of physico-chemical forces. We have seen that during nerve regeneration we can discover how the new fibres are formed when the material emerging from the central stump makes contact with the Schwann cells emerging from the peripheral. We can examine quantitatively the forces of pressure and attraction which produce the outgrowth. Again, the size of the new fibres is determined partly by that of the parent fibres, partly by the peripheral tubes into which they enter. But we found that another factor also very much influences the fibre size, namely, whether functional connexion is made or not. Here we see a tendency—not easily referable to ordinary physical and chemical forces—to develop in such a manner as shall be suitable for the preservation of the whole system.

Indeed, this tendency is present, if we look a little closer, behind and in addition to all the physical forces which we have been discussing. The nerve fibres only grow as they do and conduct as they do because during long ages suitable substances for this purpose have been collected together. This has been the work of that same tendency to act in a manner which ensures preservation, assisting the equally fundamental tendency to increase by growth, which is the driving force of evolution. Each type of organism produces more like itself, but not exactly like. What we should perhaps call a tendency to vary also plays a part, by ensuring a continual supply of new types to meet the needs of a changing world.

So we find that we can begin to apply the methods of physics and chemistry in biology, and thereby obtain solutions of our problems which are both more exact and more general than can be reached in biological terms alone. But such methods do not serve to describe all of the phenomena which are presented by the living organism. Unless physiologists are prepared to say that their science discovers in all matter tendencies of self-preservation, of increase, of multiplication, and of variation, we must say that these are the special characteristics of living organization, which it has preserved since life first appeared long ago.

- ¹ Weiss, P., *Biol. Bull.*, **87**, 160 (1944).
- ² Steinbach, H. B., and Spiegelman, S., *J. Cell. and Comp. Physiol.*, **22**, 187 (1943).
- ³ Cowan, S. L., *Proc. Roy. Soc.*, B, **115**, 216 (1934).
- ⁴ Curtis, H. J., and Cole, K. S., *J. Cell. and Comp. Physiol.*, **19**, 135 (1942).
- ⁵ Shanes, A. M., *J. Cell. and Comp. Physiol.*, **23**, 193 (1944).
- ⁶ Hodgkin, A. L., and Huxley, A. F., *Nature*, **144**, 710 (1939).
- ⁷ Curtis, H. J., and Cole, K. S., *J. Cell. and Comp. Physiol.*, **15**, 147 (1940).
- ⁸ Katz, B., "Electric Excitation of Nerve" (Oxford Univ. Press, 1939).
- ⁹ Hodgkin, A. L., *J. Physiol.*, **90**, 183 (1937).
- ¹⁰ Offner, F., Weinberg, A., and Young, G., *Bull. Math. Biophys.*, **2**, 89 (1940).
- ¹¹ Pumphrey, R. J., and Young, J. Z., *J. Exp. Biol.*, **15**, 453 (1938).
- ¹² Dale, H. H., Feldberg, W., and Vogt, M., *J. Physiol.*, **88**, 353 (1936).
- ¹³ Weiss, P., *Arch. Surg.*, **46**, 525 (1943).
- ¹⁴ Sanders, F. K., and Young, J. Z., *Nature*, **155**, 237 (1945).

OBITUARIES

Dr. P. Pelseeneer

PAUL PELSEENEER, who died in Brussels on May 5, 1945, was well known to a wide range of scientific men through his connexion with the International Association of Academies and with the International Research Council (now called the International Council of Scientific Unions) which was founded in its place in 1919. But he will be especially remembered by zoologists for his extensive knowledge of molluscs,

ranging from embryology to parasitism, and above all for his anatomical work on this group.

Pelseeneer was born in Brussels on June 26, 1863, and graduated at the University of Brussels. He was a research worker at the laboratories of Naples, Villefranche, Roscoff and Wimereux. From 1888 until 1918 he held a professorship in the Ghent Teachers' Training College. In 1919 he was appointed permanent secretary of the Royal Academy of Belgium (of which he had been elected a member in 1899), a post he held until almost his last days.

Pelseeneer was well known in Britain, and proud of having worked with T. H. Huxley on *Spirula* in 1894; their joint work was published as one of the *Challenger* reports, to which Pelseeneer had already contributed accounts of the Pteropoda and of the anatomy of deep-water molluscs. The best text-book on Mollusca is that written by Pelseeneer for Ray Lankester's "Treatise on Zoology", of which it forms part 5 (1906, translated into English by Gilbert Bourne). He is responsible for the arrangement of bivalves on a primary basis of gill structure, that is now found in most general works on zoology; it was put forward in 1891, modified in 1906, and his final views are to be found in his report on the anatomy of the *Siboga* lamellibranchs in 1911. In his early studies on the nervous system of gastropods, he showed that orthoneury does not exist in the group Euthyneura, but that the animal has undergone torsion and then untwisted sufficiently to show no chiasmoneury. Much of his work is stimulating reading, always clearly expressed, wide in outlook, well illustrated and fresh with new ideas.

One can only refer briefly here to the quantity of work Pelseeneer accomplished, which included such diverse subjects as the relation of the osphradium to the visceral ganglia, the eyes of bivalves, hermaphroditism, sinistrality, the effect of temperature variation on larvæ, the relative proportion of the sexes, regeneration, hybridism, the chemical composition of the shell, trematode and copepod parasites. His fame rests primarily on his important contributions to morphology, classification, phylogeny and evolution. Late in life he collected into one book, "Essai d'Ethologie zoologique d'après l'étude des mollusques" (662 pages, Brussels, 1935) a concise and monumental survey of almost all that is known of the habits, relations and environment of molluscs, enriched by his own wide research experience. Undoubtedly he ranks as a great zoologist and one of Belgium's greatest scientific workers.

R. WINCKWORTH.

Prof. E. Barclay-Smith

PROF. EDWARD BARCLAY-SMITH, emeritus professor of anatomy in the University of London, died in London on July 5, aged eighty-three. Educated at Brighton College and at Downing College, Cambridge, he graduated M.A. and M.B. in 1890 and M.D. in 1893. Choosing anatomy as a career, he served as demonstrator to Alexander Macalister and was later University lecturer in advanced human anatomy at Cambridge. His faculty for close and accurate observation, his gift of graceful yet forceful exposition, and his remarkably sound and meticulous knowledge of general and topographical human anatomy, established his reputation as a teacher. In 1915 he was appointed professor of anatomy in the University of London, holding the chair at King's

College until 1927, when, upon retirement, he was created emeritus professor. He served King's College and the University of London with selfless devotion, his professional eminence and administrative abilities earning fitting recognition. He became dean of the medical faculty in 1920, a member of King's College council in 1925, and a fellow of that College the same year: he represented King's College on the committee of management of its associated hospital, acted as chairman of the University of London Board of Studies in Human Anatomy, and was chairman and secretary of the Board of Intermediate Medical Studies. Much appreciated as an external examiner, he served in that capacity the Universities of Cambridge, Durham, Manchester and Birmingham, and was representative of the Royal College of Physicians upon the Conjoint examining board.

A teacher rather than an investigator, Barclay-Smith contributed little to anatomical literature, but incorporated his wide and exact knowledge in "Buchanan's Manual of Anatomy", of which he was joint editor. His abiding and scholarly interest in the history of anatomy and anatomical nomenclature was manifested in various little memoirs—gems of

erudition—upon classical and neo-classical anatomical terminology.

To the welfare of the Anatomical Society he devoted years of disinterested, unremitting labour, an Argus in its interests and a most gentle Nestor to its younger members. Joining the Society in 1893, he served for many years on its council and on the editorial board of the *Journal of Anatomy*, was joint recorder of *Proceedings* 1925–31, treasurer 1931–37, and secretary 1919–38, declining the honour of the presidency that, as secretary, he might the better serve his fellow members. The Society's travelling fund, designed to encourage and enable junior provincial members to attend the London meetings, was Barclay-Smith's anonymous foundation. Indeed, the Society owes more to him than to any other, and its present flourishing state is perhaps his truest memorial.

Barclay-Smith's personal qualities—in particular his gentle patience, his unassuming bearing, his winsome charm and his genuine concern for the welfare of his fellows—endeared him to a wide circle of friends, colleagues and students, by whom he was beloved, and by whom his memory will be always cherished.

A. J. E. CAVE.

NEWS and VIEWS

Engineering at Queen Mary College:

Prof. E. H. Lamb

PROF. ERNEST HORACE LAMB retires from the chair of civil and mechanical engineering at Queen Mary College, London, at the end of the present session. He has occupied this chair for thirty-two years, having succeeded the late Prof. D. A. Low in 1913. At the time of his appointment, the Engineering Department at East London College (as the College was then called) was rather small and the laboratory equipment meagre and ill-housed. Prof. Lamb set to work at once to develop an engineering laboratory that should be more worthy of the College and of the University. Permission was obtained to extend the laboratory buildings, and a new hydraulic laboratory had already been erected when the War of 1914–18 interrupted the development programme. From September 1914 until April 1919, Prof. Lamb was away from the College on war service, but as soon after his return as possible he continued the work of development. With the help of the late Principal Hatton, he obtained a grant for equipment of £11,000 from the London County Council and also some useful presentation plant, notably a complete boiler and accessories from Babcock and Wilcox, so that by the end of 1923 the laboratories had been rearranged and re-equipped with modern plant for the study of hydraulics, heat engines and strength of materials. He also designed and equipped an instrument-making department which served the science and engineering departments of the College.

The undergraduate school of engineering at Queen Mary College has grown considerably under Prof. Lamb's direction. In addition, much valuable research has been carried out on temperature distribution and thermal stresses in internal combustion engines, propagation of flame in compression ignition engines and on many other investigations. He has always taken a special interest in the application of theory to those elastic and dynamical problems which are so important in high-speed machinery.

Prof. Lamb was a member of the University Board of Studies in Civil and Mechanical Engineering and served as its chairman in 1923. He was also a member of the Faculties of Science and Engineering. From November 1924 until November 1928 he was University Dean of the Faculty of Engineering, and thus occupied this important post when the new statutes under the University of London Act, 1926, were being drafted. He was elected a member of the Senate as representative of the Faculty of Engineering in May 1928 and remained a member until 1934, giving most useful service on the Academic Council and many sub-committees of the Senate.

Prof. Edmund Giffen

DR. EDMUND GIFFEN has been appointed to the chair of civil and mechanical engineering at Queen Mary College, in succession to Prof. E. H. Lamb. Dr. Giffen had a lengthy practical training with Messrs. Harland and Wolff, Belfast, and took his degree in mechanical engineering at the Queen's University, Belfast, later proceeding to M.Sc. He served for thirteen years at King's College, London, first as lecturer and later as reader in mechanical engineering. In this period, he carried out considerable research work, mainly in connexion with injection processes in compression ignition engines, in collaboration with Prof. S. J. Davies, gaining the degrees of Ph.D. and D.Sc.(Eng.) in the University of London. He was active as a member of College and University Boards and served as chairman of the Board of Examiners for the External Engineering Degree. Since 1940, he has been director of research at the Institution of Automobile Engineers' Laboratories, Brentford. During this period, he has been responsible for a great development in the work of these laboratories and has issued important publications, particularly in connexion with the use of gas-producers. In his career he has thus combined experience of practice, of research, of teaching and administration, and his return to university life will be greatly welcomed.