here the confirmatory evidence of moraines is wanting. Remembering that the 'absence of moraines' was one of the arguments against the glacial theory but a few decades ago, this map is very edifying.

THE URAL MOUNTAINS.

ONE of the first contributions to our scientific literature resulting from the International Geological Congress in Russia last summer is by Dr. Persifor Frazer on a ' Geological Section from Moscow to Siberia and Return ' (Proc. Acad. Nat. Sci., Phila., 1897, 405–457), in which some interesting geographical features of the Ural mountains are set forth. Approaching this range from the west, there is nowhere presented a bold rugged landscape like that of the Alps or the Caucasus ; a gradual ascent leads across the disturbed ancient rocks, generally striking north and south, to the divide ; then a moderate descent leads to a lower and open plain, although the disturbance of the rocks continues in full force. Karpinsky is quoted as writing of this plain that, " although its geological structure corresponds with a very complex mountain region, the greater part of it presents an area so flat that the relief is less accidented than that of most of the plains of European Russia;" and the removal of the former mountains is ascribed by the Russian geologist to abrasion by a Tertiary sea, whose sediments stretch into Siberia. From the divide one may look westward and see the ridges separated by longitudinal strike valleys, whose outlet is through transverse gorges to the Russian plains ; to the east, one looks across the old mountain plain toward the boundless, lake-dotted steppes of Siberia. Deep lakes, with ragged shores and many islands, as well as numerous swamps, abound on the old mountain plain ; their drainage is eastward by streams that have cut gorges in their middle course and opened broad-floored valleys farther forward. In the absence of all evidence of glacial action, several hypotheses are offered to account for the lakes.

W. M. DAVIS.

NOTES ON INORGANIC CHEMISTRY.

IN the *Proceedings* of the Chemical Society (London) T. C. Porter has a note on the volatility of sulfur. When heated to 100° in a vacuum tube sulfur sublimes with some degree of rapidity, the sublimate consisting of very pale yellow drops, which remain unchanged for several days ; at ordinary temperatures even in a good vacuum there is no perceptible sublimate, even in the course of a year. In commenting on the paper Professor Dewar said that if the vacua are cooled with liquid air or oxygen a visible distillation of sulfur takes place even at ordinary temperatures.

AT the meeting recorded in the above *Proceedings* Professor Bohnslav Brauner, of Prague, was present for the purpose of reading four papers on the chemistry of the rare earths. The first two papers were on thorium, describing his method of purification as ammonium thoroxalate, and atomic weight determinations leading to the figure 232.42 ; agreeing with the work of Krüss and Nilson (232.45), but lower than that of Cleve (234.5). The third paper was on the compound nature of cerium, in which the author holds that some unknown element, of lower atomic weight (perhaps about 110) and with no characteristic spark spectrum, is present in the cerium from cerite. The last paper on praseodymium and neodymium is chiefly a study of the compounds of praseodymium. From experiments to determine whether the higher oxid PrO_2 belongs to the type of PbO_2 or BaO_2 the author concludes that it is " an oxid of a new kind, belonging simultaneously to the ozonic oxids of the water type, and to the antozonic oxids of the hydrogen peroxid type ; it is, in fact, the

missing link between these two hitherto entirely different types of peroxids, its active oxygen being at the same time both entirely ozonic and entirely antozonic." He believes both praseodymium and neodymium may be further split up and will give when pure for their highest oxids the formulæ Pr_2O_5 and Nd_2O_6; hence, he would arrange the eighth series of the periodic system as follows :

I.	II.	III.	IV.	V.	VI.
Cs	Ba	La	Ce	Pr	Nd
133	137.4	138.2	139.7	141	143.6

Some months ago a petition, signed by several hundred members of the Chemical Society (London), was presented to the Council, asking for an amendment to the By-Laws so that members could vote for the officers at the annual meeting by proxy or by mail. As the number of members who can be present at this meeting is not large, a comparatively small proportion of the total membership practically controls the offices. The Council declined to take any action owing to the fact that such a By-Law would conflict with the charter. An effort was then made to have the Council seek an amendment to the charter, which was declined. A petition was then presented to have the Council take action to obtain the views of the members by taking a mail vote on the question : " Are you in favor of the proposal that a supplemental charter should be applied for to the Privy Council so as to enable Fellows to vote at the annual election of the officers by post or proxy?" This also the Council declines to do. The desire of the petitioners is so manifestly just that it is hardly probable the matter will be allowed to rest at this point, but it is to be greatly hoped that the usefulness of the Society will not be impaired by dissensions.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

THE CHICAGO SECTION OF THE AMERICAN MATHEMATICAL SOCIETY.

THE third regular semi-annual meeting of the Chicago Section of the American Mathematical Society was held at the University of Chicago, on Saturday, April 9, 1898, with the following program :

1. A triangle related to Nagel's triangle. PROFESSOR ROBERT J. ALEY, Indiana University.

2. The ellipsograph of Proclus and its inverse (illustrated by models). DR. E. M. BLAKE, Purdue University.

3. The structure of the hypo-abelian groups. DR. L. E. DICKSON, University of California.

4. I. Quaternion notes. II. Introduction to the theory of functions of a quaternion or a vector variable. DR. SHUNKICHI KIMURA, Sendai, Japan.

5. On the most general form of the inner potential consistent with the complete integration of the differential equations of motion of a free system of two bodies. DR. KURT LAVES, the University of Chicago.

6. Concerning the case where a linear substitution group of finite order in n variables breaks up into groups in a lower number of variables. ASSOCIATE PROFESSOR H. MASCHKE, the University of Chicago.

7. On the roots of a determinantal equation. PROFESSOR W. H. METZLER, Syracuse University.

8. A two-parameter class of solvable quintics in which the rational relations amongst the roots by threes are independent of the parameters (preliminary communication). HEAD PROFESSOR E. H. MOORE, the University of Chicago.

9. Dual algebras. PROFESSOR JAMES BYRNIE SHAW, Illinois College.

At the opening of the afternoon session, in response to the invitation of the program committee, Professor Michelson, of the University Chicago, made a very interesting exhibition of the theory and of the workings of the new ‘ Harmonic Analyser ’ to the members of the Society.

PROPERTIES OF THE X-RAYS.

PROFESSOR RÖNTGEN has made to the Berlin Academy of Sciences a third communication on the X-rays. A summary in the *Electrical World* states that if an opaque plate is placed between the tubes and the screen, covering the whole of the latter, some fluorescence will still be seen even when the plate is directly on the screen ;