U. S. von Euler discovered in 1946 that noradrenaline (α-3-4-dihydroxyphenyl-/?-aminoethanol), the primary amino-homologue of adrenaline, is a natural constituent of the organism. As Sir Henry Dale states in his foreword to the present monograph, noradrenaline attracted unusual interest, largely due to the “implication, and the eventual endorsement of this by direct evidence, of its important functions in the animal body, and especially of its action as the predominant chemical transmitter of the effects of adrenergic nerve impulses, mainly in post-ganglionic sympathetic nerve fibres, to the effector cells in contact with such end fibres. Hardly less interesting is the evidence now available, for the presence of noradrenaline together with its methyl-amino-homo-logue, adrenaline, as a component of the sympathomimetic hormone of the suprarenal medulla, and for its consequent presence, till recently unsuspected, in the preparations of natural adrenaline from animal suprarenal glands ...” Noradrenaline is also a constituent in foetal chromaffin organs and in adrenal medullary tumors.

Much of the tremendous and successful work concerning noradrenaline was done in the laboratory of U. S. von Euler, and he gives an excellent review of its history, chemical properties, formation and inactivation in the organism, preparation and purification, methods of assay, occurrence in the adrenal medulla, in other chromaffin cells, in nerves, organs and body fluids. The subsequent chapters deal with the physiological and pharmacological actions of noradrenaline, with its release from adrenergic nerves, its secretion from the renal medulla and excretion in urine. The final chapter summarizes the results of the therapeutic use of noradrenaline.

The presentation is thorough and lucid. The monograph covers the literature until 1955. During the ten-year period after the discovery of noradrenaline in the organism, more than 1,000 papers have been published on it. The presented facts corroborate the opinion that noradrenaline is the sympathetic neurohormone and the main suprarenal medullar hormone. Undoubtedly, it is the “natural vasoconstrictor” and constitutes “a genuine substitution therapy in conditions due to inadequate release or in cases of diminished vascular response to the normally available amounts, as in various conditions of shock and circulatory insufficiency”. One to two milligrams dl-noradrenaline per hour may have to be given in intravenous infusion. The levorotatory form only is active biologically, the synthetic product is, however, dl-noradrenaline. Noradrenaline is characterized by its lack of central nervous excitatory and tachycardia-provoking effect and by its resistance to oxidation. It exerts a powerful local vasoconstrictor effect. On the tracheal chain of guinea pigs noradrenaline shows only 10% of the dilator-effect of adrenaline. Intravenous infusion of noradrenaline is very effective in allergic shock (R. C. Gumpel et al.: Ann. int. Med. 44, 406, 1956) and in attacks of vascular headache [H. G. Wolff: Int. Arch. Allergy 7, 247-251, 1956]. Certainly, noradrenaline will soon gain importance as a therapeutic agent even in the field of allergy.
Prof. v. Euler’s review on this new field of research is outstanding in every respect. His own work and that of his school opens new avenues for the understanding of basic physiological processes, for future research and for successful and often life-saving therapeutic measures. According to Sir Henry Dale “it is a matter for great satisfaction, that one of the pioneers of this new phase, Professor von Euler, should now have undertaken the heavy labour of collecting, and bringing under expert review, all the mass of evidence, most of it so recently made available, about noradrenaline . . .”.

Paul Kallós, Helsingborg


The stress problem still remains one of the most important issues in medicine and the editing of the present “Annual Report” is certainly an invaluable service to all research-workers. The list of 5,698 papers, referred to in the Report, occupies 200 pages. In the present volume, as in the previous ones, there are excellent tables, which systematize the whole pertinent literature, published after completion of the Fourth Annual Report. In their Introduction the editors state that such a prompt systematization of all published data is “particularly necessary in the fields of biological stress, the general adaptation syndrome and the so-called adaptive hormones”. The reviewer must admit that his admiration for these volumes is growing from year to year. It is difficult to imagine the immense labour, which must lie behind this complete collection, lucid organization and perfect presentation of scientific data.

On pages 25 to 103 H. Selye gives an exhaustive and most stimulating review on “the stress concept as it presents itself in 1955”. The volume also contains a number of independent special reviews of most timely selected subjects, contributed by eminent authorities. These are: “Primary Aldosteronism” by Jerome W. Conn; “Hormonal Influences on Inflammation and Detoxification” by Th. F. Dougherty and R. D. Higginbotham; “Stress and Catechol Hormones” by U. von Euler; “Adrenal Influences upon the Stomach” by S. J. Gray et al.; “The Role of the Adrenal Cortex in the Aetiology of Disease” by D. J. Ingle; “Adrenocortical Secretion and Factors Affecting that Secretion” by D. H. Nelson; “Neurosecretion” by E. Scharrett; “Psychiatric Stress in Infancy” by R. A. Spitz and “Cortisone in Relation to Lymphoid Tissue and Immunity” by H. C. Stoerk. Last but not least, H. Selye and P. Bois contribute with a short article on “Endotheliomyelosis—an Experimental Model of the Focal Syndrome”. Endotheliomyelosis is a new syndrome, experimentally produced in rats and consists of endocarditis, ectopic myelopoiesis (in the spleen, renal pelvis and adrenals), appearance of PAS-positive granules in the adrenals, polyuria and nephritis. The rats were conditioned by unilateral nephrectomy and henceforth given exclusively 1 % sodium chloride solution as a drinking fluid. Immediately after the nephrectomy, they received daily subcutaneous injections of casein or lyophilized tissues, thoroughly mixed with “Freund’s adjuvant” and without sterility precautions. Under these conditions the “typical syndrome of endotheliomyelosis” occurred in all animals within 10 to 15 days. The protein solutions thus prepared for treatment of the rats, contained a great variety of contaminating microorganisms, e.g. Escherichia coli, Achromobacter., Pyocyanea, Klebsiella, Proteus and Paracolobactrum and it is possible that these and perhaps other as yet unidentified species play a decisive role in the production of the syndrome. “This view received further confirmation from the subsequent observation that protein solutions, left open in the laboratory for a week or more, became
extraordinarily effective in producing endotheliomyelosis, at the same time when they began to undergo putrefaction.” Obviously, this syndrome is related to the clinical picture of the “focal syndrome”. As Selye and Bois rightly state, “such purely empirical procedures do not appeal to the scientific mind”. It seems possible, however, that Selye and Bois provided in these experiments a new and useful tool, which by critical use can lead to important discoveries.

The “Fifth Annual Report on Stress” is as indispensable as the previous volumes.

Paul Kallós, Helsingborg