as far as Hungary was concerned, by Guido Schenzl. On account of the slow, so-called *secular changes*, whereby the distribution of terrestrial magnetism is forever changing its present aspect, it becomes essential to repeat such surveys from time to time. We are thus enabled to follow empirically, at least, the *modus operandi* of that occult, elusive force—the cause of the secular variation of terrestrial magnetism.

Other reasons make it desirable to repeat and amplify former surveys. Not only are our present methods of observations more refined, but experience has repeatedly taught that a magnetic chart based upon a few isolated observations gives but a very crude picture of the actual distribution of magnetism within the earth's crust. The complexity of the picture or the irregularity of the representative distribution curves furnishes, generally speaking, the truest index of the thoroughness of the underlying survey.

The first part of the report before us, of which the second is to appear later, is devoted to the publication and reduction of the observations made in Austria by Dr. Liznar, under the auspices of the Vienna Academy of Sciences. On pp. 230 and 231 is given in alphabetical order the 109 observation stations, together with their geographical positions and the observed magnetic elements reduced to the epoch 1890.0. The intensities (horizontal and total) are given to four decimals in mm. mg. s. units—a simple division by 10 will reduce to c. g. s. units.

The discussion of the results and the delineation by charts of the magnetic distribution are reserved for the second part, which is also to contain the observations made by previous agreement during the same time interval along the Adriatic coast by the Hydrographic office of Pola, and in Hungary by the Central Meteorological and Magnetic Institute of Budapest. Great care was taken that observations thus made under different auspices should be strictly comparable. Frequent inter-comparisons of the instruments used were made by selecting common observing stations, as also were the instruments compared with those at the Central Institute.

Two points are suggested by this report, the

first of which may perhaps appear trivial, but from which we, nevertheless, might draw a useful lesson. This report, like many others of a scientific character, received from abroad is above all *well printed*, a fact which is not characteristic of some of our scientific government publications, whose typographical execution in several notable instances has been abominable. We believe that what is worth doing at all is not alone worth doing well, but also *printing well*. Too often the character of the contents is judged by the external appearance.

The second point suggested is the great desirability of a detailed magnetic survey of our own confines. Our Coast and Geodetic Survey is doing excellent work in this direction, but the comparatively few observations, if you consider the territorial extent involved, it can make with all its manifold other duties, are wholly inadequate for a fairly accurate representation of terrestrial magnetic distribution in the United States. How fraught with problems of the most interesting and suggestive character a *detailed* magnetic survey can present to the physicist and to the geologist has been clearly shown by the Rücker and Thorpe minute magnetic survey of Great Britain.

At the present time when many of the European governments have either just carried out detailed surveys or are about to do so, it behooves us to fall in line. But *one* State of the Union has received the distinction of having a fairly complete magnetic survey made of it, and this was due to the *private* enterprise and enthusiasm of Prof. Francis E. Nipher, of Washington University, St. Louis. Good work has also been accomplished in this direction by the geologists in New York, New Jersey and Pennsylvania. It is firmly believed that more of such detail work will redound to the benefit of geology and of geomagnetism.

L. A. B.

Tables for the Determination of Common Minerals.

By PROF. W. O. CROSBY, of the Mass. Inst. of Technology.

This book, the third edition of which has just been published (1895), is a very carefully prepared scheme for the determination of about two hundred and twenty-five of the more com-

mon mineral species, chiefly by means of their physical properties with confirmatory chemical tests. A special feature is the addition of a supplemental table for the determination of one hundred of the rarer minerals, thus avoiding for the student the unnecessary use of a large cumbersome scheme, and at the same time reducing to a minimum the chances of meeting a mineral not contained in the Tables.

The general idea of the scheme is to make two grand divisions into the minerals *with* and the minerals *without metallic lustre*. The minerals having *metallic lustre* being further sub-divided into groups by their *color* and approximate *hardness*. The minerals with *non-metallic lustre* being grouped by color of *streak*, approximate *hardness*, *specific gravity* and general structure.

These Tables carry out the idea that a scheme is the *better*, the more closely it tends to facilitate recognition of minerals at sight by their structural and physical characters. For this reason chemical tests are only used as confirmatory and are made as simple as possible, so as to put them within the reach of persons having only a blowpipe outfit. Schemes of this character can be used with great success by students who are more or less proficient in mineralogy, and who have been carefully trained in observation. One part of the scheme that might give trouble to beginners is the required determination of the specific gravity of the non-metallic minerals. A determination for which special apparatus is needed and which is generally more or less difficult. Schemes for the non-metallic minerals based on fusibility and solubility, especially when dealing with massive minerals, may give more general satisfaction when used by beginners.

The introductory part includes a detailed description of the morphological, physical and chemical properties of minerals, and a short explanation of the blowpipe tests made use of in the Tables. A simple and inexpensive form of specific gravity apparatus is also described. A list is furnished the student of fifty of the common minerals, giving very characteristic tests and most useful in commencing a course of determinative mineralogy.

A very convenient chapter is that on 'How to use the Tables.' Here the structural, physi-

cal and chemical properties of several minerals are given, and the student is taken, step by step, by reference to page, etc., through the actual determination or confirmation of the mineral. A great advantage in this scheme is having the general synopsis all contained on one page, after reference to which it is generally possible to turn immediately to the part of the Tables needed for the determination of the special mineral in question.

The separation of the scale of hardness into five divisions instead of ten also has its advantages, as it makes possible the use of the Tables when only an approximate determination of the hardness has been made.

After each mineral species in the Tables a number, in parenthesis, is given, which refers to the synopsis of classification where at a glance the general relation of the special mineral to the rest of the mineral kingdom is given.

At the end of the Tables a very convenient index of mineral names and synonyms is found.

LEA MCL. LUQUER.

Fauna fossil de la Sierra de Catorce, en San Luis Potosi. AGUILERA Y DEL CASTILLO. Boletín de la Comisión Geológica de México. No. 1, México. 1895. Pp. 55, plates xxiv.

In this publication, the authors confirm the existence of the Jurassic System in México. They note that the formation has a vast extent, greater than is commonly believed, partly for the reason that the localities are widely separated and difficult of access. The fossils also are scarce and not well preserved. Another circumstance which appears to be unfavorable to the recognition of the system is its gradual passage into the overlying Cretaceous. This transition zone is barren of fossils or at best contains forms which are of difficult interpretation. The Jurassic rocks belong mostly to the upper division, but localities exist in which strata are found representing the middle and lower members. Some authors, deceived by the resemblance of the Cretaceous limestones to those of the Jura, have referred these deposits to the Jurassic, but our authors have referred them on the evidence of their contained fossils to the Cretaceous on the geological map of the Republic.