

metal single crystals," R. Madding and N. K. Chen give an extensive discussion of the formation of slip lines and the slip systems in B.C.C., F.C.C., H.C.P., and other metal crystals. The article by N. J. Petch on "Fracture of metals" is less satisfactory. Some important contributions to this field are neglected, while undue emphasis seems to be placed on the author's own theory that associates Griffith cracks in metals with arrays of blocked dislocations.

The two remaining articles relate, respectively, to the solidification and structure of liquid metals. The former, by U. M. Martius contains an extensive summary of the data related to pure metals, but the segregation of alloys during solidification is only barely touched on. B. R. T. Frost gives a useful, if somewhat uncritical, review of the structure of liquid metals. The section of his article treating the thermodynamics of liquid alloys is too sketchy to be of much value and contains an excessive number of small errors which will be irritating to the specialist and a source of confusion to the nonthermodynamicist.

The only general complaint I would make is that the value of some of the contributions would have been enhanced by the inclusion of a summary either at the end or beginning of each article. Otherwise, the presentation and typography maintain the very high standard set by the previous volumes. An excellent name and subject index is included.

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Modern Experiments in Telepathy. S. G. Soal and F. Bateman. Yale Univ. Press, New Haven, 1954. xv + 425 pp. Illus. + plate. \$5.

The authors have presented a book intended for the purposeful reader and the student of parapsychology. Its primary purpose is to consider much of the available evidence concerning telepathy from the point of view of the scientific statistician. This purpose is admirably fulfilled by a careful résumé of the historical background and experimental approaches to paranormal happenings. As nearly as possible, the authors have attempted to confine themselves to extrasensory perception (ESP) in its relation to card guessing, basing their work on the assumption that "the validity of any piece of scientific research depends ultimately upon its confirmation by other investigators. . . ." They have assembled an impressive array of experiments and data, carefully evolved, minutely recorded, and, within limits, capable of reproduction by other investigators. In their endeavor to eliminate deception, fraud, and artifact, they have imposed extreme and, at times, absurd precautions.

A secondary theme of the book appears to be a refutation of those hypotheses that seek to explain the beyond-chance results of ESP experiments as being due not to telepathy or extrasensory perception but, instead, to artifacts or defects in our theory of probability. The evidence offered as rebuttal to these

hypotheses, however, is based chiefly upon statistics derived from the very probability theory under question. It seems that the reliability of such reasoning is unsound. More attention might well be directed not toward an evaluation of the mathematical accuracy of those statistics dealing with beyond-chance expectations but rather toward a determination of whether random distribution based upon these statistics actually behaves in practice as would be predicted by accepted probability theory.

The book provides, in addition to adequate testing techniques, a review of the hypotheses that seek to explain ESP., a summary of current research in the field, a correlation of parapsychology with the more orthodox sciences, and an insight into methods of statistical analysis. An extensive appendix, a bibliography, and a well-organized index enhance the usefulness of the book as a guide for those who wish to investigate or evaluate paranormal phenomena on a scientific basis.

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Complex Variable Theory and Transform Calculus. With technical applications. N. W. McLachlan. Cambridge Univ. Press, New York, ed. 2, 1953. xi + 388 pp. Illus. \$10.

This is a second edition of a work originally published in 1939 under the title *Complex Variable and Operational Calculus with Technical Applications*. In the preface to this new book, the author says, in speaking of the two editions:

. . . the degree of rigour seemed to be adequate, but certain pure mathematicians (and physicists!) who reviewed the book disagreed. In the interim, the standard of technical mathematics has improved, and it is now possible to be more rigorous than before. Accordingly the chapters on Complex Variable Theory have been rewritten, amplified, and made rigorous enough for all but the pure mathematician, to whom the book is not addressed.

This change in attitude toward mathematics is most welcome, although it would seem that there is still much room for improvement in the average electrical engineering article of the present day. Let us hope that McLachlan's colleagues will follow his lead.

Almost exactly one-half of the book is devoted to an exposition of certain portions of the theory of functions of a complex variable, particularly such topics as the calculus of residues, contour integration, operations with integrals, and transform theory. The second half deals with applications of these mathematical disciplines to a variety of technical problems drawn largely from electrodynamics and related fields. The more specialized applications include studies of the influence of gun recoil on the motion of an airplane, radio receiver circuits, various aspects of partial differential equations, loaded and unloaded cable circuits both with and without terminal apparatus, electric wave filters, condenser microphones, and loud-

speaker horns. At the end are a number of appendixes dealing with some of the items of mathematical interest noted in the text but not elaborated upon there, and a short list of transforms.

The particular transform employed in this work is the p -multiplied Laplace transform. It is largely a matter of personal taste whether the Laplace transform be used in its original form or with the additional p multiplier; but it is a pleasure to note that the author tags his choice of the p -multiplied transform with an explicit label. Accordingly, there can be no misunderstanding as to which transform is being used. He is also to be congratulated upon his use of it throughout for the imaginary unit, despite its avoidance by most electrical engineers of the present day.

McLachlan's book contains an excellent bibliography (273 items) and an unusually serviceable index. It seems to be very well printed, with the possible exception of some of the figures, where certain of the lines appear much too heavy for the size of the cut.

This second edition appears to be a marked improvement upon the earlier work. It is a noteworthy book in its field.

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The Coalfields of Great Britain. Arthur Trueman, Ed. Edward Arnold, London; St. Martin's Press, New York, 1954. xi+396 pp. Illus.+plates. \$15.

This book is the first review of the state of knowledge in this subject since the 1927 revision of Walcot Gibson's *Coal in Great Britain*. Here is a condensed and elementary summary of the geologic theories and mechanisms of the laying down of coal beds and a series of chapters describing the history, present condition, and future prospects for the 11 major coal fields of England, Scotland, and Wales.

The editor is author of the first four chapters elucidating the present theories of the origin of coal, with special emphasis on fossils and geologic characteristics of the different seams that make it possible to correlate their occurrence and properties not only in Great Britain but across the English Channel as well.

The balance of the book consists of 11 chapters on the major fields, authored by nine geologists of universities and the Geological Survey. In a standardized systematic outline, they describe for each field the general historical background, the sequence of sedimentary rocks, and detailed characteristics and sequences of the major coal seams. Each chapter concludes with a brief estimate of the existing reserves and the future potential production. These condensed reviews are for reference and not for reading.

This book will be of particular interest to students and to industrial management who need a condensed and general review. It is a reference book for those who want to make a start in the study of a particular coal field. Those who need more detailed information will find the selected references of great value.

The coal industry of the United States, even though it is much younger, is already plagued by many of the troubles that stand out in this book. Records of workings are nonexistent or incomplete, and the correlation of mining and drilling information is not sufficient to allow accurate estimates of the quantity and quality of coal that can be recovered economically in the future. Today there are rapid developments in mineral exploration techniques, in mechanized mining, in coal cleaning, in coal utilization, and in the economics of competitive fuels. The interdependence of these factors makes even short-range planning difficult. This book makes its contribution in bringing together the scattered and incomplete knowledge in the sphere of the geologist and the mining engineer. Immense amounts of work remain to be done before the British (and we) know where and how much coal there is, and how it can be mined.

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Endokrinologische Psychiatrie. M. Bleuler. Georg Thieme, Stuttgart, 1954. xi+498 pp. Dm 46.50. (U.S. distrib., Intercontinental Medical Book, New York).

M. Bleuler explains (i) the description of psychic specific maladies in cases of endocrinological anomalies, (ii) the teaching of the interrelationship of endocrine and psychic conditions as they coexist in the same individual, or if they influence one another, and (iii) the teaching of and in what ways personality disturbances can be influenced by endocrinological means. He emphasizes the importance of the knowledge of endocrine *psychology*. Up to now the research has been based on pathologic conditions with the result of multa rather than multum. The endocrinologist should make his studies in the clinic of psychiatric patients and the psychiatrist in the workshop of the endocrinologist.

Bleuler's work consists of 380 original text pages, 117 pages of bibliography with 2717 references. Bleuler was guest scholar in the Endocrinological Clinic of the New York Hospital and the Payne-Whitney Psychiatric Clinic to observe the intimate cooperation between psychiatrists with specialists of other medical services. His statements are based on clinical experience, and it is surprising that he very often avoided projection techniques such as the Rorschach, thematic apperception test, Bernreuter test, Szondi, and others. I do not agree with disregarding a battery of tests. I agree with him in using them only as the basis for psychological examination and judgment.

The book is divided into two parts: psychopathology of the endocrine maladies and endocrinology of psychopathology. Bleuler draws the following conclusions: (i) Many schizophrenics are endocrinologically healthy. There is no uniform endocrine pathology for all schizophrenic diseases. (ii) The several endocrine disturbances are generally not accompanied by schizo-