

Commission on Snow and Ice of the I.U.G.G. to study the variations and mass budget of typical glaciers. Andrews concludes that for the summer of 1959 47·6 per cent of the heat supply came from radiation with sensible heat and latent heat contributing 32·4 and 20·0 per cent respectively. He also concluded that 91·7 per cent of the total heat was used to melt the ice, the remainder being conducted downwards to heat the glacier. The wind strength was found to be very important in the ablation process, especially under foehn-wind conditions. As in the shorter reports, the data are clearly presented and the analysis is clear and to the point.

Dr. Müller and his colleagues are to be congratulated on the great amount of detailed quantitative measurement that they have carried out under trying conditions and also for their successful attempt to convey to their co-workers the essential features of their experience without confusing the issue with irrelevant detail.

GORDON T. WARWICK

HERFRIED BERGER. *Vorgänge und Formen der Nivation in den Alpen: ein Beitrag zur geographischen Schneeforschung*. Klagenfurt, Verlag des Landesmuseums für Kärnten, 1964. 88 p., illus., [20 plates]. (Buchreihe des Landesmuseums für Kärnten, 17. Bd.)

IN comparison with the voluminous literature upon glacial erosion the study of the geomorphological effects of snow has been sadly neglected, though as Costin and others recently pointed out in this *Journal* (Vol. 5, No. 38, 1964, p. 219–28) agreement has not been reached about the ability of snow to erode. Herr Berger has helped to swell this literature with a useful account of the form and mechanism of moving, static and melting snow and of the resulting effects, with special reference to the Austrian Alps, though general considerations predominate over the particular.

Berger classified the alpine snow into five main classes with thirteen subdivisions, based largely upon measurements of the density and porosity and of more general descriptions of the dampness, grain size and hardness. He has proposed conventional signs for each type but does not provide any map showing their use in the field. He also describes the physical processes in some detail before classifying the nivation forms. Some of the classifications are supported by the generalized results of quantitative work. It would appear that the more detailed results are to be published later.

In the morphological section Berger makes a fundamental distinction between the upper and lower zones which merge about 2,400 m. above sea-level. In the upper zone nivation features such as snow basins and niches tend to be more concentrated and to dominate the landscape, whereas below more linear forms prevail and are less dominant features and are more scattered in their distribution.

The author provides a very valuable bibliography of 149 items and the text is illustrated by 14 clear line diagrams and at the end are 31 photographs of somewhat variable quality though most are of considerable scientific interest and a few possess great artistic merit.

Future workers will be indebted to Herr Berger for this introduction to high mountain morphological processes, but not all will agree with his classifications which, to Anglo-American readers at least, appear to be a little too tidy and precise to fit the various gradations which one encounters in the field.

GORDON T. WARWICK