

many endemic species. Tree ferns begin at 1,500 feet elevation, but they are much more abundant at 3,500 feet, the highest point reached by the expedition. There are no roads in the interior, only uncared for bridle trails, and there are absolutely no bridges. One stream was forded sixteen times in a distance of twelve miles. A thousand numbers of herbarium material were secured besides living plants and wood specimens.

Dr. Howe spoke of two months spent in Porto Rico collecting marine algæ. He found the species fairly numerous, but on the whole the marine vegetation was less striking and luxuriant than on some of the Florida keys. He visited the north, west and south sides of the island, but found less difference in their algal flora than he had expected. Nine hundred numbers were taken, but so far most of the material is unstudied.

Dr. Murrill reported on his visits to various European herbaria for the purpose of studying types of the species of the Polyporaceæ. Upsala, Berlin, Kew and Paris were visited and some time was spent in field work with Bresadola in the mountains of the Tyrol. Interesting comments were made on the different herbaria and the men who made or are now working with them.

Professor Underwood called attention to the fact that the different expeditions from the botanical garden during the past year had brought back fully 10,000 numbers of herbarium material from the West Indies.

Dr. Britton spoke of the recent death, after a long and painful illness, of Mr. Cornelius Van Brunt, who was one of the oldest members of the club. His work in the photographing of plants was unique, and he leaves a collection of over 10,000 studies on glass. He had done much in devising special lenses and appliances for this special work and his knowledge of photographic technique was remarkable. His earlier studies were with the diatoms, but failing eyesight prevented his work with the microscope and he turned to photography instead. Data are being gathered for a more extended notice of his life.

F. S. EARLE,
Secretary.

NEW YORK ACADEMY OF SCIENCES.

SECTION OF GEOLOGY AND MINERALOGY.

THE Section met in the large lecture hall of the American Museum of Natural History on Monday evening, October 19. Three hundred and fifty-two members and friends were present. The following papers had been presented by Dr. George F. Kunz for reading by title:

Bismuth (Native) and Bismite from San Bernardino County, Calif.

Californite (Vesuvianite), a New Ornamental Stones from Siskiyou County, Calif.

The meeting was devoted mainly to a paper by Dr. E. O. Hovey entitled 'Observations on the 1902-1903 Eruptions of Mt. Pelé, Martinique.' In this paper or lecture the author sketched the principal events in the volcanic history of the island during the past year and a half. He described the phenomena of the eruptions, the mud-torrents and mud-flows, the attendant and subsequent aqueous erosion on the slopes of the mountain, the rise and vicissitudes of the new cone of eruption and its wonderful spine or obelisk. The lecture was illustrated with about ninety-five lantern slides from negatives taken by the author on the two expeditions which he has made to Martinique for the American Museum of Natural History since the eruptions began.

EDMUND OTIS HOVEY,
Secretary.

DISCUSSION AND CORRESPONDENCE.

ANTEDATED PUBLICATIONS.

DURING recent years attention has been called so strongly to the evil of antedated papers published by museums and scientific societies that in general great care has been taken of late to have all brochures emanating from such sources bear the correct date of issue. It is hence all the more surprising to find one American institution of high standing still apparently careless or indifferent in the matter. We believe, however, that the impropriety about to be mentioned is due to either inadvertence or lack of appreciation of

its seriousness on the part of the responsible authorities.

During the last few months the Field Columbian Museum of Chicago has issued a number of papers, some of them describing new species and new genera, which bear date 'June, 1903,' but which were not issued till late in August or early in September. In some instances the authors' separata were not delivered to them till August 20. In one case at least there is internal evidence to show that the paper, dated 'June 1, 1903,' could not have been even printed till some time in July, since reference is made by the author to the July, 1903, number of the *American Journal of Science*, which was not published till July 1 or 2.

I am authoritatively informed that the authors are in no way responsible for the dates, or anything else, on the title pages of these brochures, and hence the responsibility for the antedating of papers which contain descriptions of new genera and species by from eight to ten weeks rests higher up. Presumably it is sufficient to call attention to the matter to have the fault promptly remedied.

J. A. ALLEN.

THE 27-DAY PERIOD IN AURORAS AND ITS CONNECTION WITH SUNSPOTS.

TO THE EDITOR OF SCIENCE: During the last few months in New England there has been an interesting example of the tendency of auroras to return after intervals of 27 days. The report of the New England 'Climate and Crop Service' shows that auroras were observed in New England on July 25 and 27, the 26th being rainy. Twenty-seven days later auroras were observed on August 21 and 22. The next return of the twenty-seven-day period was September 17 to 19. General rain fell on September 17, but auroras were observed on the 18th and 19th. Twenty-seven days later was October 14 to 16. Auroras were observed on the 13th and possibly on subsequent dates (the reports are not yet in).

Another group of auroras began on August 26, was observed again on September 21 and was due on October 19.

Each of these auroral displays was connected with sunspot activity and may have preceded the first appearance of the spot. A fine group of sunspots crossed the surface of the sun next the earth on October 5 to 17, passing the sun's meridian about October 13. A second smaller isolated spot crossed the sun's meridian on October 18 or 19.

About November 1 a very large sunspot crossed the meridian of the sun next the earth and with it apparently began a new series of auroras which were very brilliant on the early morning of November 1 and again on the evening of the same day.

According to the theory of Arrhenius, which has much to sustain it, auroras are caused by small highly electrified particles of matter carried outward from the sun by the pressure of light when the sun is in a high state of activity. These particles are intercepted by the earth's atmosphere and from them is derived the electrical charge which gives rise to auroras and magnetic currents ('Lehrbuch der kosmischen Physik,' page 920).

The twenty-seven-day period in the aurora arises from the fact that it takes twenty-seven days for a center of disturbance on the sun to rotate around and face the earth in the same relative position again. The period is not a permanent one, the disturbance at any given point lasting usually only for a few solar rotations, and is then displaced by a disturbance at some other part of the sun with which another series of auroras is connected.

There is, however, a twenty-seven-day period of auroras connected with the sidereal revolution of the moon. This, however, is of minor importance and can only be detected by a long series of averages (*American Journal of Science*, Vol. V., 1898, p. 81).

If the auroras described here were of solar origin they were probably visible over a large part of the northern and southern hemispheres. Some of them were very brilliant. The aurora of August 21 was described in the *Popular Science Monthly*, Vol. LXIII., pp. 563-564, by A. F. A. King, and in Vol. LXIV., pp. 87 and 88, by Alexander Graham Bell.

HENRY HELM CLAYTON.