Meetings

Purkyne Symposium

An international symposium to appraise the current significance of Purkyne's contributions was held at Charles University in Prague, 8–10 September 1969.

O. Stary (rector, Charles University) told of Purkyne's student days in Prague. Vladislav Kruta (Purkyne University) described Purkyne's concept of physiology as a rational explanation of life in physical, chemical, and mathematical terms, as based on experimental evidence, and as the basis for rational pathology and medicine.

I undertook to pay tribute to Purkyne's humanistic interests. He was a considerable poet, writing many lyrics and odes. He was inspired both by Friedrich von Schiller (1759–1805) and Wolfgang von Goethe (1748–1832). With the latter he maintained correspondence. Purkyne's poetry, edited by Kruta, fills volume XI of his *Opera Omnia.* Purkyne's artistic nature was reflected in the imaginative insight of his scientific accomplishments.

The opening session was concluded by the award of the degree, doctor of medicine, *honoris causa,* to Sir John Eccles (State University of New York at Buffalo), who acknowledged the inspiration he had received from Purkyne for his current studies on the cerebellum.

E. Mendelsohn (Harvard) opened a discussion on Purkyne and 19th-century physiology by describing the conflicting patterns of explanation for vital phenomena arising from the impact of physical and chemical advance. The influence of romantic natural science on Purkyne was discussed by R. Toellner (Münster). Purkyne's ideas for a physiological explanation for drug action were outlined by R. Zadina (College of Pharmacy, Prague). The pioneering psychopharmacological experiments which Purkyne conducted on himself were well described by Z. Votava (Prague). Using large doses of ipecac, emetine, belladonna, digitalis, camphor, and nutmeg, Purkyne recorded his subjective reactions as well as physical effects on his stomach, heart, and other organs. M. D. Grmek (Paris) considered Purkyne's reaction to the physiological concepts of Claude Bernard and Carl Ludwig. W. C. Gibson (University of British Columbia) indicated the wide range of current pertinence to be found in Purkyne's many contributions. Erna Lesky (Vienna) described Purkyne's influence on the reformer of Austrian education, Leo Graf Thun-Hohenstein (1811–1888).

An interesting session was devoted to Purkyne's studies on the eye and vision. P. Ratzliff (Rockefeller University) reported on current objective studies on subjective phenomena with reference to the "Purkyne Tree," the perception of shadow of the branching blood vessels of the retina. The normal invisibility of Purkyne's Tree has now been traced to the dynamic balance of the opposed effects of excitation and inhibition in the integrative action of the retina. Ragnar Granit (Stockholm) reported on current electrophysiological and photochemical measurements of spectral sensitivity in dark- and light-adapted eyes with regard to the "Purkyne Shift." An important review was offered by R. Jung (Freiburg) on current studies on after-images, visual illusions, and neural mechanisms, as inspired by Purkyne's studies on vision. Josef Brožek (Lehigh University) discussed the significance of Purkyne's concept of psychology as based on neurophysiology, which was indicated in yet unpublished notes. This session concluded with a report by E. Dodt (Bad Nauheim) and by A. Oksche and M. Vick (Giessen) on the ultrastructure and physiology of photoreceptive pineal organs.

A full afternoon meeting was devoted to nerve cells and fibers. H. Van Der Loos (Johns Hopkins University) gave an account of the development of the concept of nerve cells as derived from Purkyne's 1837 report. In an analysis, J. Szentágothai (Budapest) depicted Purkyne cells in the cerebellum as unique examples of space economy for neuron coupling and information transfer. Sir John Eccles described the integrative properties of Purkyne cells as subsumed under the whole operational dynamics of cerebellar cortices in vertebrates. Usually Purkyne cells fire somewhat irregularly at 20 to 50 a second modified by various afferent inputs. Histograms constructed from these firing patterns reveal delicate integrational mechanisms not hitherto recognized by anatomical distribution or field potential studies. The biochemistry of Purkyne cell synapses was skillfully examined by Z. Lodin and J. Faltin (Prague) working with O. Z. Zellinger and J. Azcurra (University of Michigan). By microdissection and the sucrose gradient of De Robertis, they were able to separate the molecular and granular layers of rabbit cerebellar cortices. Both contain cholinergic fibers. Glutamate dehydrogenase activity is higher in glomerular structures than in Purkyne cells, while GABA-transaminase activity is greater in Purkyne cells than in the glomerular spaces, suggesting synthesis of glutamic acid in excitatory synapses and destruction of GABA in Purkyne cell cytoplasm where inhibitory synapses may occur. E. Gutman (Prague) described recent advances on Purkyne's concept of functional correlation with nerve size. H. Hyden (Goteburg) closed this session with a report on differences in protein composition between nerve cells and glia. An increased synthesis of acidic protein fractions occurs in neurons during learning processes in rats. Synthesis and response of brain cell macromolecules to electrical fields may reflect selective activation of gene areas in brain cells.

The concluding session of the symposium was introduced by a discussion by K. E. Rothschuh (Münster) on Purkyne's influence in developing histophysiology. Jerry Stannard (Kansas University) described Purkyne's important contributions to botany, particularly in his description of pollen grains so that they may be classified for the purpose of determining phylogenetic relations. E. E. Allen (St. Louis) showed how contemporary work in general physiology, such as Purkyne's, influenced students of heredity, citing Gustav Jaeger (1832–1917) as an example. Purkyne's studies on cardiac structure and function were discussed by Z. Wiktor (Wroclaw) while S. Weidmann (Berne) gave an important review of

our knowledge of the Purkyne fibers lying on the inner surfaces of the ventricles of hearts. Action potentials can now be recorded from tiny segments of Purkyne fibers and these may be correlated with ionic shifts by means of the voltage clamp technique.

A feature of the symposium was an extensive exhibit of pictorial and documentary material relating to Purkyne. This was well arranged by Kruta. In the State Museum there was an exhibit of Purkyne's work in anthropology. In honor of the centennial of Purkyne's death, the Czechoslovakian Mint issued a 25 kronen silver coin carrying Purkyne's face in profile. The symposium closed with a dinner at Libochovice, where Purkyne was born. The proceedings of the symposium are to be edited by Kruta, and will be published by the Czechoslovak Academy of Science. For the symposium the Prague State Opera gave a delightful performance to a crowded and enthusiastic audience of Anton Dvorak's *Jakobin*, in which young liberalism finally triumphs over stale and pompous conservatism.

The symposium was sponsored by the Czech universities, the Czechoslovak Academy of Sciences, the Czechoslovak Medical Society, the International Union of Physiological Sciences, the International Brain Research Organization, the International Union for the History and Philosophy of Science, and UNESCO.

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Courses

Immunology. This course was announced on page 657 of the 31 October issue. However, there are two changes in content: (i) the course will be held at the University of California at San Diego, in La Jolla, Calif.; and (ii) the deadline for applications is 1 March 1970.

Electron Microscopy in the Biological Sciences, Boston, Mass., 15–27 June; 11th session. A 3-week intensive program in the preparation of biological materials as electron-microscope specimens, electron microscopy, and interpretation of results. Designed for predoctoral students and laboratory assistants who wish to use the electron microscope in research, but who have little or no experience in the field. Doctoral-level investigators will be considered. Limited to 12 students. (Professor Clifford Youse, Center for Continuing Education, Northeastern University, 360 Huntington Ave., Boston 02115)

Fertilization and Gamete Physiology,