last week's eruption, he was not equipped with means to complete the work.

While more geological study is needed, the chief problem of Pelée is the nature of its gaseous ejecta, and it is no longer within the power of a geologist single-handed to solve it, but a carefully planned and equipped co-operative expedition accompanied by physical, chemical and photographic apparatus is needed.

In order to advance knowledge a party should be sent to Martinique for an indefinite stay of several months, with spectroscope, seismographs, chronographs, special photographic apparatus and all necessary equipment to study the eruptions with special reference to their electrical, magnetic, gaseous and other physical behavior. Furthermore, some society or individual should have seismographic stations established throughout the West Indies and our southern coastal plain—and this could be probably aided by our Coast and Geological Surveys, or by the Weather Bureau.

A temporary and healthful observatory and laboratory could be established on the slopes of Carbet overlooking Pelée, from which studies could be made with perfect safety. The talk about the danger of the annihilation of the island is all wrong. The recent deaths were all within the previous zone of danger coincident with the slopes of Montagne Pelée proper, but the rest of Martinique, except villages at sea level in reach of tidal waves, is perfectly secure.

Never was there a time so propitious or important for concerted effort to secure new and important light upon the behavior of volcanoes, and some society or individual should immediately raise the funds to conduct and direct this important work.

Americans are letting a great opportunity pass to add to knowledge, and I humbly beg that those who are in a position to equip such an expedition or to influence our learned societies or individuals, give this subject their serious consideration.

ROBT. T. HILL.

U. S. GEOLOGICAL SURVEY.

MR. BORCHGREVINK ON THE ERUPTION OF MT. PELÉE.

TO THE EDITOR OF SCIENCE: There are certain features of the article 'History's Greatest Disaster,' by C. E. Borchgrevink, descriptive of the eruption of Mt. Pelée, Martinique, in May of the present year, and published in the July number of *Frank Leslie's Monthly*, which are so inaccurate or misleading that they should be corrected.

On page iii of the 'Martinique Supplement' referred to there is an illustration with the caption: "This remarkable photograph was taken during the grand eruption [of Mt. Pelée] of May 20th. The camera was knocked from the photographer's hand and was not recovered till the following day. The fate of the photographer is unknown." The facts are that this photograph was not taken on May 20; it does not represent an eruption of Mt. Pelée; the photographer did not lose his camera; he is still doing business in Kingstown, St. Vincent. The photograph was taken by J. C. Wilson, photographer, of Kingstown, St. Vincent, and it represents an eruption of La Soufrière.

On page iv there is an illustration with the caption, 'The smoking lava beds of Pelée.' This illustration was not made from a photograph of any part of Mt. Pelée, but from a photograph of the mouth of the gorge of the Wallibou river, St. Vincent, with Richmond Peak (a part of Morne Garou) in the background.

On page xiii of this article on Martinique there is a picture labelled, 'The two craters of La Soufrière.' These so-called craters are not on Martinique. The illustration was made from a photograph of the Pitons of St. Lucia, which is a stock picture in all photographers' shops.

The last instance to be noted is one on page xvi, which is called 'General view of the island'—presumably of Martinique, since the article deals solely with that island. This illustration is not of Martinique. It is a composite, made up from two photographs of La Soufrière, St. Vincent, taken from nearly the same point of view. In the middle distance we have, be-

ginning at the left, Chateaubelair island, strait and point, and the same repeated. The island in the middle of this illustration is composed of Chateaubelair point on the left and Chateaubelair island on the right.*

There are some statements in the article which would not have been made by the author had he spent more time in the study of the volcanoes which he was sent by the National Geographic Society to investigate as a scientist.

It seems to the writer that Mr. Borchgrevink should explain such very inaccurate statements as those cited regarding four important illustrations accompanying his article. These corrections are particularly important at the present time, because Mr. Borchgrevink is now trying to raise funds for another expedition to the Antarctic regions and the public should be satisfied as to the scientific accuracy of one who desires to undertake such enterprises.

The writer feels qualified to make the preceding criticisms because he spent nearly seven weeks on Martinique and St. Vincent studying the phenomena of these eruptions.

Edmund Otis Hovey.
American Museum of Natural History.

* Compare this picture with the second one on page 790 of September *Century Magazine.*

PATAGONIAN GEOLOGY.

In a recent publication,† F. Ameghino gives again a new table of the geological succession of the different Cretaceous and Tertiary beds found in Argentina. This scheme differs from those published by him previously in several respects, but, as in all his former publications, he fails to give any evidence whatever for the succession of the respective beds, and thus this new scheme has only the same negative value as all the previous ones.

Moreover, in some respects, the present scheme is entirely opposed to some of the observations made by J. B. Hatcher* in southern Patagonia, and the results obtained by the present writer in studying the Tertiary invertebrates collected by Hatcher.†

This discrepancy is most evident in Ameghino's conception of the so-called Patagonian formation, which is regarded by Hatcher and the present writer as a geological and paleontological unit of marine beds, while Ameghino divides it into no less than six marine horizons, which, in part, correspond to four continental horizons.

The general trend of our demonstration that Ameghino's divisions are untenable, is that the so-called characteristic fossils of the latter do not actually characterize them, but are found associated in the same layers.

It may be said that the fact that some of the characteristic fossils are found in more than one of Ameghino's horizons does not alter the general character of difference of the various faunas. But I wish to emphasize here that I have shown this not for *some* or *a few* of the 'characteristic' species, but for *practically all of them.* The few exceptions are formed by comparatively rare species which are altogether unfit to be used for the discrimination of horizons (see Ortmann, *l. c.,* p. 284).

But it is not only the lack of all evidence for his views that we have to complain of in Ameghino's paper, but it is the way in which he treats some of the deposits that have been closely investigated by us, by adding to and taking away from the evidence given by us.

I shall mention only the most striking instances.

The Cape Fairweather beds are placed by Ameghino, in his table, in the Lower Pliocene, between the Lower Tehuelche and the Ensenadense beds. He says of the fauna of these deposits that it contains 50 per cent. extinct mollusks, and gives the following characteristic fossils: *Ostrea ferrarisi, Chlamys (Pecten) actinodes, Turritella innotabilis, Trophon inornatus,* etc.

† Ameghino, F., 'Cuadro Sinóptico de las formaciones sedimentarias, Terciarias y Cretáceas de la Argentina an relacion con el desarrollo y descendenia de los Mamíferos,' *Anales del Mus. Nac. de Buenos Aires,* vol. 8, 1902, pp. 1–12.

* See *Amer. Jour. Sci.,* vol. 4, 1897, pp. 327–354, and *ibid.,* vol. 9, 1900, pp. 85–108.

† 'Rep. Princeton Univers. Exped. Patagonia,' vol. 4, part 2, 1902.