be preferable. In so far as a reference table for formulas expedites a student's work, it is good; but if it leads him away from using the small amount of memory and common sense requisite for remembering most of the very simple and fundamental formulas here given, it is not good.

E. B. WILSON.

Gravitation. By FRANK HARRIS. London, Longmans, Green and Company, 1912. xi + 107 pp.

WHEN sending for this book, we hoped to find in it an account of past and present speculation concerning gravitation—especially in view of the recent active discussion under the lead of Einstein; we find, however, an independent theory of the hydrodynamic type with apparently no reference to the numerous prior authors who have tried to give a similar explanation of gravitational or electric phenomena. With picturesque language, guided by an entertaining philosophy, and frequently plodding through tedious approximations (the details of which we have not checked), the author discusses the mutual forces developed by two equal solid spheres moving in a perfect fluid with uniform velocity on the line joining their centers or in the line perpendicular thereto. A more general problem than this is far better treated by Lamb in his Hydrodynamics (arts. 97, 98, 136 of the second edition) with references to a fuller treatment.

Harris also treats sources and sinks and undertakes to make clear what is meant by the "cruelly ill-used" expression potential energy. In the last chapter of the work he argues for a higher dimensionality for space, accompanied by an extreme and progressive anisotropy in so far as the distribution of matter is concerned. Indeed our material universe now lies chiefly in the galactic plane, and is supposed to have become so completely three-dimensional that our sense of higher dimensions is atrophied (if it ever existed). These speculations may be interesting; but, unless supplied with more through analysis, they must be questioned.

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