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TEN YEARS OF THE DEPARTMENT OF COMPARATIVE PHYSIOLOGY

In 1966 the board of leaders of our University adopted a resolution according to which the zoological departments of the Faculty of Natural Sciences were to be reorganized for the sake of modernization of the educational and research activities. Animal Physiology (or by its present name: Comparative Physiology) had been taught at the Department of General Zoology and Biology (headed by Academician AMBRUS ÁBRAHÁM) by FERENC BICZÓK Ph. D., among other zoological disciplines, without separate teaching and research staff. After the retirement of Professor ÁBRAHÁM the anatomy, histology and embryology staff moved to the Department of Systematic Zoology (headed by Academician GÁBOR KOLOZSVÁRY). At the same time a Dapartment of Animal Physiology was established. According to a decree of the Ministry of Cultural Affairs, the existence of the Department can be counted

The new Biology Building of the Attila József University giving accomodation for the Departments of Genetics, Biochemistry, Microbiology and Comparative Physiology since 1974.

officially from the lst of November 1967. The direction of the Department was taken over by OTTÓ FEHÉR M. D., who was previously a university lecturer at the Department of Physiology of the Medical School in Debrecen. Thus, with the generous help of Academician Prof. FERENC MÁRTA, Rector of the University, Academician GYULA GRASSELLY, Dean of the Faculty, Prof. IMRE HORVÁTH Ph. D., President of the Biological Section, and FERENC HERCEG, Bursar of the University, teaching and research activities in comparative physiology could be started. At the same time far-reaching work commenced for the creation of the material and personal conditions of a full-valued university institution. The laboratories had to be reconstructed

for the aims of physiological work; a room for laboratory animals was built and there was an urgent need for modern physiological apparatus for teaching and research. Academician KÁROLY POLINSZKY, the Deputy Minister, kindly placed at our disposal a considerable sum in foreign currency which allowed us to furnish the first neurophysiological laboratory. In the preparatory, organizational and technical work an outstanding role was played by GÉZA TURY Ph. D., one of the founders of the Department. In starting the teaching and research activities, LAJOS ERDÉLYI Ph. D. gave indispensable help. This group of founders was later joined GÁBOR BÁLINT M. D. (1969—1970), MAGDOLNA SZENTE Ph. D. (1970—), ISTVÁN PÓR Ph. D. (1971—1975), IMRE GAÁL Ph. D. (1973—1978), ATTILA BARANYI Ph. D. (1975—) FERENC PONGRÁCZ (1975—), and JÓZSEF TOLDI (1976—).

At that time the technical staff consisted of GÉZA MRÁZ, ERZSÉBET DÁNOS and SÁNDOR MOTZWICKLER. Mrs. Anna Basch was the Department's secretary. The Electron Microscope Laboratory functioned as a part of the Department from 1965, headed initially by Prof. BERTALAN CSILLIK M. D. and later by FERENC JOÓ M. D. The scientific staff consisted of NORBERT HALÁSZ Ph. D. and ÁRPÁD PÁRDUCZ Ph. D. The laboratory was supported by the Hungarian Academy of Sciences. Since 1972 the Laboratory has continued its work as the Group of Molecular Neurobiology in the Biological Research Center of the Academy in Szeged.

In 1973 a new Electron Microscope Laboratory was established to aid the scientific research in the Faculty. Members of the scientific staff are: IMRE ROJIK Ph. D. and IMRE HORVÁTH Ph. D., with the technical assistance of Mrs. ZSUZSA FEJES. The Laboratory is managed by the Director of the Department.

In 1967 a Group of Genetics was also organized within the body of the Department. Under the leadership of LAJOS ALFÖLDI M. D., Mrs. MÁRIA HORVÁTH (1968—1974) and IMRE ROJIK (1967—1973) carried out scientific and educational activity until 1974.

In 1970 a Group of Biochemistry was founded under the leadership of BÉLA MATKOVICS Ph. D., M. D.; from 1972 it was united with the Group of Genetics and functioned as a separate unit in the body of the Department until 1974.

Form the beginning the Department gave place and other facilities for the work of the biologist-didactician LÁSZLÓ KÖRTVÉLYESSY Ph. D., who until his retirement in 1977 carried out succesful educational and scientific activity.

The range of the educational tasks covered by the Department is rather wide. Teacher-students in biology-chemistry, and students in biology attend lectures and practical lessons in comparative physiology in the Department. Lectures in school-hygiene and animal husbandry are also delivered by members of the Department. As mentioned above, education in biological didactics was taught here for ten years.

Training in comparative physiology at the university level does not have a long past in Hungary (Prof. GYÖRGY ÁDÁM M. D. 1965), and thus one of the most urgent tasks was the definition and standardization of the subject matter of the lectures and practical lessons. As a first step, a guide book was published by OTTO FEHÉR, LAJOS ERDÉLYI, JÓZSEF FAISZT, GÁBOR HOLLÓSI and MIHÁLY KURCZ, with the title "Exercises and Experimental Demonstrations in Comparative Physiology".

In 1975 Academician GYÖRGY ÁDÁM M. D. and Prof. OTTÓ FEHÉR M. D. published the Textbook "Coomparative Physiology". The book was rewarded with a "Niveau Prize" by the Ministry of Education in 1977.

Meanwhile a modern program has been developed in the student laboratory

exercises, supported by instrumentation of a high level. Methods have been elaborated for checking the proficiency of the students during the semesters. As an important branch of the educational activity 26 students were instructed in preparing their diploma-work and 8 theses were submitted for Ph. D. degree by scientific co-workers of the Department.

Thus comparative physiology has gained its proper place in our University as an important discipline in education and scientific research.

The main objective of the scientific investigations in the Department has been the nervous system. This was fairly natural, because the founders (FEHÉR, TURY, ERDÉLYI) has done considerable work in neurobiology up to that time. From 1967 a complex neurobiological research group was built up and set into motion, which exerts its activity in the following main directions:

a) The origin of cortical evoked and seizure potentials. Computer modelling of neuronal nets producing them (SZENTE, PÓR, PONGRÁCZ).
b) Plasticity of cerebral cortical functions (BARANYI, TOLDI).
c) Nervous processes in the Molluscan heart and nervous system (ERDÉLYI).
d) Complex morpho-physiological examination of cerebral synaptic transmission (JOÓ, PÁRDUCZ, HALÁSZ in collaboration).
e) Morphological-biochemical examination of cortical excitatory processes (ROJIK, GAÁL).
f) Study of the spreading depression (TURY).

The study of the spreading depression has been finished. Theme *e)* is financed as part of the central research plan: "Investigation of biologically-active compounds".

The members of the staff have read 53 lectures at national and 11 lecturs at international congresses and symposia, and published 40 full-length papers. The leader of the Department wrote his academic dissertation mainly on the basis of experiments performed in Szeged, and was declared a "Doctor of Medical Sciences" in 1973. Further scientific qualifications are in preparation. The collaborative work of the Department with the Electron Microscope Laboratory and Cybernatics Laboratory was awarded an academic prize in 1972. Prof. OTTÓ FEHÉR M. D. was rewarded with a shared academic prize for his scientific work in 1977.

The repertoire of scientific research methods applied by the Department has become rather wide and is of an interdisciplinary character. The most important methods are as follows: stimulation and recording in any part of the central and peripheral nervous system with macroelectrodes; electroencephalography; stereotaxic techniques; intracellular recording and stimulation, polarization, and conductance measurement; the voltage clamp method (under development); extracellular microelectrode techniques; microiontophoresis, examination and averaging of evoked cortical potentials; standard methods for examination of the heart, blood circulation, breathing and metabolic rate; tissue fractionation with density gradient centrifugation; polyacrylamide gel electrophoresis; gel chromatography; standard electronmicroscopic methods; light- and electronmicroscopic autoradiography; etc.

The electrical engineer of the Department (FERENC PONGRÁCZ) has constructed equipment for intracellular recording, polarization and conductance measurement. The computer modelling of nervous processes has commenced, too.

As regards the production of the mechanical workshop, several instruments are worthy of emphasis: a middle-school kymographion (SÁNDOR MOTZWICKLER),

a thermo-stabilizer for animal experiments and a regulated current source for the student exercises (PÉTER TRÁM).

The scientific equipping of the Department commenced in 1969, when high-quality amplifiers, stimulators, oscilloscopes and other apparatus were placed at our disposal for research and teaching. Now four wellequipped physiological, a chemical and a morphological laboratory serve as the basis for progress in neurobiology and education.

In 1974 the Department and the Electron Microscope Laboratory moved to the new biological building of the University and were generously accommodated in more than 900 square metres.

The whole staff of the Department is doing its best to use all the facilities afforded by the Socialist State in order to educate the new intelligentsia and to elaborate a deeper knowledge of the nervous system.

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