ventions applied to raising and distributing water and showing the tremendous strides made in the art at the present time.

Mr. P. B. Pierce's paper on wireless telegraphy presented in an attractive manner this most recent of the great inventions. Mr. Pierce pointed out the various steps by which wireless telegraphy came to be and called attention to the interaction of minds and inventions to produce new inventions. In conclusion Mr. Pierce explained the apparatus employed in wireless telegraphy.

The 330th meeting was held April 8.

Dr. Franz Boas of the American Museum of Natural History, New York, read a paper entitled 'Anthropological Organization in America.' The paper, which was prefaced with a review of the history of the existing societies, was devoted to a discussion of the question whether it is advisable to add a new organization to the number as has been lately proposed in the formation of an association of a national character, or to centralize and combine all such agencies in such manner as to strengthen the present and prospective organizations. Dr. Boas concluded that such work could be better done through Section H. of the American Association of the Advancement of Science, swarming from the parent hive as the Geological, Chemical and other Societies, from their respective Sections of some years ago.

In the discussion of Dr. Boas' paper, participated in by W J McGee, W. H. Holmes, Dr. George M. Kober, J. Walter Fewkes, and J. D. McGuire, there seemed to be a consensus of opinion that the new society should be of a national character, organized on broad lines, designed to promote the interests of anthropology in America. It was recognized that for convenience of meetings, etc., it might be advisable to maintain a connection with the American Association if such arrangement could be made.

A paper by Hon. A. R. Spofford followed, entitled 'Ceremonials, National, International and Social,' which was entertaining and instructive. Mr. Spofford rapidly sketched the wide range of ceremonial forms in time and their prevalence among uncultured peoples. The ultra forms of ceremonious politeness were held up to ridicule. WALTER HOUGH.

DISCUSSION AND CORRESPONDENCE.

THE VOLCANIC ERUPTION IN MARTINIQUE AND POSSIBLY COMING BRILLIANT SKY GLOWS.

THE terrific volcanic eruption in Krakatoa, near Java, in 1883, was productive of such brilliant phenomena in the sky and air and added so materially to our knowledge of the motions of the atmosphere that meteorological observers would do well to watch for the earliest appearance of similar phenomena from the recent outbursts in the West Indies. Such observations may aid greatly in the study of the motions of the air.

Up to the date of the Krakatoa explosion, it had been supposed by meteorologists that the air forming the trade winds approached the equatorial belt from both sides and ascending near the equator turned toward the poles, becoming a southwest upper current in the northern hemisphere and a northwest upper current in the southern hemisphere, flowing over the trade winds below.

The observations on the Krakatoa phenomena gathered by the committee of the Royal Society and discussed by Russell and Archibald show that the upper currents in the tropics between 20°N. and 20°S. moved from the east with a velocity of about 75 miles an hour. This was indicated by the progress of the haze and sky glows which were traced around the world three times in succession. (See 'The Eruption of Krakatoa and Subsequent Phenomena,' London, 1888.) The very fact that the authors were able to follow the dust cloud and its attendant phenomena indicates that the upper air movement within this belt is very uniform in velocity and direction, otherwise the cloud of smoke and haze would have very quickly disintegrated and it would have been impossible to trace it even once around the world with a nearly parallel front as was done by Russell.

These observations were not in accord with theory and it was at first supposed they might be due to temporary movements of the atmosphere. But Abercromby was so much impressed by the phenomena that he began to

gather observations of cirrus within the tropics (see *Nature*, 1887–1889). These observations were followed by the systematic work of Hildebrandsson who has shown that the prevailing motion of the cirrus between 20°N. and 20°S. is from the east. Above these latitudes the prevailing cirrus motion is from the west.

It is probable that between these two regions of opposing winds there is a narrow belt of comparative calm across which the air moves very slowly from the equator. The spread of the dust from Krakatoa across this region apparently did not exceed a velocity of one mile an hour, so that it was two months or more after the eruption before sky glows were observed in high northern latitudes.

It is evident that observations on the sky glows following volcanic eruptions are very desirable for the study of the atmosphere. It is thought that some bright sunsets observed at Blue Hill last autumn may have been connected with a volcanic eruption in May in Java and subsequent brilliant sunsets in Mauritius described by Claxton. If notes were made elsewhere of unusually brilliant sunsets we should be glad to receive them at this Observatory and also accounts of such sky phenomena as may follow the eruption at Martinique.

Henry Helm Clayton.

Blue Hill Observatory,
May 10, 1902.

THE WORD 'ECOLOGY.'

To The Editor of Science: After the full discussion of the origin, history and use of the word *ecology* in Science for April 11, it is certainly surprising to read the inexcusably erroneous statements about this word by Mr. F. A. Bather in the current number of the same journal. After correctly stating the meaning of the word, Mr. Bather goes on to say: "Haeckel and biologists generally have used the word in the above sense, but of recent years the botanists have wrested, or at least restricted, the meaning of the term to the study of the associations of plants in such groups as alpine, sand-dune and desert plants; and this is the sense intended on pp. 458, 459 of Science for March 21. In a word they have used 'œcology' instead of 'œcological plant geography.'" This statement is extremely misleading if not wholly erroneous. It is possible that some writers have so restricted the term, but I cannot recall any case of it. Mr. Bather cannot surely here refer to Cowles's use of the phrase 'physiographic ecology,' because Cowles, in his elaborate paper in which he introduces the phrase expressly defines ecology in its full scope and shows that his use of the term is by no means an attempt at a restriction of it. Botanists, universally as far as I know, use the word in very nearly if not exactly its original broad sense, as applying to all forms of adaptation of organisms to their environment, and hence it is perfectly proper to apply it to plant associations when studied from the point of view of adaptation. If it were needful I could cite columns of references to prove this usage, but I will simply refer to the fact that ecology is used in its broad sense, with no attempt at such restriction as Mr. Bather avers, in all the modern botanical text-books including Campbell's 'University Text-Book' just issued, in a recent official publication ('Report on a College Entrance Option in Botany') by the Society for Plant Morphology and Physiology, and in many recent special papers upon plant adaptations.

Quite inexcusable, further, is Mr. Bather's statement that Robert Smith, in his justly praised paper on the 'Study of Plant Associations' (in *Natural Science* for February, 1899) does not mention the word œcology. Smith uses it no less than four times in that paper. Thus on page 113, Smith says, "Reiter (1885) modified Grisebach's scheme of plant forms to reconcile it with later research in plant œcology." Again on page 112, Smith says, "In the bibliography at the end of this paper a few only of the chief of these have been mentioned as representative œcological works, dealing with such marked forms of vegetation as strand plants, aquatic plants, halophytes, desert plants, etc." And he uses œcological again in the footnote at bottom of page 115, and again, on page 110. Mr. Bather's implication that Smith did not use the word œcology in connection with plant