

contribution is *Shannon's* chapter, dealing with the "kidney". He considerably clarifies the position regarding fundamental problems such as discrete renal processes and their interrelation, excretion of water and electrolytes and experimental hypertension. Progress achieved in "electrophysiology" is well brought out by *Gerard*; it becomes clear that electric currents in cells and tissues are involved in the integration of function, metabolism and growth. New results, obtained in neurophysiology, are to be found in the sections on "spinal cord and reflex action" by *Ruch*, "the central nervous system" by *Hines* and "the autonomous nervous system" by *Hare* and *Hinsey*, which cover adequately the advances made in these almost unlimited subjects, which include such interesting topics as the extension of synaptic surface on the nerve cell, the status of the ventral horn cell, a new function of the anterior cerebellar lobes and the complex problems of reflex physiology. Among the contributions to the physiology of "sense organs", critically arranged by *Hartline*, should be mentioned that the retinal mechanisms concerned with colour vision have been explored with the aid of a microelectrode, a method which permits discerning clearly the activity of individual retinal ganglions. Out of the "metabolic functions of the endocrine glands" *C. N. H. Long* considers especially those of the anterior pituitary, the adrenal cortex and the pancreas. More than 480 contributions to "the physiology of reproduction" have been reviewed by *Hisaw* and *Astwood*; they give a clear-cut picture of the present-day opinions on the oestrous cycle, metabolism and physiological effects of sex hormones, menstruation, sexual skin of primates, lactation and placental hormones. *C. P. Richter* impresses upon the reader the increasing interest in "physiological psychology", which has led to considerable advances, made in electroencephalography and the treatment of mental disturbances by frontal lobectomy, electrical shock and hormones. Those interested in physiology, applied to modern warfare, will find the article by *Behnke* and *Stephenson* full of interesting informations; they deal, especially, with the effect of low and fluctuating pressure in aviation and high pressure in diving and the submarine service; also problems of health preservation under extreme conditions are treated. The concluding chapter by *M. I. Smith* deals with "the pharmacology of drug addiction", limiting the drugs concerned to morphine and derivatives, alcohol, cocaine, barbiturates, amphetamine, acetanilide and cannabis.

This publication, containing a masterly digested inexhaustible material, pertinent to so many branches of biological and medical science, is a real asset to post-graduate students, teachers and research workers, offering to all of them the most reliable information on the recent position of many physiological and clinical problems. Under the present circumstances, when foreign literature reaches this country extremely delayed, when hardly any one volume of the journals and magazines contains all the issues, due to the hazards of communication, we do not think that the value of this *Annual*

Review could be exaggerated or a substitute for it could be found.

ROBERT HEILIG.

*Yantrik Shodhachya Navinyakatha*. By K. A. Damle, B.Sc. (Published by the author at Damlewada, Shastripol, Baroda), 1940. Pp. 140. 46 Figs. Price Rs. 1-8-0.

This publication is the first of a series entitled 'Vijnanmala' published by the author himself. The book is a narrative about some of the inventions with the results of which we are quite familiar. The book is in Marathi and perhaps it is the first of its kind in the language. It is written from the point of view of the general reader and although it is concerned with what may be described as technical matter, the method of presentation is such that it forms a very interesting reading indeed.

The first chapter deals with the birth and growth of the sewing machine while the third gives the story of the bicycle. It is followed by two other chapters, the first telling us as to how the typewriter came into existence and the way it assumed its present form and the second about the various inventions that have made possible the remarkable development that has taken place in the art and technique of the printing press. After this there is a discussion about the possible advantages and disadvantages of the machine age. Finally, there is the fascinating history of the gramophone.

When the time comes for taking out a second edition of the book—which it is hoped will be soon—the following suggestions may be considered. The order of the chapters may be slightly altered so that chapter two comes first while chapter six goes to the end. A few more diagrams may be added with explanatory notes. At the end of each chapter a sequence of different steps which go to make the particular invention may be given.

There is one more point which deserves mention and that is the satisfactory manner in which the author has rendered into Marathi various technical terms for which there were no ready equivalents. Altogether this book is a praiseworthy attempt on the part of the author and deserves congratulations.

*Mineralogy, Petrology and Economic Geology—Tables for the Use of Geologists, Prospectors and Mining Engineers*. By N. L. Sharma. (Indian Society of Engineers, Calcutta), 1942. Pp. 22. Price Rs. 3-8-0.

The booklet is divided into three chapters. The first deals with mineralogy, the second with petrology and the third with economic mineralogy. Each chapter consists of a number of tables which are meant as ready reckoners for a geologist, or a student of the subject. Two tables are dedicated to crystallography, six to physical characters of minerals, one for chemical composition, one for blow-pipe tests and one for microscopic characters. There are three tables for petrology treating respectively with Igneous, Sedimentary and Metamorphic rocks. The chapter on Economic Geology also comprises of three tables, one

indicating the uses to which various minerals are put, the second giving the classification of deposits and the third showing the distribution of economic minerals in India. Each table is preceded by a small introductory note. The great utility of a booklet of this nature for students of the subject cannot be gainsaid and Mr. Sharma should be complemented on this work.

The value of the booklet would be enhanced by a foreword or an introduction giving the scope and the procedure adopted. The title gives the impression that it is mostly meant for the professionals but at the end of the first page it is stated that it is meant for students. The notes given are too elementary for the understanding of the tables especially in crystallography and optical mineralogy. Both morphological and physical mineralogy (p. 1) may be included under the general term physical characters. The term 'crystalline habit' and 'structure' as defined by the author on pages 3 and 4 are more generally included in one term 'Habit' or 'Form', the term 'structure' usually referring to X-ray structure or space lattice of a mineral. Table 3 should, therefore, be termed 'crystalline form' and Table 4 'Habit' respectively. Excepting for certain metallic minerals, colour is a variable factor in min-

erals and hence the different types of streaks could also have been included (p. 9). Instead of cataloguing the optical and mechanical parts of a petrological microscope (p. 12) a sketch of the petrological microscope with different parts labelled and an explanatory note on the parts, would have been better. Similarly sketches of the different optical figures would have been more helpful.

In the classification of mineral deposits (p. 20) 1, 2, 4, 5 and 6 are all magmatic deposits. To distinguish them the various stages of magmatic intrusion should be considered, e.g., 1, is magmatic segregation and the rest come in the pegmatitic, pneumatolytic or hydrothermal stages. In giving the distribution tables for economic minerals in India the more important deposits which are being actually worked should be distinguished from less and insignificant deposits.

Other constructive suggestions could be offered, in particular for the section of petrology, and we hope that the author will consider all these when he brings out a second edition of this useful reference book. A stiff cover for the book would be welcome. The author deserves the gratitude of all students of geology for this useful compilation.

B. V. I.

## SUPER-NORMAL FACTORS IN HUMAN PERSONALITY\*

DR. ATREYA has departed from the usual routine in choosing a subject for his Presidential Address. The subject chosen, ought to be, rightly, of interest to all psychologists and other students of human nature. He makes a passionate plea for the correct understanding of what are usually known as super-normal phenomena. This, he believes, is necessary if one wants to avoid complete disaster of modern civilization.

He feels it a duty of modern psychologists to interest themselves in the study of super-normal facts of human experience. These super-normal facts are divided into: (1) Miraculous cures and super-normal control over the body, (2) Exteriorization of Motivity and Telekinetic Phenomena, (3) Apparitions, (4) The Aura and the Astral Body, (5) Super-normal Cognition, (6) Crystal-gazing, Automatic Writing and Speech, Dowsing, (7) Genius, Materialization, Ectoplasm, Paraffin Moulds and Fingerprints, (8) Transmediumship, and (9) Reminiscence of Past Life.

All the topics are dealt with in an interesting way. The author has tried to persuade the reader to accept these as facts, by adducing a number of facts as evidences. In most cases these evidences are taken from the writings of other persons interested in the topic. Though, ordinarily such a procedure is exact enough,

in matters connected with super-normal phenomena where verifiability is extremely difficult if not rare, to base our conclusions on the assertions of others might be considered risky by the more orthodox sections amongst scientists. There is no doubt that some of the phenomena cited are genuine and serious-minded experimentalists like Rhine, are devoting time and energy for a proper understanding of them.

By far the most important chapter of the Address is the last one where the author speaks of the bearing of the super-normal facts of experience on the theory of human personality. Acceptance of the inevitable fact of Telepathy and a proper understanding of the operative laws—as Worcollier has tried to—will considerably change our conception of human personality and relationship. Mrs. Sidgwick long ago made a similar plea. If one has not been able to achieve much since then, it is not because of lack of interest on the part of psychologists. It is because of the subtle nature of the phenomena themselves and the extreme caution necessary before hazarding laws and rules operative in super-normal phenomena. But the task is urgent and a proper understanding of the phenomena might reveal truths on which depend human destiny.

Though one cannot fully subscribe to the author's views—which he sometimes modestly asserts—yet, Dr. Atreya has laid all the psychologists under a deep debt of gratitude by this well-written, thought-provoking and thorough address, on a subject which less brave souls would have hesitated to speak about.

N. S. N.

\* Summary of the Presidential Address of the Section of Psychology and Educational Science, *The Indian Science Congress, 1943*, delivered by the President Dr. B. L. Atreya, M.A., D.Litt.