

mullets and flounders are expected, but the plaice (*Pleuroctes platessa*) is something of a surprise.

Together with the final part of the systematic account, Volume 3 also contains an extensive zoogeographical discussion of the Palaearctic and Amur freshwater fish-faunas as a whole. Usefully illustrated with a coloured fold-out map at the end of the book, this begins with a twenty page table of distribution listing every species and sub-species and their occurrence in any of thirty-six basins. Excluding those fishes which do not spawn in fresh water, there follows a detailed consideration of the many faunistic sub-regions, provinces and districts, with enumerations of their typical or autochthonous elements, and, in some cases, descriptions of geological changes and their influence on the present day fauna. Topics of general interest cover interchange of fishes between the major rivers of Russia, the age of the Baikal fauna and its spread outside this basin, and similarities between the Amur region of the Far East and the Mediterranean sub-region.

The Israel Program for Scientific Translations has produced an English text which reads well without presuming to be more than a translation. A few minor defects in the third volume include wrong numbering of certain orders, families and genera, the transposition of pages 174 and 175, and two unsightly corrections to the map legend. The practice of italicizing scientific names in the text and synonymies has been replaced by letter-spacing, a technique perhaps inappropriate for an English translation but no doubt more convenient in operation. The value of this volume is greatly enhanced by the transliteration and translation of a bibliography of more than a thousand references (serving all three volumes) which provide an amazing record of Russian ichthyological activity. The original index has been reproduced from the last Russian edition, and further indices include Russian vernacular names and their translated forms. An index to the biological information buried in the text would have been a most useful (if laborious) addition to the translation.

Although now almost twenty years old, Berg's work provides in its entirety an unsurpassed survey of a vast fish fauna, and is of general limnological significance as well as being of enormous practical importance to the ichthyologist. To specialists in particular groups of fishes, some of the detailed subject matter may be patently unacceptable or antiquated. For example, in the lengthy treatment of the Gobioidae, there are many inaccuracies and deficiencies, ranging from misallocation of synonyms and errors of description to the usually poor diagrams of cephalic sensory papillae, where accuracy is particularly essential. But taxonomic shortcomings are inevitable when a subject as large and multifarious as this is attempted by a single person, however knowledgeable in general matters. The essential value of Berg's monograph lies in its collective and synthetic approach to a vast concourse of scientific findings and records, mostly little known outside Russia. Western students will be grateful for the translation of this outstanding work, the usefulness and circulation of which through the scientific world have thus been so greatly extended. Its contents will widen their horizons of thought, as well as their knowledge of Russian ichthyology, a subject which continues to proliferate.

P. J. MILLER

La Lune à l'Ère Spatiale

(Publications du Centre National d'Études Spatiales.) Pp. xi+185. (Paris: Presses Universitaires de France, 1966.) 20 francs.

EARLY in 1964, J. Coulomb of the French National Centre of Space Research organized a symposium to deal with current and future problems in lunar research. Ten of the lectures have been combined in book form by Dr. J.

Rösch. Texts of other lectures are missing; and one wonders if this stems from a reluctance on the part of some authors to publish conference material outside scientific journals.

J. Rösch writes briefly about the motion, size, brightness and atmosphere of the Moon and, in another chapter, on lunar topography; Th. Weimer discusses the libration and figure of the Moon; A. Dollfus provides a comprehensive account of the physical methods used to elucidate the nature of the Moon's surface, the section on polarimetry being particularly interesting; J. Kovalevsky describes methods of determining the Moon's distance and, in another chapter with an appendix by B. Morando, he shows how a lunar orbiting satellite can be used to yield information on the lunar gravitational field; G. Jobert writes on the interior of the Moon; J. Levy deals with the consequences of tidal action on the evolution of the Earth-Moon system; P. Swings provides an interesting, if inconclusive, discussion of lunar glows; and J. Hopmann gives a critical analysis of the errors in both relative and absolute lunar altitudes, in the latter case by comparing results drawn from the U.S. Army Map Service, R. B. Baldwin, G. Schrutka-Rechtenstamm and H. Ritter.

The papers that have been collected here do not form a coherent whole, but it is thought that the book will provide a stimulus for student readers of the French scientific literature. Several of the papers have been published elsewhere; but Hopmann's contribution, given here in French, was previously available only in German.

G. FIELDER

Mathematics and Statistics for Students of Chemistry, Chemical Engineering, Chemical Technology and Allied Subjects

By C. J. Brookes, I. G. Betteley and S. M. Loxston. Pp. vii+418. (London and New York: John Wiley and Sons, Ltd., 1966.) 50s.

In the two sections of this book, of about equal length, selected topics in mathematics and statistics are expounded lucidly and economically. After an introductory chapter on the exponential, logarithmic and hyperbolic functions, the emphasis in the mathematical section is placed on elementary differential and integral calculus, and on the integration of ordinary differential equations. There are chapters also on multiple integrals and Fourier series. In the section on statistics there are treatments of various types of frequency distributions, then of quality control, tests of significance, analysis of variance, regression analysis, and design of experiments.

The text has merit in its concise and unfussy style, well adapted to those concerned in applying mathematical and statistical methods and not with the mathematical formalism. A greater emphasis on statistics is much to be desired in course work, where too often the subject is dismissed in a few perfunctory sessions on the analysis of experimental results. This book will be valuable for reference in this respect. But neither the title nor the claim in the preface that "the book covers the mathematics and statistics required in most undergraduate courses at colleges and universities" is justified by the contents which, in the mathematical part, are not well judged for university undergraduate chemists. On the one hand there is much that a student will know from his school mathematics, and on the other no mention of topics that many will consider essential to a modern chemistry degree course. There is no mechanics and no algebra, and opportunities to bias the discussion of differential equations towards those leading to the special functions that are central to atomic and molecular problems, such as the Legendre and Hermite polynomials, have not been taken. Readers whose interests lie in the topics that have been chosen for exposition, however, will find the book well written, clear and explicit, with numerous fully worked