

ingly prepared when opening a book like "Cloud Studies" to find some amplification of the international classification, but it may be doubted whether the separation of clouds into forty named types really serves any useful purpose. Such a system must inevitably be too cumbersome for use in the daily work of meteorological observatories, and stands no chance of obtaining general acceptance. It may also be remarked that although Mr. Clayden pays lip service to the international classification, he makes it plain that in certain important respects he is not in agreement with it.

It is not intended by these criticisms to suggest that the book should be avoided or that it is unworthy of study either by meteorologists or the general public. On the contrary, it may certainly be read with profit and pleasure derived from the numerous cloud photographs with which it is illustrated. The most important change from the first edition published twenty years ago is the inclusion of a chapter on the formation of clouds, in which stress is rightly laid upon the primary importance of dynamic cooling in cloud production. Another useful chapter is devoted to the subject of cloud photography.

For the observation of clouds the use of a mirror of black glass is recommended, the reflected image of the cloud being observed. The same device has been used in obtaining many of the cloud photographs. The printer does not seem to have done full justice to all of these, the delicate texture of the high clouds being in some cases lost. Others are entirely admirable, among which may be mentioned Plate 36 which represents "Alto-cumulus Castellatus Fractus."

J. S. D.

*Ergebnisse der exakten Naturwissenschaften.* Herausgegeben von der Schriftleitung der *Naturwissenschaften*. Vierter Band. Pp. iii + 242. (Berlin: Julius Springer, 1925.) 15 gold marks.

THE 1925 volume of the "Ergebnisse der exakten Naturwissenschaften" contains eight articles. Dr. J. Stracke deals with the minor planets historically, treating their brightness, diameters, total mass, the statistics of the elements of the orbits, groups the orbits of which show great similarity, planets with unusual orbits, such as Eros, which is often closer to the sun than Mars, and Hidalgo, which at its aphelion is nearly as far from the sun as Saturn. The article gives a short account of the theories of the origin of the minor planets.

Prof. A. Prey's article on the theory of isostasy treats the development and the results of the theory; he does not consider it possible to account for mountain building by means of this theory alone, horizontal thrusts also being necessary. Prof. A. v. Brunn considers that for astronomical purposes the empirical time concept retains its importance, in spite of the Minkowski-Einstein conception. Prof. A. Wehnelt gives an account of oxide cathodes and their practical applications, and Dr. G. Heckmann of the lattice theory of solids, dealing with stability and energy relations, mechanics and electrostatics, acoustics, optics, thermodynamics, ionic lattices, atomic and molecular lattices. Dr. I. R. Katz investigates the swelling of such substances as rubber, nitrocellulose, and acetylcellulose, when soaked in certain organic liquids, the process

being studied by X-ray methods. Dr. W. Hanle's article is on the influence of magnetism on resonance fluorescence, *i.e.* fluorescence occurring when the exciting light has the same wave-length as the natural vibration of the atom; and that of Prof. Strömngren deals with the orbit forms in the problem of three bodies.

*A Practical Treatise on Fourier's Theorem and Harmonic Analysis: for Physicists and Engineers.* By Albert Eagle. Pp. xiv + 178. (London: Longmans, Green and Co., 1925.) 9s. net.

HARMONIC analysis appeals both to those interested in the mathematical eccentricities exhibited by Fourier expansions and to those concerned merely with the practical question of analysing empirical data into their constituent harmonics. The present volume, by catering in an interesting manner for the latter class, endeavours at the same time to focus the interest of its members on problems of more theoretical importance. In many respects the treatment is novel, and differs materially from that adopted in text-books of this nature. One is accustomed on picking up a "practical" book on harmonic analysis to find the usual medley of special methods unco-ordinated by any guiding principle for determining the coefficients. While certain of these find their place here, the author has centred a great part of his discussion around the expression for the coefficients in terms of the discontinuities of the function to be analysed and its successive differential coefficients, and on this as a basis he develops a number of elegant and at the same time comparatively accurate approximations to the coefficients. In practice these expressions are in a form suitable for numerical computation.

On the theoretical side, however, the book exhibits weakness in parts. There should scarcely be any necessity in such a work for a special section on the meaning of complex numbers, while the derivation of the power expansions for  $\sin x$  and  $\cos x$  from Demoivre's theorem and the evaluation of  $\int \frac{\sin x}{x} dx$  are splendid examples on how *not* to treat limits. Altogether an interesting and valuable book, though slightly marred in places by elementary weaknesses and an irregular style.

*Guide to Current Official Statistics of the United Kingdom.* Vol. 3 (1924). Pp. 252. (London: H.M. Stationery Office.) 1s. net.

THIS guide consists of three main parts: a numbered list of official publications that contain statistics; a subject-index, giving under each entry the list-number of each publication containing relevant statistics, and some indication of their nature; a key from which the converse may be discovered, namely, the kind of statistics found in each publication. This last is of undoubted value; but we cannot see why the same information should not be more cheaply and conveniently given by adding the page-numbers to which reference is made after each entry in the list of titles, and in saying this we speak from practical experience with a similar publication.

The subject-index, on which the value of such a work depends, has been drawn up with much skill;