the vessel. The other form was due to infraction consequent to thrombosis of an artery. The hemorrhages in this case seemed to have taken place from small arterioles and to have occurred at much greater pressure than in the previous form. [Da Fano.]

5. BRAIN; MENINGES.

Bauza. FROIN'S SYNDROME AND TUBERCULOUS MENINGITIS. [Rev. méd. de Uruguay, Oct., 1919.]

A boy, aged 4 years, developed symptoms of meningitis which on lumbar puncture showed a yellowish fluid, which coagulated *en masse* in a few minutes; it contained 25 cells per cubic millimeter, lymphocytes 100 per cent., normal and changed red cells, and an increase of fibrin. There were no tubercle bacilli, but a few meningococci. A second puncture yielded only a few drops of fluid, which set in a jelly. Inoculation of a guinea-pig did not produce tuberculosis. The case, however, was regarded as an example of tuberculous meningitis, owing to a positive intradermal reaction with a meningococcal association.

Fossataro, E. MENINGITIS SYMPTOMATOLOGY. [Policlinico, Dec. 7, 1919.]

A man of 37 suddenly began to cough and expectorate, following fever, headache and vomiting. Râles were found. The neck was stiff. Meningococci were found in the spinal fluid. The course was distinguished by torpor and death at the third month. The spinal meninges did not seem to have been affected. There was loss of equilibrium sense and a tendency to fall which suggested a tumor in the cerebellum but vision was normal and no eye ground changes. The torpor was the result of the hydrocephalus. Purulent leptomeningitis of the lower surface of the cerebellum with hydrocephalus, ventricular and also intermeningeal were found.

Villaret, M., et al. ALCOHOLIC MENINGITIS. [Bull. de la Soc. Méd. des Hôp., Dec., 19, 1919.]

In the woman of 45 typical symptoms of meningitis were present. The presence of syphilis and tuberculosis could be excluded. The diagnosis was made from the findings of alcohol in the cerebrospinal fluid.

Lewkowicz, K. SEROTHERAPY AND VACCINE OF EPIDEMIC MENINGITIS. [Arch. de Méd. des Enfants, Dec., 1919, J. A. M. A.]

Lewkowicz presents what seems to be conclusive clinical evidence that the lateral ventricles are the principal and essential seat of the infectious process, and that the meningococci spread from this hotbed through the entire subarachnoid space. The antiserum therefore, he declares, should be injected into the lateral ventricles from the very first and be reinjected daily, on alternate sides, or simultaneously on both

sides every third day. The amount of the antiserum should be from 10 to 20 c.c. He urges the use of vaccine at the same time, from the very start. This tends to induce a general immunization which is a potent aid in the cure. He punctures the skull with a Götze grooved drill, 15 mm. wide, in a hand-drill. The needle is 1 mm. in diameter and 7 or 7.5 cm. long. A brass guide for the needle is introduced through the groove in the drill before the latter is drawn out. The brass guide inside the needle prevents obstruction with tissue. The tip of the needle is not sharp, as the only obstacle it has to force is the dura. The puncture is made anywhere along the top of the skull, 3, 4 or 5 cm. from the median line, pointing the tip of the needle toward the center of the skull. The depth of the puncture should be about 40 mm. for infants; 50 to 60 mm. for older children, and 60 to 75 mm. for adults. The fluid should not be injected until the needle is certainly in the ventricle. This is proved by the cerebrospinal fluid flowing from the needle and by the drop in tension as the antiserum spreads in the ventricles. It is important, therefore to have a manometer with three-way stopcock interposed between the needle and the syringe. The tension should not surpass 60 to 80 mm. mercury for older children and adults, and 40 or 50 for infants.

After the injection he leaves the needle in place for ten minutes to let the tension fall. Then he draws the needle half way out and leaves it for fifteen or thirty minutes, by which time the puncture canal has been plugged with a clot and there is no further oozing. In renewing the injections he trephines always at a point 1 or 1.5 cm. at least beyond the last points. His mortality was 36 per cent. in his last series of twenty-two cases, but analysis shows that a defective antiserum or a fulminating course from the start explained all the fatalities. In one instructive case the antiserum displayed a notably favorable action up to the twelfth day. Then the following injections, the sixteenth and seventeenth days, induced anaphylactic phenomena. Hence he warns not to give horse antiserum for longer than the thirteenth day, relying on the vaccine used from the start to carry on the work. In some mild cases the vaccine alone proved effectual, the blood serum showing an antibody content equal to that of the commercial antisera. He explains how there is a constant current from the ventricles to the surface of the brain and of the spinal cord, the ventricles being the secreting area and the subarachnoid space the resorbing area. He has been applying this primary ventricle serotherapy since 1914, and has a total record of eighty-four cases.

Roger, H. UREMIC MENINGEAL SYNDROME. [Ann. d. Méd., Dec., 1919, J. A. M. A.]

Roger presents evidence to show that the meningeal reactions which develop in the course of uremia do not seem to be directly caused by the retention of nitrogen. They are usually the results of intercurrent cere-