

July twenty-eighth, eighteen hundred and sixty-six, shall be the tables of equivalents which may be lawfully used for computing, determining, and expressing in customary weights and measures the weights and measures of the metric system."

#### IMPROVED BLACKBOARD.

EDITOR OF SCIENCE: Several persons have enquired about the blackboard mentioned in your columns recently. May I describe it briefly: A sheet of ground glass a meter square is framed and the frame is hinged into a very shallow cupboard fastened to the wall. A false bottom covered with padded serge fits this cupboard loosely, and when the door is closed and fastened presses firmly against the glass on the inside. It then forms a fine blackboard as the ground glass surface is perfect for use with crayons.

If the door be opened and a sheet of white paper fastened to the false bottom by thumb tacks, it becomes an equally useful drawing slate for colored crayons. If in the place of the white paper a sheet of drawings as of crystal forms or geometrical figures, or outline maps be put behind the glass they show through so that all modifications of the primary form beneath can be drawn on the glass and in proper relation to this primary. It is only needful that the false bottom shall press firmly against the glass, and this is easily effected by having it held in place by four screws placed near the corners whose heads are countersunk in the false bottom. The latter moves freely on these screws and four spiral springs which are slid on the screws behind it press the serge firmly against the glass.

BEN. K. EMERSON.

AMHERST, MASS., January 14, 1896.

#### SCIENTIFIC LITERATURE.

*Elementary Physical Geography.* By RALPH S. TARR. 12 mo., pp. 1-xxxl., 1-488, 29 plates and charts, 267 diagrams and photographs. Macmillan & Co. 1895. Price \$1.40.

Physical geography is no longer a mere description of the earth's surface, but includes also an enquiry as to how its features came to be what they are. The recent ideas that have vivified this study and placed it on a scientific

basis may be seen by contrasting the writings of Ritter, Humboldt, Guyot and others of what may in all courtesy be termed the old school, with the book before us. In the older books, which are by many persons still considered fountains of geographical knowledge, the leading theme is the description of the earth; in Tarr's physical geography the dominant idea is how the features of the earth came to have their present characteristics.

In descriptive physical geography the continents are sometimes treated as fragments of broken china, which, by the exercise of much ingenuity and an active imagination, are made to fit together with more or less accuracy, thus leading the student to fancy that at one time they were united. In rational physical geography each continent is shown to have a life history, and to have been modified by elevation and subsidence, and varied in relief by erosion and sedimentation. In the modern view of nature even the largest of land masses are found to be unstable forms; the processes to which they owe their elevation above the sea, as well as their outlines and relief, are still active, and additional changes are to come. Mountains are no longer to be studied as finished forms, but as representing all stages of growth, adolescence, maturity and old age. River valleys are not merely drainage canals, the lengths and breadths of which are to be memorized, but each one has a history written in its terraces and flood plains, in which evidences of elevation and depression of the land, climatic changes, the influence of rock structure, etc., can be read.

The modern ideas referred to, which, so to speak, have blown away the mist from the landscape and revealed its varied beauties, are truthfully reflected in the book before us. One who is familiar with the progress of geological study in America sees, as he turns its pages, an epitome of the results brought by many conscientious workers from the mountains and valleys, with much labor and thought. Most of all, it is flavored with the studies of Prof. Davis, of Harvard, in whose class room and from whose writings Prof. Tarr has gained much of his inspiration. The great sources both of facts and ideas, as must of necessity be the case in