Kahn negative, and vice versa)—a percentage of 7.8. The remaining 5.2 per cent. were discrepancies of degree only, both reactions being positive, but one or the other strongly so.

To sum up, one may say that 91.6 per cent. of the tests roughly agree and 8.4 per cent. are contradictory as performed by the technique at present in use. It was found that in treated cases there was a tendency in blood specimens for the Wassermann to become negative sooner than the Kahn test—possibly owing to the Wassermann being slightly less sensitive; but in untreated cases one formed the impression that the Kahn test gave fewer false positives. Both reactions occasionally fail when the clinical signs of syphilis are fairly clear-cut.

In October a specimen of blood from an out-patient with very large hard dry perianal condylomata was examined and found negative by both the Kahn and Wassermann reactions. This patient was examined in the laboratory with a view to the detection of *Sp. pallida* in his lesions by the dark-ground method; also the possibility of infection with *S. mansoni* was investigated, with entirely negative results in each case. After biopsy by Dr. Davies a portion of a condyloma was submitted to microscopical examination in section and showed gummatous tissue. Another section treated by the method of Levaditi failed to show any spirochetes, but the evidence of the histological structure of the fragment was conclusive.

The problem of a satisfactory Wassermann antigen has been a great source of speculation and experiment. The antigens in common use in English laboratories are a simple alcoholic extract of fresh heart muscle (bovine or human), and such antigens keep in the English climate in a cold chamber for many years. A small supply of English-made antigen was brought out to Persia by the pathologist, but,

in the atmosphere of Masjid-i-Sulaiman, rapidly developed anticomplementary properties and became unfit for use.

Antigen prepared in Persia from bullock hearts and guinea-pig hearts by a variety of methods (Mackintosh and Fildes, modified Kahn; Neyman and Gager, Park and Williams) all became unfit for use after keeping on ice for two or three months in the summer. Even the Kahn antigen suddenly failed five months after the date of manufacture. The antigen elaborated by Kolmer is now being constructed and experimented with, and it is hoped that this antigen may solve many of the problems connected with the manufacture of a sensitive antigen with good keeping properties. Many of the discrepancies between the results of the Wassermann reaction and the Kahn test are probably due to defects of the antigen used. A supply of pipettes graduated in one-thousandths of a cubic centimetre are now on the way out, and will greatly assist the technician in performing the numerous and very accurate measurements of minute quantities of liquid that are such a feature of the Kahn test.

The difficulties with the supply of complement that were so acute last year were in a great measure overcome by the adoption of the routine of storing complement, frozen hard, in a test tube surrounded with a freezing mixture in a thermos flask. This year forty-six Wassermann reactions were performed with the blood from one guinea-pig; last year it was seldom that more than twelve Wassermann reactions could be performed with the blood from one guinea-pig.

In conclusion, it may be stated that, at its present stage of development, the Kahn test cannot replace the Wassermann reaction, but the adjuvant value of the tests when performed in parallel on all blood specimens is very high indeed.

ANTHRAX IN A 15 MONTHS OLD BABY.

BY

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THE case here recorded is of interest from various points of view, among others the age of the patient and the probable source of infection. Incidentally, an added interest arises from the fact that the father of this baby was himself a patient of mine suffering from anthrax, from which he recovered, eight months ago.

L. E. W., aged 15 months, was admitted to the City Hospital, Fazakerley, on May 9th, 1929, suffering from cutaneous anthrax. The infection had taken place on the front of the left forearm, one inch below the flexure of the elbow-joint. On arrival at the hospital with the baby the mother said that she had noticed the red "spot" on the arm five days before, but had not then thought it a cause for alarm. By May 9th, however, the "spot" had become much more angry, the arm had swollen, and the child was ill and distressed. The mother took it to the doctor, who at once suspected the nature of the condition, especially as anthrax is at all times a present danger in the district (Runcorn, Cheshire), and also as the father works in a local tannery. A film showed the presence of *B. anthracis*, and the patient was immediately sent to hospital.

When the child was admitted the local appearance was typical. The arm was much swollen, red, and indurated from three inches above the elbow-joint to well below the middle of the forearm. The axillary lymphatic glands were not unduly enlarged or tender. Characteristically, the swollen arm was not as painful to touch as the swelling would lead one to expect. The lesion showed a small dark brown centre about one-fourth of an inch in diameter, surrounded by a ring of angry vesicles, the whole covering an area rather larger than that of a shilling. Film and culture confirmed the presence of the anthrax bacillus.

Owing to the plumpness of the child the intravenous route for the injection of serum was not practicable, and accordingly the

intramuscular method was chosen. A dose of 50 c.cm. anti-anthrax serum (Parke, Davis and Co.) was given immediately. The infected area and arm were treated with eusol fomentations. No excision was made. A like amount of serum was given the next day and on the three succeeding days, making in all five injections of 50 c.cm. each.

The temperature and pulse, which hovered about 98.8° to 99.8° F. and 120 to 130 respectively for five days, became normal on the sixth. For the first two days the local inflammation increased, and the arm became much more swollen and indurated. On the third day a definite decrease of inflammation and swelling commenced, and by seven days from the first injection the arm

was no longer swollen except for a very limited zone about the slough at the point of infection. From the third day the baby appeared well and took its feeds readily.

The child made uneventful progress except for the incidence of a severe serum rash of urticarythematous type which appeared on May 25th, and persisted for five days. The wound gave negative swabs from May 23rd onwards. Healing was normal, and when the baby was discharged a well-formed circular scar only remained, with no evidence of adherence to the tissues underneath.

I have not been able to find on record any

case of anthrax in so young a patient. The source of infection almost certainly originated in the dust carried on the father's clothes from his work. The response to anti-anthrax serum injected intramuscularly, without excision of the "malignant pustule," is gratifying, though elsewhere¹ I have preferred the intravenous method, and almost invariably still rely upon it. In this instance it is probable that a more rapid checking of the inflammation would have been produced had the latter mode been feasible.

I desire to thank Dr. Claude Rundle, medical superintendent of the City Hospitals and Sanatorium, Fazakerley, for his kind permission to publish the case.

REFERENCE.

¹ The Serum Treatment of Cutaneous Anthrax, *Lancet*, September 22nd, 1928, p. 594.

FIG. 1.

FIG. 1.—Photograph taken on May 10th, showing the vesiculated lesion. The swelling of the arm is evident.

FIG. 2.

FIG. 2.—Photograph taken on May 17th, showing the ulcer after the shedding of the necrotic slough, as well as the abatement of the swelling.