

REVIEWS

MARIO BERTONE. *Inventario de los glaciares existentes en la vertiente Argentina entre los paralelos 47° 30' y 51° S. Instituto Nacional del Hielo Continental Patagónico, Publicación No. 3, 1960, 103 p., illus., map.*

In this special paper an effort is made to list pertinent geographical information with respect to location of 356 significant glaciers on the Argentine flanks of the Patagonian Andes between the parallels 47° 30' and 51° 00' S. In addition brief reference is made to the morphological classification of each glacier, its total surface area and the approximate elevation limits of the upper *névé*s as well as the terminus. Brief notation is also made of the current regime of the terminal zone, being cited either as "in advance, in retreat or stationary". Also in some cases a few observations are added to provide information of special or unique significance—i.e. usually concerning unusual morphological characteristics or abnormal regime conditions.

This publication succeeds in accomplishing what the title connotes, by simply listing in inventory fashion the major glaciers in this remote cordilleran region. The emphasis is on those glaciers east of the water divide in the Laguna del Desierto, Lago San Martín, Lago Viedma and Lago Argentino districts. The small amount of additional information under the sub-heading "observations" is too sporadic. But what information is given is often tantalizing and points out the need for a more comprehensive and detailed gazetteer of existing glaciers in this fascinating region.

The special interest of the supplemental observations is illustrated by comments on the main outlet of the southern ice field, the Moreno Glacier, which terminates in an active berg-discharging ice front in Lago Argentino. The author's report reveals that significant changes have taken place since the investigations of R. L. Nichols and the writer in 1949.* Then we reported that the Moreno Glacier in the 1940's was generally in a forward position with minor oscillations, and that on one occasion in that decade its advance had created an ice-dammed lake, Lago Rico, which inundated many miles of grazing land south of Lago Argentino. Now the report is that this terminus has retreated to an equilibrium condition, and that in the upper reaches of the glacier a grand depression has developed, giving the impression that the still vigorous terminal section will eventually separate completely from its ice source. Of course with such information one cannot but wish for further details. This also brings up the desirability of regime estimates, where possible, concerning the total glacier rather than its terminus alone.

Much of the *névé* region of the glaciers, dealt with in this report, was only fifteen years ago marked "*inexplorado*" on existing maps. It is therefore gratifying to see this fine inventory of glaciers now available. This publication serves as a useful example, perhaps to be followed in the other great glacierized cordillera, such as south coastal Alaska, the Himalaya, and even in the glacial regions of the North Atlantic rim or New Zealand. Undoubtedly the greatest value of such an inventory with its cursory set of facts, is in regions where there are large areas where little but reconnaissance glaciology has been accomplished. This is why it is particularly appropriate to the Andes of Argentine Patagonia. For the same reason we look forward to a similar inventory of glaciers along the south Chilean coast, and perhaps in Graham Land as well.

MAYNARD M. MILLER

B. J. MASON. *Clouds, rain and rainmaking*. Cambridge, University Press, 1962. 149 p., illus. 22s. 6d.

THIS neat, admirably written and beautifully produced little book is based on a series of sixteen lectures given to physics students at Imperial College by Professor Mason, from his

* See *Journal of Glaciology*, Vol. 2, No. 11, 1952, p. 41–50. Ed.

newly created Chair of Cloud Physics in the University of London. His larger text (*The physics of clouds*, Oxford, Clarendon Press, 1957) epitomizes the results of the decade of active research to which his elegant experimental techniques have contributed so much, as those who know his papers will acknowledge.

In this concise introduction to the subject we begin with a summary of cloud forms and features. Nuclei of cloud condensation and growth of cloud droplets will attract many who want a summary of progress in recent years. Glaciologists will find the two chapters on the germination and growth of snow crystals, and on snow, rain and hail as precipitation especially interesting, although the emphasis is on events in the atmosphere. Nakaya's work on crystal growth in this field has been extended by Mason and Hallett. Chapters follow on rainmaking experiments and on the electrification of thunderclouds.

Glaciologists who want a compact, up-to-date and readable account can be strongly recommended to this book. Physicists will welcome the descriptions of experimental techniques. The only criticism the reviewer would make is that readers will find it difficult to pick up many of the references, e.g. to Bowen's work in Australia or "the work of the Cambridge school" (p. 118) as there is no full bibliography or list of papers, although a few sources are named in footnotes and captions. Otherwise, an excellent and delightfully compact account.

GORDON MANLEY

ADRIAN E. SCHEIDEGGER. *Principles of geodynamics. Second edition.* Berlin, etc., Springer-Verlag, 1963. xii, 362 p., illus. DM. 49.60. (Distributed in U.S.A. and Canada by Academic Press, Inc., New York.)

THE five years that have passed since the appearance of the first edition of this book (reviewed in the *Journal of Glaciology*, Vol. 3, No. 25, 1959, p. 432-34) have seen a considerable increase in the effort devoted to geophysical research, and this is reflected in an increase in its size from 280 to 362 pages, with a more than proportionate increase in the number of diagrams. The new material, as might be expected, comes mainly from the rapidly expanding field of marine geophysics, although references to all parts of the literature have been brought up to date. As with the first edition, the bibliography includes many papers by Russian and German authors which may be unfamiliar to English-speaking readers, and a book of this kind is all the more valuable for drawing attention to them. This exoticism, however, sometimes leads to the more standard work being given barely adequate treatment (the reviewer finds this true of the section on palaeomagnetism, and specialists in other fields might well make similar complaints) or even to the inclusion (for example, on p. 268) of hypotheses of marginal importance apparently for no other reason than to give the author the pleasure of demolishing them. He would presumably argue that ideas which offend physical laws must be publicly demolished if they are not to be perpetuated, and that those which offend only existing geophysical data should at least be noted in a book of this kind so that they may be reconsidered if the balance of the evidence is changed as further research is carried out.

The new edition has enhanced the value of the book as a review of the subject and as a source of further information. It is to be hoped that Dr. Scheidegger is already collecting material for the third edition that will surely be necessary within the next few years.

R. F. KING

Brekart over Sør-Norge, utarbeidet på grunnlag av flyfotografier (vesentlig fra 1955). Glacier map of southern Norway, compiled from air photographs (mainly from 1955). 1 : 500,000. [Oslo], Norges Vassdrags- og Elektrisitetsvesen, 1963.

Oversikt over breer i Skandinavia. Glaciers in Scandinavia. 1 : 1,600,000. [Oslo], Norges Vassdrags- og Elektrisitetsvesen, Den Hydrologiske Avdeling, 1963.