

In conclusion my thanks are due to the Home Office authorities for permission to publish this paper, and to Dr. H. P. Foulerton, the Medical Superintendent of the State Criminal Lunatic Asylum at Broadmoor, for allowing me access to the Broadmoor records.

*References.*—(1) Troup, Sir Edward, The Home Office.—(2) Baker, Sir John, "Female Criminal Lunatics: A Sketch," *Journ. Ment. Sci.*, January, 1902.—(3) Kraepelin, Prof. E., *Lehrb. der Psychiat.*—(4) Mott, Sir Frederick, *Brit. Med. Journ.*, October 24, 1925.—(5) Troup, Sir Edward, *op. cit.*—(6) Craig, Sir Maurice, *Psychological Medicine.*—(7) Cole, R. H., *Mental Diseases.*—(8) Craig, Sir Maurice, *op. cit.*—(9) Sullivan, W. C., *Crime and Insanity.*—(10) *Idem, ibid.*

### Clinical Notes and Cases.

*A Note on the Wassermann Reaction in the Blood-Serum of Male Admissions to Hanwell Mental Hospital.* By G. A. LILLY, M.C., M.A., M.D., D.P.M., Deputy Medical Superintendent of Banstead Mental Hospital; and E. L. HOPKINS, M.C., M.R.C.S., L.R.C.P., D.P.H., D.P.M., Assistant Medical Officer, Hanwell Mental Hospital.

In a series of 412 cases admitted between December 20, 1923, and December 29, 1925, the blood-serum was tested, and of these, 105, or 25.48%, were found to be positive. This shows the distinctly high incidence of syphilis of 1 in every 4 admissions.

The diagnoses on admission of the 105 positive sera cases, compared with the diagnosis on admission of the total admissions, were as follows:

Diagnosis on admission.	Total cases.	Positive sera.	Diagnosis on admission.	Total cases.	Positive sera.
General paralysis	. 54	50	Dementia præcox	. 75	3
Delusional insanity	. 46	8	Epilepsy	. 24	3
Confusional insanity	. 73	21	Moral insanity	. 1	Nil
Melancholia	. 51	4	Alternating insanity	. 1	"
Senile dementia	. 44	7	Volitional insanity	. 1	"
Gross brain lesion	. 12	3	Congenital imbecility	. 5	"
Mania	. 25	6			
			Total	. 412	105

A consideration of these figures shows several interesting features:

(i) On admission, 55 cases, although actively syphilitic, did not present signs suggestive of general paralysis. Later a certain number developed sufficiently to be recognized as general paralysis—a recognition hastened by the fact that their sera were known to be positive.

(ii) It is evident that syphilis occurred in 8 types of mental disorder, presenting symptoms in no way suggestive of syphilis.

(iii) Of the 105 admissions with positive sera, no less than 21, or 20%, were diagnosed on admission as confusional insanity. This is to be expected in view of the prevalence of a confusional state in the earlier stages of general paralysis—an expectation borne out by further observation of these confusional cases, in which 11 were diagnosed ultimately as general paralytics.

(iv) The immediate recognition of the presence of syphilis enabled early anti-syphilitic treatment to be carried out, with excellent results in many cases.

(v) The knowledge that syphilis is the causative factor has a definite bearing upon the prognosis, as it has been found that when the cerebro-spinal fluid is negative, anti-syphilitic treatment is often successful.

(vi) The knowledge that the chief factor in causation is not heredity has been some relief to the families of the patients concerned, whilst in cases where there is the possibility of transmission of the disease by contact, cohabitation, etc., it is possible to warn those exposed to such infection, and if they so desire, have their own serum examined.

(vii) In many cases the cerebro-spinal fluid could not be obtained for two reasons :

(a) Persistent refusal by the patient. (b) Extreme collapse and feebleness, rendering the attempt inadvisable.

Thus from the 55 cases not diagnosed as general paralysis, the cerebro-spinal fluid could be obtained in 43 only. The blood-sera were obtained easily in all cases.

(viii) Four cases with a clinical picture of general paralysis on admission were found to have negative sera. In the first case the serum on two separate occasions exhibited a negative Wassermann reaction, but as the clinical signs were so suggestive, the cerebro-spinal fluid was also sent for examination. This proved to be positive, therefore the original diagnosis of general paralysis was sustained.

In the second case the patient admitted syphilis, and was transferred to another mental hospital, where both serum and cerebro-spinal fluid were found to be positive. In the remaining 2 cases the serum and cerebro-spinal fluid were negative; both patients died, the one of broncho-pneumonia, in which the *post-mortem* revealed nothing suggestive of general paralysis. The second died rapidly of exhaustion without seizures; the brain in this case exhibited macroscopic signs of general paralysis.

It is not intended to discuss further those cases which were

diagnosed as general paralysis, since once the diagnosis was confirmed by a positive Wassermann reaction in both serum and cerebro-spinal fluid, they received treatment during 1924 at Hanwell Mental Hospital by inoculation with malaria, which continued after transfer in 1925 to another mental hospital.

The 55 cases with positive sera on admission, but without symptoms suggestive of general paralysis, were diagnosed under eight forms of mental disorder as—

Delusional, 8; confusional, 21; melancholia, 4; senile dementia, 7; gross brain lesion, 3; mania (recent), 6; dementia præcox, 3; epilepsy, 3: 55 cases.

A summary of results of anti-syphilitic treatment is appended for each of these mental disorders.

#### DELUSIONAL INSANITY (PARAPHRENIA).

Total admissions, 46. Cases with positive sera, 8. Percentage with positive sera, 17·39.

There was no alteration of original diagnosis. Two died without any response to treatment; 2 recovered and were discharged; 4 have improved physically, but not enough mentally to warrant discharge.

#### CONFUSIONAL INSANITY.

Total admissions, 73. Admissions with positive sera, 21, or 28·76%.

Diagnosis was changed to general paralysis in 11 cases. Seven have died; 10 have improved physically; 3 have recovered and been discharged; 1 was transferred without responding to treatment.

#### MELANCHOLIA.

Total admissions, 51. Admissions with positive sera, 4, or 7·84%.

No alteration of original diagnosis. Three have improved; 1 has recovered.

#### SENILE DEMENTIA.

Total admissions, 44. Admissions with positive sera, 7, or 15·90%.

No alteration of original diagnosis. One improved physically; 6 died.

#### GROSS BRAIN LESION.

Total admissions, 12. Admissions with positive sera, 3, or 25·0%.

No alteration of original diagnosis. In each case progress of disease has been checked.

#### MANIA.

Total admissions, 25. Admissions with positive sera, 6, or 24·0%.

In this series diagnosis was altered in 1 case. Four died within six months (2 from pulmonary tuberculosis); 2 benefited from treatment, but still require institutional care.

#### DEMENTIA PRÆCOX.

Total admissions, 75. Admissions with positive sera, 3, or 4·0%.

In this series original diagnosis was altered in 1 case. One recovered; 2 improved physically, but are still certified.

#### EPILEPSY.

Total admissions, 24. Admissions with positive sera, 3, or 12·50%.

No alteration of original diagnosis. One recovered; 2 improved physically, but are detained for epileptic confusion.

It is felt that the above notes and summary are a strong indication that a routine examination of the sera by the Wassermann test on each admission should be carried out.

The obtaining of sufficient serum causes little or no inconvenience to the patient, the most serious sequela being slight ecchymosis due to "buttonholing" of the punctured vein, which causes no pain, and clears up in a few days.

A positive serum is an indication for the routine examination of the cerebro-spinal fluid.

A positive Wassermann reaction of both serum and cerebro-spinal fluid is confirmation of the diagnosis of general paralysis, and suitable treatment can be initiated.

Those cases in which the serum is positive and the cerebro-spinal fluid is negative have been found to respond successfully to anti-syphilitic treatment.

The Wassermann reactions were carried out at the Pathological Department of the Maudsley Hospital, Denmark Hill, under the direction of Dr. F. L. Golla.

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*The Calcium Content of Serum in Mental Invalids.* By EDWARD ARMSTRONG, M.D., B.Sc., and WILLIAMINA HOOD, B.Sc.  
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IN March, 1925, Clark and Collip (1) published a modification of Tisdall's method for the estimation of calcium. They had made extensive use of their method, and claimed that it gave an error of not more than 2%.

In order to test the method, aqueous solutions of calcium chloride of different strengths were made up, and the amount as found by the method in each solution was compared with its known amount. In all 34 estimations were made of 7 solutions, in which the amount of calcium varied from 7 to 13 mgrm. per 100 c.c. Our maximal errors were one of 6% and two of 5%. Including these figures, our average percentage of error was 1.5. Next, in order to ascertain whether the presence of serum influenced the method of estimation, mixtures were made of serum (in which the calcium had been estimated) and of calcium chloride solutions of known strength. The amount found in each mixture was then compared with its calculated amount. Twenty-four estimations were made of 7 mixtures, in which the amount of calcium varied from 9.0 to 12.7 mgrm. per 100 c.c. of mixture. Our maximal errors were one of 5% and two of 4%. Including these figures, our average