His speech was slow and somewhat deficient in sense, but he was talkative. He said that he had several paretic attacks which affected the left side. He died of failure of the heart's action after being four weeks in the hospital.

On examination, there was noted adhesion of the membranes with the skull, paleness of the pia, sclerosis of the vessels, and general atrophy of the brain, which weighed 1,200 grammes. There was extensive destruction of the lower part of the left inferior frontal implicating the whole of the pars triangularis and the anterior half of the pars opercularis. The foot of the gyrus and the pars orbitalis seemed to be intact. There is given an engraving of the lateral aspect of the left hemisphere. At the time of publication of the article the brain had not yet been sliced for further study. From such a serious lesion to Broca's convolution one might have expected a manifestation of motor aphasia, and as nothing of the kind appeared the injury discovered might be considered a confirmation of Marie's disbelief. On inquiry into the man's antecedents it transpired that ten years before he had a severe apoplectic attack with what was recalled as left-sided paralysis. For a fortnight he spoke a little, after which he became speechless. This mute condition lasted for three weeks, after which he began to learn slowly again to speak; but half a year elapsed before he regained ordinary speaking capacity. Writing was lost along with speech, although he was always able to understand what was said to him. The man was naturally right-handed. Liepmann's explanation is that at this time the patient had motor aphasia, and that during the ten years there was a restitution of the speech faculty by the vicarious function of other parts of the cortex.

WILLIAM W. IRELAND.

---

3. Pathology of Insanity.

On the Alkalinity of the Blood in Epilepsy [*L'Alkalinita del Sangue negli Epilettici*]. (*Il Manicomio, N.* 1, 1907.) *Tolone, J.*

Dr. Joseph Tolone, Assistant Physician in the Provincial Asylum of Catanzaro, has made some careful researches upon this subject, which has already been studied by several Italian and French observers.

He divided his patients into three groups. In the first, ten in number, the epileptic attacks recurred at long intervals; in the second group of four the intervals were short, sometimes two or three attacks in the day; in the third five cases the attacks habitually recurred from three to eight days. With all his epileptic patients the blood was less alkaline than with healthy persons. Where the fits returned after long intervals the alkaline reaction of the blood, though less than the normal, was higher than in the other groups. In those cases in which the intervals were short the alkalinity was lowest just before and after the attacks. In the group between those of medium frequency the degree of alkalinity rose almost up to normal and then sunk till the epileptic attack, after which it mounted.

Dr. Tolone put the question whether the diminution of the alkaline

reaction of the blood be due to the diminution of the alkaline salts proper in the circulating fluid, or to the excess of acid substances owing to retarded elimination.

It is not easy, he remarks, to answer this question. The observation of Biernaki that the diminished alkalinity is owing to the accumulation of lactic acid has not been accepted by any other observer. The epileptic attack cannot be caused by the lessened alkalinity of the blood, since Charon and Briche have found that it cannot be put off by repeated injections of alkaline solutions, nor can the alkalinity depend upon the attack, because it is actually lessened in degree thereafter. Tolone himself thinks that the diminution of alkalinity depends upon the production of substances due to retrogressive changes or to diminished elimination, perhaps owing to the lessened action of the liver. Thus toxic matters accumulate in the blood, which act upon the cortical matter of the brain, but the resulting disturbance represents a reaction and favours the elimination of the toxic products especially by restoring the power of the hepatic cells. WILLIAM W. IRELAND.

Investigations upon the Spinal Fluids in Mental and Nervous Diseases [*Untersuchungen der Cerebrospinalflüssigkeit bei Geistes und Nervenkrankheiten*]. (*Arch. f. Psychiat., Heft.* 2, *Bd.* 42.) *Henkel.*

The study of the state of the cerebro-spinal fluids in disease has been mainly initiated by French pathologists. Schoenborn was the first to take it up in Germany. He was followed by Siemerling and Meyer.

Lumbar puncture has been principally useful for diagnosis; its therapeutic value has been slight. Meyer found that in almost all cases in which there was organic disease with chronic meningitis there was an increase of lymph cells in the cerebro-spinal fluid. He describes these lymph cells as small round nuclei with indistinct contour, at one part clearer but without granules. In general paralysis he has found bigger blue nuclei, which within the cells are surrounded by red granules.

As the result of his observations in the Psychiatric Clinique at Kiel, Dr. Henkel gives the following conclusions: He has regularly found a considerable increase of lymph cells, abundance of serum albumen, and increase of serum globuline in progressive paralysis, tabes, lues cerebri and cerebro-spinalis, and in all the forms of meningitis. These appearances were also constantly observed in cerebral tumours although in a lesser degree. It is much the same in myelitis, only there is a greater relative increase in the amount of albumen. In arterio-sclerosis, multiple sclerosis, and syringomyelia the changes in the cerebro-spinal fluid were variable; perhaps they depended upon the seat of the lesion. In early syphilis without organic implications there was sometimes a small increase of lymphocytosis. No such production of cells could be found in infantile paralysis or in functional disease. One had the impression that in chronic processes single nuclei, in acute processes cells with several nuclei, were most abundant. Inflammations seemed to favour the increase of cell-formation, but the manner of this increase could not be made out. WILLIAM W. IRELAND.

Changes in the Blood, especially in Insanity [*Le Alterazioni del Sangue in Rapporto specialmente alle Malattie Mentali*]. (*Il Manicomio, N.* 1 *and* 2, 1907.) *Galdi.*

Formerly, there was too much solidism in our pathology, but of late years there has been a closer study of the varying conditions of the circulating fluid in health and in disease.

Such researches are enormously difficult, and often the results of different observers clash with one another. Dr. Galdi has undertaken the useful task of collecting from the medical literature of Europe and America the more recent studies on the blood in mental and nervous diseases. His two papers fill one hundred pages, and he cites 270 works which contribute to the subject. According to Schaeffer the coagulation of the blood takes place under the influence of a ferment (trombina), which is formed by an unknown reaction of a nucleo-proteid (protrombina) with atoms of calcium. This protrombina is found in various cells, principally in the leucocytes. After the protrombina forms an enzyma with the salts of calcium, coagulation becomes possible. In some conditions the formation of the nucleo-proteids and their reaction are hindered, causing the coagulability of the blood to vary. The whole of the fibrin ferment is not used in the process of coagulation; some of it still remains free in the serum. Galdi observes that in spite of the large number of observations, in which Italian pathologists have taken a large part, it is difficult to arrive at any certain conclusions. He, however, sums up in five pages:

The coagulability of the blood is much diminished in epilepsy, especially when the convulsive attacks are frequent, which may depend upon a reduction of the functional activity of the liver. The alkalinity of the blood is constantly diminished in epilepsy and in pellagrous insanity. The alkalinity of the blood has also been found to be lessened in mental confusion and dementia præcox, general paralysis, and in mental disorders in which there is great motor restlessness; but it is increased in the alcoholic forms. Hypoglobuly, diminution of the red corpuscles, is a symptom of intoxication, infection, malnutrition, and morbid diathesis, while hyperglobuly indicates a state of molecular concentration of the blood. These states have only an indirect relation to the mental disorders depending upon divers conditions and constituting the substratum upon which the derangements implant themselves. Hypoglobuly with a deficiency of hæmoglobin was noticed in mania, melancholia, dementia, and general paralysis—conditions of great agitation, especially at the beginning and with female patients. The deficiency of hæmoglobin is observable before the hypoglobuly. The alteration of the red corpuscles commences with a diminution in their colouring matter.

Hyperglobuly was observed in maniacal states in epileptics after the convulsive attacks, in the optimistic stage of general paralysis and in the excited phases of maniacal depression. In patients with goitre, myxœdema, and acromegaly the hæmoglobin is diminished while the red corpuscles appear normal. Some interesting observations have been made in vascular neurasthenia. Cabot, Vigoroux, and others have observed an alteration in the number of the red corpuscles

after the application of static electricity, massage, and baths. In these results, which are sometimes contradictory, one must bear in mind the influence of the tonicity of the vessels, so variable with the neurasthenics, exercised upon the quantity of the globules at the different times when the blood is examined. Cheron has described a vascular neurasthenia characterised by the apparent anæmia (hypoglobuly with hydræmia), which may appear at any time. This is solely owing to relaxation of the muscular coats of the arteries. In these cases of functional anæmia, Cheron used an injection of from 5–10 c.c. of salt water, 1 per cent. of which was followed by a considerable elevation of arterial tension and an increase of red globules from one-fourth to one-third. The apparent hypoglobuly is entirely owing to the stimulus exercised upon the nervous system by the injection. It diminishes gradually to be replaced by the antecedent hyperglobuly.

It was found by observation upon the influence of the emotions on the constitution of the blood and the state of the capillaries, which are under vasomotor influences, that the number of the blood-corpuscles varied. Joy induces an active dilatation of the capillaries and then hypoglobuly. Sadness, on the other hand, causes constriction with hyperglobuly. Hypoglobuly and hyperglobuly accompany the first vasomotor variations often before the mental affections, which is a proof that the alterations in the vessels are anterior to the emotions.

Careful observations were made upon the state of the hæmatoblasts. Like the red corpuscles they were found to be diminished in quantity at the beginning of attacks of insanity, to resume their normal proportions in dementia.

The results obtained by different observers about the globular resistance in insanity were sometimes discordant. What is meant by this expression is the more or less readiness with which a specimen of blood parts with its hæmoglobin to a graduated saline solution. It may be said that in general the globular resistance is less in insanity than in the normal condition, and that the greatest alterations in the blood are met with in processes of intoxication or of altered metamorphosis as in pellagra, dementia paralytica, and the first stage of dementia præcox. Also in mania, melancholia, and alcoholism, senile dementia, and in epilepsy the globular resistance is always found diminished. In epilepsy the greatest loss of tone may either accompany the convulsive attacks, precede or follow them.

From recent studies upon infection, it has been supposed that the increase of polynuclear white corpuscles indicates the reaction of the organism when an acute infection demands a prompt defence. In fact, it has been found that an increase of such polynuclear leucocytes, a diminution of leucocytes with a single nucleus and of lymphocytes, takes place at the outset of insanity of toxic infective origin, and the process is reversed on recovery. In the first stage of dementia præcox, in tabes, and in dementia paralytica there is an increase of the white corpuscles, especially with those which have several nuclei; but as these diseases progress a return to the single nuclei leucocytes and to the lymph corpuscles is observed.

Galdi remarks that the treatment of mental diseases by serum, notably in pellagra and epilepsy, has as yet yielded no beneficial results,

while it has sometimes done mischief. In spite of many researches these experimenters are still sailing in the sea of hypothesis.

It has, however, been proved that the serum of the blood taken from patients suffering from pellagra and epilepsy has a malign influence upon the development of the embryo, arresting growth or producing monstrosities. A similar power seemed to be possessed by blood taken from cases of mania and melancholia.

Cappelletto, while admitting the recurrence of various microbes in the blood which may come from the intestines, denies that they have any importance as causes of mental derangement. Ceni believes that the morbid factor of acute delirium cannot be single and that the various microbes found in the blood (stafilococci, streptococci, micrococci tetrageni) can only be a true secondary auto-infection, and that they constitute a complication which always aggravates acute insanity.

Galdi assigns to Dr. Johnson Smith a priority in observing the density of the blood in forms of insanity. After explaining the researches of Dr. W. Ford Robertson upon the pathology of general paralysis and its assigned factor, the diptheroid bacillus, Galdi observes that it is still to be proved that the bacterium of gastro-intestinal origin is the primary cause of the malady and not secondary to the morbid process in the brain, and that the diphtheroid bacillus is really specific and nothing more than one of the many bacteria of "the intestinal flora" which, in ways not yet clearly known, enters the circulating fluid already depraved.

In conclusion, Galdi tells us that the catalytic power in the blood has been found much diminished in different forms of insanity, especially in dementia præcox and dementia paralytica, in epilepsy and in acute delirium. The activity of catalysis seems to hold some relation to the intensity of the insanity.

Catalysis is a name given by chemists to an obscure process by which the presence of one substance aids in the decomposition of another without itself appearing to be changed. Thus a small quantity of platinum minutely divided acts as a decomposer of oxygenated water, setting free the oxygen. In like manner Senter found an enzyma in the blood which he named *emasi*, and Issayew isolated another enzyma from the cells of a ferment which were found to act upon oxygenated water in the same way as pulverised platinum. Schönbein first showed that many vegetable and animal structures when brought in contact with oxygenated water set free oxygen. Ferments which acted in a similar manner have been found in animal tissues, especially in the liver, kidney, spleen and glands, and also in the blood, heart and brain.

The researches of pathologists in this difficult inquiry have been few and doubtful, but catalytic products have been found in some urines and in pus. Iolles and Oppenheim found the reducing action of the blood upon oxygenated water diminished in tuberculosis, nephritis, and in many intoxications produced by acids and carbonic oxide. They think that the symptoms of death through freezing and comatose conditions may be sustained by the failing activity of catalysis.

Pighini has endeavoured to study the catalysis of the blood in mental diseases. He began by making experiments on animals. Some dogs

of medium size and age were made to inspire carbonic oxide, while on others there were practised injections of aspergillus, and from others the parathyroid glands were removed. Before and after the intoxication blood was taken from the external jugular and then subjected to examination.

It was found that catalytic products were contained in the blood during the acute and potential stages of the intoxication, but their action on oxygenated water was less powerful.

Pighini studied the catalytic power of the blood in sixteen insane patients; two of these were suffering from maniacal depression, five from dementia præcox, five from epilepsy, and one from acute delirium and three from dementia paralytica. The general result was that the catalytic power was found to be notably diminished in the different insane patients examined. It appeared likely that there was some relation between the acute state of the insanity and the dynamic power of the catalysis; but there are many causes which may modify the activity of the blood. WILLIAM W. IRELAND.

Contribution to the Study of Auto-intoxication in Mental Confusion [*Contribution à l'Étude de l'Auto-intoxication dans Confusion Mentale*]. (*A Thesis.*) *Prunier, André.*

In this thesis, Dr. André Prunier discusses the question of auto-intoxication in confusional insanity by an estimation of the toxicity of the urine. The subject of a toxicity of the urine has been of interest for many years, for Maron in 1868 first injected some subcutaneously, but obtained negative results and declared that it was inoffensive.

In a short review of the literature upon the subject the author refers to the observations of several workers at the Congress of Mental Medicine held at Rochelle in 1893, at which the whole question was discussed.

Gilbert Ballet and Roubinovitch stated that the urine of melancholiacs was hypertoxic, and that of maniacs less so, whilst from "mental degenerates" very variable results were obtained. Lavaure compared the toxicity of serum with the urine, and in two cases of mental confusion found that both were distinctly hypertoxic.

The author then describes how he carried out his experiments in guinea-pigs, taking especial care to correct the general causes of error in the technical details. He selected the urine from six patients who were suffering from mental confusion, and who at the same time showed signs of gastro-intestinal disturbance (constipation, diarrhœa, attacks of vomiting, excessive appetite, etc.), and he describes it as being hypertoxic in each case. He repeated each of his experiments on three different occasions.

He concludes from his own cases and from a review of the literature that there exists in most patients suffering from confusional insanity some gastro-intestinal trouble, as shown by abnormal fermentations, altered secretions, constipation, etc., all tending to exaggerate the production of intestinal toxines. Owing to an excessive production and absorption the kidney is stimulated to further work, so that there appears "a hypertoxicity of the urine." But this "hypertoxicity of defence" is not equal to the amount of toxine absorbed from the

intestinal canal, so that an auto-intoxication of the body is produced which manifests itself by various physical signs and by the appearance of mental confusion. After injection of the hypertoxic urine, all the animals died in convulsions—in opisthotonos with trismus, never in coma; and he attributes this to the presence of a ptomaine in the injected urine.

Although the toxicity of the urine has been determined in several diseases, *i.e.*, general paralysis, epilepsy, etc., yet the value of the method has been seriously disputed, and these results must be accepted with considerable reserve. The author jumps too readily to the conclusion that the hypertoxic urine indicates the body is poisoned with toxines. Moreover it is very difficult to decide whether the observed or alleged disorder is the cause rather than the result of the disease in the central nervous system.

The question of auto-intoxication is most interesting and fascinating, and about which much has been written, but of exact observations there are but very few. SIDNEY CLARKE.

Part IV.—Notes and News.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF THE UNITED KINGDOM.

A GENERAL MEETING of the Association was held at 11, Chandos Street, Cavendish Square, London, on Tuesday, May 19th, 1908, Dr. P. W. MacDonald, President, in the chair.

Present: T. S. Adair, C. Aldridge, H. T. S. Aveline, C. H. Bond, A. N. Boycott, J. Chambers, M. Craig, W. R. Dawson, J. F. Dixon, T. O'C. Donelan, A. C. Dove, T. Drapes, F. W. Edridge-Green, F. H. Edwards, F. A. Elkins, J. A. Ewan, C. H. Fennell, N. J. H. Gavin, T. D. Greenlees, H. E. Haynes, J. W. Higginson, H. G. Hill, Robert Jones, N. Lavers, H. Wolseley-Lewis, H. J. MacBryan, J. H. MacDonald, P. W. MacDonald, M. E. Martin, W. F. Menzies, C. A. Mercier, W. J. Mickle, A. Miller, C. S. Morison, D. Orr, H. Rayner, D. Rice, R. G. Rows, G. H. Savage, G. E. Shuttleworth, R. Percy Smith, R. H. Steen, C. T. Street, D. G. Thomson, F. Watson, T. Outterson Wood.

Apologies for absence were received from: Drs. Bedford Pierce, Clouston, Hamilton Marr, H. H. Newington, Nolan, Turnbull, and Urquhart.

At the Council meeting were present: The President and Drs. Aveline, Hubert Bond, Boycott, James Chambers, Craig, Dawson, Drapes, Ewan, Fennell, Robert Jones, Wolseley-Lewis, Mercier, Miller, Orr, Rayner, and Steen.

THE MINUTES.

The minutes of the last meeting having already appeared in the Journal, were taken as read, approved, and signed.

The PRESIDENT said that, arising out of the minutes, a letter had been received from the Commissioners in Lunacy, which he asked the Secretary to read.

The SECRETARY (Dr. Hubert Bond) said members would remember that he was instructed to forward to the Commissioners in Lunacy a resolution passed at the last meeting of the Association in reference to the Factory and Workshops Act, 1908.