Impressions Of The XXth International Physiological Congress

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Among institutions which survive such tragedies as anarchy, dictatorships, and war, few can equal the record of religious and scientific organizations. The survival power of churches and universities requires no comment. International scientific meetings, likewise, proceed as usual after unavoidable interruptions.

The first meeting of the International Physiological Congress was held in Basel, in 1889. At 3 year intervals, thereafter, meetings were held in Liege, Berne, Cambridge (England), Turin, Brussels, Heidelberg, Vienna, and Groningen. World War I caused an interruption from 1913 to 1920, when the 3 year schedule was resumed with meetings in Paris, Edinburgh, Stockholm, Boston, Rome, Moscow-Leningrad, and Zurich. World War II intervened between the meeting in Zurich in 1938 and one in Oxford in 1947. Once again the 3-year schedule was reestablished. The Congress met in Copenhagen, Montreal, and most recently in Brussels, July 30 to August 4, 1956. The twenty-first Congress is scheduled to meet in Buenos Aires, in 1959, the council having accepted the invitation of Nobelist B. A. Houssay.

President of the XXth Congress was Professor Corneille Heymans, who, in 1939, was awarded the Nobel Prize in Medicine for 1938, in recognition of his studies of the carotid sinus and cardio-aortic receptor mechanisms in respiration. His father was likewise a distinguished pharmacologist and professor at Ghent, and a pupil of DuBois Reymond. Scientific meetings were held in large teaching auditoria of the University of Brussels. One entered by the Avenue Paul Heger, commemorating the “founder of recent Belgian physiology”, who was born in 1846 and died in 1925. The opening session was held Monday afternoon, in the Palais des Beaux Arts, in the presence of Queen Elisabeth of Belgium. President Heymans announced that about 2500 representatives of 43 countries were present. By scanning representative pages of the membership list, the writer estimated that about 20 per cent were from the U. S. A.

The two address at the opening session were by Prof. C. H. Best, President of the International Union of Physiological Sciences, and Prof. Pierre Rijlant, Director of the Institut Solvay de Physiologie. Professor Best outlined the international organization which has taken form in recent years. This is a matter to which the officers of many scientific organizations throughout the world have devoted much thought and effort. The numerous international organizations in different areas of investigation have extensive liaison with one another and with UNESCO. The function of these organizations is “to facilitate the interchange of productive ideas and plans”. Arrangements for international meetings, and collaboration in the problem of abstracting the literature are among their principal problems.

The address of Professor Rijlant, entitled “The Future of Physiology”, dealt with an aspect that would have appealed to any medical man, — the confusion of tongues
that modern technology has wrought in so many fields that once were rather clearly defined. Thus the discipline “tends to split into numerous fragments whose subsequent development is centrifugal”. However, the speaker recognized why this is inevitable: “It has become impossible for anyone, no matter how gifted, even to pretend to have appreciated all the implications of the overwhelming number and diversity of reports. Thought and knowledge obviously cannot hope to develop to fully creative levels unless the field of interest is sufficiently sharply delimited”. Then he voiced the profound truth: “And yet there is a unity in life itself and its fundamental mechanisms and their manifestations which is to be found in the main features of the function of every organ.” This basic fact, and the influence of great leaders, to which the speaker devoted much of the remainder of his address, gave him a basis for confidence that centrifugal forces would not overcome integrative ones.

Organization of the extensive scientific program left little to be desired. Each morning, Tuesday through Saturday, which was “pharmacologists’ day”, there were 15 to 16 separate sessions in which 7 to 15 papers, well grouped as to content, were presented. There were also programs consisting of films. During afternoons, with the exception of Thursday (reserved for excursions to Bruges, Ostend, or Antwerp) there were two to four symposia or special group meetings. Two evening receptions were held by representatives of the Belgian and city governments, and a superb program by the Belgian National Symphony Orchestra was presented Wednesday evening.

In keeping with quotations from Prof. Rijlant’s address, no attempt will be made to review the scientific program in detail. The two books of abstracts contain 1604 pages, and the writer took many additional notes! The perpetual question: “Was anything truly outstanding presented?” may also go unanswered, for appreciation of individual contributions is largely a matter of one’s immediate interest.

Several contributions may be mentioned as representative of general trends. In the development of medical knowledge, the study of structure, — gross anatomy, histology, and presently electron microscopy, — continues to be fruitful. “Electron microscopic studies on the islets of Langerhans of the adult guinea pig and dog”, presented by P. E. Lacy, brought out a species difference (three types of islet cells in the guinea pig) and opened the way for granule counts in response to various stimuli. Similarly, a paper presented by B. Kisch, entitled “The contribution of electron microscopy to the physiology and pathology of circulation” emphasized the relatively huge content of enzyme containing sarcosomes in heart muscle as a clue to the ability of the heart to beat for a lifetime, and, in connection with problems involving capillary permeability, the finding that the capillary wall is not a sheet but a complicated structure.

In a symposium on “Physiology of water and food intake”, the contribution of B. Andersson closed with a striking film showing that electrical stimulation of a small area of the hypothalamus caused goats to drink water in amounts up to 40 per cent of their body weight. The response began in about 5 seconds and ceased 2 to 3 seconds after stimulation ended. While “classical conditioning” was excluded, a lively discussion about “experimental conditioning” ensued. A paper entitled: “Hypothalamus, hypophysis, and thyroid gland,” presented by G. W. Harris on Saturday afternoon typified the constant attempt of scientists to construct an overall pattern from isolated facts.
In this instance two questions were explored: (1) How are stimuli (cold, light, stress), or emotional disturbances to which they give rise, transmitted to the thyroid gland? Do they reach the thyroid directly, through nervous pathways from the central nervous system, or via hypothalamus and pituitary, or via other endocrine glands? (2) How does the “feed back” work? Where is the inhibitory action of secreted thyroid hormone exerted? Thyroid activity, in rabbits, was measured by the rate of disappearance of radio iodine from the gland, the log of residual radioactivity being linear with time in the absence of stimulants or inhibitory effects. The effects of hypophysectomy, stalk section, and other procedures were studied. Stalk section reduced thyroid activity, but not to the same extent as hypophysectomy. The stalk was necessary for transmission of emotional, but not for stressful stimuli, in keeping with Fortier’s thesis, and was apparently not essential in the feed-back mechanism. That the pathway from hypothalamus to pituitary is vascular rather than nervous was again emphasized. The hypophyseal portal system of vessels is becoming as important in endocrinology as another portal system is in gastroenterology.

A final comment may be made about the titles of programs. Many of them dealt with the function of organs or systems: salivary glands, gastrointestinal tract, pancreas, striated muscle, smooth muscle, heart and circulation, sympathetic nervous system, central nervous system. Others dealt with well-known processes, — blood clotting, photosensitivity, thermoregulation, active transport, or metabolism in general. Still others were oriented toward hypertension, inflammatory reactions, stress, hypothermia, epilepsy, effects of radiation, and cancer. On “pharmacologists’ day” neuropharmacology of course received much attention. Whenever investigators of sufficient calibre are brought together one will have a worthwhile scientific program, regardless of title.