

BOOK REVIEWS

Blood Groups and Diseases in India by M. R. Chakravarty, (Published by Samant & Co., 33/246, Mangesh Sadan, L.J. Road, Dadar, Bombay 400 078) 1983, pp ix + 202, Price £ 10-00, \$15-00, Rs 48.00.

In the search for biological significance of the genetic polymorphism in man, special attention has been directed towards the relationship between blood groups and human diseases. This volume reports the relationship between blood groups and the major diseases in Indian population. The author has collected a vast body of data from the Indian sub-continent. The volume aims to bring together the widely scattered, recent and old information on blood groups and diseases worked out in India. This presentation throws new light on the problems of associations and causation of diseases and is likely to have important bearing on clinical diagnosis. A few selected articles by the author, on well established associations between blood groups and diseases, published earlier have also been included in this volume.

Infectious diseases and blood groups have been dealt with under bacterial and viral diseases. Typhoid, whooping cough, tuberculosis, leprosy and syphilis are the bacterial diseases discussed. The relatively weak blood group associations known in leprosy could not be shown in the present study.

'The viral infection' deals with studies on ABO relationship with small pox, chicken pox and measles. Statistical analysis has confirmed that persons with blood A and AB have a disadvantage when exposed to small pox and chicken pox.

The volume also presents data on the blood group relationship with miscellaneous disorders in Indian population. These include protozoal and helminthic infections, neoplasms, diabetes mellitus, mental disorders, congenital abnormalities, diseases of digestive, circulatory and genitourinary systems and the influence of blood groups on fertility.

The treatise will enable the scholars to appreciate the present state of research in this field and serves as a valuable up to date bibliographic search on the subject.

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Annual Review of Physiology (Vol. 46). Eds: R. M. Berne and J. F. Hoffman (Annual Reviews Inc., 4139, El Camino Way, Palo Alto, California, 94306, USA), 1984, pp. 727, price: \$30/-

The volume opens with an insight into the history in a prefatory chapter contributed by one of Europe's senior and great physiologists Alexander von Muralt of the Physiological Institute, University of Bern, Switzerland.

This is an outstanding volume presenting a total of 45 review papers covering a whole range of frontiers of physiology under 8 broad sections, namely, Endocrinology, Cardiovascular Physiology, Auditory Information Processing, Renal Physiology, Gastro-intestinal Physiology, Cell Membrane Physiology, Comparative Physiology and Respiratory Physiology.

Each of the sections has been well edited by a Section Editor who also provides an introduction at the beginning of each section. These introductions provide a brief focus to the headlines of advances covered in the sections.

In the Endocrinology section W. F. Ganong reviews the evidence for the presence of renin-angiotensin system in the brain and its possible role in the regulation of pituitary. P. K. Donahoe *et al.*, discuss in their review on the Mullerian inhibiting substance in reproductive tract development and associated neoplasms. A. O. Davies and R. J. Lefkowitz review the findings on the inter-relationships of glucocorticoids and β -adrenergic receptors. In recent years, it has become apparent that neurotransmitters can influence expression of steroid receptors and that steroid hormones influence neurotransmitter receptors. In the section of Cardiovascular Physiology, R. B. Stephenson reviews on how baroreflex function operates during exercises. D. E. Anderson reviews the evidence in his paper as to how behavioural stress influences renal regulation of sodium balance. J. A. Herd reviews studies which show a relationship between the development of hypertension and exaggerated cardiovascular responses to physiological and psychological stress stimuli. There are other reviews which deal with the theme of cardiovascular correlates of behaviour. The Auditory Physiology section deals with topics covering several levels of information processing, from periphery to the central integration. The Renal Physiology section includes reviews dealing

with four humoral systems that influence salt and water excretion by the kidney, under the areas of renin release, kallikrein-kinin system, arachidonic acid and natriuretic hormone. The Gastrointestinal Physiology section focusses studies on in vitro model systems, *e.g.*, isolated acini from salivary and pancreatic glands and isolated gastric glands. The physiology of lipid absorption and metabolism was given emphasis, through studies on hepatocyte cell cultures, and study of sodium transport by the colon.

In the section of Comparative Physiology, the recent studies on how magnetism can influence biological function and behaviour, have been reviewed including the magnetic sensors which aid in navigation of organisms. There are also reviews in the section dealing with the sensing environment through sound pulse echos (bat sonar) and through electric fields by fishes. In the Respiratory Physiology section, the reviews deal with the theme of the development of the lungs and regulation of pulmonary ventilation in the fetus and newborn.

In the section of Cell and Membrane Physiology, the recent revolutionary advances occurring in the field of physiology of membrane channels have been covered, starting from a review by B. Sakmann and E. Neher.

The highlights of each of the 45 review papers and of the historical prefatory chapter cannot be even briefly narrated in a Book-Review like this, because all these are of outstanding quality. All those who work in the fields of Physiology, Medicine and other Biomedical areas, will find the volume as of outstanding value.

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Annual Review of Genetics by Herschel L. Roman,
Published by Annual Reviews Inc. 4139, El Camino
Way, Palo Alto, California 94306, USA, Vol. 17, 1983,
pp. 537, price: USA \$27.00, elsewhere \$30.00.

The Annual Review of Genetics, 1983, covers a wide range of topics, much more diverse than the previous years. Most of them are organised and presented in a sequential fashion for a comfortable reading. However, exceptions are there, some of them being directed to a very narrow interest.

The review on stasis and punctuations covers the

variation in evolution as a result of changes in gene expression. Evolutionary changes occur in rapid bursts separated by long periods of stasis during which little or no morphological changes take place. Cytoplasmic male sterility is the inability of male plants to produce functional pollen grains. Such maize plants are commercially exploited to produce hybrid maize. Orientation behaviour of chromosome multiples of interchange heterozygotes has implications in medical, veterinary, plant and population genetics and biological control of insect pests. Most of the review is based on 4/6 interchange of *Allium triquetrum*. The author rightly points out that the real understanding of this phenomenon will emerge only from carefully planned experiments on a very specific problem.

The molecular genetics of bacteriophage, P_1 , covers the nature of the genome, avoiding morphogenesis and restriction modification systems. Extensive studies are needed to know their functions, recombination, immunity system, DNA packaging and the differences between λ and P_{22} phages. Murine leukemia viruses are a collection of viruses that show diverse pattern of host range and tissue specificity. Their genes are located at different sites on the mouse genome. The nature of the structural and regulatory elements of their genes are discussed. The review on mutational specificity in bacteria by Miller deals with different mutagens, their pathways to create specific mutations. Overlapping genes are found in phages, viruses, mitochondria and bacteria. It means that a single nucleotide sequence codes for more than one polypeptide. In this review, they are looked in detail to understand the functional role of the overlaps.

The review on prenatal diagnosis of genetic diseases and birth defects deal over 100 inborn errors of metabolism. Using the recombinant DNA technology, diseases such as thalasemias etc. are detected. Genetic defects in the glycoprotein metabolism such as biosynthesis, processing and catabolism have resulted in the production of a number of diseases. The biochemical and clinical nature of most of the diseases are discussed in depth.

Sex differentiation is one of the best examples of differential gene expression. The x-chromosome/autosome ratio is the primary determinant of sex in *Drosophila*. At a particular time during the developmental stage, the cells assess this ratio and decide the sex, which can not be reversed. Probably the best mode of insect pest control is to manipulate at the sex ratio which is determined by the density of population and by the infectious organisms which

kill a specific sex. The review on mammalian x-chromosome inactivation covers the molecular aspects of this phenomena. The connection between the x-inactivation and dosage compensation is not clear. The P family of elements are one of the many structural types of transposable elements distributed on various chromosomes. They are responsible for sterility, recombination, mutability and other germ line qualities in *Drosophila*.

Application of monoclonal antibodies in enzyme genetics by Harris deals with various methods to discriminate any closely similar enzyme produced by different alleles of the same locus, different loci in the same individual or homologous loci in different

species. The organization and expression of histone genes are discussed mainly with respect to sea urchin, *Drosophila* and *Xenopus*. Other systems which show diversion in the organization and expression are not included. Histone genes are clustered, repeated several fold, but do not show any conserved topology. They may be evolved by the process of recombination including crossover, gene conversion, transposition and horizontal transfer.

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NEWS

CANCER DRUGS*

Nitrosourea compounds used in chemotherapy also suppress bone marrow. Yale researchers have found the reaction responsible and have designed a new nitrosourea molecule that undergoes an internal reaction with itself while retaining its anticancer activity.

'LEMON' DANGER*

Citral, the lemony compound used in detergents, polishes and processed foods, may be a health hazard, according to Eli Seifter of Albert Einstein College of Medicine. Although the existing data do not indicate any hazard, the compound inhibits wound healing and

tumour rejection in animals. Natural foods contain enough vitamin A to counteract citral's effect.

MOTHER'S MILK*

Chemical composition of breast milk varies between mothers of full term and premature infants. Levels of growth modulators Ca, Zn, Cu and vitamin B₆ change as the baby matures. The research may lead to better artificial milk formulations.

FRENCH FRIES*

Chips from fast food shops have distinctive flavours that cannot be matched at home. Researchers at Rutgers University have found 400 different flavour compounds in chips. These could be sprayed on frozen chips for baking at home and may be useful in perfumery.

* Items extracted from: Perspectives—Highlights column of *Chemistry in Britain*, Vol. 20, No. 9, September 1984, p. 772.
