6 (625)

The seat of action in tetany after parathyroidectomy.

By **W. G. MACCALLUM.**

[*From the Department of Pathology of the College of Physicians and Surgeons, Columbia University.*]

Both the immediate cause and seat of tetany are still obscure. It has been suggested, though never proven, that a poison must circulate in the blood to cause the tetanic twitchings. It has also been suggested that these twitchings may result from a lack of calcium in the circulating fluids. It has been shown that tetany does not appear in a limb to which the nerves have been cut. It is conceivable that this is due to the fact that no impulses reach that limb from the spinal cord. The present experiments show that if the nerves be cut during tetany, their electrical excitability remains the same as that of the intact nerves on the opposite side. Further, it is shown that if the nerves be cut before the development of tetany, they become hyperexcitable to an extent which equals that of the intact nerve on the opposite side, although they are quite separate from the spinal cord. Since degeneration occurs within two or three days, such observations must be made with due regard to this fact. The peculiar character of this rise in the excitability is seen in the figures obtained for the cathode and anode opening shocks to which the nerves become especially excitable. In complete anemia or after the death of the animal there is a period of about one half hour during which this characteristic rise in the excitability of the nerve to the cathode and anode opening shocks appears. Nevertheless, the excitability of the nerves is, throughout this period, very much lowered and the curve is in no way comparable, therefore, to that in tetany.

Transfusion of the blood of an animal in tetany into the vessels of a normal animal has not succeeded in producing a characteristic tetany nor even a marked change in the excitability of the nerve.

This is probably partly due to inadequate technique and partly to the action of the normal dog's parathyroids. If the leg of a normal dog be isolated, with the exception of the nerves which

remain in intact connection with the spinal cord, and if the vessels be anastomosed with those of a dog in tetany, so that the peripheral portions of the normal leg are bathed with tetany blood, the nerves of that leg assume the characteristic hyperexcitability of tetany, and twitchings may even occur. Reëstablishment of the connection with the normal circulation brings back the excitability to normal.

From these experiments, it may be concluded that the hyperexcitability is peripheral and is dependent upon some change in the character of the blood. Experiments with curare, to determine whether or not this is an affection of the nerves alone, have not yet been completed, although one has the general impression that the excitability of the muscles themselves is increased over normal. The value of the experiments is thought to lie particularly in the opportunity which is offered for the study of tetany blood modified in various ways and used as the fluid for perfusing an isolated extremity.

7 (626)

Curves from a case of transient complete heart block, showing constantly varying ventricular complexes.

By **ALFRED E. COHN.**

[*From the First Medical Division, Mount Sinai Hospital, New York.*]

The patient from whom the curves were taken has been under observation since August, 1910. He was at that time suffering from cardiac decompensation. It was clear from the physical examination that he had a valvular defect. Combined arterial and venous curves were made. These showed that for short periods every impulse from the auricles was answered by a ventricular contraction, while at others the ventricular contractions responded to every second beat of the auricles. Curves were taken in February and March, 1911. These were volume curves from the jugular vein and radial artery and likewise curves of the cardiac action current, registered with an Edelmann string-galvanometer. At first the ventricles responded to every second