

binding has an electrostatic valency strength one half of the charge on the anion. The super-polarising power of the  $H^+$ -ion arising from its vanishingly small size, and the consequent anomalous behaviour of compounds containing hydrogen, entitle them to a separate chapter: in this, is also included, a succinct account of the allied topics of the structures of liquids, liquid crystals, and glasses. The descriptions of the various ionic crystals, and in particular the 'defect' structures, with either a statistical distribution of different ions among crystallographically equivalent sites, as in the spinels with 'equipoint' structures, or with incomplete lattices as in  $Al_2O_3$ , and Pyrrhotite, leave the classical chemist searching in vain for a trace of his molecule, and thereby disillusioned about the 'sanctity' of the same.

In the last chapter on molecular lattices, where the bonding is generally by residual forces, the concept of the molecule is restored to its true and proper place. Here the shape of the individual molecules plays an important rôle, and the structures can be broadly classified according to the molecular shape, and the type of inter-molecular force, apolar, polar or ionic. The number of such crystals whose structures have been completely worked out is not large, but to the extent progress has been made, significant

informations regarding the precise molecular configurations, and intra- and inter-molecular bondings, have been obtained, which are otherwise beyond the scope of direct chemical experimentation. A striking example in this connection is the work of J. M. Robertson on the phthalocyanines, for under the favourable circumstances prevailing in this case, he has achieved the first absolutely direct analysis of an organic molecule, and one which does not involve even the assumption of the presence of atoms. Indeed this analysis goes one step further, and the chemist has to stand corrected regarding the distribution of valencies in the molecule. With other complex molecules even the incomplete X-ray analysis at present possible, is not without profit, as it has frequently enabled important conclusions to be drawn about molecular structure merely from the cell dimensions, and the space group, *e.g.*, the sterols and sugars.

The printing and get-up of the book are excellent: just one print mistake has been detected on page 342, line 21, where 'molecular' has obviously to be corrected to 'molecule'. For original sources a choice selection is given, which includes almost all the summarising articles, wherefrom fuller and complete references can be easily had. The book is moderately priced and must find a place in any science library.

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## Modern Psychology grapples with Man

Introduction to Psychology. By E. G. Boring, H. S. Langfeld, H. P. Weld and Collaborators. (John Wiley & Sons, New York; Chapman & Hall, London), 1939. Pp. 652. Price 15sh.

READERS of *Current Science* perhaps know that the three distinguished psychologists, E. G. Boring, H. S. Langfeld and H. P. Weld have already published "Psychology: A Factual Text-Book" with the help of collaborators, and a revised edition of that work now appears under a new title, because, "This new book is so much more than a revision of the old that we have given it a new title" (p. vii, Preface). New chapters, new collaborators, revision and rearrangement of chapters, occasional expansion and condensation of contents of certain chapters should be deemed sufficient justification for the advent of a new book.

Not for these and many other features that may become apparent to those who peruse the volume will it be welcomed. The book commences with a specific question: What is man? The opening chapter is entitled "The Nature of Man". The concluding chapter repeats the title, and has a thick-face type sub-heading or commencement *Da Capo* "as at the end of a passage of music" (p. 627). Without keeping anyone in suspense, the question is almost immediately answered. What is man? "A man", the distinguished authors answer, "is a mass of protoplasm moving about on the face of the earth". What is the chief characteristic of man? His conduct is dominated or right through governed by needs. To satisfy countless needs, he "acts, learns, thinks and perceives". Let the matter be clinched. What is a person? *Needy protoplasm with*



all these properties. (Italics mine.) The authors tell us that modern psychology attempts an outline of man's sketch on the lines indicated. A complete picture of man understood as needy protoplasm is attempted in the course of 18 chapters. There is no need to repeat the contents at any length. Man is a mass of protoplasm. He is thrown amidst an environment. He should adjust himself to it or refashion it to suit his convenience. He has needs. Satisfaction of the needs is the goal of existence. He thinks, learns, and acts in the interests of the satisfaction of the needs.

One must be grateful to the authors for a frank statement of the conclusion of modern psychology on the problem of man without any camouflage. Out of the plenitude of the reviewer's unconcealed gratitude is the title of this notice chosen. I would like frankly to frame the straight question: Has modern psychology ushered in with a flourish of trumpets, propaganda and advertisement after all grappled with the problem of man? *Introduction to Psychology* renders the answer that Man is a mass of needy protoplasm. I am unable to see how this answer is claimed to have been given by "modern psychology". Modern biology may well define man as a mass of protoplasm. Man may further be defined as a bundle of nerves and neurones. It would be impossible to forget the definition of man as a *consolidated colony of cell bodies and chromosomes*. Sex-urge, food-urge, fear, instinct of self-preservation are all shared by animals along with man. Animals are undoubtedly masses of needy protoplasm too. The *reductio ad absurdum* of the view of man upheld by Boring, Langfeld and Weld would be: Hitler is a mass of needy protoplasm securing satisfaction of his needs in his own way! Sir C. V. Raman is a mass, again, of needy protoplasm securing satisfaction of his light-needs in his own way!

I am afraid there is absolutely nothing in the volume under notice for students of Indian Psychology to enthuse over. Behaviour of mankind in different zones of civilization

is by no means a rational or scientific guarantee of the correctness of definition that man is a mass of protoplasm. Heredity, and Environment, Matter and Energy are not alone sufficient to explain adequately the facts and phenomena of life. The contention is perfectly understandable that for purposes of verification under the conditions imposed by laboratory investigation and the concomitant qualitative and quantitative analysis, nothing of man is available except his overt behaviour, or adjustment to environment, and that from such behaviour or adjustment his motivation is to be inferred. In receiving and registering sensory stimuli emanating from external Reality and impinging on the organism, and in the execution of correct and efficient responses, neuromuscular, protoplasmic mechanism is the only go. So far one can easily follow the modern psychologists. From this there is an unmistakable *non sequitur* to the view that man is nothing more than protoplasmic stuff or mass of protoplasm. Failure to realize the nature and consequences of this palpable *non sequitur*, deliberate or unconscious or unwitting, is the bane of Modern Psychology of the type presented in the volume before me. According to Indian Psychology, man is first self (*Atman*). In addition to the well-known sensory-motor mechanisms or organs (*Indriya*) there is a specific, special inner sense (*Antah-karana*), which is the *mind*. Psychology would cease to be an independent science if mind is ignored or denied under cover of protoplasm. Psychologists *a la* Othello would lose occupation if man were nothing more than protoplasm. The mind (*Manah*) is differentiated into *Manas*, *Buddhi*, *Ahamkara* and *Chitta*. *Contact of self with mind* is the root-cause of all conduct, emotion and intellect, or of volition, emotion and intellection or cognition. Modern Psychology is a mysterious mixture of Anatomy, Physiology, Biology and Neurology. What then is Psychology proper? The book contains no answer. The distinguished authors, however, have issued an attractive volume.

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