishments are spending large sums of money for the improvement of working conditions and for the care of workers who become sick. Literally thousands of organizations exist among employees for the purpose of affording financial relief to those who are disabled because of disease. Public Health agencies are devoting much effort toward building up a knowledge of industrial hygiene. But, without current information as to the occurrence of disease and as to the conditions under which disease occurs, much of this money and of this effort has been spent on 'general principles,' or has been concentrated on the elimination of a few well recognized hazards of health. Desirable and valuable as 'wholesale sanitation' of places of work and of industrial communities as safeguards against specific hazards may be, their adequacy can not be tested until we know as much as possible of what the entire sickness situation is from week to week or from month to month. Preventive measures can not be definite in their application unless when, where, and how disease occurs are definitely known.

The growing realization of the importance of a current index of sickness among employees—not only as a foundation for intelligent prevention of disease, but as an essential in economical plant operation—led the Public Health Service to study the question of sickness records in industrial establishments. Information from several hundred plants which had sick benefit associations among their
employees was secured; the information covering the character of the records kept, the preventive measures attempted, and the sickness experience for three years. The results of this inquiry showed that while many records were available, the records differed so widely in their form and character and were so rarely prepared for use as indices of sickness prevalence and incidence that they were practically valueless, except in a few instances, for the chief purpose in view. Accordingly it was determined to work out, if possible, a practicable standard plan for reporting and recording sickness which would be elastic enough for adaptation to many systems already in use by individual plants and yet would furnish at least some of the fundamental facts necessary for a current knowledge of sickness prevalence among the wage earning population.3

Some progress has been made, and certain principles have been evolved, although it must be said that, outside of a few trades and occupations generally recognized in all industrial countries as being unsuitable and dangerous, no general list of occupations as unsuitable or suitable for arrested cases of tuberculosis is yet available. In point of fact, several investigators have come to the conclusion that it is not feasible to attempt to formulate such a list.

When it appeared that amongst the men disabled in the World War a very large percentage were suffering from tuberculosis, the United States Government asked the National Tuberculosis Association for advice in the difficult problem of the vocational rehabilitation of these men. The association gladly acceded to this request and appointed, about the time of the Armistice, an advisory committee of medical and lay persons of long experience and national reputation in the field of tuberculosis. The association also detailed one of its executive staff, Dr. H. A. Pattison, to act as executive officer of the committee.

The committee met at frequent intervals for more than a year after its appointment, and at wider intervals subsequently. Various reports were made to the National Government; three

of which were issued as bulletins of information. In the first of these bulletins published in 1919, there were set forth the reasons which actuated the government in making the information available in that form. The following is taken from the "Foreword" written for the bulletin by the Director of the Federal Board for Vocational Education, which was at that time the governmental authority charged with the vocational rehabilitation of men disabled in the war:

When the committee began its labor it was realized that any intelligent and effective program for the vocational rehabilitation of the tuberculous man must be based upon sound principles which represented at least the censensus of opinion to which the experts had as a result of long experience arrived. It was felt, also that the time had come for drawing up and issuing in brief, simple, compact form, certain information with regard to the tuberculous man and his proper care and treatment which would be valuable to the man himself, his family, the public and those engaged in or concerned in any way with the problem of his restoration to normal civilian life as a successful and independent wage worker.

With these ends in view the committee has formulated the statement of principles, policies, safeguards, and helpful information contained in this bulletin, which has been approved by the Federal Board and which is to be used as the basis of the work of the office of the Federal Board and its district offices in dealing with every phase of the problem of the discharged tuberculous soldier, sailor or marine. It is believed that it will be found to contain information of equal and lasting value to many others, to civilians as well as soldiers, to employers as well as to victims of the disease.

Because it was largely intended as a guide to laymen in dealing with tuberculous ex-service men, the bulletin devoted some attention to general information on the subject of tuberculosis. Chiefly, however, the bulletin dealt with considerations relating

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4 Federal Board for Vocational Education, Washington, D. C.
Bulletin 29 Reeducation Series No. 5 Treatment and Training for the Tuberculous.
Bulletin 32 Reeducation Series No. 6. The Agricultural and Industrial Community for Arrested Cases of Tuberculosis and Their Families.
Bulletin 33 Reeducation Series No. 7. Productive Vocational Workshops for the Rehabilitation of Tuberculous and otherwise Disabled Soldiers, Sailors and Marines.
to the training and employment of tuberculous men after the cure; i.e., when the disease has been arrested.

*Outdoor employment*

One broad statement of extreme importance marked the beginning of the remarks on suitable employment for the tuberculous; namely, a definite pronouncement regarding outdoor employment.

Many patients are still being told by physicians that they must seek 'light outdoor employment.' This is a fallacy. Experience has demonstrated that most arrested cases, especially those who have been accustomed to indoor work, will do better if they return to indoor jobs. Moreover, there are few outdoor jobs that are suitable for the tuberculous, as will be shown presently. There are many suitable indoor jobs.5

Misconception on this point appears to be wide-spread, even amongst physicians dealing with tuberculosis; but it cannot be stated too emphatically that there is practically no "light outdoor work" by which a tuberculous man can earn sufficient wages to permit of that proper scale of living necessary if the tendencies towards a reactivation of the disease and a consequent breakdown are to be minimized.

Further, many outdoor occupations, especially in agriculture, are seasonal in character. Periods of intense activity and long hours alternate with periods in which little or no work requires to be done, instead of steady effort throughout the year. If it were desired to represent graphically the fluctuations in intensity and hours of any occupations proposed for a tuberculous person, the most suitable occupations from this point of view would be those in which the line representing the occupation throughout the year was straight. For, alike from the point of view of the physical stress involved in special periodical activity, and of the mental worry likely to be occasioned by periods of unemployment, an "even tenor" of work and life is best for the tuberculous.

5 Bulletin 29, Treatment and Training, p. 9.
In a later bulletin, considerable attention is devoted to some studies and investigations made amongst ex-patients of several of the leading sanatoria of the United States in order to discover, if possible, the effect of their occupations on the maintenance of the arrested condition of the disease, or of its reactivation. The superintendent of one well-known institution reported that of the patients discharged from the institution during a period of ten years (about 1100 cases) the records showed that factory workers held their condition distinctly better, and workers in offices far better, than did outdoor workers. (This experience has been corroborated in the case of other sanatoria.)

Dr. Lyman ascribed the excellent economic and physical results chiefly to wages and environment. Of 344 men who had stated their earnings only 13 were earning $10 or less a week. Two-thirds were earning over $15 a week. The average for the 344 was $21.37 (the average weekly earnings of all ex-patients, both men and women, of Otisville, New York City's sanatorium, was but $9.81). An allowance of $9 a week for women doing their own housework was included in the average.

Dr. Lyman's report of his investigation also emphasized the necessity for a more highly developed follow-up service, in the following words:

The follow-up work of the present day is a development far in advance of the annual circular letter of our earlier efforts. It has two distinct aims. Primarily it seeks to secure more permanent results for the patient. Secondly, it is intended to aid us in amassing data on housing, living, and industrial conditions, which data shall be recorded observations of trained investigators and not the haphazard replies of those who look upon our questionnaires as nuisances, impertinences, or both. The second function of our follow-up work must be further developed to give us the correct answer to many of the questions which confront us. To control tuberculosis in any locality we must know the

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8 Bulletin 33, Productive Vocational Workshops.
7 Dr. David R. Lyman, Gaylord Farm Sanatorium, Wallingford, Conn.
8 Bulletin 33, Productive Vocational Workshops, p. 8.
chief determining factors of the incidence of the disease in the locality. These may lie in the housing facilities or in the industrial conditions, or in the habits of life of the population (the problem usually varies with the locality), but this can only be determined by careful study in the homes of the cases which come under our care.  

The government authorities had especially hoped that the advisory committee appointed by the National Tuberculosis Association would provide lists of occupations both suitable and unsuitable for the tuberculous, which could be placed in the hands of physicians and lay advisers of disabled ex-service men. However, after a careful study of the problem, it was found to be impossible to provide such lists without many years of study and wide experimentation, and it was decided that the problem must be approached from a different angle. Although certain broad generalized statements may be of some value such as,

The tuberculous should not enter occupations which are conducted underground, which are dusty (particularly if the dust is inorganic), which involve handling poisons or produce fumes and gases, which require severe physical strain, mental stress, or emotional excitement.  

such statements do not provide advisers of the tuberculous with sufficient information.

In point of fact, there are probably very few industries in which suitable work for a tuberculous person could not be found in some part or sub-division of the occupation.

It is also well to remember that the manner in which a tuberculous worker spends his hours of leisure and rest is a factor quite as important as are his conditions of work.

The advisory committee came to the conclusion that the solution of the problem could be found only upon an individual basis. Every case should be considered in the light of all the factors involved; both in the tuberculous person himself and


The vocational adviser and the medical officers in the various dis­
trict must sit down with the individual soldier and help him to decide
wisely about his future. They will have to advise about a particular
job for his case. The vocational officers will know little or nothing
about tuberculosis, but will know about jobs and processes. The
medical officers will know little or much about tuberculosis, depending
upon their training, and they will probably know little about industries.
But if we can lay down a set of standards by which to judge the inher­
ent and extrinsic health factors of a job they can more nearly approxi­
mate a wise judgment.

**Occupational health standards**

The following standards\(^{11}\) cover nearly, if not quite all, the
health factors that will enter into the problems of training and
placement. Not all will have a bearing on every case, but all
cases met will involve most of them. A few explanatory com­
ments are given to make the subject clearer:

**Group I—Factors due to the personality of the worker.**

(a) Present health: The amount of damage done by and the degree
of arrest of the tuberculous disease, as shown by the medical survey,
should be carefully considered.

(b) Temperament and education: Is the ‘high strung’ or phlegmatic,
stupid or quick of perception? The extent and direction of the man’s
education, both in school and by experience, will enter into the choice of
training course and job.

(c) Choice of vocation and trade: It is a cardinal principle that the
man shall be consulted as to his hopes and ambitions; that previous
experience shall be utilized whenever possible in retraining. This holds
true for tuberculosis as well as for other disabilities.

(d) Age will have a direct bearing on training. One soldier with
only a common-school education who had been a warehouseman wanted
at the age of 39 to become a minister. The vocational adviser convinced
him that his education was too limited and his age too advanced to
undertake training for the ministry.

\(^{11}\) Adapted from those devised by Dr. Geo. M. Price in “The Modern Factory.”
The soldier would not, of course, be directed to a trade largely followed by women.

**Group II—Factors due to conditions of work**

(a) Character of work: Active or sedentary; heavy or light, involved and complicated, or simple as to operation; per diem or piece work.

(b) Attitude and position: sitting, standing, stooping. An occupation requiring a continuous stooping or strained position would be unsuitable.

(c) Time, duration, and pauses: Day or night work, the latter usually unsuitable. The work should not be seasonal, requiring intensive application at certain times of the year, as the canning industry. Speeding up at the end of each month, as is frequently done by bookkeepers, might prove serious. The tenure of employment should be reasonably certain.

Hours of work: Eight or less, suitable; nine or more, unsuitable.

Pauses: Lunch hour imperative and brief rest periods desirable.

(d) Fatigue, tension, and responsibility; Lifting heavy weights or any work requiring vigorous exertion of the upper extremities, especially if long continued, should be avoided. Severe bodily effort, continued nerve strain, and too much responsibility are dangerous.

(e) Wages must be adequate for the healthful support of the man and his family.

**Group III—Factors due to materials and processes.**

(a) Dusts, (b) poisons, (c) gases and fumes: Their kind and quantity must be taken into account. They may act as direct irritants to the throat and lungs or lower the general 'tone,' thus leading to breakdown.

(b) Infectious material: This will not affect employment in well conducted sanatoria where infectious material is properly disposed of.

(c) Dangerous machinery and appliances affect the tuberculous no differently than other employees except as nervous strain contributes to breakdown.

**Group IV—Factors due to the place of work**

(a) Outdoor and indoor work: This has already been discussed. These cases should not work in strong drafts nor high winds, under a burning sun, in superheated shops, greenhouses, etc. nor in slush and rain.
(b) Construction of work place: Flooring is an important item. Damp or wet floors are unsuitable places. Basements, underground jobs, and overcrowded shops should be avoided.

(c) Air and ventilation, temperature and humidity: Frequent changes in shop air are imperative for the health of all workers. In artificially heated places of work and abode the most desirable temperature range is 65 to 75°F. The minimum for the tuberculous should be 55. The maximum should not exceed 75. Relative humidity for these temperatures should not be below 30 per cent or above 60 per cent.

(d) Light and illumination: The amount and intensity of light suitable for the kind of work to be done should be determined. This, however, is a matter of shop inspection for the placement officer, and it is suggested that he study the lighting codes of those States that have adopted such a code.

(e) Sanitary care and comforts: Drinking, washing and toilet facilities of approved types. Club and rest rooms desirable. Employers who have developed a department of industrial medicine will be more likely to have a sympathetic and helpful attitude toward the tuberculous workers.12

Surveys: The patient: the industry

In practice, it is obvious that the use of this set of standards would involve two separate and distinct procedures; (a) a careful survey of the man himself who is a subject for advice regarding vocational training for an occupation, or for direct employment when training is not feasible or necessary; and (b) a careful analysis of the industry into which it is proposed to direct him.

While these procedures may seem slow and cumbersome, it should be pointed out that while the survey of the man himself must always be an individual one, the survey or analysis of an industry, when once completed, will serve always until changes in the industry itself may compel a supplementary survey. Also, it should be remembered that many enlightened employers have already analyzed the processes and sub-divisions of their industries, from a health point of view, and that their reports are usually available.

12 Bulletin 29, Treatment and Training for the Tuberculous, p. 10, et seq.
Reference was made earlier to the limited value of generalized statements with regard to the suitability or otherwise of an occupation for tuberculous persons, but there is practical unanimity of agreement with regard to one important point: namely, a possible change of occupation. The following statements on this point are authoritative:

As a general rule, it is better for a man with arrested tuberculosis to return to his old occupation than to learn a new trade or profession. If the particular job is unsuitable, then some job in which previous training can be utilized should be sought. Occasionally it may be found necessary to advise complete readjustment of occupation.\(^{13}\)

After a man has been cured of tuberculosis he should be allowed to return to the industry to work at his old occupation, if no hazard exist there, or in some allied occupation.\(^ {14}\)

Employment agencies

Reference was made earlier to the importance and necessity of the continuance of supervision over ex-patients of sanatoria. The investigations undertaken to aid the national government in dealing with the problem of the tuberculous soldier emphasized the importance and necessity of continued supervision of ex-patients of sanatoria.

While some arrested cases of tuberculosis may be able to return to full work under ordinary conditions of employment, it seems certain that, in the great majority of cases, they will be unable to do so. It will, therefore, be necessary to provide for many arrested cases opportunities of employment under special conditions. If there were available plenty of occupations in which part-time, medically supervised work could be provided, the problem would be a simple one, but unfortunately there is little work of this character to be found. Indeed, it is exceedingly difficult to find work in regular, full time jobs for the tuberculous; a fact attested by the experience of many agencies for the placement of tuberculous persons in employment.

\(^{13}\) Bulletin 29, Treatment and Training for the Tuberculous, p. 9.

The superintendent of the employment bureau of the New York Hospital Social Service Association finds it practically impossible to place cases of arrested tuberculosis. Herself, an arrested case of tuberculosis for 20 years, the superintendent of placement in one employment bureau gives these reasons for the difficulties:

1. Having been told by the physician or someone else that they must seek outdoor employment, they are disinclined to accept any sort of indoor work. Suitable outdoor jobs are few and hard to find.
2. Prejudices of employers are exceedingly difficult to overcome.
3. It is almost impossible to find part-time employment.\(^{15}\)

Inquiries have shown that the development of industrial medicine in recent years has caused many large employers of labor to modify their attitude towards the employment of the tuberculous in their establishments, and the testimony of workers in the field of tuberculosis indicates that prejudices against the employment of arrested cases of tuberculosis are steadily growing less. There is, however, an undoubted need in the United States for organized service in obtaining employment for such persons.

**Opportunities for employment**

Possible opportunities for the employment of arrested cases of tuberculosis may be grouped under four heads:

1. In or about the tuberculosis sanatorium.
2. In the normal channels of commerce and industry.
3. In productive workshops especially organized for tuberculous persons.
4. In agricultural and industrial colonies, also specially organized for the purpose.

1. Employment in or about the sanatorium has been proved to be excellent for arrested cases, although it is obviously a limited field. From the medical superintendent downwards through the personnel to the lowest branch of service, sanatoria all over the United States are today looking more and more towards ex-patients to fill the positions. It is believed that it is

fair to say that a majority of the physicians engaged in sanatorium work in the United States today have themselves been patients in the past.

Nurses for tuberculosis work are also being largely recruited from amongst ex-patients. In point of fact, many sanatoria provide training schools in which patients may be properly trained for the duties of nursing. Quite often the training begins during the period of treatment; the hours of study and practice being graduated to suit the candidate's physical condition and progress towards recovery.

Laboratory technicians, bookkeepers, clerks and other skilled workers employed in sanatoria are also ex-patients in many instances. There are also many opportunities of employment for unskilled workers in institutions devoted to the care of the tuberculous.

(2) Reference has already been made to some of the factors which make it difficult for tuberculous persons to obtain and keep employment in the normal channels of commerce and industry. Not the least of these is the widespread prevalence of phthisiophobia which, while it is probably due in part to the effectiveness of the educational campaign against tuberculosis,—nevertheless, often hampers efforts on behalf of tuberculous persons. The remedy lies probably in the direction of further popular education in the nature of tuberculosis; although there is evidence that even amongst medical men and nurses an unreasoning fear of the disease is often found.

(3) It is believed that one of the most hopeful fields for the employment of tuberculous persons in whom the disease has been arrested may be found in the establishment of special workshops. (Experience has shown that it is also possible, in a limited degree, under the favorable conditions provided in such special workshops, to employ persons in whom the disease is still active.)

Two important experiments in this field have been made in the United States. The following account of the premier experiment is significant and interesting:
About five years ago a committee representing the United Hebrew Association, Montefiore Home, and the Social Service Department of the Free Synagogue (all of New York City), was appointed to investigate the conditions surrounding Hebrew tuberculosis patients discharged from sanatoria.

The investigation covered those cases which had been for six months to one year at home, following sanatorium treatment. Of those cases which could be located, 52 per cent had grown worse at the time of investigation. Practically all of these were relief cases and therefore an economic drag on the community. The investigation indicated that 52 per cent of work done at the Bedford Sanatorium—that $52 out of every $100 spent in treating the patient in the sanatorium—was wasted in less than a year's time. In studying the history of these cases, both from the medical and social side, the committee was convinced that relapses and waste were due to two facts:

1. The home conditions to which the patients return.
2. Industrial conditions into which the patients were forced by economic needs.

As a result of the study it was determined to open a shop for the manufacture of a marketable product. The work of the shop was to be based upon the principle that a tuberculous patient should enjoy at least two years continuous good health after sanatorium treatment, without any signs of renewed activity, before it is safe to discharge him as apparently a cured case with little or no need for further medical and social care.

It was planned to provide part-time work, paid on the basis of piece work and done under medical supervision; with periodic reexaminations to regulate work and rest in accord with changing physical condition. Because the majority of cases had been engaged in some form of needlework, the garment trade was chosen.

Numerous difficulties confronted the projectors. They had not only the ordinary problems involved in starting a new business, but the problem of a chronic infectious disease as well. Added to this was the fact that all of the cases had been more or less pauperized by charitable aid.

Among the difficulties were these:

1. Finding a satisfactory loft. The committee frankly told the landlord of the exact purpose for which the loft was sought. At first they were met with refusals. Old prejudices are difficult to dispel, though it was explained that only sputum negative and therefore non-infectious cases would be employed.
(2) This ruling that only sputum negative cases would be employed was found necessary because of the unwillingness of arrested cases to associate with men having tubercle bacilli in their sputum.¹⁸

(3) It was difficult to find the right man who would accept the position as shop manager. Fortunately for the committee, the family physician of one prospective candidate understood tuberculosis and advised him that the danger to himself was negligible; less, in fact, than in a crowded shop in which there might be unknown cases of active tuberculosis. The committee was also fortunate in securing as executive secretary a man who combined business ability with experience in social work and had tact and perseverance to meet difficulties as they arose.

(4) In the beginning there was difficulty in getting work for this sort of factory. This has been overcome very largely. During the war the shop made great numbers of blouses for the Navy and shirts for soldiers. Just now surgeons' and nurses' gowns are being turned out for hospitals.

(5) At first there was fear on the part of the patients that, if they received wages, relief would be withdrawn; also that it was hardly worth while to work, as they would only be helping to save money for the charities. It was made the policy, therefore, not to withdraw relief to the extent that the patient's earnings increased, but to reduce their relief allowance by about half of their earnings until they were absolutely self-supporting, so that as an answer to the query 'Does it pay to work?' they learned that it did pay them and they had more money than they ever had before. This inevitably led to increased self-respect and the desire to become economically independent. "It has been interesting," writes the secretary "to see some families that the charities had told us were absolutely pauperized, change their ideas entirely when they were able to earn $25 a week or more." Our experience does seem to prove that given an opportunity to work and earn good wages, many patients of the dependent type become absolutely self-supporting in spirit and in fact their health improves as their earnings improve.

This remarkable shop is situated in the upper east side of New York City. It has been the policy of the committee to make the shop, in every way, as nearly as possible like any other garment shop. The supervising nurse wears no uniform. She appears on the floor as a forewoman. The examining physician does not go to the factory, but the patients go to him.

¹⁸ Later, a department was provided for "open" cases.
About 170 men and women are on the payroll and most of them are tuberculous. A few perfectly well people have been employed as supervisors or as full-time workers to keep the processes going. Likewise, two or three normal men are employed to do heavy lifting. It is said that visitors often pick out normal workers as tuberculous and tuberculous workers as normal. The shop is somewhat overcrowded because of rapid growth. Plans have been drawn for a new building, but it has been necessary to “mark time” during the war.

The ages of those employed range from 16 to 60 and over. About 50 per cent had to be taught the trade, but they succeeded and are doing just as good work as those who had followed the trade previous to their breakdown.

This is distinctly a factory and not a resort for dilettante training in an avocation. The employees are just as busily engaged with their tasks as in any other similar factory. There is little or no conversation between the workers. They earn their money by piece-work at the prevailing wage and they work hard and steadily during the hours prescribed for each.

In this shop, however, the doctor is “boss” and fixes the hours of labor. The nurse watches the amount of work and the effect upon the worker. If it appears necessary to reduce the hours, the patient is not permitted to “speed up” in order to maintain the higher wage, but is told that he may not average more work per hour than he did before his work period was shortened. Sometimes it is necessary to limit the amount of work instead of the hours so that a given task which would take two hours may be completed in three or four hours.

The factory was started frankly as an experiment. It was expected that they would lose money at first, but it was hoped that ultimately it could be made self-sustaining. That hope has been realized. During 1915 and 1916, they lost money; in 1917, they made money; in 1918 they made still more money, getting a good return on the investment. The assets of the company including equipment and materials, equal the money invested, namely, $21,371, which includes the deficit incurred in 1915 and 1916. If the relief money saved were included in the financial statement, the dividends would be very high. Still better, however, are the social and moral dividends accruing from the restoration of hospitalized and pauperized cases to self-support and self-respect.

It is the opinion of the secretary that this experiment can be successfully repeated in New York and other cities in the same industry or other industries. It is necessary only to choose an industry producing a
readily marketable product, suitable for the employment of tuberculous men in its manufacture, in which the prevailing wage for eight hours work is not less than $20 per week.\footnote{Bulletin 33, Productive Vocational Workshops, Federal Board for Vocational Education, Washington, D. C.}

The second experiment was inaugurated in 1920 by the New York City Tuberculosis Association, which opened a shop in the suburbs of the city.

Only men with arrested or quiescent tuberculosis and negative sputum are received by the Reco Manufacturing Company. The men now under training are largely ex-service men, but civilians who are suitable patients and anxious to take up any of these trades will be accepted if they are prepared to spend the full period of apprenticeship.

All applicants are subjected to a thorough medical examination before admission. Close and exhaustive histories of each patient are taken and the effects of the work carefully noted; but, it is a workshop and not a sanatorium, rest camp or health school.

The trades selected to be taught at the shop are watch repairing, jewelry manufacturing and cabinet making; these were chosen only after careful investigation. They are deemed most desirable because not injurious to the lungs nor especially fatiguing. Workmen in these trades are very well paid and there is a great demand for men skilled in these particular occupations. The instruction is carried out by experienced men who are experts in their respective trades.

When the students in the shop have gained enough skill to do marketable work they are paid wages on a piece work basis. The skill that some of the men have developed has been surprising; without any previous mechanical experience some have become proficient enough to make salable articles within two and a half months on only part time training.

Because of the fact that this second experiment has been assisted throughout by the national government, which pays for the tuition of disabled ex-service men who are being taught trades in the model workshop, it is not possible at present to judge fully of the possibilities from a purely commercial and self-supporting standpoint. It is the opinion, however, of those closely associated with the experiment that in time it may be-
come largely self-supporting; quite apart from the present support of the national government.

It seems fair to conclude that in all such enterprises for men and women who are sub-standard in health, the capital expenditure necessary to establish the workshops must be provided on a non-interest bearing basis; also, that there will probably be an actual deficit in the early years.

Although a number of valuable experiments have been made, it must be recorded with regret that no real example of a colony for tuberculous persons, in which they may live and undertake occupations suited to their disability, exists today in the United States. The advisory committee on the rehabilitation of tuberculous ex-service men (to which reference has already been made) undertook a careful study of the subject and presented a report which was published by the national government.¹⁸

The National Tuberculosis Association has also had a special committee working on the problem for the past two years; but, owing to the lack of the necessary funds, it has not been found possible up to the present to carry into effect any of the recommendations which have been made.

Probably the outstanding conclusion made from the studies which have been undertaken with regard to suitable employment for arrested cases of tuberculosis is that a prolonged period of what may be termed "industrial convalescence" is necessary in the great majority of cases. Earlier in this paper it was remarked that few arrested cases are able to return at once to full-time work in the normal channels of industry and commerce. The great majority will require, for a longer or a shorter period, to work under special conditions not often obtainable in ordinary employment.

The problem, therefore, which presents itself is the provision of opportunities for what has been termed "sheltered" employment for such cases; many of whom will probably be unable ever to maintain themselves under ordinary conditions.

¹⁸ Bulletin No. 32, Agricultural and Industrial Community, Federal Board for Vocational Education, Washington, D. C.
In finding a solution for the problem in general, and for the individual case in particular, the services of a specially-trained vocational adviser are indispensable. Reference has been made to various investigations which have been carried out with regard to employment for the tuberculous, and in all of them the necessity for skilled vocational advice has shown itself.

At the request of the United States Government, the National Tuberculosis Association began a further inquiry into the subject. In a preliminary report of the committee in charge of the inquiry the following statement is made as to the qualifications of a vocational adviser for the tuberculous:

What does the adviser need to know and have at instant command regarding tuberculosis and the placement (in employment) of arrested cases? He should have at least the following:

1. Correct information as to the nature of tuberculosis and the physical and mental effects of tuberculosis.
3. Some knowledge of the economic and social effects of tuberculosis and of the progress made in its control.
4. Some basal knowledge of conditions inherent in employments known to be dangerous for the tuberculous.
5. Acquaintance with available agencies assisting in caring for "arrested" cases.
6. Knowledge as to how to survey and judge jobs, and of the standards to be applied.

An adviser cannot appreciate the problems of the tuberculous unless he has some knowledge of these subjects. Without such knowledge the adviser will be at loss in attempting to counsel individuals seeking employment. Furthermore, it is indispensable in dealing with prospective employers and other agencies interested in the individuals he seeks to assist.19

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Surveying an industry

The report also summarizes briefly the data regarding any given industry which should be obtained by a vocational adviser who investigates it for the purpose of discovering its possibilities for the employment of tuberculous persons. As it is believed that the summary will be of interest, it is included here:

**How to Collect Data**

I. List of all operations and processes to be studied.

II. Description
   
   (a) An exact and complete description of what the worker does.
   
   (b) A clear statement of the machines and tools used.
   
   (c) A complete statement of the materials used in the process.
   
   (d) A description of the product after the process is completed.
   
   (e) An estimate of the mental and educational requirement necessary to do the job, and an estimate of the amount of training and experience required.

III. Observe and record facts regarding the conditions under which work is performed and resulting conditions as observed in individuals.

1. General Conditions (Accurate record as visits are made)
   
   (a) Who are employed
       
       Age
       
       Sex
       
       Which sex predominates
   
   (b) Wage
       
       Amount
       
       Piece Work
       
       Day Work
   
   (c) Hours
       
       Daily
       
       Weekly
   
   (d) Peak Loads
       
       Hourly
       
       Diurnal
       
       Weekly
       
       Monthly
       
       Seasonal
   
   (e) Day or night
(f) Management
(g) Home conditions in relation to working conditions.

2. Working Conditions
(a) Working Place
(b) Temperature—Humidity
(c) Safety and Prevention
(d) Dust
(e) Gas and Fumes
(f) Muscular Effort

3. Fatigue

IV. Interviews with Supervising physicians and nurses.
V. Report of Cases of Tuberculous Employees.
VI. Interview with Workers.20

It is necessary also that the vocational adviser should have access to any records available regarding the patient's life and environment which are of peculiar importance in the case of tuberculosis. When a "follow-up" system is in force, such information is often at the adviser's disposal without special effort.

In addition to these records, the adviser must necessarily have a survey form on which will be recorded the facts necessary in determining an occupational objective. This form is filled out by the adviser from the results of his interview with the applicant. Topics which will draw out the data desired are suggested.

A. Employment History

1. List in sequence the occupations in which disabled person was engaged prior to latest illness.
   What did he or she do?
   Name and address of employer
   Wages average monthly
   Time employed
   (1)
   (2)
   etc.

2. Describe any other occupations with which applicant is familiar although never employed in them.

3. Name of last employer.

20 Miscellaneous Document 401 (see previous reference).
4. Address.
5. Describe fully character of job held at time of injury.

How long followed?—At what wage?—per

6. Remarks: Discuss suitability of old job or job in allied line;
   (a) as the applicant sees it; (b) as the adviser sees it.

B. Education and Training
1. Grade completed.
2. Other education. Give details.

3. Education and skill acquired by experience, association, self-
   study, in hospital or elsewhere. (State equivalent of
   education in school years—elementary, high, college).
4. Ability to speak, read and write English.
5. In what kind of school work was special interest shown?
6. Applicant’s preferences as to occupation.
   (1) ____________________________
   (2) ____________________________

7. Is applicant’s education sufficient to warrant placement or
   training toward the occupation desired?
8. Compare education and skill as shown by employment history
   with the requirements of the desired occupation, and
   estimate its feasibility for the applicant.

C. Adviser’s Summary
1. General Remarks. Here the adviser should state his impres-
   sions of the disabled person’s handicap, spirit, personality,
   as compared with the demands of the occupation.
2. Recommendations as to rehabilitation. Compare carefully B-8
   and C-I and discuss his conclusions with the physician
   who has charge of the case. The adviser, the physician
   and the patient should reach a common agreement and
   understanding before a tuberculous person is entered upon a
   training course or placed in employment.21

SUMMARY AND CONCLUSIONS

It is obvious to all who have studied the question that the
problem of the employment of the tuberculous after the cure
is many sided and exceedingly complex and difficult. No one

21 Miscellaneous Document 401 (see previous reference).
solution is possible, and no formula for general application can yet be devised. In the preceding paragraphs an attempt has been made to indicate the present status of the question in the United States; including the enunciation of a few principles which seem generally accepted and an indication of the directions in which it is believed that opportunities for employment should be sought; together with some suggestions as to the methods to be adopted. The following is a brief summary of the points which it is hoped have been brought out in the second part of this paper:

1. That it is not possible, in the present state of our knowledge of the subject, to provide lists of occupations suitable or unsuitable for the tuberculous.

2. That there is urgent need for a wide and thorough study of all the leading occupations, so that more help will be available in directing arrested cases to suitable employment. As an integral part of any such study, an adequate and continuous follow-up system of arrested cases placed in occupations should be maintained.

3. That it is a mistake to advise arrested tuberculous cases in general to seek “light outdoor occupations.” (a) In scarcely any occupations of that type are the wages paid sufficient for a tuberculous person. (b) The seasonal character of many outdoor occupations renders them unsuitable for the tuberculous. (c) Experience of many observers has shown that arrested cases maintain their condition better in occupations in which they worked previous to their illness.

4. That in cases where it is necessary to seek a new occupation, work of a type allied to the old occupation should be sought.

5. That there will be a large number of persons in whom the disease has been arrested who will be unable to work under ordinary conditions of employment. Provision must be made for such persons in special workshops and industrial and agricultural settlements.

6. That trained vocational advisers should be employed to study, with the aid of the physician, each individual case; so that the person may be directed towards an occupation suitable
not only to his physical powers and previous experience, but also to his mental ability, his temperament, and his social aptitudes.

7. That each occupation in which it is proposed to place arrested cases of tuberculosis should be studied very carefully and an analysis of its conditions made; so as to enable the advisers to discover opportunities of safe employment for arrested cases.

8. That all employers of industry should maintain careful records of the incidence of all forms of sickness in their establishments; with the dual purpose of reducing health hazards and providing information useful in the guidance of sub-standard persons to suitable employment.