

thetic. No traces of myelin could be detected around the fibrils. Roncoroni has found them in some of the lower animals. He thinks that these fibrils have a nervous or psychical function; but this does not go beyond speculation.

WILLIAM W. IRELAND.

The Changes found in the Central Nervous System in a case of Rabies with Acute Mental Disturbance. (Journ. of Nerv. and Ment. Dis., May, 1903.) Allen, C. L.

Before proceeding to a description of the case which came under his personal observation, the author gives a *résumé* of the literature on the subject of the pathological anatomy of rabies.

This case was that of a farm labourer *æt.* 32, who, whilst intoxicated, was bitten on the hand by a dog. The dog was said to be mad, and killed, but no examination of its body was made. The man, who was the subject of much attention and interest on the part of his neighbours, who repeatedly detailed the symptoms of rabies to him, became nervous and depressed, gave up work, and began to drink heavily. About three months after receiving the bite he became excited and violent, tore his clothes, is said to have "barked like a dog," was unable to swallow, and took neither food nor drink from that time onwards. He was brought into hospital, tied hand and foot, three days later. He was then very restless and excited, kept constantly in motion, secreted a great quantity of saliva, and was absolutely unable to swallow. Apparently he had no definite delusions, hallucinations, or illusions, and in an interval of comparative calm told the attendant that he had hydrophobia and hated to die. The patient died the same evening.

On account of the questionable history the case was regarded as being most probably one of acute excitement supervening upon alcoholism.

The autopsy was performed seventeen and a half hours after death. Two rabbits were inoculated with portions of the brain and spinal cord, with the result that each animal developed typical paralysis of the hind limbs and died three days later, after the paralysis had ascended to the fore limbs.

The writer then gives a detailed account of the macroscopic and microscopic findings, which agreed in general with those which have previously been described in rabies, but which he thinks, while strongly suggestive in a case with so suspicious a history, would hardly have justified a positive diagnosis if taken alone, *i. e.*, without the animal inoculations. None of the changes found were characteristic of rabies alone, but each may be present also in other diseases.

From the study of the literature of the subject, together with that of this case, the author believes that it is justifiable to conclude that neither the ganglionic changes of van Gehuchten and Nélis nor the rabies tubercle of Babes are absolutely characteristic of human rabies, though their presence in a suspicious case may be of considerable diagnostic importance. The value of these changes in the nervous system of a dog suspected of rabies is not yet entirely decided, but when found in a case otherwise suspicious they are at least strongly

suggestive, and they should invariably be sought for, at any rate until we acquire some more definite information upon the subject.

A. W. WILCOX.

7. Treatment of Insanity.

Saline Injections in the Treatment of the Psychoses [Kochsalzinfusionen in der Therapie der Psychosen]. (Psychiatr. Neurol. Wochenschr.) Wickel.

Dr. Wickel draws attention to the continually increasing field of application of subcutaneous saline injections which has been noted within the last twenty years. This development has taken place in the various departments of medicine, surgery, and gynæcology, and, within the last twelve years, it has invaded also that of mental disorders.

The reasonableness of this method of treatment is quite obvious in all forms of acute anæmia from loss of blood. In shock and collapse its applicability is equally apparent. In the profound prostration of cholera (*Asiatica* and *nostras*) it is held to serve a double purpose—on the one hand by filling the depleted vascular system, and on the other by diluting the percentage strength of the toxins in the system and facilitating their elimination; in the latter action the improved circulation would be a factor.

On the strength of this point of view, the dilution of the poison by the injection, the latter has been employed in various forms of poisoning, infectious and other, including carbonic oxide and coal-gas poisoning; also in uræmia, diabetic coma, eclampsia, the typhoid state, septicæmia, etc. It has likewise been used in pneumonia, malignant endocarditis, and in the primary (essential) anæmias.

From 1891 on we find records of the use of saline injections in acute delirium with prostration (Mercklin); in mental disease with collapse and the refusal of food (Ilberg, Emminghaus, Zichen, de Borck, Kraepelin, and others); in mental disease depending on infection or auto-infection (Jacquin, Buvat). A very wide application of the method is advocated by di Gaspero, who sees in it a very powerful means of stimulating the whole system in mental disease attended by marked depression or perversion of the functions, and in particular where there is present a supposed lowering of the oxidations in the tissues. Donath speaks highly of the treatment in general paralysis, especially in the early stages, and Alter agrees upon the whole with Donath.

The method of procedure consists in the subcutaneous injection, with all antiseptic precautions, of 400 to 700 c.c. (14 to 24 oz. about), and the repetition of this dose, according to results, every fifth, third, second day, or even every day. In general the liquid employed was a sterilised solution of sodium chloride, 0.75 per cent., but Donath uses a mixed solution of sulphate and chloride of potassium, and of chloride, carbonate, and phosphate of sodium; of this he injects 18 to 35 oz. every third or fifth day.