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THE SERUM DIAGNOSIS OF SYPHILIS.

THE latest of the Medical Research Council's Special Report Series[1] gives the records of three different sets of workers who have compared the results obtained from the serological examination of serum by the Wassermann reaction and those obtained from the Sigma reaction, or flocculation test, of Dreyer and Ward.[2] The specimens of blood were collected from the patients, divided into two equal portions, labelled with numbers, and sent to the laboratories, where the Wassermann and Sigma reactions were carried out respectively. Clinical notes were kept by those who collected the samples of blood, but those who performed the tests had no knowledge of the source of the specimens, and were quite ignorant as to whether the blood was taken from normal persons, from cases of syphilis, or from individuals suffering from other diseases. At the completion of the comparison the records of the results were sent to the Medical Research Council by both sets of workers, and subsequently the results of both series of tests were collated with the clinical notes. The outcome is a document of much interest and value.

Part I of the report—contributed by Professor G. Dreyer, Drs. H. K. Ward, J. McIntosh, and P. Fildes—gives the analysis of the results obtained in the comparison of the Wassermann and Sigma reactions in the same serum. In all 894 specimens of serum were examined, obtained from 571 individuals. From persons definitely suffering from treated or untreated syphilis 519 specimens were taken; 55 specimens were obtained from persons who had previously given a positive Wassermann reaction, although no definite evidence of syphilis was obtainable; 115 specimens were obtained from persons in whom there was a suspicion or possibility of syphilitic infection; and 203 specimens from persons suffering from other diseases, where there was neither admitted history, suspicion, nor detected signs of syphilis. The results reported showed that an approximately equal number of positive reactions were obtained by the Wassermann and Sigma tests in untreated cases of manifest syphilis, but that in treated cases the Sigma reaction gave a larger number of positive reactions than the Wassermann reaction. A rough correlation was found to exist between strong and weak reactions with each test, but the results of the two reactions, when expressed quantitatively, did not in all cases run parallel. In supposed non-syphilitic cases one or other of the reactions was positive on seven occasions. In four of these both reactions agreed, in three the Sigma reaction was positive and the Wassermann reaction negative, and in one the opposite result was recorded.

A description is given in the report of the technical methods employed in the performance of the reactions. The technique of the Sigma reaction tests corresponded closely with the method previously described by Dreyer and Ward; the Wassermann reactions were carried out by methods similar to those described in the Special Report Series No. 14 of the Medical Research Council.

Part II of the report—contributed by Drs. Thomas Houston, S. B. Boyd Campbell, J. A. Smyth, J. C. Rankin, and Hugo Hall, working at the Royal Victoria Hospital, Belfast—gives a comparison between the results obtained by the Wassermann test (Harrison's and Fleming's methods) and the flocculation test of Dreyer and Ward. The 1,342 samples of serums examined by these three methods showed complete or almost complete agreement. The divergences in the results of these examinations usually occurred in a serum with low Sigma reactions or a borderland serum. In a number of cases Sigma readings sufficiently high to warrant a diagnosis of active syphilis were found, while the other methods gave negative findings; and, on the other hand, negative Sigma reactions with a positive Wassermann occurred in a few cases. Repeated determinations on cases undergoing treatment showed a regular fall in the Sigma findings, and the Sigma readings persisted longer than positive findings by the other tests employed. The Sigma technique seldom or never gave a false positive in non-syphilitic serums, whereas the other methods occasionally did. These workers conclude that the Sigma findings seem sufficiently accurate for all clinical purposes, they correspond in a remarkable way to the intensity of the clinical features of the disease, and provide an interesting and valuable method of determining the progress of a case of syphilis under treatment, and the effect of various remedies on the course of the disease.

Part III of the report—contributed by Professor Adrian Stokes and Dr. J. T. Wigham, working at Trinity College, Dublin — gives an account of the results of 1,500 comparative tests done by the Wassermann reaction and Sigma reaction. 1,515 reactions on identical specimens of serum from 772 individuals gave: positive with both tests, 885; negative with both tests, 571; positive Wassermann, negative Sigma, 38; positive Sigma, negative Wassermann, 21. The discrepancies thus numbered 59 in all. By analysing them evidence was obtained permitting a conclusion in 38 out of the 59 discordant results. In 23 of these the balance of evidence was in favour of the Sigma reaction and in 15 it was in favour of the Wassermann reaction. In discussing the relative merits of these two tests the authors point out that in both reactions the technique is simple, and accurate measurements are only a question of care. When large numbers of specimens have to be examined the Wassermann reaction, as usually carried out, occupies less time and is less fatiguing than the Sigma test. On the other hand, if only a small batch of serums have to be examined, the time occupied in doing the Sigma reaction is very much reduced, and time is saved by adopting the flocculation test. The Sigma method is more economical than the Wassermann method, when once the apparatus has been obtained, since no purchase and upkeep of animals is necessary. The two disadvantages of the Sigma test are that it is more laborious when large numbers of tests have to be carried out, and that more serum is necessary than for the orthodox Wassermann technique. The chief advantages of the Sigma test are (1) that only two reagents are employed instead of five, (2) that a very great amount of information may be obtained by a quantitative expression of the results, (3) that since the reagents can be standardized comparable results can be obtained by different workers,

[1] The Serum Diagnosis of Syphilis: the Wassermann and Sigma Reactions Compared. Medical Research Council Special Report Series No. 78. H.M. Stationery Office. 1923. 5s. 6d. net.
[2] BRITISH MEDICAL JOURNAL, June 11th, 1921, p. 859.

(4) that it is very simple and inexpensive, (5) that by its routine employment it will probably be possible to make treatment less empirical and more in accordance with the requirements of individual cases.

STATISTICS AND PUBLIC HEALTH.

THE receipt of a copy of the second edition of Professor Whipple's manual on vital statistics[1] starts a train of reflections. Here is a volume of nearly 600 pages, almost wholly devoted to the illustration of statistical methods applied to the data of public health services. It has none of the general epidemiological features which would recommend such books as those of Prinzing or Sir Arthur Newsholme to the general medical reader; it displays no such mastery of modern mathematical theory as secures to Mr. Udny Yule or Professor Czuber a wide circle of readers. The outstanding merit of the book is its assumption that the medical reader will wish to acquire as practical a knowledge of this subject as he would expect to gain of any other essentially practical technique in the field of medical science. The student is told—no doubt not always quite accurately—what method he should apply to the study of a particular class of problem, and his progress is tested by real exercises. One finds such questions as these: "How would you find out what proportion of all children born have whooping-cough at some time in their lives?" "Do the statistics of infant mortality justify the continuance of the milk stations in New York City?" "Is there a higher correlation between flies and diarrhoeal diseases among children than between diarrhoeal diseases and other factors?"

One wonders, or rather one does not wonder, what sort of answers such questions would elicit from candidates for an English diploma in public health. But, in America, it has taken less than four years to exhaust an edition of such a book written, as the author says, "for students who are preparing themselves to be public health officials and for public health officials who are willing to be students." Nobody in this country could advise a student preparing himself to be a public health official to read such a book as Professor Whipple's; it would not help him to pass his D.P.H. examination. It is true that "vital statistics" are an item of the curriculum and that the General Medical Council has decreed that no less than twenty lectures shall be devoted to vital statistics and epidemiology. But since, so far as we are aware, the Council has not decreed that candidates shall be required to give practical proof that they have learned anything from the twenty lectures, the effect upon their actual statistical education will be precisely that of the reforms in the Inns of Court of sixty years ago, when the student might either pass an examination or attend lectures, but need not do both, the view being—as Bagehot said—that "to examine those who have already attended lectures would be impertinent; it would seem as if we doubted whether they had learnt from those lectures or not." In fact, in England, the serious academic study of medical and vital statistics is almost wholly confined to non-medical students. We believe that only at University College, London, is a distinct course of instruction in medical statistics offered, and that, in the last four years, it has been almost exclusively attended by non-medical undergraduate students for the B.Sc. and by non-medical post-graduates.

[1] *Vital Statistics: An Introduction to the Science of Demography.* By George Chandler Whipple. Second edition. New York and London: Chapman and Hall. 1923. (Pp. 579. 20s. net.)

In America the state of affairs is different. At least two of the great universities—Johns Hopkins and Harvard—maintain whole-time professors of vital statistics, and from the department of the Johns Hopkins Professor, Dr. Raymond Pearl, have issued a long series of medico-statistical studies. If it were not for the Ministry of Health and the Medical Research Council, there would be no whole-time medical statisticians in this country—all medico-statistical research would necessarily be the leisure employment of men engaged in other fields; and neither the Ministry nor the Council can feel confident that it will be possible to maintain a succession of trained men. Yet this lack of encouragement is a serious matter, because in most branches of medicine, and in that of preventive medicine above all, the power rightly to use the statistical method, whether as an instrument of research or of critical evaluation, is a most valuable accomplishment. Indeed, the unquestionable fact that the power of the statistical method may be overestimated is an additional argument for a wider dissemination of knowledge of its strength and weakness. It is always dangerous for important knowledge to be the exclusive property of a small minority. In these days of collective and international investigations or comparisons, many of the data upon which action is based must partake of the statistical character and be adjudicated upon by methods of statistical logic.

There is a very wide difference between the standards both of material accuracy and scientific analysis reached in the presentation of data of mortality and morbidity in different countries. In many, perhaps in all, the less advanced nations, there is a need of and desire for instruction. America can offer that instruction in her universities. What do we do here? The intelligent foreigner, recognizing that it is to great Englishmen—to such as Farr and Professor Karl Pearson—that modern practical statistics owe their greatest improvements, but noting that we ourselves seem to attach little material importance to statistical knowledge, might be pardoned if he concluded that England was not the country in which to study medical statistics. Whether the new School of Hygiene can help to remove this reproach we do not know, but it is certain that a new professor, or a new army of professors, cannot change the internal situation unless it is made manifest that it pays a student to acquire a sound knowledge of medical statistics. Satisfactory teaching facilities might meet the needs of foreign or overseas post-graduates, but few of our own students will study a subject knowledge of which neither carries marks in an examination nor credit in candidatures for public appointments.

THE NEW MINISTER OF HEALTH.

IT is unfortunate that Mr. Neville Chamberlain's very success as Minister of Health should have led to his transfer to an office generally and by tradition held to be one of the highest in the Government. It is unfortunate also that the office of Minister of Health should so frequently change hands, and Mr. Chamberlain has himself expressed his regret that he should have to leave work in which he was strongly interested before he could complete schemes he had instituted or developed. Sir William Joynson-Hicks, who has now become Minister of Health, brings to his office a reputation greatly strengthened and enlarged during the last few months. During some ten years as a private member of Parliament he interested himself particularly in air service and road transport, and