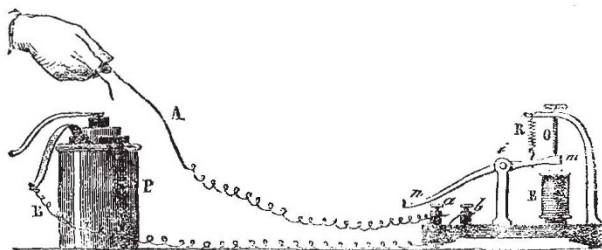
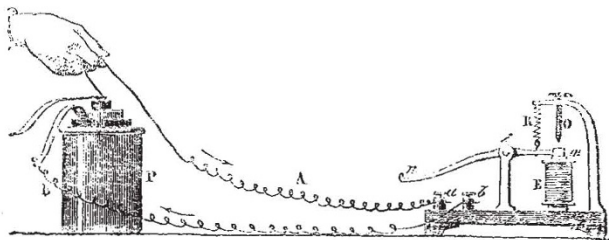


of the aurora borealis hardly deserves such a favourable criticism.

As usual with almost all treatises on Natural Philosophy, we have to find fault with the character of the very few remarks which are devoted to terrestrial magnetism; but we know of no elementary book which deals with that very interesting subject sufficiently, and of hardly any which deal with it correctly.



The explanation of the principle of the telegraph is very lucid, and the diagrams connected therewith are exceedingly well adapted for enabling the learner to grasp the principle. The accompanying pair of diagrams in illustration of the principle of Morse's Telegraph leave hardly any verbal explanation necessary.



Diagrams of a self-explanatory character, and which, to a certain extent, stand in place of words, form a very useful feature in an educational text-book.

JAS. STUART

OUR BOOK SHELF

Jahrbuch der kaiserlich-königlichen geologischen Reichsanstalt. No. 1, 1872. Band xxii. (Wien.)

THIS part of the Year-book contains three papers devoted to the mining industries of Austria. In one of these—"On the Future of Mining in Austria," by Constantin Freih. v. Beust, we have concise and interesting sketches of the several mineral-bearing regions of Bohemia and Moravia, as also of the various rock formations of the Alpine districts which are metalliferous. The author comes to the conclusion that mining in Austria is capable of vast development, there being goodly stores of silver, lead, zinc, iron pyrites, and even perhaps of gold, which only require energy and enterprise to win them. The same writer contributes a second paper, "On the Direction of the principal Veins in the non-Hungarian Lands of the Austro-Hungarian Monarchy." Franz Ritter v. Hauer also gives some account of the ironstones worked by the Styrian Iron Company near Eisenerz. Dr. Emil Tietze has a long and able memoir on the geology and palaeontology of the southern regions of the Banat moun-

tains (Hungary). The descriptions of cretaceous and liassic fossils, many of which are of species new to science, and the illustrative plates that accompany the memoir, are well worthy the attention of palaeontologists. In the *Mineralogische Mittheilungen*, edited by Prof. Tschermak, we have, amongst a number of other papers, one by Prof. Inostranzeff of Petersburg, giving the results of his examination of certain limestones and dolomites as bearing on questions of metamorphism. Prof. A. Exner, of Vienna, also contributes a "Chemical Examination of the Meteorites of Gopelpur." Other papers by M. Websky, A. Brezina, and F. Babanek, on mineralogical subjects, will serve to sustain the reputation acquired by our German friends in a department of science which has far too few volaries in this country.

The Metric System of Weights and Measures: an Address delivered before the Convocation of the University of the State of New York, at Albany, August 1, 1871. By Frederick A. P. Barnard, S.T.D., LL.D., President of Columbia College, New York City, &c. (New York, 1872.)

PRINCIPAL BARNARD was appointed, in 1871, by the Trustees of the University of the State of New York to attend a meeting of the Convocation of that University, who were adverse to the introduction of the Metric System, and to enlighten them as to its real nature, and the immense advantages that would flow from its adoption. He seems to have performed his duty with great ability, and we hope with equal success. This volume contains a revised edition of that address, with considerable additions in the form of notes and appendices. Principal Barnard gives a very lucid account of the origin and nature of the metric system, narrating the recent progress of meteorological reform, and answering with what appears to us unassailable arguments the objections commonly urged to its universal introduction into all civilised communities. One appendix contains a long, interesting and useful dissertation on the Unification of Moneys, with some well-arranged information on what has already been prepared and done. In another appendix he describes and discusses the various experiments which have been made to fix on a standard for measures of capacity. His third appendix is on the legislation of Great Britain and of British India in regard to the metric system; and his last appendix contains some very interesting, and what many will deem astonishing, statistics on the extent to which the system has been already adopted. From this we learn that France, Spain, Holland, Belgium (and their colonies), Portugal, Italy, the North German Confederation, Greece, Roumania, British India, and nearly the whole of the countries of Central and South America, have adopted the metric system in full; they represent a population of 336,419,595. Wurtemberg, Bavaria, Baden, Hesse, Switzerland, Denmark, Austria, and Turkey, representing a population of 84,039,209, have adopted metric values; while in Great Britain and the United States, containing a population of 70,373,091, the system is still permissive. In Sweden and Norway (population in 1867 5,897,159) the decimal division has been adopted without the metric values. Thus the peoples already decidedly enlisted on the side of the system include a total population of about 420,000,000. This looks hopeful, and there seems no doubt that this rational system of weights and measures will ere long be universally adopted. One very remarkable fact the author mentions in confirmation of this. At the close of last century, the simple measure of length called the foot had not less than *sixty* different values—probably many more—actually in use in different parts of Europe; in 1867, there could be found only *eight* of this discordant class surviving. We would recommend Dr. Barnard's book to all who wish to possess a clear and intelligible account of the system and its many advantages within a moderate compass.