

The courses of instruction contemplated will cover the most important phases of diagnosis and treatment, and especially all measures and methods relating to sanatorium treatment and management. The laboratory work will deal with the latest and best methods used for the early detection of the disease, and will aim at developing an interest in the study of tuberculosis by the combination of clinical and laboratory activities; this will tend to greater precision and understanding of tuberculosis as met with in the course of public health administration, tuberculosis work proper, and general medical practice. Arrangements have also been made to furnish opportunities for those who desire to study dispensary and social service work in the large cities, by affiliation with several of the larger clinics in New York, Boston, Philadelphia, and Cleveland. It is believed that this enterprise is planned on the right foundation, and has promise of definite value to the cause of combating the scourge of all nations.

## THE CLASSIFICATION OF CASES OF PULMONARY TUBERCULOSIS.

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THE progress that has been made lately in the treatment of tuberculosis will probably be followed after the war by an increased activity in the study of the many problems connected with the disease. Throughout the country large numbers of fairly accurate records are being kept of the different forms of treatment used, and it is important that there should be some standard classification of cases by which the efficacy of the different methods of treatment can be examined. Without some effective classification much valuable information will be wasted, and progress in efficient treatment will be hindered. Further than this, if a standard classification is arranged so that it can be made to record the life-history of the disease in any particular patient, it will be a great boon to the over-worked tuberculosis officer.

### Principles of Classification.

Whatever classification is devised or adopted, one important and absolutely essential condition must be laid down: namely, that it shall only be used for cases of undoubted pulmonary tuberculosis—

that is, cases in which tubercle bacilli have been found in the sputum at some period during the illness. Everyone will agree that the disease is often diagnosable clinically, with fair certainty, before the appearance of bacilli in the expectoration, and also that in many cases the sputum may be free from tubercle bacilli for long periods. But in a classification designed to help comparative study, it is essential that only definite cases should be included; and the finding of the bacillus still remains the only diagnostic proof that no one can deny. It is true that it is in early cases that treatment is most important and most successful; but at the same time everyone is familiar with publication of the reports of new treatments, with their records of high percentage of successes and no failures, and with the disappointing results of the same treatment in one's own hands, results often so disappointing that, on re-reading the report, the question arises, "Were all these cases *definitely* diagnosed and proved to be what they were said to be?" And thus another valuable treatment gets pigeonholed and forgotten because it could not live up to its reputation. It must therefore be reiterated and insisted upon that a classification for comparative study must include only definite cases of pulmonary tuberculosis—namely, those in which tubercle bacilli have been found in the sputum. Having established this as the fundamental basis on which the classification is to be built, it will be well to consider the requirements which must be satisfied. These are as follows:

1. *The classification must be simple.* It should contain as few classes as possible. Any disease can be accurately classified, provided enough latitude is allowed in the number of classes. But after a certain point the value of the classification varies inversely with the number of classes used.

2. *The classification must be independent of the personal equation of the classifier.* That is to say, it must depend on facts, and these facts must be easily obtainable and unarguable. This is the essential requirement.

3. *The classification must be accurate.* A given type of case must fall under one heading, and one only; and having done so, there must be no doubt in the mind of an independent observer as to the nature of the case.

We can now ask, if these are the requirements, how far do the classifications in use at present satisfy them?

#### **Forms of Classification.**

*The Turban-Gerhardt Classification.*—This classification depends almost entirely on an accurate estimation of the amount of tuberculous disease in the lungs—a fact certainly, but not an easily

obtainable or unarguable fact until a post-mortem examination has taken place. Further, it talks of "disease of slight severity," and no accurate or comparative classification can be based on such criteria.

*Philip's Classification.*—In this grouping the three anatomical stages of the Turban-Gerhardt classification are accepted, and denoted by the symbols  $L_1$ ,  $L_2$ ,  $L_3$ ; and the amount of systemic disturbance is used for further subdivision, and is denoted by "S" or "s" according to its severity; and if the severity of the systemic disturbance entirely overshadows the anatomical lesion, the latter is denoted by "l." This classification gives twelve classes. The following table is taken from the published account of Sir R. Philip's scheme :

$L_1$	$L_1S$	$L_1s$	$l_1S$
$L_2$	$L_2S$	$L_2s$	$l_2S$
$L_3$	$L_3S$	$L_3s$	$l_3S$

Sir Robert Philip's classification is undoubtedly the simplest and best available for private use, but it cannot be well used for comparative study, since it involves the Turban-Gerhardt classification, and, further, gives no definite division between slight and severe systemic disturbance.

*The Classification used in the Astor Report.*—In this classification no attention is paid at all to the anatomical extent of the lesion. It is, however, useful for private classification, but it depends on extraordinarily accurate prognosis, and no definite standards are set for subdivision.

*Inman's Classification.*—By this scheme patients are divided into three classes: (1) Resting febrile; (2) ambulant febrile, resting afebrile; (3) ambulant afebrile. And the limit between febrile and afebrile is set at  $99^{\circ}$  F. This is a particularly useful and scientific classification, entirely depending on facts and eliminating the personal equation. But it cannot be accepted as fulfilling all the requirements, since temperature is not always an accurate measure of the severity of the disease. Patients severely ill and dying are often apyrexial, and many patients absolutely incapacitated through the large extent of their anatomical lesion have very slight systemic disturbance. In other words, the classification is not sufficiently minute.

*Walters' Classification.*—Here the anatomical Turban Gerhardt

classification is combined with symbols indicating the amount of systemic disturbance.<sup>1</sup> The degree of the latter is estimated by temperature, pulse-rate, and loss of weight—thus:

	A.	B.			C.		
		<i>a.</i>	<i>b.</i>	<i>c.</i>	<i>a.</i>	<i>b.</i>	<i>c.</i>
Maximum temperature	Not over 38° C. (100°4 F.)	38°1'-38°5" (100°5'-101°3')	Not over 38°	Not over 38°	Over 38°5'	Not over 38°	Not over 38°
Pulse-rate ...	Not over 90	Not over 90	91-120	Not over 90	Not over 120	Over 120	Not over 120
Weight-loss ...	Not over (10 kgr.)	Not over 10 kgr.	Not over 10 kgr.	10-15 kgr. (22-33 lb.)	Not over 15 kgr.	Not over 15 kgr.	Over 15 kgr.

Walters' classification, if the anatomical part is disregarded, is a sound scientific one which can be used for comparative work; but it hardly satisfies requirement No. 3 mentioned above, Class A being far too large. The classification is also rather complicated.

#### A Proposed Classification.

After this general survey of the situation, I should like to suggest a classification which, I hope, will be found a satisfactory one for comparative study. It will, I trust, receive much criticism, and if it is worth anything it should be capable of standing alteration and improvement. To start with, the anatomical extent of the lesion will have to be ignored. It is impossible even for the most experienced to accurately limit the extent of a tuberculous lesion in the lungs, and no two classifiers would agree over a difficult case. Therefore, until we have some accurate means of measuring the areas involved, we cannot use a classification dependent on site or extent of lesion.

The more important feature of the disease—namely, the constitutional or systemic disturbance—must be brought into prominence, and, in my opinion, should be allowed to play the chief part in the classification. This constitutional condition must be accurately defined and measured. The only possible way to do this is by systematic record of the temperature and pulse-rate. It still remains to be decided which is the most reliable. For further subdivision, capacity or incapacity for work can be considered. Such a standard will not at first sight appear to be one which will allow of much accuracy in statistical expression; but after three years' trial I have found it to work well, and to be both accurate and easy.

<sup>1</sup> Walters, F. R. : "Sanatoria for the Tuberculous."

And I am certain that, even for a standard classification, a standard of work is not necessary. A man does most readily that work which he has been trained to do, and it is my experience that the bank clerk with chronic pulmonary tuberculosis finds his work just as trying and just as likely to induce constitutional disturbance as the navvy does in regard to his particular form of labour. We can divide all cases into those (1) fit for their work, and (2) those unfit for their work. If a patient is attending his doctor regularly, there is no difficulty in deciding whether he is fit for work or not. If he is fit, he either makes steady improvement or remains *in statu quo*; if he is working but not fit for it, he goes steadily downhill, a fact which it is not difficult to determine. What appears to be at first sight a criterion based on personal opinion will be found to be in practice a hard-and-fast and easily obtained fact. I have used the proposed classification now for three years, and have never known it fail me; nor do I find, when at the end of each quarter I classify my patients according to their fitness or unfitness for work, that there is any doubt into which class they should go.

For the purpose of statistical records I divide cases of pulmonary tuberculosis into four groups: namely, those who during a given period are—(A) Fit for work and remain so; (B) fit for work, but become unfit; (C) unfit for work, but become fit for work; (D) unfit for work and remain so. I suggest that a useful comparative classification would be to combine this classification with an accurate measure of the constitutional condition as found in Inman's classification, and that it could be defined thus.

The condition of a patient suffering from pulmonary tuberculosis (*i.e.*, in whose sputum tubercle bacilli have been found) can be denoted at any given period during the course of the disease by one of the following combination of symbols:

In <sub>1</sub> A	In <sub>1</sub> B	In <sub>1</sub> C	In <sub>1</sub> D
In <sub>2</sub> A	In <sub>2</sub> B	In <sub>2</sub> C	In <sub>2</sub> D
In <sub>3</sub> A	In <sub>3</sub> B	In <sub>3</sub> C	In <sub>3</sub> C

In<sub>1</sub> = Resting febrile.

In<sub>2</sub> = Resting afebrile, ambulant febrile.

In<sub>3</sub> = Ambulant afebrile.

A = Fit for work and remaining so.

B = Fit for work, becoming unfit.

C = Unfit for work, becoming fit.

D = Unfit for work, remaining so.

99° F. is taken as the dividing-line between febrile and afebrile, the temperature being taken resting, not less than three-quarters of an hour after work.