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not nearly enough serologists available. That may be so; nevertheless the authorities are to blame for not having trained them; they must be properly trained; for it would be worse than useless to allow serological blood tests to be carried out except in approved laboratories and by approved techniques.

A Royal Commission on Population has just been appointed to inquire into the present population trends. I should like this Society to suggest to that Commission that by prenatal testing and treating of mothers we could promise to add probably as many as 10,000 healthy children a year to the population. However, Royal Commissions take years to report. Let us rather approach the Government and ask it to inform all doctors and laymen of the value to the community of prenatal treatment which has proved so successful in the countries in which it has been introduced. The aid of the B.B.C. even might be invoked.

We hear so much nowadays about improving the nutrition and physique of children; yet, we neglect to utilize one method by which we know for certain that we can effect a vast improvement in a limited, yet not inconsiderable number of them. It is to be hoped that the result of the Newcastle upon Tyne experiment will be such as to justify the Government in extending its methods throughout Great Britain.

REFERENCES


DISCUSSION ON THE PRECEDING PAPERS

Dr. A. E. W. McLachlan said that he had listened with great interest to the two papers and agreed with many of the views expressed. Up to recently the blood testing of pregnant women in Newcastle had applied only in the case of illegitimate pregnancy; in the past six months the scope had been widened to include as many expectant mothers as possible. This had led to the recognition of a certain amount of previously undetected maternal syphilis, while, in addition, a number of defaulted were brought back to the clinic for treatment. It was not possible to quote results in the prevention of congenital syphilis; he believed, however, that when syphilis was detected even as late as the seventh month there was nearly a 50 per cent chance of ensuring a healthy child.

In the investigation of the child, he relied to a great extent on x-rays of the long bones as being possibly more correct than or at any rate an invaluable supplement to the Wassermann reaction. Periostitis affecting multiple long bones was invariably followed by a positive Wassermann test. After the adequate treatment of sero-positive pregnant women, a positive Wassermann reaction might occur, from the maternal reagin, transferred to a healthy child; in these cases x-ray and clinical findings were negative and the serum reaction became negative in six weeks. One had to consider not only the detection of congenital syphilis, but also its exclusion in those cases in which the mother had been adequately treated.

Dr. Wattie had emphasized the number of infections occurring late in pregnancy; these might be difficult to detect unless a careful clinical examination was made and if necessary repeated monthly; much depended on the knowledge of the social background of the patient.

Col. Harrison congratulated Dr. Wattie on the wonderful results which had been obtained in Glasgow. They showed what could be done by diligence and enthusiasm. When one thought of Cruickshank's figure of 9 per cent in 1920-1—though his sample was perhaps more selected—and the present figure of 0·9 per cent, one realized what a splendid achievement was the latter. Another point which Dr. Wattie had made was the principle of treating the disease wherever it was found. This was a principle which he had tried to propagate very early on in his work at the Ministry of Health. At that time the idea was not very warmly received; there was a great fear that if syphilis were treated in maternity and child welfare centres, they would be shunned. He had never seen why that need be, if the work were done by the doctors on the one hand, and a great amount of good might be done. Accordingly his branch had quietly persuaded the medical officers of health that it was worth trying, and in a number of places in this country there were maternity and child welfare centres which had been approved as treatment centres; there was no question but that they had done a great amount of good.

A certain amount had been said about the percentage of positive reactions, and something about the alleged bogey of false positives caused by pregnancy. He did not think that the
subject should be dismissed quite so lightly as that. With all respect to Dr. Earle Moore, he was a firm believer in the tendency of pregnancy to cause false positives. He agreed that, with a well managed test, pregnancy serum would rarely give a false positive, but in his oversight of results of tests he had found a fair number of examples of false positives in serum of pregnant women. This was not an argument against routine testing, but it was an argument against blind acceptance of positive reactions without further questions as diagnostic of syphilis. It is interesting that this fairly big reference to the test had never been able to explain—between the percentages of positive reactions found in pregnancy and those found in blood donors. Some people would say that blood donors were a selected part of the population, but was this really so? On the whole the ages of prospective blood donors were approximately the ages of child-bearing and, moreover, the blood donors included males as well as females, and one expected a higher incidence of syphilis in males than in females. Why was it then that the percentages of positive reactions in blood donors in this country were less than half any figure which had been quoted? It was highly probable. Some figures were cited. By and large, the percentage was about that figure. He thought Newcastle showed a higher figure.

Dr. McLachlan: It was 0.9 per cent of strong positive reactions in blood donors in over 60,000 cases, and I have placed 0.75 per cent as doubtful.

Col. Harrison: And the pregnancy cases?

Dr. McLachlan: They vary according to the district from 1.4 to 2 per cent.

Col. Harrison: That bore out what he had said regarding the difference between results of routine tests of pregnancy and routine tests of blood donors. How was that difference accounted for? He suggested it might be due to the tendency of pregnancy to make the serum labile. This was agreed to by one of the greatest authorities on serum testing in the world, namely Professor Sachs.

Dr. Nabarro had spoken about routine testing of blood serum in the United States as though it were all that was perfect, but there was another side to the picture, which was that in the United States a certain number of voices had been raised in protest against blind acceptance of positive reactions for a diagnosis of syphilis. Certain people had said quite bluntly that thousands of patients were being treated unnecessarily as a result of false reactions, and it was very important that the weapon should be used, otherwise a great amount of domestic unhappiness and misery would be caused. He was not opposed to routine testing; he had always been in favour of it; but they must be careful of the use made of the results.

There was one point on which he would join issue with Dr. Nabarro, and that was his estimate of 1.4 per cent of pregnant women being syphilitic. He suggested that the figure was not so high as this, and anyhow this 1.4 per cent of women would not give birth to as many syphilitic babies. As to the amount of work which the routine testing of pregnant women would cause in this country, he thought it should be carefully weighed, even the nearly two hundred cases made. This was not a strong objection, but it did show what would have to be provided for.

Gp. Capt. McElligott wondered whether he had correctly understood Dr. Wattie's remarks on the necessity for immediate treatment of the mother who presented a positive Wassermann reaction. He presumed that treatment was not begun on the evidence of one single positive W.R. He had not that amount of faith in pathologists, that in an otherwise symptomless and signless case he would proceed to treat on one positive W.R. and, what was more important, he would not proceed to treat a latent syphilic without previously investigating the cerebrospinal fluid. Moreover, he would take the blood and giving the patient a thorough medical examination. In cases of latent syphilis the aorta might be affected, or the cerebrospinal fluid might be infected, and it was as well to know this before treatment was started with large doses of neoarsphenamine and bismuth.

A large proportion of these women would be young and the presumption was that their infection was early, but even in the Services he had seen congenital infections with positive cerebrospinal fluid, which on further investigation showed cardiac complications; so that it was an exceedingly dangerous procedure to start off with full cases of neoarsphenamine in otherwise symptomless patients unless there was a history of recent infection. One might avoid trouble in many cases, but sooner or later that type of reaction might mean the death of a patient.

Dr. C. Hamilton Wilkie said that he had special pride in Glasgow's achievement, as he had had his earlier training there. A point with which he had been rather impressed in Leicester was that the antenatal clinics which did routine testing of the expectant mother were up against the problem of the doubtful Wassermann reaction. In a number of these cases Dr. Wilkie, after examining the case history and all the other factors, had decided to the disadvantage of the patient that it was not syphilitic. Subsequent follow-up with tests had proved this to be correct. One had to be very careful in the interpretation of a doubtful Wassermann reaction in the expectant mother.

Dr. A. Fessler spoke of his experience of congenital syphilis in Vienna. There had been many cases in the early and middle nineteen-twenties, but from the beginning of the nineteen-thirties there had been very few cases. The factors responsible for the disappearance of congenital cases through routine tests of all females were considered to be due to the tendency of pregnancy to make the serum labile, that facilities for treatment were provided and the effect of propaganda. The number of cases of syphilis decreased steadily and during the economic crisis of 1929 syphilis nearly disappeared.

The majority of women infected during the 1914-18 war, or shortly after the war, had passed the child-bearing age, or, for social reasons, some of them had not become pregnant; quite a number of them developed primary syphilis. A further interesting question was how far treatment, even if it were not completely efficient, prevented a woman with syphilis from giving birth to a baby suffering with congenital syphilis, because one had to bear in mind that in the later
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stages of syphilis the number of babies born healthy increases (law of Kassovitz). Therefore, without underestimating the value of the Wassermann test, he would stress that both the campaign against syphilis and natural factors had to be kept in mind.

With regard to his experience in this country, the Lancashire County Council had recently provided a ward at the County Hospital, Whiston, for maternity cases suffering from venereal diseases. There he had seen, in addition to several patients in the latent stage of syphilis, six women brought in for confinement, two in the primary stage and four in the secondary stage; none of these patients had received any treatment. The babies of the two patients in the primary stage of the disease were apparently healthy and the Wassermann result was negative. Two of the babies of the mothers in the secondary stage were Wassermann negative. Unfortunately he could not follow up these patients and feared that some of the babies might develop signs of syphilis later. However, the Lancashire County Council had appointed an almoner, whose duty it would be to follow up these cases.

Dr. R. Forgan said that he did not know the extent to which Dr. Wattie and Dr. Nabarro had collaborated before the meeting; but Dr. Nabarro backed Dr. Wattie up on one point, when he stressed the fact that in England the proportion of pregnant women not undergoing routine antenatal examinations was greater than in Scotland; this fact would explain why the figures for maternal syphilis were not more nearly equal. At what stage should the authorities cease to consider routine antenatal Wassermann tests as desirable? It was within the memory of most that before the war the biggest local authority in this country had abandoned routine antenatal Wassermann tests, because they felt that the evidence thus obtained did not warrant the trouble and expenditure. It was a point to which authorities should address themselves: at what stage should this measure be abandoned as extravagant and unnecessary? He hoped when Col. Harrison's remarks were quoted that they would be quoted in full, because he had received reports that it was the belief of the presence of false positives, he believed that routine antenatal Wassermann tests should be carried out.

With regard to Gp. capt. McElligott's point about the danger of treating every case, it was not stretching things too far to suggest that the use of a certain drug, about which some had great hopes and others had great fears, might considerably alter the question of treatment of pregnant women. He understood that the administration of penicillin carried practically no risks. Arsenical treatment was not without danger, and it was unfair to subject the non-syphilitic mother to such danger by some ill fortune, her system was positive. In cases of doubt, no harm would be done by a course of penicillin that required only five or ten days. Dr. MacLennan said she hoped that it would not sound depressing if she mentioned some of the possible difficulties in establishing in other areas an ideal scheme, such as Dr. Wattie had described.

In the first place there was the administrative difficulty. There were many maternity and child welfare authorities which were not venereal disease authorities, and those authorities and their officers might not be "V.D.-minded".

Then there was the financial difficulty. Even when the maternity and child welfare authority might consider instituting the simple routine investigation of expectant mothers, it might not wish to bear the expense of all the negative results. They would gladly pay for positive results, but to pay for negative results seemed too much for many authorities. There was the practical difficulty that under present circumstances many maternity and child welfare centres were not suitable for giving treatment, because they were housed in improvised premises and V.D. treatment could not be carried on in them.

It seemed to the speaker that there were two possibilities of meeting the situation, one from the White Paper of services being coordinated more generally. One was the education of the public and the authorities up to the idea of the importance of stamping out congenital syphilis, which had not had such wide publicity as it deserved, and the other was the education of mothers in the importance of having their first antenatal examination early; in fact, as soon as they thought they were pregnant they should report to a clinic.

Dr. P. Silver asked Dr. Wattie whether she had an established technique for taking Wassermann tests in all the clinics. If not, had she noticed any difference in the results obtained from different clinics? There were two antenatal clinics in Grimsby, and from both of them he found a large number of weak or doubtful positive reactions, whereas in the other the results were straightforward. On investigation he found that in the first clinic the technique for taking the blood was suspect; as soon as he improved it, the percentage of doubtful reactions fell to a much lower level.

Dr. W. N. Mascall said that at the Whitechapel Clinic if a woman became pregnant after completion of her treatment for syphilis, a further course of injections was given, however the chances of treatment might have been. He was sure that this was the only safe policy to adopt, and it was well worth while when one saw the results. It might cause the mother a little extra inconvenience whilst carrying, but it saved her a great deal of trouble after delivery. It was a well known fact that there was a considerable amount of latency of symptoms in syphilitics who became pregnant, even in those suffering from early infections. The only sign of syphilis might be a positive Wassermann reaction and even this was sometimes suppressed. This suppression of symptoms was also transmitted to the infant. He had been alarmed recently at the number of congenital syphilis cases his department. He had seen a considerable number of cases of interstitial keratitis occurring between the ages of twenty and thirty years. No other symptoms had occurred up to that time. One case, which had been discharged from the Army, was apparently fit when called up and had seen active service. He was unfortunately now totally blind. A routine Wassermann test might have saved
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this catastrophe. The question of cost seemed to be a very important matter, and if many negative tests were obtained routine examination might not seem to warrant the outlay. While agreeing that economy had to be exercised, he felt that, even to save a few children much suffering, the expenditure was justifiable. When one saw the mental defectives in some of the special homes, practically all syphilitics, and in all conditions, from idiots upwards, one felt that if that could be avoided any cost would be worth while.

Further by the fact that pregnant syphilitic women seemed to be notoriously poor at attending for treatment. They made many excuses for this—it was difficult to get there, or they were not feeling well. If the treatment could be arranged in the antenatal clinics, it would be ideal. He knew of very few where this was done, or even where they wished it to be done. The antenatal clinics were often cramped for space and every extra person counted. He had heard of a case quite recently in which a large maternity home wished to reserve a few beds for venereal disease cases, but so much objection had been raised that the scheme, he believed, had had to be dropped. He thought that it should be compulsory for every maternity home to have a small section of the antenatal management and treatment of such cases.

Dr. Wattie, in reply, said that a case was never treated on the evidence of a single positive Wassermann; when she said 'there and then', she had meant that there was no delay in sending the patient elsewhere. Cerebrospinal fluid tests were not taken as a routine, as it was not safe in pregnancy. She was very glad that Col. Harrison had raised the question of the weak positive result. In Glasgow there was a wide experience of the interpretation of the positive result and the tests were repeated if necessary. There was a constant relationship between the laboratory and the clinic. The cases with weak positive reactions were not treated unless confirmed clinically. Otherwise they were regarded as non-syphilitic, because there was a grave danger in giving treatment to such women. She did not agree with Dr. Nabarro that potentially all these infected women would give birth to syphilitic children. Many healthy children were born of such mothers. Some had strong positive Wassermann reactions only and there was a good chance that the child would be all right. Although she agreed with the last speaker, that she would do anything to save one child, she did not think they should go on talking about these extraordinary figures of still-births caused by syphilitic infection. She did not believe that they were correct.

Dr. Nabarro, also in reply, said he knew that all children born to syphilitic mothers would not have the disease; it had, however, been found that negative mothers, who were known to have had the disease, might give birth to positive children. He had received figures from Prof. F. J. Browne in which only sixty out of eighty-one syphilitic mothers gave a positive reaction, yet the others were known to have had the disease. At the time the test was taken the reaction was negative, yet some of the children were born syphilitic; it would therefore probably not be far wrong to say that with 1 to 5 per cent positive mothers there would be about that number of syphilitic still-births or syphilitic children.

He agreed with Dr. McLachlan that an x-ray of the long bones was an important part of the diagnosis in infants. One might find bone changes quite early, at a fortnight or a month old, when the value of the Wassermann test was very slight. He had emphasized time and again that the result of a Wassermann test in a child under the age of two months was not of much value, even if positive, unless definite clinical manifestations were present. If one repeated the test, month after month, one might find that it gradually faded out and, by examining the child, be satisfied that the annual test, hereafter, might be confirmed. The syphilitic reagent could be carried over through the placenta from the mother to the child, who would be positive for a month or two after birth and then become negative. Similarly a negative reaction at, or shortly after, birth might give place to a positive when symptoms of the active disease became manifest. He had seen prompt and adequate treatment lead to a quick reversal of the positive blood test, and ultimate cure attained in such cases.

With regard to false positives, he did not mention Dr. Sachs's paper (see the Journal, 1942, V. 18, p. 96) because he had expected Colonel Harrison to do so and that was the reason why he had sought an American viewpoint. He felt that, although there was a possibility of a small number of non-syphilitic but positively reacting mothers being given antisyphilitic treatment, it was a justifiable risk to take in order to safeguard the infants. If, however, the reaction were only a weak or doubtful positive, due in all probability to increased liability of the serum in pregnancy, treatment should not be given unless the mother were a known syphilitic.

With regard to the question of unrecognized congenital syphilis, he was quite convinced the question had been regarded too seriously. The Committee for Sick Children, Great Ormond Street, he rarely saw a case of florid congenital syphilis. The symptoms and signs might be so mild that even the elect could be deceived unless a blood test were taken. It was probably on account of the treatment of the parents that congenital syphilis had become so difficult to diagnose, and also because it might be latent for fifteen, twenty and even thirty or more years before declaring its existence in the form of interstitial keratitis, deafness or mental deterioration. In a recent article on 'Unrecognized Congenital Syphilis' (Lancet, II, he had discussed cases where there had been no signs of disease at all; the children had been sound in the Army, who, on account of their latent disease, had broken down under the stress of Army training and life. One man, for example, was sent into hospital with the diagnosis of encephalitis lethargica, but when, in view of his suggestive teeth, a blood and a spinal fluid test were made, the results were returned positive. The patient was really suffering from early congenital general paralysis. The explanation, he thought, was that the fathers of such patients who were soldiers in the last war had contracted syphilis for which they were partially treated, so that, at the time their children were conceived, the spirochaetes were in a state of suspended animation. In con-
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sequence, the disease in the infants took on such a mild form that it did not manifest itself until many years later.

Col. Harrison had spoken about the number of men who would be needed to do all the Wassermann tests required, but provision should have been made for this. The suggestion had not been sprung upon the country. In 1928, this Society had made the suggestion that routine antenatal testing and treatment should be carried out, and it was obvious then that, if the Government acted upon the suggestion, a number of additional serologists would be required. Health visitors should be trained to educate the mothers, and they would play a great part in the future of this work. If the mothers were properly educated by tactful health visitors, he felt sure that few mothers would raise any objection to being tested.

He hoped the discussion would arouse the profession. The trouble was that in this Society we were preaching to the converted; we wanted to teach those who did not know what can be achieved in this matter. Even if only a few thousand children were saved every year from premature death, from blindness, or from an asylum, it would be worth while, and no effort should be spared to attain this end.

THE TREND OF ANTISYPHILITIC TREATMENT

By DAVID ERSKINE, M.D., D.P.H.

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Inadequate treatment of recent syphilis in the early days of salvarsan and neo-salvarsan is responsible for many of the patients with destructive tertiary lesions and those with congenital syphilis who are under treatment today. Experience of relapses has gradually indicated the necessity for the prolongation of continuous and combined treatment with arsphenamine and bismuth after the outward signs of syphilitic lesions have disappeared. As a result of this experience a high standard of cure can be anticipated with the present-day routine measures.

Intolerance to standard treatments

Unfortunately the regular and prolonged treatment which is necessary in well established schemes demands a high degree of cooperation by the individual patient and many default before they have received an adequate amount of treatment. Failures are also caused indirectly by intolerance to treatment; the toxic effects of the arsenical and bismuth compounds are not confined to the Treponema pallidum but extend to the host in a proportion of cases; the incidence of these toxic manifestations has risen considerably in some centres during recent years and often interferes with the full treatment of a patient. To overcome this difficulty and in a search for a more effective control of the disease, certain intensive types of treatment are being investigated.

Many theories have been advanced to explain intolerance to chemotherapy and alternative drugs have been advocated on inconclusive evidence. Treatment schemes of modified intensity have been adopted by some authorities in an attempt to reduce the toxic effects and have perhaps jeopardized the standard of cure without ensuring a reduction of intolerance. A standard of treatment which is capable of giving a high rate of cure having been adopted, it is agreed that we are probably over-treating a majority of patients, a minority of whom might have been cured with only a few injections. But twenty years is a long time to wait for evidence of failure and the destructive lesions which may occur at the end of that period are tragedies which should be avoided. Investigations suggest that patients who have not relapsed serologically in five years are probably cured and will not relapse at a later period.

Avoidance of toxic effects

Having adopted a standard of cure which conforms to the accepted present-day requirements, we should assess the likelihood of the patient tolerating the treatment. Apart from immediate reactions due to individual injections, the toxic effects which most commonly complicate antispecific treatment are jaundice and dermatitis.
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