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REMINISCENCES OF THE EARLY DAYS OF THE
PHYSIOLOGICAL CONGRESSES

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BIBLIOTHÈQUE

THE first idea of assembling the physiologists of all countries in periodical congresses sprang from an exchange of views between Hugo Kronecker and the English physiologists who had worked with him in Ludwig's laboratory at Leipzig. At the instigation of Kronecker, the Physiological Society of London, under date of March 19, 1888, addressed to 109 professors of physiology a circular letter inviting them to consider the advantages of assembling in a congress the following year and proposing to select for the purpose the city of Berne.

As a result of this proceeding, which was received with unanimous favor, a certain number of English, French, German, Italian and Swiss physiologists gathered on September 10, 1888, with Kronecker at Berne and evolved a program of work.

It was decided that the sessions of the congress were not intended to compete with the physiological periodicals in the publication of new facts. It was strongly emphasized that the communications should be of the nature of demonstrations and devoted primarily to experimentation. To discourage those who might be tempted to read their papers at the congress, it was decided not to print the text of the communications and not officially to admit representatives of the press. This was something quite new in an international congress. It was further decided, at the suggestion of Michael Foster, that the greatest simplicity should prevail at the general meetings and that festivities, receptions and official addresses should be avoided.

As the premises of the Hallerianum at Berne were not ready at the moment, it was decided to meet at Bâle, where the new institute of anatomy and physiology, the Vesalianum, and that of physics and chemistry (Bernoullianum) would meet all the requirements of the experimentalists.

Professor Holmgren, of Upsala, was appointed president of the congress.

The first Congress of Physiology met at Bâle, the following year, from the ninth to the twelfth of September, under the direction of Miescher. It numbered 129 members. England, Germany and France had furnished the largest contingents.

The brilliant galaxy of English-speaking physiologists was represented virtually in full strength: Michael Foster, Langley, Gaskell, Gotch, Bowditch, Waller, Beevor and Horsley, Halliburton. Among

¹ Closing address of the International Physiological Congress, August 23, 1929.

the French: Chauveau, Arloing, Bouchard, Dastre, Morat, Gley, Lapicque, Doyon, Hedon, Arthur, Raphael, Dubois, Roger, Charrin. Among the Germans: Goltz, Hermann, Heidenhain, His, Fick, Preyer, Grutzner, Loeb, Rosenthal, Hering, Schiff, v. Mering, Kronecker. Among the Italians: Mosso, Fano, Albertoni. Also Holmgren, Einthoven, Prevost, Herzen, Bunge, Kocher, Blix, Tigerstedt, Heger, etc.

Few dissertations were read, but numerous experiments of the greatest interest were performed. Von Mering and Minkowski gave a demonstration of diabetes by extirpation of the pancreas. Other exhibits were Mosso's ergograph, Goltz's dog without cerebral hemispheres, Bowditch's composite photographs, Waller's electric variations of the human heart, Dastre and Morat's vasodilation by stimulation of the cervical sympathetic. The Englishmen Beevor and Horsley evoked amazement by the virtuosity of their operations demonstrating the motor functions of the cerebral cortex in the monkey.

Thus many things were seen at the congress of Bâle which can not be learned in books. Furthermore the opportunity was afforded a great many physiologists to get better acquainted. I recall seeing at Bâle the irascible Hering chatting amicably with the venerable Holmgren, whom he had assailed in anything but parliamentary language in *Pflüger's Archiv*. A moment later he was seen conversing with von Kries, who, the year before, had declared in another periodical that he refused any further discussion with the professor from Prague.

The success of the congress, then, was conspicuous. It was decided not to stop there, and that a second congress should be held, three years later, at Liège, in the new institute which had just been erected there.

The Congress of Liège (August 29-31, 1892) numbered only 102 physiologists. Cholera, which had been reported in several countries, had found some victims in Belgium, which explains the almost complete absence of German physiologists. The English and French, not afraid of the cholera, had come in larger numbers than to Bâle: 25 English, 20 French.

The traditions inaugurated at Bâle of good fellowship and monastic simplicity (the expression is Dastre's) were strictly observed at Liège. The committee had even declined an official reception at the Hôtel de Ville tendered by the municipality of Liège. Sir Michael Foster might have been seen at the inaugural session of the congress smoking his pipe at the official table.



No official reception, few festivities, but useful work. Chauveau repeated on the living horse his celebrated experiments made in common with Marey on the recording of the cardiac pulsations by means of cardiographic probes introduced into the cavities of the heart. I can still see the venerable old man of noble and imposing features, following on the wet screen the trace of the auricle and the ventricle recording themselves one below the other. All the physiology of the cardiac movements was unfolded before our eyes, interpreted with juvenile animation, each incident provoking a new digression and involving the orator in a new and brilliant improvisation. It was a historic, never-to-be-forgotten moment, the high point, so to speak, of the congress. These experiments made a deep impression upon all present and were destined to put an end to the controversies excited in Germany by the interpretation of the cardiograms and the determination of the moments of opening and closing of the valves.

Hamburger demonstrated, in the case of red globules, suspended in saline solutions, the laws of isotomy, according to the method of de Vries. These experiments, which introduced physical chemistry to medical science, were, as you know, the starting-point of a new chapter on physiology.

Hedon produced his system of subcutaneous grafting of the stomachal portion of the pancreas, and the results of extirpating either the pancreas or the graft from the point of view of the appearance of diabetes. It is the story of insulin before the letter.

The curious phenomena of autotomy of the claws were demonstrated on living crabs. In short, it was another opportunity to admire the impeccable operating ability of the English in the person of Sherrington, who made on a female monkey the experiment of stimulating the cortical centers of the anus and the vagina.

The third congress was held at Berne, September 9-12, 1895, on the premises of the Hallerianum, presided over by Kronecker. Among the numerous experiments, let us mention only the cardiac allorhythmia (His junior) by a section of auriculo-ventricular muscular sheaf, to which the name of His's sheaf has been given, the fibrillation of the ventricles by closing of the coronary arteries (Kronecker). Finally Langley expounded his new ideas on the constitution of the sympathetic nervous system, and demonstrated on a cat the effects of pre- and post-ganglionic stimulation.

The Congress of Berne, while as scientific as the two preceding, was less dry and had a social addition: a garden party at the villa of Professor Kronecker, a party given by the medical corps, with an organ recital, illumination of the cathedral and excursion to the Schynige Platte.

I shall not go so much into detail about the work done by the succeeding congresses which followed each other every three years, with success and numbers increasing steadily, so that at the Congress of Groningen in 1913, the last before the war, there were 432 participants.

At the fourth Physiological Congress, which was held at Cambridge, England, and presided over by Sir Michael Foster, the principal innovation was the printing, on loose leaves, of the text of the matters discussed, which text was distributed to all the members of the congress. It was at Cambridge that, at the suggestion of Marey, an international committee for the unification and checking of recording instruments in physiology was begun. This was the origin of the Marey Institute, established at Parc des Princes at Boulogne-sur-Seine near Paris.

At Cambridge, Foster showed us an isolated fragment of a dog's heart nourished by artificial circulation of oxygenated serum under pressure, which kept beating. It was there too that Atwater demonstrated the alimentary value of alcohol, etc.

At the fifth congress, held at Turin, September 17-21, 1901, presided over by Mosso, Italian was adopted—together with English, French and German—as a fourth official language of the congress. We were given an artistic medal representing *Minerva medica*, and at the final banquet we were treated to a chamois presented by the King of Italy and killed by him expressly for us. At the session of September 17, 1901, Sir Michael Foster was made perpetual honorary president of the Congresses of Physiology.

Locke showed us an isolated rabbit's heart which continued beating for long hours, with no other nourishment than a saline solution, oxygenated and glucosed. Bayliss showed the vaso-dilating function of the posterior vertebral roots. Langley demonstrated the paralyzing influence of nicotine on the great sympathetic.

At the sixth congress, held at Brussels, August 31-September 3, 1904, presided over by Paul Heger, let us note the demonstrations of Einthoven on the string galvanometer, of Cannon on the movements of the intestines, studied by means of X-rays and reproduced by means of the zootrope, of Victor Henri on the colloids, of Lapicque on the laws of electrical stimulation, of Charles Richet on anaphylaxia, etc.

The congress decided to take under its protection the laboratory of the Col d'Olen at 3,000 meters altitude and to ask the Italian government to name it the Mosso Institute (which was granted).

The seventh congress took place at Heidelberg, presided over by A. Kossel. We note the experiments of Beshold on the mechanical separation of colloids by ultra-filtration, and the communications of Delezenne,

Foa, Gley, Cohnheim, Percy and others on digestive ferments. A plan for the classification and nomenclature of proteic matters, sponsored by the Physiological Society of London, was discussed.

The eighth congress was held at Vienna, September 27-30, 1910, presided over by Sigmund Exner. Professor Charles Richet lectured on "Ancient and Modern Humoralism." The one hundredth anniversary of the birth of Théodore Schwann, the immortal author of the cellular theory, was celebrated.

The ninth congress, the last before the war, took place at Groningen, September 2-5, 1913, presided over by Hamburger in the fine institute just inaugurated. Pavlov gave a lecture on "Experimental Study of the Superior Nervous Functions."

There was much admiration of the beautiful cinematographic views of Comandon and Bull on cardiac pulsation, capillary circulation and movements of protoplasm. Mines showed the continued circular movement in a ring of cardiac tissue, and attached thereto a tentative explanation of fibrillation, etc.

If we look backward to consider the results achieved by these nine Physiological Congresses, spreading over a period of 25 years, we may say that they give a faithful picture of the development and progress of physiology during that quarter of a century. These meetings witnessed the first fruit of nearly all the great forward steps made in our science. Thus they formed a precious means of mutual instruction for physiologists: with a minimum of time and effort they were initiated into all the new problems of the science of life, and became familiar with the most varied techniques. They afforded also an opportunity to know one another better, and to make friends with learned men of foreign lands. Alas! the war interrupted this fine tradition; fortunately we have resumed it and it is continued now in Boston, after Paris, Edinburgh and Stockholm. Let us wish good fortune to this work of progress and peace. It is in excellent hands, as the great success of the present meeting proves.

OBITUARY

RECENT DEATHS

DR. ROBERT HALL BOWEN, professor of zoology at Columbia University, died on August 19, after an operation for appendicitis. He was thirty-seven years of age.

DR. EDWARD F. BUCHNER, since 1908 professor of education at the Johns Hopkins University and director of the college for teachers, died unexpectedly of heart disease in Munich on August 23 in his sixty-first year. Dr. Buchner was professor of analytical psychology in New York University from 1896 to 1901.

WALDRON DEWITT MILLER, associate curator of ornithology of the American Museum of Natural History, has died as the result of injuries sustained in a motorcycle accident on August 4. Mr. Miller was fifty years old.

DR. JAMES DITMARS VOORHEES, a specialist in obstetrical surgery and professor of that subject at the College of Physicians and Surgeons of Columbia University, died on July 29 at the age of sixty years.

THE death is reported of Dr. Etienne Bieler, the deputy director of the Imperial Geophysical Experimental Survey of West Australia. Dr. Bieler died while awaiting the arrival of Professor A. O. Rankine, director of the department of technical optics in the Imperial College of Science and Technology, London, who had reached Perth and who intended to cooperate with him in his work.

Nature reports the deaths of M. Léon Lindet, member of the section of rural economy of the Paris Academy of Sciences, known for his work on the physiology of plant and animal foodstuffs, on June 16, aged seventy-two years; of Professor Wilhelm Ellenberger, formerly rector and director of the physiological and histological institute and of the physiological chemistry research station of the Veterinary High School, Dresden, and of Lieutenant-Colonel George Henderson, formerly of the Indian Medical Service and for a time director of the Royal Botanical Gardens and professor of botany in the University of Calcutta, on June 24, aged ninety-two years.

THE death is announced of Karl Auer, Ritter von Welsbach, the inventor of the incandescent gas light, the electric metal thread lamp and other important technical advances. He was president of the Auer-gesellschaft, which has large chemical works at Treibach, and member of the Academies of Sciences of Vienna, Berlin and Stockholm. The *London Times* writes: "Karl von Welsbach, who was seventy years of age, was the son of Aloys Auer, Ritter von Welsbach, for many years head of the state printing works in Vienna and himself known as an inventor of many devices in printing and paper-making. He studied in Heidelberg under Bunsen, and his researches in the chemistry of rare minerals produced several results of scientific and technical importance. His invention of the incandescent mantle was made in 1885, and five years later the company, the Auer-gesellschaft, which

now has 4,000 employees, was formed to manufacture the Welsbach patents. The invention by Karl von Welsbach of the osmium filament lamp followed in 1897, and six years later he invented the ferro-cerium

compound used in pocket lighters. Many scientific bodies in his own country and abroad conferred their honors upon him, and he himself endowed a number of social and scientific institutions."

SCIENTIFIC EVENTS

THE BOTANIC GARDEN OF THE UNIVERSITY OF CAMBRIDGE

THE syndicate appointed last January to consider the organization and finance of the Botanic Garden and the relations between the garden and the department of botany and other scientific departments have made a report to the university. The appointment of the present syndicate was a consequence of the urgent need of the Botanic Garden for increased financial support. In response to the report on the situation made by the regular Botanic Garden syndicate, doubts were expressed in some quarters, not only as to the need for some of the existing expenditure associated with the garden, but also as to whether the garden itself was worth what it cost to the university. Such a point of view, if seriously held, demanded a very full treatment. The syndicate have held five meetings, and have interviewed both the director and the superintendent of the garden. In the result, the syndicate make the following recommendations:

(1) That the Botanic Garden should become an integral part of the department of botany.

(2) That the responsible head of the garden should be the professor of botany and that the actual director of the garden should be either the professor himself or a member of his staff, nominated by and responsible to him.

(3) That the duties of the director should be general responsibility for the management of the garden and particular care for its development as an aid to the study of botany, this work being regarded as a part-time occupation only.

(4) That the stipend attaching to the office of director should be reduced from its present value of £500 per annum in addition to a house and allowances to a value not less than £200 nor more than £300 per annum, inclusive of a house and allowances.

(5) That the stipend attaching to the office of the director should be variable according to the nature of the other offices held simultaneously by the director.

(6) That a new university lectureship should be created for the teaching of systematic botany and that the duties of the new lecturer should include as a part all teaching work hitherto performed by the director of the garden.

(7) That the office, duties and emoluments of the present superintendent of the garden should continue unchanged.

(8) That a permanent sinking-fund should be established into which an annual amount should be paid to

meet normal depreciation in the glasshouses and heating services of the garden.

(9) That in addition to the annual amount referred to in the last preceding recommendation, steps should be taken to provide a capital sum of £2,000 within six years, and a further £2,000 within twelve years, to meet the cost of urgent reconstructive work.

(10) That consideration should be given by the university to the fact that a part of the land adjoining the garden could be sold under suitable restrictive conditions without detriment to the present or probable future needs of the garden.

(11) That, until appeals for benefactions for the garden can be launched and their results ascertained, the costs of the garden, beyond those which can be met by the present grant, should be met by an additional non-recurrent grant from the university chest.

(12) That consideration should be given by the university to the suggestion that the Town of Cambridge be invited to contribute to the cost of the garden, so long as it is made accessible to the general public.

(13) That the executive functions of the permanent Botanic Garden Syndicate should cease, that their duty should be periodically to inspect the garden from the point of view of amenities, and to report to the university, and that their constitution should provide for the representation of the interests of the Town of Cambridge.

DEMONSTRATIONS OF BIOLOGICAL WORK AT WOODS HOLE

FOREIGN members of the Thirteenth International Physiological Congress visited Woods Hole on Saturday after the adjournment of the Boston meeting. They were entertained at luncheon and at a clam bake in the evening. In the laboratories of the Marine Biological Laboratory and the Bureau of Fisheries the following demonstrations were arranged:

MARINE BIOLOGICAL LABORATORY

RUTH B. HOWLAND, Micro-injection of the Vacuolated Problem of the Digestion of Fats.

Cytoplasm of Actinosphaerium with Reference to the JEAN T. HENDERSON, Micro-injection of Indicator Dyes into Fibers from the Sartorius Muscle of the Frog.

CHARLES W. METZ, Microscopic Preparations and Cultures of *Sciara* (Fungus Gnats). Slides Showing Chromosomes and Monocentric Spermatocyte Division with Selective Segregation of Chromosomes.

DOUGLAS A. MARSLAND, Micro-injection of Lipoid Solvents into *Amoeba dubia*.

FRANK FREMONT-SMITH, Charts Illustrating the Com-

- position of Cerebrospinal Fluid and Serums in Elasmobranchs and in Man.
- CLARENCE A. MILLS, Alternation in Visual Function of the Eye with Binocular Vision.
- B. SEN, A New Type of Micro-electrode.
- HENRY H. DONALDSON and MRS. W. F. GREENE, Drawings for an Anatomy of the Albino Rat.
- E. NEWTON HARVEY, Luminous Animals of Woods Hole; Cypridina Luminescence.
- ETHEL BROWNE HARVEY, Micro-injection of *Arbacia* Eggs; Microscopical Observation of *Arbacia* Eggs in Complete Absence of Oxygen.
- ELIOT R. CLARK and ELEANOR L. CLARK, Studies on Monocytes and Macrophages in the Tail of Living Frog Larvae; Studies on Reactions of Blood-vessel Endothelium in the Tail of Living Frog Larvae.
- E. R. CLARK, J. C. SANDISON and R. REX, Study of Living Cells in a Transparent Chamber Introduced into the Rabbit's Ear.
- EDUARD UHLENHUTH, Methods of Studying the Physiology of the Salamander Thyroid Gland; Exhibition of American Endocrine Literature.
- H. C. BRADLEY, Studies in Comparative Digestive Mechanisms; Viscosimetric Determinations of Pepsin, Trypsin, Amylase and Rennin in Marine Organisms.
- P. BRANDT REHBERG, Apparatus for Determination of Carbon Dioxide in Air and Carbon Dioxide Tension in Sea Water.
- LEO LOEB, Urease of Amoebocytes of *Limulus*; Demonstration of Amoebocyte Tissue of *Limulus*.
- WARE CATTELL, Some Effects of the Direct Electric Current on Marine Animals and Their Eggs.
- H. H. PLOUGH, Complete Developmental History of a Compound Ascidian, *Botryllus*; Living and Stained Preparations.
- RUTH S. LYNCH, HELEN B. SMITH and ELSIE CLINE, Work in Progress on Genetics of Rotifera; Work in Progress on the Rodent Placenta with Special Reference to Vascularization.
- M. H. JACOBS, Apparatus for Studying the Rate of Hemolysis.
- HANS WINTERSTEIN, Micro-respirometer for Investigating the Metabolism of Local and Conducted Excitation.
- W. J. V. OSTERHOFF, Bioelectrical Effects in Muscle and in Plant Cells.
- LOUISE and MARCELLE LAPICQUE, Measurement of Chronaxie of the Mantle of *Loligo*; Modification of the Chronaxie of the Nerve by Tension on the Muscle (Frog).
- D. J. EDWARDS and MCKEEN CATTELL, The Effects of Hydrostatic Pressure on the Contraction of Cardiac Muscle.
- W. E. GARREY, The Heart-beat of *Limulus polyphemus*; Effects of Light on Muscle Tone in Insects.
- C. G. ROGERS, Apparatus and Method for Determining the Rate of Beat of Cilia.
- C. E. MCCLUNG, Preparations of Orthopteran Germ Cells.
- W. H. F. ADDISON, Brains of Marine Vertebrates.
- E. ELEANOR CAROTHERS, First Spermatophyte Chromosomes of a Short-horned Grasshopper, *Trimerotropis vinculata*; Preparations Illustrating the Use of Feulgen's Stain.
- E. V. COWDRY and S. F. KITCHEN, Intranuclear Inclusions in Hepatic Cells Caused by the Virus of Yellow Fever.
- A. FRANKLIN SHULL, Intermediates Between Gametic and Parthenogenetic Aphids.
- SELIG HECHT and SIMON SELLAER, Visual Acuity at Various Intensities and Colors.
- HARRY GRUNDFEST, The Rheotropic Reaction in Fishes Used for the Study of Various Photosensory Phenomena.
- H. W. STUNKARD, The Complete Life Cycle of the Trematode, *Cryptocotyle lingua*.
- SERGIUS MORGULIS, Methods for Bone Analysis.
- JACK SCHULTZ, Eye Pigments and Eye Color Mutants in *Drosophila*.
- H. MCE. KNOWER, Injected Blood-vessels and Lymphatics of Amphibian Embryos.
- B. H. GRAVE, Reactions to Light of the Larvae of *Bugula flabellata*; The Swimming Ability of Spermatozoa; Method of Rearing Larvae to Metamorphosis upon Diatoms; Longevity of Unfertilized Gametes of *Hydroidea*.
- MARGARET SUMWALT, Measurement of Potential Differences Across the Chorion of Single *Fundulus* Eggs.
- ABBY H. TURNER, Studies by Tilting-table and Other Methods of the Effect of Gravity on the Human Circulation.
- WALTER S. ROOT and CHARLOTTE HAYWOOD, The Effect of Carbon Dioxide upon the Oxygen Consumption and the Rate of Cleavage of Fertilized *Arbacia* Eggs.
- L. MICHAELIS, Apparatus for Purification of Nitrogen from Traces of Oxygen and Measurement of a Reduction Potential.
- E. S. G. BARRON, Respiration of Unfertilized Sea-urchin Eggs and its Increase by Methylene Blue as Measured with Warburg's Micro-respiration Apparatus.
- PRISCILLA FREW, Living Specimens of *Lebistes reticulatus*.
- JOSE F. NONDEZ, Microscopic Slides Showing Vascular Innervation of the Thyroid Gland (Method of Golgi).
- ANNA K. KELTCH, Specific Sperm Agglutinin (Lillie's Fertilizin).
- T. H. MORGAN, Cultures and Mutant Types of *Drosophila*.
- LORANDE LOSS WOODRUFF, Pedigree Cultures of Various Species of *Paramecium* Including *Paramecium aurelia* at 13,500 Generations (22 years).
- C. B. BRIDGES, Chromosome Groups of *Drosophila*.
- SAMUEL GELFAN, Microdissection Studies.
- RALPH S. LILLIE, Activation, Transmission, Interference and Recovery in Passive Iron Wires.
- ROBERT CHAMBERS, Microdissection Studies (Acid-Basic and Oxidation-Reduction Potentials).
- C. C. SPEIDEL, The Production and Proliferation of Young Thrombocytes and Erythrocytes in the General Circulation of Splenectomized Salamanders. (Blood-smear Preparations and Drawings.)
- JAMES E. KINDRED, Slides Showing Changes in the Kidney of the White Rat Following Ligation of the Major Blood Vessels.