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## BOOK REVIEWS

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**The Adrenal and its homologue** by A. C. Pandey, 1988, pp. 97, (Published by Santosh Kumar Upadhyay, Naya Sansar Press, Bhadaini, Varanasi 221 001), Price: Rs. 100/.

In recent years a number of text books dealing with vertebrate hormones have been published. However, the present publication exclusively deals with one vertebrate endocrine gland, adrenal and its homologue. The basic aim of this book appears to capture the spirit of a dynamic, expanding discipline of adrenal endocrinology. The book synthesizes the current knowledge on the cellular and subcellular levels dealing with adrenal gland in vertebrates. The author has attempted to integrate contemporary research with classical literature on the adrenal tissue. In the first 36 pages, the comparative anatomy, ultrastructure, cytochemistry and physiology of adrenal gland are described in detail. Subsequent pages consist of tables, figures and microphotographs. The book ends with a list of titles for further reading. However, there is no index to the text at the end of the book nor any suggestion for future lines of research in that area of endocrinology. On the whole, the book offers valuable material for the use of teachers in the field of adrenal physiology.

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**Annual Review of Physiology**, 1988, Vol. 50, pp. 741, (eds) R. M. Berne and J. F. Hoffman, (Published by Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California 94303, USA). Price: USA \$ 36; Elsewhere \$ 40.

The present annual volume being the 50th, is a milestone in its history of progress. The historical developments have been interestingly recapitulated in the preface.

This year's prefatory chapter is on muscular contraction, written by Sir Andrew Huxley (Cambridge).

He states: "For the purpose of this article, I shall assume that changes of length of striated muscle take place entirely by sliding, without any shortening or lengthening of the individual filaments". He confirms with recent evidences the sliding-filament theory that came to be known since 1953.

In the section of reviews on gastrointestinal physiology edited by G. Sachs, regulation of acid secretion by peptides was the emphasis in common. Many of the peptides were not even known a decade ago. They influence gastric acid secretion both through the central nervous system mechanisms and also through the peripheral myentric plexus. Since a decade, acid secretion was thought to be regulated by acetylcholine released from vagal nerve terminals, by gastrin released from G-cells stimulated by meal intake, and by histamine. Knowledge of recent years indicates participation of a variety of receptors on the parietal cell: the H<sub>2</sub> histamine receptors, the M<sub>2</sub> cholinergic receptors, gastrin receptors acting through calcium rather than cyclic-Amp mechanism, epidermal growth factor receptors, somatostatin receptors, and others. There are four reviews in this section written by: Y. Tache; J. H. Walsh; O. H. Petersen and D. V. Gallacher, and C. Sternini.

In the section on renal and electrolyte physiology (edited by C. W. Gottschalk), chloride transport was the theme of special consideration. Approximately two-thirds of the anions in extracellular fluids is of chloride, and it is also the major anion filtered and reabsorbed in the kidney tubules, both proximal and distal. The regulatory mechanisms of chloride ion transport have been reviewed in four papers by: L. Schild *et al*, R. Greger; C. deRouffignac and J-M. Elalouf; and J. H. Galla and R. B. Luke.

The functional and chemical properties of hemoglobin have been reviewed in two papers by R. E. Weber and F. B. Jensen; and A. F. Riggs, under the comparative physiology section (editor F. N. White). The environmental and adaptational effects in the modulation of hemoglobin molecule have been discussed in these papers, with reference to the Bohr effect ("affinity for oxygen in response to protons").

Functioning of membrane transport systems is dependent on intrinsic factors (the membrane system structures) and extrinsic factors such as the lipids and other ligands present in the internal milieu. On

these, reviews are provided on molecular mechanisms of transport processes, by the following authors under this section (edited by J. F. Hoffman): S. P. Solfott and L. C. Cantley; P. De Weer *et al*; H. R. Kaback; A. Carruthers and D. L. Melchior; T. Y. Tsong and R. D. Astumian; and D. R. Yingst.

A great deal of new information has emerged in recent years on biosynthesis of neuropeptides and endocrine peptides, with the use of tools of molecular biology. The enzymes involved in pre-propeptide processing have been found to be membrane-bound. They require one or another divalent metal ions for actions. These recent aspects are given in five reviews (section editors B. A. Eipper and R. E. Mains): L. D. Fricker; G. Thomas *et al*; B. A. Eipper and R. E. Mains; R. S. Fuller *et al*; and W. B. Huttner.

In recent years, voltage-sensitive ion channels have been intensely studied using the methods of classical genetics, somatic cell culture genetics and molecular genetics. The present progress is summarized in this section (editor W. A. Catterall) in two papers written by: D. M. Papazian *et al* and W. A. Catterall.

How steroid hormones are secreted by cells in the adrenal cortex, testes and ovary under the regulation of gene expression, has become an important area. Recent knowledge on how the molecular mechanisms of regulatory signals are translated ultimately into biosynthesis of steroids is summarized in five papers (editor J. L. Kostyo) written by: S. J. Quinn and G. H. Williams; E. R. Simpson and M. R. Waterman; J. S. Richards and L. Hedin; P. L. Keys and M. C. Wiltbank; and M. L. Dufau.

Of the three major categories of control mechanisms (neural, humoral and metabolic products), the neural factors regulating the cardiovascular system are summarized in eight papers under the section of cardiovascular physiology (edited by L. C. Weaver and H. V. Sparks) contributed by: F. R. Calaresu and C. P. Yardley; W. Janig; M. Yoshimura and S. Nishi; R. M. McCall; B. G. Wallin and J. Fagius; C. J. Mathias and H. L. Frankel; J. L. Feldman and H. H. Ellenberger; and R. D. Foreman and R. W. Blair. The sympathetic control of blood vessels can be quite selective and its control can differ in different vascular beds at any given time. Microneurographic recording of post-ganglionic sympathetic nerves has also been investigated in humans in recent years. The neurotransmitters released on preganglionic sympathetic neurons and their receptors, diseases due to lesions of sympa-

thetic system, and cardiovascular responses to pain are also summarized in reviews of this section.

In the section on respiratory physiology the focal theme was on velocity of CO<sub>2</sub> exchange. Carbonic anhydrase was discovered as a catalytic agent nearly 60 years ago in eliminating CO<sub>2</sub>. The enzyme is present in almost all types of tissues in the body. Carbonic anhydrase has not only a role in accelerating the elimination of CO<sub>2</sub>, but also in the anabolic chain reactions as in the liver and perhaps also in the muscle. The enzyme has also a role in ion transport, particularly of H and Na in a wide variety of tissues. Five review papers discuss the knowledge on CO<sub>2</sub> kinetics and the functions of carbonic anhydrase in the tissues (section editor R. E. Förster, II) contributed by: R. A. Klocke; A. Bidani and E. D. Crandall; T. D. DuBose Jr. and A. Bidani; G. Gros and S. J. Dogson and T. H. Maren.

The volume contains 41 reviews, categorized under nine sections, besides the prefatory chapter, and the preface highlighting the history behind this 50th anniversary volume. The reviews are contributed by acknowledged experts. All those working in frontier areas of research in physiology will find the reviews highly useful and intellectually entertaining.

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**Thermomechanical Processing of High Strength, Low Alloy Steels** by Imao Tamura, Chiaki Ouchi, Tomo Tanaka and Hiroshi Sekine, (Published by Butterworth Scientific Ltd., Westbury House, Bury Street, Guildford GU2 5BH, London), 1988, pp. 248, Price: £ 40.

One of the brightest chapters in the design of alloys is concerned with the development of high strength low alloy steels. These steels make effective use of the fact that among the various strategies available for strengthening and toughening of alloys, fine grain size alone has the ability to confer simultaneous improvement in strength and toughness. Microalloying with niobium, leading to the

precipitation of niobium carbide and retardation of grain boundary movement, plays an important role. The ingenious use of controlled rolling leads to the desired external shape as well as the internal microstructure. Its success has revolutionized our approach to processing. Again, the inclusion shape control to improve ductility is a fascinating topic. All these themes are dealt with authority and coherence by a group of four Japanese authors drawn from the University as well as from the Steel Corporation. The authors have been involved in the field of controlled rolling for several years and have made significant contributions to this processing

route. Even though the different chapters are written by different authors, a great deal of uniformity has been achieved in contrast to edited conference proceedings. For a clear understanding of this important development in ferrous physical metallurgy, the book under review is compulsory reading.

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## ANNOUNCEMENTS

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### THE CLINICAL IMPACT OF INTERLEUKINS

With the first of the interleukins now approaching the market as a novel therapeutic agent for use in certain forms of cancer, research on this group of proteins is now beginning to bear fruit. The international conference to be held on 10 and 11 April 1989 at the Royal College of Physicians, London, will examine the clinical data available to date, e.g. with interleukin-2 in the treatment of cancer and with interleukin-2 receptor monoclonal antibodies in the prevention of transplant rejection and the

treatment of graft-versus-host disease. It will also look at the latest data available on the other interleukins under development and assess the impact they are likely to have themselves as therapeutic agents, and the prospects they offer for new drug development.

For details contact: Dr Renata Duke, IBC Technical Services Ltd., Bath House, 56 Holborn Viaduct, London EC1A 2EX.

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### JAPAN PRIZE FOR 1990

The Chairman of the Science and Technology Foundation of Japan has invited Prof. S. S. Sarkar to submit proposals for the Award.

The selected fields for the Prize include Technology of integration, design, production and control techniques, and Earth sciences.

The Award consists of a citation, a commemorative

medal and a sum of 50 million yen for each field.

The guidelines for nominating candidates and nomination forms can be had from: Prof. S. S. Sarkar, P. O. Box 122, Howrah 711 101. Proposals should reach the Japan Prize Selection Committee before 30 April 1989.

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