SCIENCE:

A WEEKLY RECORD OF SCIENTIFIC PROGRESS.

JOHN MICHELS, Editor.

PUBLISHED AT

229 BROADWAY, NEW YORK

P. O. Box 3838.

SATURDAY, NOVEMBER 6, 1880.

DURING the year 1877 the Microscopical Section of the Indianapolis Lyceum of Natural History addressed a letter to the various Microscopical Societies throughout the United States, requesting expressions of their views touching the desirableness of a National Convention of the microscopists of the country, for the purpose of taking the necessary steps to form a National Association for the promotion of the progress of microscopical science, and for the benefit and advantage of all concerned therein.

Favorable replies having been received, THE NATIONAL MICROSCOPICAL CONGRESS, pursuant to a call, met at the Court house of Indianapolis, Indiana, on the 14th of August, 1878.

At this convention nearly fifty gentlemen, representing the Microscopical Societies of the United States, decided by a resolution, unanimously passed, that "IT IS DESIRABLE TO HAVE A NATIONAL ORGANIZATION FOR THE PROMOTION OF MICROSCOPICAL SCIENCE."

Thus THE AMERICAN SOCIETY OF MICROSCOPISTS was called into life, under the presidency of Dr. R. H. Ward, of Troy, N. Y. It met a second time at Buffalo, N. Y., on the 14th of August, 1879, and thirdly at Detroit, Michigan, on the 21st of August last.

It may be possible that the expectations of some persons in regard to the useful results of this Society have not been fulfilled; if such a feeling exists, we are not aware of its having been expressed; for our part we congratulate THE AMERICAN SOCIETY OF MICROSCOPISTS upon the results so far obtained, and feel sanguine for the good work it may accomplish in the future.

The address of the first president, Dr. R. H. Ward, was a model of its kind. The long extract we gave from it in "SCIENCE" for July 31, last, under the title of a "Plea for the Metric System in Microscopy," showed the master hand of an accomplished writer and earnest worker.

Dr. Ward's address was of a most practical nature, and well adapted to inspire enthusiasm; he dwelt upon the many instances in which the value of the microscope had been demonstrated, and recalled the many fields for microscopical work still fully open and recognized, but yet unoccupied, and concluded by showing that microscopical study might be made not only a source of pleasure to ourselves, but an effective aid to science and humanity.

The third annual meeting of this Society held under the Presidency of Professor H. L. Smith, of Geneva, N. Y., was fully reported in this journal on the 25th of September last.

As a professional microscopist Professor H. L. Smith, the second President, has so distinguished himself, that his reputation as an authority on the Diatomaceæ and other allied forms, is not confined to this continent, but acknowledged wherever such studies are intelligently pursued.

On referring to our report we find that Professor Smith congratulated the Society on its progress, and the meeting adjourned hopefully, after having elected as President for the new year Mr. J. D. Hyatt, of our city, a gentleman eminently qualified to occupy the chair of his predecessor.

Such being the history and present standing of THE AMERICAN SOCIETY OF MICROSCOPISTS, we notice with some surprise that the editor of the *American Monthly Microscopical Journal*, in his issue for September last, makes a proposition, to give this Society a *coup de grace*, by proposing that the Society shall disorganize, and its members join the Association for the Advancement of Science.

The reasons for such action are stated to be as follows: 1. The Society has not received the support of microscopists. 2. The officers of the Society have been inexperienced men, who have not directed it properly. 3. A supposed necessity created by the writer, that this Society must meet at the same place and time as the A. A. A. S., it being then infered that as the latter Society has a *subsection* of microscopy, there arises the difficulty of having two meetings on the same subject simultaneously; therefore one should be abandoned, the preference being given to the American Society of Microscopists for such act of self-sacrifice. 4. Can the American Society of Microscopists show any reason why it should exist? If it cannot, the inference is obvious.

This question having been raised in a journal devoted to microscopy, and by a gentleman who formed one of the original Committee of Organization, it appears only courteous to the writer, to direct the atten-

tion of microscopists to the subject. We suggest that they should give some expression of opinion, if they desire the integrity of this Society. For ourselves, we shall strongly support the maintenance of the American Society of Microscopists, on account of our decided faith in its usefulness, and necessity for its existence, and for the reason also, that no real cause has been shown for its disbandment.

Taking the charges of the editor of the *American Monthly Microscopical Journal* in the order presented, we would say: 1st. That we have the authority of the late President, Professor H. L. Smith, that the Society *has* received sufficient support to make it a success. 2d. That the Society has been unexceptionally fortunate in the selection of officers, that they have proved themselves to be experienced men, and *have* "directed properly." 3d. That the Society does not deem it necessary to meet in conjunction with the A. A. A. S., and has voted down all resolutions for so doing. The assertion to the contrary is therefore perfectly gratuitous, and the fact that those who propose it, also made it a reason for breaking up the Society, has the appearance of a desire to lead the Society to such an end. 4th. The demand made upon the Society by one of its members, to show cause why it should exist, appears slightly presumptuous and ill-timed. As a suggestion *before* the establishment of the society it might have had some weight, but after the third annual meeting, and the congratulations of its President on its success, the proposition is unseasonable. We would remind the editor of the *American Monthly Microscopical Journal*, when he challenges the American Society of Microscopists to show the *raisen d'etre* for its existence, that fifty delegates, representing the microscopists of the United States, in his presence passed a resolution in the following words: "*We think it desirable to have a National Organization for the promotion of Microscopical Science.*" We consider this a conclusive answer to the present querest, and to all others who in future raise such a question.

The article we have referred to states, that "if the American Society of Microscopists does not decide to meet next year in convention with the A. A. A. S., at Cincinnati, *that the next meeting will be its last.*" As the writer also states, that if it does so meet, the necessity will arise for it to be "disorganized," and as one of these alternatives is inevitable, the fate of the society would appear to be sealed.

As we believe these difficulties to be purely imaginary, we are ready to grant the American Society of Microscopists a long term of existence, and a future of utility and progress. If any of our readers are of a contrary opinion, our columns are open for an expression of their views.

LAW ACCORDING TO WHICH THE METALS, AND THEIR ORES, CAME TO, OR NEAR TO, THE SURFACE OF THE EARTH.

By Prof. Richard Owen, M.D., LL.D.

In the abstract of a paper read before the A. A. A. S., which appeared in the issue of "Science" for September 25, 1880, allusion was made, in the closing paragraph, to the connection between the law of land-forming and that of metallic development.

We might reasonably expect that the metals requiring temperatures from 2000 degrees to over 2500 degrees F. to melt them (such as iron and gold) would be the first to solidify, as our earth cooled; and therefore more likely to exist among older rocks than such metals as zinc, lead[1] and tin, which melt at a comparatively low temperature; and consequently could not become solid until the earth's crust had cooled to 773 degrees, 612 degrees, and 442 degrees, the melting points respectively of these metals. Such we find to be the fact. Furthermore, Faraday demonstrated that all substances, when suspended freely between the jaws of a powerful horseshoe magnet, would place themselves either *paramagnetically*, the same as iron and some other metals, or *diamagnetically*, the same as bismuth and numerous other bodies; and the magnetism developed, for the time being, in that horseshoe magnet, may be, and often is, produced by powerful currents of electricity.

It has been proved that there are constantly currents of electricity passing in the earth's crust, chiefly in an opposite direction from the earth's revolution, perhaps therefore operating mainly in causing a freely suspended needle to place itself at right angles to the plane of those so-called currents.

It seems therefore, further, not unreasonable to expect that metals, when about to solidify, if free to permeate cavities in all directions, should assume, relatively to these currents of electricity, respectively either a paramagnetic or a diamagnetic position. Such seems in reality to have been the case: Iron, manganese, platinum, nickel, cobalt (and probably other paramagnetic bodies, but time has not permitted this latter investigation) will be found chiefly occupying north and south belts, corresponding pretty generally with meridians, while gold, silver, copper, tin, lead, zinc, antimony, bismuth and other diamagnetic bodies will be found in east and west belts, sometimes on regular parallels, of which the terrestrial north pole is the centre, sometimes in east and west curves, having one or other of the Continental foci (pointed out in the law of land-forming) as their centre. The apparent law, then, briefly formulated, may be thus expressed:

The paramagnetic metals, in consolidating, arranged themselves along north and south belts, usually near the median line of each Continent, and are found in older rocks as well as newer. Diamagnetic metals are most commonly to be found in belts, not necessarily continuous, but running more or less east and west, and except perhaps in the case of gold, silver and cop-

[1] Although lead is found sometimes in silurian and carboniferous rocks, yet Dr. Dana shows (at page 148 of his Manual of Mineralogy) that such is not its true age. Speaking of Galena, he says: "In Derbyshire, England, the deposits contain fossils of permian rocks, showing that, although occurring in subcarboniferous limestone, they were much later in origin."