

Lashley has shown that the problems of proximate orientation are relatively simple and straightforward. On the island of Bird Key the terns make their adjustment to the nest, mate, young, etc., on a basis largely of visual habits. Kinæsthetic habits are also involved, but to a less extent. On dark nights the sooty tern hovers over the crowded nesting area, giving out his call; he is answered by his mate and young, and is thus guided to the nest. Dr. Lashley found no evidence of any remarkable or unusual sensitiveness, or of the functioning of any hypothetical sense-organ.

As to the more difficult problem of distant orientation, the authors consider and dismiss various suggestions: that the birds follow water-currents; that they get their bearings by ascending to a great height; that they have special visual acuteness, e.g. to infra-luminous rays; or that they have special tactual or olfactory sensitiveness in the nasal cavities. The experimental thoroughness with which the spectral sensitivity and the functioning of the nasal chamber are dealt with is worthy of imitation. The authors are unwilling to suggest at present the assumption of any new and mysterious sense; they rightly prefer to continue to experiment. They suggest various experiments, e.g. on the sensory equipment of homing pigeons, and they conclude:—"We are far from being without hope that future studies may yield results which will enable us to solve the riddle which has been propounded to scientific men of all ages, but as yet never satisfactorily answered."

THE INSTITUTE OF METALS.

AT the meeting of the Institute of Metals held in London on September 17, a number of interesting papers were read and discussed. Amongst these were the following:—"Specifications for Alloys for High-speed Superheated Steam Turbine Blading," by W. B. Parker. In this paper the author confines his attention to a consideration of the non-ferrous alloys which are used for turbine blading. He gives a clear description of the physical and chemical properties which are essential for this purpose, and discusses in detail the causes of the wearing and corrosion of the blades. It is pointed out that although non-ferrous alloys have the advantage of being non-rusting, they do not possess a good proportional limit which is capable of being retained for long periods when exposed at the temperature of highly superheated steam. This fact has so far prevented the use of non-ferrous alloys for this particular purpose, and steel alloys are invariably utilised. The proportional limit should remain, for temperatures between 100° and 450° C., within 10 per cent. of its value at the ordinary temperature. Investigation is, therefore, needed, in order to find either (1) a non-ferrous alloy which will almost indefinitely retain its hardness up to a temperature of 450° C., or (2) a steel which will fulfil the above requirements and also be non-rusting. Anyone conducting research along these lines will find Mr. Parker's paper extremely valuable.

"The Constitution of Brasses Containing Small Percentages of Tin," by Dr. Hudson and R. M. Jones. This paper deals with the constitution of the ternary alloys containing from 50 to 70 per cent. of copper and 0.5 per cent. of tin. The ranges in which the various constituents can exist, at temperatures below the lowest thermal critical points of the alloys, have been determined, and the results are embodied in a constitution diagram. Most of the alloys fall into one of the two following groups: (1) Those in which the tin is held in solid solution, and conse-

quently possess the normal structure of the copper-zinc series, and (2) those in which a constituent is present, which is similar to the δ of the copper-tin alloys.

"A Thermostat for Moderate and High Temperatures." The authors of this paper, J. L. Haughton and D. Hanson, describe a simple and much-needed apparatus which they have designed for keeping constant temperatures for long periods. The records illustrated in the paper show that the apparatus is highly satisfactory. By using fused silica in the place of glass it is hoped that the effective range of temperature will be considerably extended.

"Metallic Crystal Twinning by Direct Mechanical Strain." In this paper Prof. C. A. Edwards gives evidence which proves that certain metallic crystals are twinned when subjected to mechanical deformation without the intermediate operation of annealing. In the case of tin the twinning is very marked, even at the temperature of liquid air. Diagrams are shown to illustrate the possible mechanism of twinning, and from a consideration of these it is concluded that amorphous layers are produced on the twinning planes.

"The Micro-chemistry of Corrosion," by Dr. Desch and H. Hyman. The corrosion of gun-metals has been examined by the electrolytic method. The presence of tin decreases the rate of corrosion by forming a layer of basic salts which act as a protective coating on the metallic surface. Coarsening the structure by annealing increases the corrosion. A pure alpha alloy is more readily acted upon than one which contains the eutectoid, but the presence of the beta, obtained by quenching, has very little effect.

ON THE FUNCTIONS OF THE CEREBRUM.¹

THE first of these papers is a study of thirty-eight cases of insanity (dementia præcox, general paralysis, arteriosclerotic dementia, and senile dementia) and their autopsies. It is pointed out that entirely different symptoms (hallucinations, delusions, loss of memory, disordered conduct) may occur in different patients, although the associated cortical atrophy may occur in precisely the same areas; also that the same symptoms may occur in different patients in whom the cortical atrophy is subsequently found to be in different areas. The author, however, ignores the fact that different layers of the cerebral cortex are affected in the different diseases.

The second paper is the result of an experimental study of cerebral localisation in monkeys. It is there pointed out that any given cortical motor centre (the leg area, for example) differs in size and shape in different animals of the same species, in the two hemispheres of the same animal, and even in the same hemisphere at different times. For instance, it is found that the arm can sometimes be stimulated from a spot in the middle of the leg area, sometimes not. From these data Dr. Franz draws conclusions as to certain possible connections between neurons. We are quite prepared to go even as far as this with him; but when he offers these neural arrangements as an explanation of "the variations of behaviour of different animals and of the same animal at different times to the same form of stimulation," we must join issue. Not so much that Dr. Franz's suggestions are incorrect from a neurological point of view

¹ (1) "Symptomatology Differences Associated with Similar Cerebral Lesions in the Insane." (2) "Variations in Distribution of the Motor Centres." By Shepherd Ivory Franz. (Princeton, N.J.: Psychological Review Co.)