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THE BERNE PHYSIOLOGICAL CONGRESS (I.).

THE third International Physiological Congress, held at Berne from September 9th to 13th, 1895, was attended by a larger number of physiologists than either of the previous meetings. The official lists of those who announced their intention of being present contained 154 names, and, though a few of these were prevented from attending, the representation from most of the European countries was very satisfactory. The United States, however, sent but two representatives.

The meetings were held in the new physiological institute named in honor of Switzerland's great physiologist the 'Hallerianum.' Here every facility was offered by Prof. Kronecker and his assistants, not only for the presentation of the regular communications, but also for the exhibition of apparatus and for physiological and microscopical demonstrations, which are really the most important features of such gatherings.

The social entertainments were numerous and well arranged. On the evening of September 8th an informal reception in the Gesellschaftshaus gave the members an opportunity of greeting each other and of making new acquaintances. On the following evening Prof. and Mrs. Kronecker received the members at their home and entertained them with private theatricals, dancing and an 'Abendessen' in the open air. The other social features of the Congress

were a concert in the Cathedral with a subsequent reunion in the Café du Pont, an excursion to the Schynige Platte (somewhat interfered with by bad weather), a subscription dinner followed by a ball and a reunion in the 'Festhalle' of the agricultural exhibition.

In the business session the Congress adopted rules for the admission of members to future meetings and voted that the next Congress should be held in Cambridge, England, in 1898.

The physiological proceedings were the following:

Monday, September 9th. Morning demonstrations and papers. (Chairmen, Profs. Chauveau and Bowditch.)

Dr. H. Boruttau (Göttingen) discussed the possibility of explaining the conduction of nervous impulses by purely electrical processes, and demonstrated on the polarizable 'Kernleiter' of Matteucci and Hermann with the aid of capillary electrometer and of reflecting galvanometer the production of a negative variation by tetanic sinusoidal 'stimulation,' and by rupture of the Kernleiter. With Hermann's rheotome, too, a wave of negativity was shown to be produced in the Kernleiter analogous to that of a nerve.

Prof. R. Ewald (Strassburg) showed a dog from the spinal cord of which a length of 158 mm., comprising the whole of the lumbar enlargement and a large part of the thoracic region, had been removed more than two years before in two operations. The alimentary canal continued its normal functions; the urine, free from sugar and albumen, accumulated in large quantities in the bladder, which emptied itself at intervals; vascular tonus had become normally restored; and there were no trophic cutaneous lesions. With the exception of the sphincter ani, which still functioned normally and retained electric excitability, the muscles supplied by the portion of the cord removed were completely degenerated. An animal similarly operated on bore young naturally, one of which was still alive, and suckled them.

Discussion by Profs. Kühne, Rosenthal and Holmgren.

Prof. E. Fano (Florence) demonstrated a myographic method for the measurement of reaction-time in the dog by which he had found that removal of certain regions of the cerebral cortex causes a shortening of the reaction-time, while electrical stimulation of the same regions lengthens it. He believes the conclusion justified that the cells of the cerebral cortex, especially of the frontal lobes, exercise an inhibition on the spinal cord.

Prof. N. Vitzu (Bucharest) had removed the occipital lobes of a dog's brain, and in the course of two years the consequent visual defect gradually improved. By a second operation of the same nature as the first, the animal became blind as before, while examination of the tissue removed showed it to be very vascular and to contain ganglion cells. These Prof. Vitzu held to be of new formation.

Discussion by Profs. Héger, Arloing and Herzen.

Dr. Demoor (Brussels) showed photographs and drawings of preparations made by Golgi's quick method of the cerebral cortex of dogs to which large doses of chloral or of morphine had been given. They showed a characteristic varicosity of the processes of the ganglion cells, absent in the case of unpoisoned and unexhausted animals, although killed in the same way. This action of the drugs in question was compared with a similar one exercised by them on the pseudopodia of amœbæ and on vegetable protoplasm. Dr. Demoor holds all three structures to be motile, a conclusion of interest in relation to the functions of ganglionic cells.

Dr. G. Mann (Edinburgh) discussed the

results of electrical stimulation of the cerebral cortex of the dog, cat, rabbit and hedgehog. He found that the method of relative arrangement of the different motor centers was in all the animals investigated essentially the same, although specific differences of location and of relative functional importance existed.

Mr. J. N. Langley (Cambridge) gave a general account based especially on his own researches of the sympathetic system, the fibres of which he classed as pre-ganglionic and post-ganglionic, according as they are central or peripheral (in relation to the central nervous system) to sympathetic ganglia. He discussed the nature of the 'reflexes' possible in sympathetic ganglia, and demonstrated such a one—stimulation of a post-ganglionic sympathetic trunk in the cat producing erection of the hairs covering a certain skin area. Stimulation of the corresponding pre-ganglionic trunk produced the same effect over a larger area.

Prof. J. Gaule (Zurich) gave the results of his investigation as to the growth of skeletal muscles. This is not continuous, but periods of increase are separated by periods of inactivity or even of decrease, in which crystals of calcium oxalate occur in the muscles. Faradic stimulation of long duration of the lower spinal ganglia caused in the periods of increase relative decrease; in the periods of inactivity relative increase.

Afternoon demonstrations and papers (Chairmen, Profs. Hensen and Mosso). Prof. A. Herzen (Lausanne) described the isolation of a dog's stomach made by himself and Dr. Frémont (Vichy), in a manner analogous to that of Thiry in the case of the small intestine. He showed some of the gastric juice obtained from the stomach; it was strongly acid, colorless and odorless, and capable of digesting its own weight of coagulated albumen. The amount daily secreted was 800 grams, which would correspond to 4 litres in the case of a man.

Prof. Herzen also described experiments tending to show that the spleen secretes internally a substance capable of developing digestive properties. The addition of blood from the splenic vein to pancreatic extract enables it to digest more actively ordinary arterial blood not having this action.

Discussion by Prof. Schiff.

Prof. M. Schiff (Geneva) gave the results of his investigation of the effect of local lesions of a bulbar pyramid. This does not produce degeneration of the corresponding crossed pyramidal tract or any motor disturbance.

Prof. R. Tigerstedt (Stockholm) described in detail his large apparatus for the investigation of the respiratory gaseous exchange. The respiration chamber has a content of 100 cubic meters and can contain several persons at once. Control experiments in which petroleum and stearin were burnt in the chamber showed an average error of 1.08%, *i. e.*, not more than that of Petterhofer and Voit's apparatus which was ten times smaller. Prof. Tigerstedt gave the results of an experiment on the effects of hunger made on himself and three others at the same time.

Discussion by Profs. Richet and Zuntz.

Dr. K. Gürber (Würzburg) described his modification of Hoffmeister's method for the preparation of crystals of serum-albumin from horse's serum. He had obtained four varieties of crystallized serum-albumin. If the crystals, after the removal of excess of ammonium sulphate, were heated to 67° C. in $\frac{2}{3}$–$\frac{3}{4}$% ammonium sulphate solution, they were coagulated and became insoluble without losing their crystalline form, although their power of double refraction disappeared, but returned after some weeks. Specimens of the crystals were shown under the microscope.

Prof. I. Rosenthal (Erlangen) demonstrated his Calorimeter.

Tuesday, September 10th. Morning

demonstrations and papers (Chairmen, Profs. Rutherford and Héger).

Dr. W. His, Jr. (Leipsic), discussed the mechanism of the heartbeat. He supported Engelmann's view of the purely muscular propagation of the contraction wave, not only in auricles and ventricles separately, but from auricles to ventricles also. He found in the rabbit, cat, dog and man a bundle of cross-striped muscle fibres, which if experimentally divided produces often a short arhythmic interval, a condition of allorhythmia in which auricles and ventricles beat at different rates. The muscular bundle in question contains no nervous elements. Dr. His was unable to confirm Stanley Kent's results.

Prof. K. Hürthle (Breslau) demonstrated his method for determining plethysmographically the blood pressure in man. An arm is first made bloodless by the Esmarch bandage, and is then introduced into a closely fitting india-rubber case connected with a 'Gummi-' or 'Federmanometer.' On re-entry of blood into the arm the pressure rises in about half a minute to its full length, a pulse curve being then recorded.

Discussion by Prof. Mosso.

Dr. K. Kaiser (Heidelberg) gave his views on the causation of the rhythmical contraction of the frog's heart, which he considers due to nervous apparatus. The heart muscle itself is unable to respond rhythmically to a constant stimulus, as has been hitherto supposed. Dr. Kaiser showed experiments on the frog's heart in favor of his views.

Discussion by Mr. Langley, Prof. Burdon Sanderson, Dr. His, Jr., and Prof. Schiff.

Prof. H. Kronecker (Berne) showed an experiment consisting in the injection of paraffin (of melting point 39° C.) into the peripheral end of the descending coronary artery of a full-grown dog. The ventricles at once entered into fibrillary contractions while the auricles continued to beat. Ligature of the artery does not produce this result. The conclusion drawn was that the normal heartbeat is brought about by the agency of nervous structures, easily affected by anæmia.

Dr. R. Magnus (Heidelberg) demonstrated his sphymograph, which is applied to the end of a dissected-out artery. Curves, the ordinates of which are proportional to pressures, were shown.

Discussion by Dr. Cow and Prof. Fredericq.

Prof. N. Zuntz (Berlin) demonstrated his method for estimating the velocity of the blood stream, consisting in the determination of the rate at which blood must be injected into the carotid artery during vagus standstill in order to bring back and maintain the average blood pressure.

Dr. A. Beck (Lemberg) gave an account of his experiments with Cybulski's photohæmotachometer to determine the velocity of the blood stream in the dog's portal vein. He found it to be 2,000–2,800 cubic millimeters per second, which corresponds to 620–780 c. c. per gram of liver tissue in 24 hours. There are slight respiratory variations, but only large variations of general blood pressure produce much effect on velocity of blood stream in the portal vein.

Afternoon demonstrations and papers (Chairmen, Profs. Tigerstedt and Wedensky.)

Prof. A. Dastre (Paris) discussed the gradual dissolving of fresh fibrin in strong solutions of neutral salts at 40° C., in which process globulins, albumoses and peptones are formed. He analogised this action to that of peptic and pancreatic digestion, of micro-organisms, of oxygenated water, and of sterile distilled water at high temperatures and pressures. The hydrolysis of proteids is a general process to which ferments are not necessary. Gelatin is similarly acted on by salt solutions.

Discussion by Drs. De Rey-Pailhade and Arthus.

Prof. W. Einthoven (Leyden) showed photographs of the regular excursions of a capillary electrometer produced by a tuning fork giving as many as 1,000 vibrations per second. The results obtained on the other hand with Appunn's steel lamellæ were so irregular that these are apparently unsuitable for investigation of the deepest perceptible tones.

Prof. C. Sherrington (Liverpool) and Dr. F. Mott (London) showed two monkeys. One of these had had the posterior nerve roots, with the exception of the 8th cervical nerve, divided down to the 2nd dorsal nerve, with no resulting sensory or motor disturbance. The other monkey had, in addition, the posterior roots of the 8th cervical nerve divided, and showed motor as well as sensory disturbances. It was demonstrated to the Congress that these disturbances were not due to injury of the pyramidal track for stimulation of the cerebral motor area caused movements of the fore limb.

Prof. J. B .Haycraft (Cardiff) described the change of shape of the heart in systole. It was very difficult to produce post-mortem systolic contraction of the heart, but this could be done by injection of mercuric chloride. The results obtained confirmed those of Ludwig and Hesse.

Prof. F. Gotch (Oxford) described the results of his investigations of the nature of the discharge of Malapterurus Electricus in response to mechanical and electrical excitation with the help of galvanometer and rheotome, of rheoscopic nerve-muscle preparation, and of capillary electrometer provided with shunt or condenser. Each discharge consists of three or four single shocks following one another at intervals of .004–.005 seconds, each of which has a duration of .002 seconds and an electromotive force of 120–200 volts. The succession of shocks is probably due to each shock stimulating the organ producing it to the production of a fresh one, and can be demonstrated with the organ isolated from the body.

Discussion by Dr. Boruttau and Prof. Rosenthal.

(*To be concluded.*)

AMERICAN ORNITHOLOGISTS' UNION.

THE Thirteenth Congress of the American Ornithologists' Union convened in Washington, Monday evening, November 11th. The business meeting was held at the residence of Dr. C. Hart Merriam. The public sessions, lasting three days, were held in the Lecture Hall of the U. S. National Museum, commencing Tuesday, November 12th.

William Brewster, Cambridge, Mass., was elected President; Dr. C. Hart Merriam and Mr. Robert Ridgway, of Washington, Vice-Presidents; John H. Sage, of Portland, Conn., Secretary; Wm. Dutcher, of New York City, Treasurer; Dr. J. A. Allen, Maj. C. E. Bendire, Frank M. Chapman, C. F. Batchelder, Dr. Elliott Coues, D. G. Elliot and Dr. A. K. Fisher, members of the Council. One active, one honorary, two corresponding and eighty-eight associate members were elected.

A communication was received from Dr. Ch. Wardell Stiles, delegate from the United States to the International Zoölogical Congress, requesting the Union to appoint a representative as a member of an Advisory Committee to which will be submitted all questions of nomenclature likely to be ruled on by the International Zoölogical Congress, to be held in England in 1898. Dr. J. A. Allen was so appointed.

The Committee on 'Classification and Nomenclature of North American Birds' reported the new edition of the Check-List as practically finished; it will be published in a few weeks.

In behalf of the Committee on 'Protection of North American Birds,' Mr. Wm. Dutcher stated that the same precautions