using. But who needs tables such as these nowadays, with desk calculators and computer terminals so thick on the ground? —JTS

Physics of Strength and Plasticity

A. S. Argon, *ed.*
399 pp. MIT Press, Cambridge, Mass., 1969. $12.50

This is a *festschrift* presented to Egon Orowan on the occasion of his retirement from MIT. It contains a speech (in German) on some of Orowan's achievements and 27 scientific papers divided in four groups: "Individual Dislocations and Basic Deformation Mechanisms," "Hardening Mechanisms and Dislocations Dynamics," "Cracks and Fracture," and "Geology;" but I did not attempt to read the geology papers.

The organizers' intention was to produce a "volume summing up the present state of affairs" in the science of strength and plasticity. But the distinguished contributors proved to be too individualistic for this scheme and wrote on particular problems of current interest to them. All the papers are preponderantly theoretical. Perhaps the greatest intrusion of experimental material is found in the article on cleavage initiation in iron by cracking of carbides (Morris Cohen and M. R. Vuckevich) and on crack growth in grooved tensile specimens (F. A. McClintock). The paper on the dynamic behavior of a distribution of dislocation loops (J. C. M. Li) is an example of those almost free of experimental data.

Of the 37 authors, 19 are from US, eight from Great Britain, and the others from Australia, France, Germany, Japan, Norway, Poland and the Union of South Africa. This is a clear proof of the international importance of Orowan's work.

J. J. Bikerman
Shaker Heights, Ohio

Elements of Meteorology

By R. W. Longley
317 pp. Wiley, New York, 1970. $10.95

This book was developed during ten years of teaching undergraduates about weather and climate. It seems to have been written so that nonscience majors interested in meteorology could understand the mathematics and physics without using calculus and vector notation. It is very difficult to write in a simplified way about a subject that involves almost all of the basic principles of classical physics and chemistry in an extremely complicated and complex way. In doing this, it is almost necessary to make small conceptual errors that any expert in the field would notice immediately. This book is no exception.

I feel that it is a good book for nonmeteorologists, nonscience majors or for those only interested in the basics of meteorology. It covers the proper topics and, in fact, I particularly like the chapters on "Weather and Man" and "Climatic Change," which are frequently not included in meteorological texts. However, the important connection between local and "synoptic" meteorology with the general circulation of the atmosphere is inadequately covered. This is reflected in many of the illustrations of meteorological charts, which are presented on a too limited geographical scale for the reader to see the larger, particularly global, interactions of atmospheric parameters. The discussions, involving interactions of a shorter period or smaller scale with the larger-scale circulation, are incomplete and not satisfied by later illustrations of mean hemispheric charts.

In the more basic discussions of meteorological physics I am sometimes puzzled by the organization of the explanatory material. The author will frequently introduce a subject in one chapter and fill out the remainder of the discussion (to the confusion of the reader) later in the book. This ties in with another general comment to the effect that incomplete discussions of subjects, particularly involving meteorological instruments, are given when I would prefer to see the subject material either omitted or a fuller description given.

Most of the discussions that deviate from accepted meteorological theories can be overlooked because of the necessary simplification of the material. However, a few are sufficiently basic that they should be pointed out. On page 43, the 14th line from the bottom is misplaced and should appear as the 12th from the bottom for the statements in this section to have the correct meaning. Figure 4.6 purports to be an illustration of ground fog in the valley. The photograph is evidently misplaced, as shadows appear under clouds that have the appearance of fractocumulus. The coriolis force does not act with sufficient importance in the vortices of an emptying bath tub or even in desert dust devils to control the rotation as stated by the author. The reference that he cites to substantiate his statement that most dust devils rotate cyclonically because of the action of the coriolis force actually assigns to them a roughly equal partition of cyclonic and anticyclonic rotation. Figure 11.13, illustrating the wall cloud of a hurricane, is evidently entered upside down. The discussion on thunderstorm electrification mechanisms on