

Clinical Notes and Cases.

The Colloidal Gamboge Reaction.⁽¹⁾ By D. O. RIDDEL, D.S.O., M.B., Ch.B.Aberd., and R. M. STEWART, M.D., M.R.C.P.Edin., D.P.M., Assistant Medical Officers, County Asylum, Whittingham.

THE subject of biochemistry is so closely related to physiology that any advances in the former science are bound to have important applications to the practice of medicine.

We find, accordingly, that the modern development of the chemistry of colloids was soon followed by the introduction of a colloidal gold reaction for the examination of cerebro-spinal fluid. This test, with which the name of Lange will always be associated, has proved to be of great diagnostic value, especially in neurosyphilis, and is now regarded as one of the most important laboratory procedures in the examination of the cerebro-spinal fluid. A satisfactory reagent, however, is extremely difficult to prepare, and any gold sol which deviates from the standard requirements laid down by Miller and his associates leads to erroneous and conflicting results. On account of this difficulty attempts have been made to employ other colloids which would be simpler to prepare, and with this object in view gum mastic, gum benzoin and Berlin blue have been introduced.

The gum mastic test, devised by Emanuel and modified by Cutting, is simple to perform, but has been found to give unreliable results.

The colloidal benzoin test, which is still in its infancy, has proved to possess a sphere of utility which deserves a wider recognition than it at present enjoys. We have recently used this reaction, together with those of Lange and Emanuel, on the spinal fluids of a fairly large series of cases, and as an outcome of our experience we propose to describe to-day a still simpler and, we believe, equally reliable test, which may be called the colloidal gamboge reaction.

The mechanism of colloidal tests has been adequately dealt with by Cruickshank, Brunton and others, and we do not think it necessary to refer to this subject here, nor shall we attempt to detail our reasons for substituting for benzoin a suspension of gamboge. We propose, rather, to detail as briefly as possible the results which we have obtained from the application of our test to 256 spinal fluids.

In performing the gamboge test it is essential to use pure reagents, distilled water free from acid or all trace of salts, and chemically clean glass ware. Further, the colloidal gamboge must be freshly prepared.

⁽¹⁾ A paper read at the Spring Meeting of the Northern and Midland Division, held at the Derby Borough Mental Hospital, April 27, 1922.

The method of performing the test is as follows :

Stock solution.—One gramme of commercial gamboge resin is powdered and dissolved in 10 c.c. of absolute alcohol. After the lapse of forty-eight hours the supernatant fluid is decanted, and stored in the dark.

Gamboge emulsion.—When the test is to be performed 0.3 c.c. of the stock solution is added drop by drop to 20 c.c. of twice, or better, triply distilled water, the flask being agitated in order to obtain a homogeneous emulsion.

Electrolyte.—This is obtained by preparing a 0.4 per cent. solution of chemically pure sodium chloride.

Performance of the test.—Six small test-tubes (3 in. \times $\frac{1}{2}$ in.) are set up in a rack ; in the first tube there is placed 1.8 c.c. of the saline solution, and in each of the remaining tubes 1 c.c. 0.2 c.c. of cerebro-spinal fluid is next added to the first tube (bringing the volume in this tube up to 2 c.c.), and after mixing 1 c.c. is transferred to the second tube, the procedure being repeated for tubes 3, 4 and 5. The c.c. removed from the fifth tube is rejected, the sixth tube thus serving as a control. In this manner a series of five dilutions is obtained, ranging from 1 in 10 to 1 in 160. Finally to each of the six tubes 1 c.c. of the gamboge emulsion is added. The test may be read after allowing the tubes to stand at room temperature for 12 to 24 hours.

In a negative reaction the contents of each tube remain unaltered, showing no trace of turbidity. In positive cases complete precipitation of the gamboge occurs in a given number of tubes ; the fluid becomes clear and the gamboge is deposited at the bottom of the tubes.

A negative reaction is shown by a total absence of precipitation in all six tubes, and a curve indicating general paralysis, the so-called paretic curve, is shown by complete precipitation in the first three or more tubes. In all of our cases of general paralysis, 56 in number, a paretic curve was obtained. The clinical diagnosis was confirmed *post-mortem* in 16 instances.

Some of the cases were in the earliest stage of this disease, and presented very few clinical signs of general paralysis, but their subsequent course fully justified the reliance which we attached to positive reactions.

It is also interesting to note that in this series two patients belonged to the senile type, their ages being 64 and 68 respectively. It has only lately been recognised that general paralysis may be encountered in patients even 80 years of age, and in doubtful cases of this type—and usually in senility, there is considerable doubt—examination of the cerebro-spinal fluid is of great value.

Two cases of *tabes dorsalis* gave similar paretic curves, but with these exceptions we never obtained a paretic curve in fluids from other diseases. It is, of course, essential to employ only fluids which are free from all trace of blood or organismal contamination, as such may cause complete precipitation in an irregular manner.

With regard to cerebro-spinal syphilis, we can speak with less confidence, as our series only comprises 11 cases, but from an analysis of these it appears that partial precipitation in the first three tubes may be taken as an indication of meningo-vascular syphilis of the nervous system.

In meningitis complete precipitation occurs in the higher dilutions, tubes 1 and 2 usually remaining negative.

In a miscellaneous group of 183 cases the colloidal gamboge reaction was uniformly negative, and this in spite of the frequent presence of increased globulin and cell content.

In conclusion, we would like to emphasise the value of a routine examination of the spinal fluids of all new admissions. Changes in the cerebro-spinal fluid are among the earliest findings in syphilitic disease of the central nervous system, and their detection affords a basis for treatment which, if promptly applied, may transform a seemingly incurable patient into a useful member of society.

Recent Medico-Legal Cases.

[The Editors request that members will oblige by sending full newspaper reports of all cases of interest as published by the local press at the time of the assizes.]

REPORTED BY DR. M. HAMBLIN SMITH.

GAUL *v.* EARL SPENCER AND OTHERS.

This case, tried before Mr. Justice Darling and a jury on June 22nd and following days, was a civil action for damages for false imprisonment and breach of contract. The case was brought by Miss Lilian J. Gaul against Dr. D. F. Rambaut, Medical Superintendent of St. Andrew's Mental Hospital, Northampton, and the Managing Committee of that institution.

The plaintiff conducted her own case. She entered the hospital as a voluntary boarder on April 26th, 1917. On May 8th a reception order under the Lunacy Act, 1890, was made. Plaintiff asserted that this order was obtained unlawfully. It was urged by the defendants that proceedings were barred by the Public Authorities Protection Act. The judge held that they were so barred, so far as any alleged irregularity in the reception order was concerned, and that the plaintiff's only cause of action was the alleged breach of contract to treat her as a voluntary boarder. This part of the case was then proceeded with.

The plaintiff complained that, on arrival at the hospital, she was deprived of her clothes and kept in bed. She had attempted suicide, on the day previous to her arrival at the hospital, by taking two ounces of laudanum. The medical evidence was that she had never demanded her release while being treated as a voluntary boarder, and that her confinement to bed was simply part of the treatment of the condition arising from her attempt at suicide. The plaintiff tried to argue the