geographers and travellers have learnt there the practical astronomy necessary to those who explore far from the beaten tracks. One of its features is the absence of any regular classes; those who go there to learn can have a lesson at any time and the lesson is made to suit the special needs of the pupil. The last two articles are obituary notices of M. Loewy by H. Poincaré; and of C. Trépied by M. Loewy, written shortly before the sudden death of the latter.

ERNEST W. BROWN.

Die Zustandsgleichung der Gase und Flüssigkeiten und die Kontinuitätstheorie. Von J. P. KUENEN. Braunschweig, Vieweg und Sohn, 1907. x + 241 pp.

KUENEN'S volume on the equation of state of gases and fluids is one of the twenty monographs already printed by Vieweg and Son under the general title "Die Wissenschaft." It must be obvious to all that the subject of this particular volume is one which lends itself well to treatment in a separate monograph. The main outlines of the theory of corresponding states are given in many books, and no book which has to do with gases or fluids can get on without the equation of state; but the details of those theories and their agreement or disagreement with the results of the hundreds of experiments which have been performed since they were broached are not to be found collected in general texts and require for their satisfactory treatment a monograph like this.

The first five chapters, of about ten pages each, may be said to be of a heuristic and qualitative nature. The author traces the history of the rise of observations on the phenomena of condensation and on the existence of some principle of continuity between the different states of matter. He touches upon the kinetic theory sufficiently to show the justification of Boyle's law from that point of view and to indicate how van der Waals was led to his equation. After obtaining that equation, the author goes on to a careful explanation of phenomena of condensation and of the principle of continuity from the basis furnished by the equation. At about this point there begin to appear numerous evidences of the great care with which matters are to be set forth in their true light, and of the conscientious criticism with which the author is to expound the relation between experiment and theory. For instance, it is pointed out that although van der Waals's equation may be de-