The time taken in pipetting the antigen mixture into the tubes with serums should not be more than ten minutes. Eight different serums can generally be tested in this time. The racks are then well shaken, and are left for twenty hours in a room at a temperature of about 20° C.

Reading of the Results

In a negative reaction the fluid in the test tubes is milky and opaque as before. In a strongly positive reaction a complete clarification has taken place in the test tubes, so that the cross-bar of a window two or three yards away is distinctly visible. In a weaker positive the fluid is more or less opalescent, but the cross-bar can be seen through it.

In most of the tubes a certain amount of sedimentation takes place, but it is the opacity and not the sedimentation which is the guide to the reading of the result. Should only the last tube (D) be clear, and the other three slightly opaque, the reaction must still be considered strongly positive.

Sixty-five specimens were examined and a confirmatory Wassermann test was performed on each at the University of Manchester. There was agreement between the two tests in 92.4 per cent. of these cases. In two of the five cases which disagreed the result of the M.K.R. was doubtful.

In reading the results tubes A, B, and C were found to give unreliable results. In twenty-one cases out of the sixty-five the reading in one or more of them differed from that of tube D. Our results are all based on the reading of tube D, which we consider the only one really necessary for the reliable performance of the test. By using it alone the test could be much simplified.

THE MICROSCOPIC MODIFICATION

The principle of the test is the same as for the M.K.R.

Serum.—The blood collected from a finger-prick is passed along a capillary tube 10 cm. in length by 1 mm. inside diameter. Two-thirds of the tube are filled, and the empty end is sealed by a flame, care being taken that the blood is not heated. Only when the capillary has to be sent away need the other end be sealed with wax. The tube is now left for a few hours in a cool place in a horizontal position and then centrifugalized towards the sealed end. The clear serum collects in the centre and is ready for use when the tube has been filed and broken, and the contents tapped or blown on to a clean numbered slide.

Antigen.—The same extract is used as for the M.K.R. The soda-salt dilution required is made by adding 3 c.cm. of a 1 per cent. solution of sodium carbonate in 3.5 per cent. salt solution to 97 c.cm. of a 3.5 salt solution—that is, by adding 3 parts of stock solution (a) to 97 parts of stock solution (b). This gives a 0.03 per cent. soda-salt dilution. Then 1 c.cm. of the extract and 10 c.cm. of the soda-salt dilution are placed in test tubes and incubated in a water bath at 45° C. for ten minutes. They are then mixed by pouring rapidly several times from one to the other. The resulting extract dilution is then poured into a warmed porcelain crucible, and covered with a watch glass; there it must "ripen" for two minutes before the test is performed. It is milky and entirely opaque, and should not be kept longer than ten to fifteen minutes, in which time fifteen serums can be mixed with it.

Mixing.—Two platinum eyelets are used for the admixture. The larger, 4 mm. in diameter, is attached horizontally to a small porcelain stand, and a loopful of the extract dilution is taken on it. On the smaller, which is 2 mm. in diameter, serum is taken. They are mixed by passing the smaller eyelet several times rapidly through the lumen of the larger. A drop of the mixture from the smaller is now placed on a clean coverslip, and a hanging drop preparation is made; this is allowed to stand for one hour in a moist atmosphere at room temperature. As each fresh serum is examined the platinum eyelets are dipped in water and next in alcohol; they are then flamed. They must be cool before being used again, and it is better, therefore, to have two pairs of eyelets.

Examination.—After an hour the slides can be read, a microscope with weak ocular and dry objective magnifying about sixty times being used. A negative reaction shows an even, finely granular field in which the particles are lively. In a positive reaction agglutination occurs, and large, widely separated dark-brown clumps are seen. Where the reaction

is weakly positive the clumps are smaller and closer together. On one occasion a delayed positive reaction was noted. It is advisable, therefore, to re-examine the slides eight or nine hours after the test has been completed.

RESULTS

Since April, 1929, 384 serums have been examined, and a confirmatory Wassermann test has been performed on ninety-five of these cases. Our routine is that a nurse collects the serum from the new admissions and from other cases as directed by the medical officer, and they are then sent to the laboratory in lots of about ten at a time, and examined. Where the Meinicke reaction is positive, and in all suspicious cases, a specimen is always sent away for a Wassermann test.

There was agreement between the two tests in 92.7 per cent. of the cases. In the seven which differed the Meinicke was positive in six cases and doubtful in the other, while the Wassermann reaction was negative in all.

We are of the opinion that a reliable microscopical test has many advantages to offer over any of the macroscopical methods in which a large quantity of serum is required. Especially is this the case when dealing with children, resistive and troublesome patients, the obese, and those in whom the veins are poorly developed.

CONCLUSIONS

The Meinicke clarification reaction can be simplified by eliminating three of the tubes containing serum (A, B, and C) and using only tube D. Its micro-modification is rapid in operation, gives a high percentage of agreement with the Wassermann reaction, is very sensitive, and is easy both to perform and to read. As a routine test for syphilis in the patients admitted to a mental hospital it offers advantages over any other test. It has proved both serviceable and reliable.

My thanks are due to Dr. R. M. Clark, medical superintendent, under whose general supervision this work has taken place, for permission to publish these results, and also to Mr. A. H. Fann, senior laboratory assistant, for help with the technical part of the work.

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FURTHER OBSERVATIONS ON OVARIAN TRANSPLANTATION

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My work on this subject during 1929^{1 2} indicated the results obtained by (1) transplantation of ovaries, removed from rabbits, into other rabbits (twenty transplantations); (2) transplantation of ovaries, removed from cats, into rabbits (twenty transplantations).

The site chosen in this series was a pocket, framed between the superficial and deep fasciae of the back of the receiving animal. Sections were taken of transplanted ovaries removed at regular intervals, and examination of these revealed no trace of ovarian tissue in transplants older than six weeks. Further, the occurrence of heat, acceptance of the male, and the other signs associated with full ovarian activity steadily declined as the graft degenerated, until complete sexual senility was observed at the time when no ovarian tissue could be found in the transplants.

In 1930³ human ovaries were transplanted into monkeys (*Macacus rhesus*)—five transplantations in all. These were performed in two situations—namely, (1) between the layers of the broad ligament, and (2) subcutaneously.

* Working under a grant from the British Medical Association.

Results with this technique were no better than those reported previously. In short, my attempts to transplant ovaries which would continue their physiological function have proved entirely unsuccessful.

So many claims in this field of research have been made of recent years that the time has come to consider the whole question in the light of the available evidence. Microscopical evidence of the survival of the transplanted glands can be the only evidence accepted, and a study of the literature shows that such evidence is in inverse proportion to the number of papers published.

That the stroma cells of the ovary may persist for some time in transplants I do not deny; but as to the value of these modified connective tissue cells in the preservation of the endocrine function of the ovary, I can only refer to modern researches in ovarian physiology. Research in this field has proved conclusively that the physiological function of the ovary depends upon an active Graafian follicular system—that is, the maturation of the follicles and the formation of the corpus luteum. On the evidence, I maintain that this follicular mechanism continues to function for only a few weeks in transplanted ovaries.

Is there any clear evidence that a compound gland can be transplanted in such a manner that its full physiological function can be maintained? We know that the

physiological activity of a compound gland depends upon three factors: (1) the blood supply and drainage, (2) the lymphatic supply and drainage, (3) the nerve supply. Allowing that surgical technique may develop to such an extent that the blood supply and drainage can be assured by the anastomosis of the vessels of the transplanted gland to the vessels of the bed in which the transplant rests, can we offer any hope of being able to deal effectively with the lymphatic supply and drainage? I do not think so. With regard to the nerve supply, even if it were possible to anastomose the nerve supply of the transplant to the nerve supply of the bed, regeneration of the anastomosed nerves would take place only a considerable time after trophic changes had occurred in the transplant. On the available evidence, therefore, I consider that the transplantation of a compound gland, such as the ovary, is of no value, since its physiological activity cannot be maintained.

Moreover, a consideration of the anatomy and physiology of a compound gland such as the ovary, and of modern surgical research on compound glands in general, affords no prospect of successful ovarian transplantation in the future.

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Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

AN EPIDEMIC OF DYSENTERY DUE TO

B. DYSENTERIAE γ OF HISS

In view of the increasing interest in bacillary dysentery, and the accumulating evidence of a hitherto unsuspected incidence of the disease in this country, it would be of interest to put on record what appears to have been another outbreak, although as a private practitioner I am able to give bacteriological evidence in regard to two cases only.

During July, 1929, a large number of cases of diarrhoea came to my notice. The severity of the infection varied, but the great majority were of a mild character, the symptoms being frequent loose, watery motions, up to a dozen a day, with colicky pains in the abdomen, and tenesmus at the time of movement, sufficient to give rise to considerable discomfort and general malaise, leaving a feeling of weakness afterwards. Those mild cases had no rise of temperature, and there was only occasionally a little blood in the stools. In older and not so robust people the general disturbance was more marked at the time of the diarrhoea, there being a slight rise of temperature to 99°, 99.5°, or 100°; the prostration remaining was more appreciable. In a few exceptional cases the illness was definitely febrile, the highest temperature noted being 104°.

Although I was not so keenly aware then as I am now of the incidence of bacillary dysentery in this country, it soon became evident after the first few cases that this was an infectious disease; I concluded that it was probably of the nature of a summer diarrhoea, and I thought it might be fly-borne. The weather at the time was warm.

The mildly infected patients were not sufficiently incapacitated to have to remain off work. With a course of a saline cathartic, and restriction of diet to bovril and similar fluids, practically all were feeling well in forty-eight hours, but the older people felt a more lasting weakness. Even the more severe cases with fever were

convalescent within four days. Besides those actually treated, I heard of a good many more people affected by diarrhoea at the same time who did not seek medical advice.

The disease was widespread, and not confined to any locality or to any class, though it was not quite so prevalent among the leisured class as among the working and business classes. No case was of sufficient severity to warrant the expense of further investigation till there occurred the sudden death of a boy, aged 7, which was the means of throwing light on the epidemic.

At 1.10 a.m. on July 28th, I was asked to go and see two brothers, J. W., aged 7, and M. W., aged 6, who were said to be vomiting and to be delirious. The history of the beginning of the trouble was uncertain; it had been Saturday night, and the parents were not at home when the children went to bed, but it seems that the children had eaten their midday meal in the usual way, and, though not hungry for tea, had been out of doors in the evening till 7 o'clock. When I reached the house within a few minutes of being called the elder boy was dying, obviously from some very acute intoxication. He had passed from the delirious to the comatose state. The temperature was 104°, the pulse very rapid and irregular, and the breathing irregular. There was a large evacuation of the bowel just before his death at 1.30 a.m. The younger boy was not in such an advanced state of toxæmia, and after the bowel had been thoroughly cleaned out he gradually came round.

A post-mortem examination of the elder boy revealed a condition of acute toxæmia affecting principally the pancreas, liver, and kidney. An organism was found in the intestine and colon which was classed by the bacteriologist as *Bacillus dysenteriae* γ of Hiss. The blood of the brother agglutinated this bacillus.

There seems little doubt that the general epidemic was caused by the same bacillus. With the occurrence of the fatal case it began to abate, and after a week or ten days no more cases appeared. The weather was now decidedly cooler. The interest in this epidemic lies in the widespread distribution in a community of an infection which, though so mild in its general effect as to give rise to no concern, could in an exceptional case cause death in a few hours. The specific causal organism is also of interest.

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