

typescript and is very clear. The author states that the elaborate checks required more time than the construction of the table.

The existence of the British Association tables might become more widely known if it were possible to have them permanently listed in a publisher's catalogue. L. M. MILNE-THOMSON.

Recent Research in Metallurgy

The Journal of the Institute of Metals. (1) Vol. 50 : *Metallurgical Abstracts and Index to Volumes 48, 49 and 50 of the Journal.* Pp. vi+962. (2) Vol. 51. Edited by G. Shaw Scott. Pp. 363+28 plates. 31s. 6d. (3) Vol. 52. Edited by G. Shaw Scott. Pp. 255+50 plates. 31s. 6d. (London: Institute of Metals, 1933.)

(1) **T**HIS volume contains the general and non-ferrous metallurgical abstracts which have already been published during 1932 in the monthly *Journal*. These abstracts not only provide the worker in physical metallurgy with an invaluable guide to the literature of the subject, but also constitute a very useful aid to the physicist or physical chemist whose interests lie in this direction. As usual, the literature has been surveyed accurately over a broad front, but whether the latter is rather too broad is open to question. The Institute's desire to cater for all types of its membership can be appreciated, but considerable space is taken up by abstracts of articles which are merely recapitulations of existing knowledge and practice. A noticeable omission is a list of the periodicals abstracted.

Although the monthly issue of these abstracts undoubtedly constitutes a great improvement on the score of rapidity of publication, considerable delay now seems to occur in their re-issue as a single volume.

(2) Some thirteen papers presented at the March 1933 meeting of the Institute of Metals are collected in this volume of proceedings, together with Prof. Portevin's May lecture on "The Phenomena of Quenching and Tempering in Alloys". Prof. Portevin deals in a thought-provoking manner with the general principles and mechanism of precipitation hardening due to differences of solid solubility at high and low temperatures, and shows that these phenomena, far from being exceptional, are extremely common. These considerations open a new field of research in the application to existing alloys of the principles of precipitation hardening.

Three papers by N. P. Allen and his co-workers deal in a fundamental manner with the practical problems of unsoundness in ingots of copper and copper-nickel alloys. The recently developed tellurium-lead alloy forms the subject of one communication, and a further paper records the effects of progressive rolling reductions on the physical properties of zinc strip. Two papers deal with the electrical conductivity of aluminium wire used for transmission lines, whilst other topics include the fatigue-resisting properties of aluminium alloys at elevated temperatures and the interpretation of the tensile test with reference to lead alloys. Particular mention should be made of a paper by Bradley and Jones on the re-examination of the copper-aluminium system by the X-ray powder method.

(3) The autumn meeting last year constituted the twenty-fifth anniversary of the foundation of the Institute of Metals, and was appropriately held in Birmingham, the original home of the Institute. This volume of proceedings contains the fourteen papers presented on this occasion, together with Mr. W. R. Barclay's Autumn Lecture on "Twenty-Five Years' Progress in Metallurgical Plant", which is illustrated with an excellent series of photographs of melting, rolling, and auxiliary equipment. Probably the most interesting of the papers is Dr. Rosenhain's review, prepared at the request of the Council, of progress in non-ferrous metallurgy during the life-time of the Institute. Much metallurgical history has been made in this period, and Dr. Rosenhain briefly surveys a number of developments, including the improved equilibrium diagram technique, the study of deformation and fatigue, the application of X-ray methods, and the development of light alloys and of special cutting alloys, with many of which he and his students have been intimately connected.

Research on precipitation hardening is represented by two papers, both dealing with copper-nickel-aluminium alloys, and a further contribution from Allen concerns the distribution of porosity in aluminium and copper ingots. Other papers deal with the preparation of lead alloys for microscopic examination, the protection of magnesium alloys, the annealing of copper wire and the corrosion-fatigue characteristics of an aluminium specimen consisting of two crystals. The papers and ensuing discussions testify to the value of the past twenty-five years' work of the Institute in the stimulation of the study of alloys.

L. B. H.