and Christian Science. The relief of symptoms shows that faith alone is a potent curative agent, and that the majority of the ordinary symptoms are mental in nature and removable. The methods employed in psychotherapy are suggestion under hypnosis, suggestion in the waking state, persuasion and re-education, and psycho-analysis. In "superficial" cases immediate results often follow suggestion, but in the more chronic cases the removal of a symptom by suggestion is often followed by relapses, a new symptom taking the place of the rejected one, as the underlying condition of morbid suggestibility has not been removed. To overcome this condition Dubois introduced the method of persuasion. He thinks that an appeal should be made to the intellect by talks with the patient on the subject of his nervous symptoms. Persuasion is to some extent a form of suggestion, as in all degrees of belief feeling as well as the intellect is involved. Upon re-education largely rests the completeness of the cure; the connection between the mental antecedents and the symptoms are explained to the patient; when these are understood and acted upon his mal-adaptation ceases. Freud has shown that the patient may be most profoundly influenced by feelings and ideas of which he is quite unconscious. No persuasion avails until the unconscious motive of his mental or nervous symptoms has been uncovered. The process by which this can be done is known as psycho-analysis. Three methods of probing the unconscious mind are mentioned—the word-association test, the free association of ideas, and the analysis of dreams. Psycho-analysis has its limitations. It is not usually successful in curing persons above middle age; even when successful the treatment may take months. Robertson thinks that in many cases it is unnecessary. No successful physician who has not given attention to this subject has the faintest idea of the extent to which he employs psychotherapy unconsciously. Every practitioner and student of medicine must be taught the part the mind plays in the chief symptoms of disease, and he must consciously use psychotherapy in the treatment of these. His success will depend on the depth of his convictions. C. W. FORSYTH.

5. Pathology.

A New Method for the Estimation of Minute Quantities of Nitrogen in Organic Substances, which Furnishes a New Quantitative Method of Diagnosis in Some Cases of Mental Disease. (Report No. 2 from the Chemical Laboratory, Cardiff City Mental Hospital.) Stanford, R. V.

The method employed consists of three stages: (1) The conversion of the total nitrogen into ammonia by the Kjeldahl process; (2) the conversion of the ammonia into pure aqueous solution; and (3) the calorimetric estimation of the ammonia in this solution by means of Nessler's solution. The result is expressed as "nitrogen number," which denotes the number of hundredths of a milligramme in 1 c.c. of cerebro-spinal fluid. In general paralysis there is a high nitrogen number, which is marked towards the termination of the disease. It may be low in the early stages or in remissions. In mania the nitrogen number is always low—a factor of diagnostic importance in distinguishing

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between this disease and maniacal phases occurring in general paralysis. In imbecility, dementia præcox, paranoia, amentia and epilepsy the nitrogen number varies, but is usually low, and in terminal dementias it is very high. It was also found that density and nitrogen numbers run parallel to one another, with the exception of epilepsy, where high density obtains. The author emphasises the fact that choline does not occur in the cerebro-spinal fluid in mental diseases, and that ammonium salts only occur in the merest traces. F. E. STOKES.

Hyperglycæmia in Mental Disorders. (*Brain, vol. 42. pt. iii, October* 19 1919.) *Koody, F. H.*

Hyperglycæmia is found in emotional states and may lead to temporary glycosuria even in normal persons, and it may exist with normal metabolism. It may be found in mental disorders with emotionalism and the mechanism of its production is by stimulation of the suprarenal glands causing hypersecretion of adrenalin, which circulates to the liver, where more glycogen is mobilised and in consequence more glycose is found in the peripheral blood. In this research Bang's modified method was used for the examination of the blood for glycose, and examinations were made before breakfast and ¾ hr., 1½ hrs., and 2¼ hrs. after this meal which consisted of 100 grms. of bread and 200 c.c. of milk. In dementia præcox and epilepsy the blood sugar was found to be subnormal before and slightly above the normal after breakfast. In dementia paralytica and non-anxious melancholia the blood sugar was slightly above the normal before and considerably above the normal after breakfast; and in anxious melancholia the highest blood sugar content was found at all times. In amentia, anxious patients showed a great increase of blood sugar after breakfast as compared with non-anxious patients, and in mania a similar increase was present in real emotional states, but was absent in hypomaniacal forms in which the patient was only optimistic and cheerful.

Cannon first suggested that hyperglycæmia might be useful to animals in emotional states, as it provides the muscles with a larger amount of sugar for combustion during the actions which follow or accompany the emotions, *i.e*, fright or flight. This strong sympathetic impulse also causes other reactions which are useful to the animal economy in such conditions, *viz*., increased blood-pressure, widening of the pupil, erection of the hair, inhibition of the salivary, sweat, lachrymal and gastric glands, and of the motility of the intestines. Gaskell points out that both the involuntary and voluntary nervous system can be divided into a somatic and splanchnic part—the former, represented by the thoracico-lumbar outflow of the sympathetic division, supplies the heart, blood-vessels, and skin musculature throughou t the body: the latter, consisting of the bulbar and sacral outflow, motivates the muscles of the alimentary canal. In emotions of rage, fear, etc., when the animal had to flee or fight, the whole somatic nervous system both voluntary and involuntary would come into action.

Cannon's theory affirms physiologically Gaskell's anatomical conception. In melancholia with anxiety and in the manic-depressive psychosis we find symptoms of stimulation of the sympathetic analagous to those produced in animals by fear and anger. These bodily changes depend

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