BOOK REVIEWS

Mechanik der Kontinua. By G. Hamel. Edited by I. Szabo. Stuttgart, Teubner, 1956. 210 pp. DM 29.70.

This is a time of great specialized compendia in the field of mechanics: we mention as examples the two-volume work of more than 1,000 pages on compressible fluid flow edited by Howarth, 1953, the 800 page work on the same subject edited by Sears, 1954, comprehensive monographs on partial topics of the theory of plasticity, and so on.

Here is a book written by a master in the field of mechanics which brings on 200 pages selected topics of the Mechanics of Continua. About half of the book, seven sections, deal with ideal fluid flow (compressible and incompressible), five sections with viscous flow, a last section is on deformable systems in general. The titles of the sections show the variety of subjects: 1. Fundamentals, 2. One-dimensional motion: sound and shock, 3. Potential flow without jets, 4. Plane potential flow with jets, 5. Rotational flow, 6. Two-dimensional steady compressible flow, 7. Potential flow. 8. The Navier Stokes equations, 9. Laminar motions, 10. Exact solutions, 11. Boundary layer theory, 12. Turbulence, 13. Elastic vibrations.

The editor tells us that Hamel's lectures on continuum mechanics were the ones most enjoyed by himself as well as by his students. We feel that the importance of G. Hamel as a great man in mechanics is not so much in this field as in that of the mechanics of a finite number of degrees of freedom, in stereomechanics, and in the fundamentals of mechanics. One can however understand the enthusiasm of students for a presentation which is interesting, original, concentrated without being too difficult, which on the firm basis of unfailing physical understanding handles with ease the necessary mathematics, —going again and again a few steps further than the usual presentations; we mention as one example the chapter on exact solutions of the Navier Stokes equations. On the other hand the author's derivation and discussion of the characteristics in compressible potential flow is almost confusing, and the presentation of plane deformation theory in plasticity seems complicated and not too clear.

These comments are however of minor importance. On the whole the book is stimulating to a high degree, rigourous without being pedantic and it has much to give to the student of mechanics on any level.

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