may arise from the ignition of gases escaping from innumerable apertures in the flanks of the islet).

Tebenkoff, in his description, tabulates this islet as in latitude 53° 52′ north, and longitude 167° 39′ west.

I have no doubt that during the present year (1884) we shall obtain its exact geographical position, its physical conditions, and reliable measures of its size and height.

On the 20th of October, 1883, — seven days before Hague saw the island, — a shower of ashes took place, small quantities of which were collected at Iliuliuk, and a portion presented to the California academy of sciences. There seems some doubt, however, as to the point whence the ashes came; as the account from Iliuliuk places the date of their fall at Oct. 16, *wind being fresh from west-south-west*, with rain and sleet. It may be that this pumice-dust came from the eruption of Mount St. Augustin (see map of Alaska) on Oct. 6, under the influence of an upper current of air from the north-eastward; that mountain lying over seven hundred miles distant in that direction from Unalashka.

It is noticeable, that during the eruption from Bogosloff, or at least about that time, the two volcanoes on Akontan Island (about as far to the east-north-east of Makushin volcano as Bogosloff is to the west by north) ceased to smoke, and showed no signs of activity. These two volcanoes, only three miles apart, are 3,332 and 3,888 feet high respectively. Nothing was heard from Makushin: probably its summit was in the clouds, and might have been active.

As regards the distance to which the ashes from such eruptions are sometimes carried, it may be mentioned, that at the time of the eruption of volcano Iliamna, in March, 1867, the pumice-ashes fell on St. Paul, Kadiak Island, one hundred and sixty-five miles distant.

From the natives of Iliuliuk it was quite recently learned that they had seen smoke issuing from the new Bogosloff — or, rather, from the position of the Bogosloff — some time in 1882: the exact date could not be obtained.

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THE DANISH EXPEDITION TO EAST GREENLAND.

THE report of Lieut. Holm has appeared in the *Dagblad* of Copenhagen. He left Nanortalik on the 23d of July last, with a party of thirty-nine people, nine kayaks, and four umiaks, and reached Fredericksthal, the last European station, the same evening. Here they were assisted and entertained by missionary Broadbeck until the end of July, while the party was detained by the presence of floe-ice in the vicinity of Cape Farewell. From the 31st of July until Sept. 11 the party was not much incommoded by ice, only losing three days while detained in Lindenow Fiord.

The charts of East Greenland as far as latitude 61°, where the work terminated, will be notably changed, especially by the discovery of extensive fiords, until now unknown. Their shores are generally bare and vertical, or nearly so. In many places snow lies all summer. The sea-ice reaches to the bases of the cliffs, or even several miles into the fiords. Except at the extreme south, vegetation is even less abundant than in West Greenland, and is sometimes wholly absent. The southernmost of these fiords, some thirty-eight miles long, reaches within ten miles of the head of the Tasermint Fiord, which opens on the western coast. Both are full of ice. South of the sixty-first degree of latitude, and even a few miles northward from it, nothing could be seen of the inland ice characteristic of West Greenland. In that vicinity, from a mountain peak three thousand feet in height on Iluilek Island, they were able to see that the interior of the country for a great distance was composed of grand mountains, often rising over seven thousand feet above the sea.

In the fiords explored in 1883, there were found no remains of buildings erected by the Northmen, except those in Lindenow Fiord, the most southern of all, already described by Broadbeck. A great number of Eskimo ruins were noted in the different fiords. Sixty of these uncivilized natives were met going to trade with the people of West Greenland. They were much less like the typical Eskimo than those of the western coast. The men are almost always tall and slender, with long beards, and at a distance resemble Europeans. Some of them were even handsome, and the women were much prettier than those of West Greenland. In summer they lead a nomadic life, going from one fishing or hunting place to another. In winter several families unite to build huts covered with turf and stones, like those of West Greenland. They spend this season hunting seal and bears.

When the natives of Holm's party arrived at about latitude 61°, they refused to continue farther, fearing that the umiaks might be frozen in, as the ice began to knit together every night. On the most northern point attained, a hut was erected, and a depot made for the use of the expedition during the coming summer. Provisions and several boats were left here, and Holm returned with his party to Nanortalik. Here winter quarters were prepared, and a magnetic and meteorological observatory established. Magnetic observations are to be taken hourly from eight A.M. to midnight; on term days, every five minutes; and from four A.M. to four P.M., every minute. Arrangements have been made for simultaneous observations at the commercial stations of Denmark, in West Greenland.

After the winter quarters had been prepared, it was the intention of Holm to examine the fiord of Frederickstha1, and the region between it and Tasermint, which has not yet been explored with care.

It was his intention to start for the eastern coast about the end of April, or early in May, 1884; and during the winter of 1884–85 some members of the party were to remain there.

HUMIDITY AND CHRONOMETER RATES.

MAJOR-GEN. J. F. TENNANT, of her Majesty's mint, Calcutta, communicated to the Royal astronomical society in November last a paper on humidity as a cause of variation in the rate of chronometers. He had borrowed from the government-stores about the end of March, 1882, a chronometer, by Fletcher of London, which had been some time in India, but had not been cleaned since its arrival, and was said to have a good rate. From a gaining-rate of $6^s.5$, which it preserved fairly well for about two months, it suddenly fell to a gaining-rate of $2^s.0$; this being the commencement of a succession of rather abnormal fluctuations of rate which Major Tennant carefully observed and recorded for about eighteen months. These rates were first compared with a plot of the published daily mean temperatures of the meteorological observatory, with results not quite satisfactory; for, though it would seem at first sight that the rate depends on temperature, further examination showed that it can do so to a moderate extent only, and confirmed the belief, which Major Tennant had from general impressions, that rate does not depend on temperature. The extraordinary differences of rate at times of nearly equal temperature leave no doubt that there is a periodic change of rate; and the cause of this, Major Tennant believes to be humidity. His first suspicion of this was raised by the sudden fall in rate of this chronometer, in 1883, being coincident with the first heavy rains producing great damp; and by the fact, also, that the same thing occurred the year previous, and that the whole period of low gaining-rate was that of the rains, while the lowest was the warm time at the end of the rains, when the soil is generally loaded with moisture. The same phenomenon recurred. It is, however, much more difficult to compare the supposed cause and effect without special arrangements; and, in any case, it is doubtful whether air-humidity could be more than a rough guide.

If the oil in the arbors of the balance be hygroscopic, it is easy to see that it may become more fluid in damp weather, the arc of oscillation will increase, the balance-vibration take longer, and the chronometer lose; but the momentary humidity of the air will not correspond to the rate, as the temperature does more or less. Major Tennant, remarking the undoubted connection in this particular case, suggests special experimenting in the following directions: —

1°. Are chronometer-oils, or any of them, hygroscopic?

2°. Can they become so by exposure to a tropical climate?

In this latter case he conceives that the climatic influence cannot be imitated in Europe. The effect of the heat, and probably the light, are very destructive of some materials. Vulcanized india-rubber, for example, does not bear exposure in India, though it seems to answer in Europe, even in heat and damp.

Lastly, in estimating the effect of humidity on a given chronometer, it will probably be best to use one of the old hair or grass hygroscopes for the humidity, placing it in the case, enclosed with the chronometer.

DAVID P. TODD.

THE GREAT COMET OF 1882.

THIS comet is one of the most interesting that has appeared for a number of years, owing to its very near approach to the sun-surface, and the resemblance of its orbit to the two great comets of 1843 and 1880. It was a brilliant object in the morning sky in September, 1882. Calculations of the orbit have been made recently by Dr. Morrison, Professor Frisby, and Dr. Kreutz. The periods obtained are as follows: Dr. Morrison, 712.1 years; Professor Frisby, 793.9; Dr. Kreutz, 843.1. These periods are, however, somewhat uncertain, owing to the peculiar nature of the nucleus of this comet. Instead of being a single bright body, there appeared to be a row of small nuclei, so that it was a mere matter of judgment with the observer what part of the comet he should observe. The observations were naturally made upon the middle of the row of points, and it is not possible to say with certainty that this corresponded to the centre of gravity of the comet. It is worthy of note, that bright comets are recorded in the year 370 B. C. and in A.D. 1132, both of which could be reconciled with the great comet of 1882 by supposing the period of 751 years.

THE WORK OF THE CAMBRIDGE ARCHAEOLOGICAL MUSEUM.

THE trustees of the museum of American archaeology and ethnology, founded by George Peabody, held their annual meeting on the 18th of February, the anniversary of the birth of the founder. The Hon. Robert C. Winthrop, president of the board, presided; and Professor Asa Gray, Dr. Henry Wheatland, Mr. John C. Phillips, Mr. Samuel H. Scudder, and Mr. F. W. Putnam (the curator of the museum) were present. The Hon. Stephen Salisbury of Worcester was prevented by temporary illness from attending, and the Hon. Theodore Lyman was unable to leave his duties in Congress.

The report of the treasurer, Mr. Phillips, showed that the $150,000 given by Mr. Peabody is well invested. Of the income of $8,334, only $5,186.50 was expended on account of the museum: $3,110 belonged to the building-fund, and the remaining $37.50 was expended on insurance. Mr. Winthrop