Short Reviews.

The Journal of the Institute of Metals. Vol. 46. Edited by G. Shaw Scott. Pp. xii + 571 + 47 plates. (London: Institute of Metals, 1931.) 31*s.* 6*d.* net.

THE high reputation of the *Journal of the Institute of Metals* is worthily maintained by the latest issue. Commencing with the Autumn Lecture on "Thin Films in Relation to Corrosion Problems", by U. R. Evans, several subsequent papers deal with allied questions. The increasing use of the spectroscope in industry is shown by two contributions on this subject, which, together with the discussion upon them, represent substantial addition to our knowledge in this direction. Two further papers, both by Prof. Hanson and Mr. Slater, deal with the causes and the elimination of unsoundness in sand castings of aluminium. The profound influence of water vapour in the furnace atmospheres is most clearly demonstrated, and the importance of the conditions under which the metal is stored between the time it is first produced and that at which it is cast is emphasised. Three papers deal with the subject of the drawing of wire: two with the nature of the flow and the factors which affect it, the third with the changes of tensile strength of high conductivity copper as it is drawn down.

One of the most outstanding features of this volume is the remarkably wide range of the researches published, and few who are interested either in general metallurgy, or in specific metallurgical processes, can fail to find much of direct interest. In addition to the topics already mentioned, others dealt with include the production of copper-nickel alloys of high elastic limit, the application of electric furnaces to the manufacture and working up of the non-ferrous metals, the effects of cold-rolling and heat-treatment on alloys of lead, the ageing of duralumin, etc. The proportion of papers of practical importance is unusually high, but the purely metallographic aspects of the Institute's interests are equally well represented. If one of such papers may be selected, attention may be directed to that of J. A. Murphy on the silver-mercury diagram, which is of more than usual difficulty and merit. F. C. T.

Social Behaviour in Insects. By Dr. A. D. Imms. (Methuen's Monographs on Biological Subjects.) Pp. ix + 117. (London: Methuen and Co., Ltd., 1931.) 3*s.* 6*d.* net.

A SOCIAL system, existing in small winged or wingless insects, long before man had evolved, having its *raison d'être* in instinct and physiology rather than intelligence, yet possessing remarkable similarities to the system which man built round himself! What more fascinating study could one find in the realm of Nature than that of these six-legged creatures. Like us, they care for their young, nursing them in cradles and feeding them on the most appropriate food. They may keep armies for defence or aggression, or may turn to the peaceful pursuits of the dairy-farmer and husbandman. They even have sufficient sense of property to leave real estate to their offspring.

In this little book, Dr. Imms sets out to explain the behaviour of social insects, the basis of this behaviour in morphology, and the paths which they may be supposed to have traversed in evolution. The big majority of insects are solitary creatures, independent of each other, except for reproductive purposes. They die soon after oviposition and therefore have little opportunity to become interested in their offspring.

A striking clue to the evolution of communal life in these animals is to be found in sub-social forms where the family system is in process of establishment. Here we learn of the great significance which attaches itself to reciprocal feeding between adult and young forms, to the exploitation of flowers, and the dependence, total or partial, of caste formation and its associated polymorphism, on nutrition. How far the condition presented to us—of a vast proletariat of sterile working classes, each individual merged into the community, to which it may at any time be mercilessly sacrificed—is one to be emulated or not, the reader may decide. Many will agree with the author and "take comfort that a system of this kind is unattainable by repressive manifestations on the part of the most ruthless human dictatorship".

Forest Life and Adventures in the Malay Archipelago. By Dr. Eric Mjöberg. Translated from the Swedish by A. Barwell. Pp. 201 + 84 plates. (London: George Allen and Unwin, Ltd., 1930.) 12*s.* 6*d.* net.

ANYONE desirous of prosecuting a biological research expedition to the tropics would be well advised to read this little book, which is charmingly written and illustrated, and equally well translated. In the thirty-one chapters, "each complete in itself and requiring no further index", we read of such giants of the forest as the elephant, the rhinoceros, and the buffalo, delighting as much in the habits of them as in the exciting incidents of the hunt. The goat-antelope, living in impenetrable tracts round volcano summits and only seen once before by a white man, is described and pictured to us. We are told that though it is two-horned, it is to this animal that we must refer the mythical unicorn. Another interesting mammal is the scaly, hairless ant-eater or pangolin, which simulates death amid myriads of ants. When in their hunger and curiosity enough ants have entered beneath the scales, the pangolin shuts these down and calmly enters the nearest pool. The ants, on release, rise to the surface of the water, from whence they are skimmed by means of his sticky tongue.

Space is not available to do more than mention here such marvels of Nature as the flying frog, poisonous fish, fish which walk on land, the trilobite larvæ, 2½ inches long—neotenic females whose mates are insignificant blue-black beetles no longer than one-fifth of an inch. To the author belongs the honour of having solved this century-old enigma.

Mjöberg is as interested in the Malayan native