

the motor area of the cortex. It is this failure which, in his view, has made it impossible for psychology to develop an adequate treatment of thought. He begins by directing attention to the apparent incompatibility between perceptual generalization, on one hand, and the stability of memory, on the other, and suggests a way out of this dilemma by effecting a compromise between configurationism and learning theory. At this point he brings in his distinction between perceptual unity and perceptual identity. The former—that is, the figure-ground relationship—he concedes to the configurationists, is sensorily determined and, so to speak, is 'given' in experience. The latter, he insists, is the result of learning. He is consistent in supposing that the mnemonic trace involves structural change and that perception depends, not on a pattern of excitation, but on the excitation of specific cells.

The theory of the book briefly amounts to the following. The more constant the stimulation from an object, the more readily it will be identified and so evoke a response. Repeated stimulation results in the formation of 'assemblies' of association-area cells, which facilitate other such assemblies. After stimulation has ceased, a cell assembly can act for a short time as a closed system and so prolong the interval during which structural change can occur. A series of cell assemblies produces a 'phase sequence', of which human thought is the most extended example. A phase sequence is a process that co-operates fully with external stimulation without being fully controlled by it, thus allowing for 'autonomous cortical processes' and for the psychological phenomena of expectancy and set.

The theory is developed in considerable detail, and, though it is speculative, the speculation is specific and thus renders it subject to the tests of observation and experiment as further evidence becomes available. Its usefulness in clarifying problems of perception, learning, motivation, and intellectual deterioration is a first step towards its verification. JOHN COHEN

## A REVIEW OF SCIENTIFIC INSTRUMENTS

### *Journal of Scientific Instruments*

Editor: Dr. H. R. Lang. Vol. 28 and Supplement No. 1, 1951. Pp. xvi+388+iii+80. (London: Institute of Physics, 1951.) Bound, £3 12s.; unbound, £3.

THE *Journal of Scientific Instruments*, the monthly publication of the Institute of Physics, deals with the principles, construction and use of scientific instruments and is produced by the Institute with the co-operation of the National Physical Laboratory. When the *Journal* was started in 1923 it was the only periodical devoted to the subject of scientific instruments, and it soon obtained a high reputation among physicists and manufacturers of scientific instruments. This high reputation has been maintained through successive editorships. The present editor, Dr. H. R. Lang, the secretary of the Institute, has been responsible for Vols. 9-28, covering the period 1932-51. His task has not been made easier in recent years, first by war-time restrictions, then by post-war difficulties due to increased and continually rising costs of production, and, more recently, by the added responsibility of the publication of a sister monthly, the *British Journal of Applied Physics*.

Nevertheless, a comparison of Vol. 28 with previous volumes shows that not only all the regular features and the high standard of the articles and book production have been maintained, but also that, in Vol. 28, the innovation of an attractive and informative supplement of papers on vacuum physics has been introduced. The editor and the advisory committee, under the chairmanship of Dr. R. S. Clay, are thus to be congratulated for their fortitude and their progressive attitude.

Vol. 28 contains four special articles, ninety-six original contributions, laboratory and workshop notes, reviews and notices of new books and descriptions of new instruments, materials and tools, in addition to the previously mentioned supplement. The range of subject covered is wide and most branches of physics are represented. Rarely does an author have more than one contribution; but Dr. Kantorowicz, formerly at the National Institute of Medical Research, London, and now at the Pametrada Research Station, Wallsend-on-Tyne, has no less than five laboratory and workshop notes in the volume. All the contributions are remarkably free from errors and misprints. Since quite a high percentage of the papers show by the dates of receipt that they required modification before final acceptance, it is suspected that the concise and effective form in which they appear is in no small part due to the conscientious and devoted manner in which the referees have carried out their arduous and voluntary task. It is a pleasure to record that the *Journal*, as it richly deserves, continues to prosper and that its circulation, both to members and non-members of the Institute, is on the increase. It is excellent value for the price. S. WEINTROUB

## MAMMALS OF THE OLD WORLD

### Checklist of Palæarctic and Indian Mammals, 1758 to 1946

By J. R. Ellerman and T. C. S. Morrison-Scott. Pp. vi+810. (London: British Museum (Natural History), 1951.) 65s.

ALL students of mammals welcome the appearance of this volume and are greatly indebted to the authors for their painstaking labour in providing a much-needed corner-stone in the structure of systematic mammalogy. The list, based on the unrivalled collections of the British Museum (Natural History), is not merely one of the working tools that every systematist must make for his own use but is also a critical revision of the mammals inhabiting an immense area of the earth's surface. It deals with mammals of the palæarctic and Indian regions, thus linking up with the already existing lists of the mammals of the Malayan and Ethiopian regions.

The authors give critical introductory paragraphs for each order and family, and indicate the diagnostic characters of each genus and species by reference to the appropriate works or by specially devised keys. The distribution of each species is approximately shown, though "it should be remembered that the distributions of many mammals are imperfectly known and that the ranges of many of the larger mammals are shrinking every year".

In the time covered by this revision, from the tenth edition of Linnæus to the end of 1946, an immense number of forms has been described. With the accumulation of adequate collections for critical