tionary either for the student or the working mathematician. In its present form it can be of considerable help, but it can hardly be considered authoritative. It is to be hoped that a second edition of increased scope and greater accuracy will be prepared. If the deficiencies of the present edition can be remedied and its good qualities retained, it will be of great value to mathematicians.

R. P. BOAS, JR.

The mathematical theory of plasticity. By R. Hill. Oxford, Clarendon Press, 1950. 10+356 pp. $7.00.

Although it is more than eighty years since the foundations of the theory of plasticity were laid by Tresca, Saint Venant, M. Lévy, and others, plasticity is still a very young science. After a first strong wave of interest (about 1913–1930), work in this field has slowly but steadily increased and recent years have seen a marked upsurge of interest; this can best be illustrated by the fact that in 1950 no fewer than four very serious books on the subject appeared, by A. M. Freudenthal (Wiley), by R. Hill, by A. Nadai (McGraw-Hill), and a comprehensive survey report by P. G. Hodge (Brown University Notes); in 1951 followed a textbook by Prager and Hodge (Wiley). Among those works Freudenthal's book differs from the others by its wider scope; plasticity as understood in the other books forms only a chapter, although one of central importance, in Freudenthal's approach, since his viewpoint is primarily that of a physicist and technologist. Hill's book is an advanced and comprehensive text, intended as an orientation for engineering scientists and applied mathematicians rather than as a textbook for students; on the other hand Hodge and Prager's useful and interesting book is planned for students on an intermediate level.

Hill's important book presents those aspects of plasticity which so far have been more or less "mathematicised"; by this word we mean that a rational theory which forms part of a larger scientific unit (the science of mechanics) is formulated in mathematical terms. This is true in particular for that part of plasticity theory which is known today as the theory of the "ideal" or "perfect" plastic body. Such a body is described mathematically by the system of equations at the basis of the theory. We may, however, point out a few features: (a) The equations deal only with stresses and deformations at a fixed moment; after the whole configuration is determined for an instant the investigation may be repeated if necessary for the next moment; (b) thermal phenomena are disregarded; (c) work hardening and related phenomena are in general neglected, etc.