

THE MECHANICS OF THE ATMOSPHERE.

The Mechanics of the Earth's Atmosphere. A collection of Translations. By CLEVELAND ABBE. City of Washington: published by the Smithsonian Institution, 1891. 8vo, pp. 324.

THE student who in these days sets out to explore any field of mathematical physics, with a view to extending its boundaries, assumes an arduous task. He must, in the first place, become familiar with a certain number of facts, or phenomena, which constitute the basis of his science. He must then learn how these facts are expressed in mathematical symbols, and along what lines the processes of deduction may be applied. This introduction to the mere elements of the science will often find him deficient in some branch of analysis, to which reference must be had before intelligent progress can begin. When this deficiency is supplied, new difficulties are almost certain to arise in the novelty of the conceptions required and in the complexity of the specifications needed for generality. Sooner or later in the course of his studies he learns that the beginnings of the science, as well as the latest conclusions concerning it, are to be found in certain original memoirs. The mere number and volume of these are generally appalling enough. But additional difficulties are commonly met in the fact that they are published in several languages and bound up in the bulky transactions of learned societies. To reach and appreciate them, the student must have access to one or more of the great libraries, and possess at least a reading knowledge of two or three foreign languages. But the obstacles he must encounter and overcome do not end here. He will find that the field of his special science joins on or laps over the boundaries of other sciences, so that he must trace out and define numerous analogies and finally end with a pretty thorough knowledge of several sciences before he is competent to advance any one. The time and energy required to attain this preliminary equipment are very great, and those who do not possess special facilities, along with exceptional talents and unflagging industry, can hardly hope to rise above the plane of mediocrity.

In view of these obstacles in the way of all but the most favored students, we must welcome every effort which seeks the unification and simplification of allied sciences or renders the sources of knowledge concerning them more accessible. Most noteworthy and commendable in the latter regard are the pains recently taken by the French government to republish in collected form the works of Lagrange, Laplace, Fourier, Cauchy, etc., thus enabling the student to place himself in