average, which is certainly one of the largest temperature gradients over the free ocean surface anywhere. The gradient between Stykkisholm and the coast of Norway is 1.3/35=0.04. The mean temperatures for Angmagsalik, reduced to the fundamental period 1851–1900, are: February, —10.8°; July, +5.4°; annual, —2.6°. For Stykkisholm we have, for the same months, —2.7°, +9.7°, +2.8°, respectively. Northwest foehn winds occur at Angmagsalik from the interior of Greenland, and two interesting cases are described by Professor Hann.

In a letter to the Editor, Professor Hann suggests that similar studies as to the relation between the American coast and the island of Bermuda are very desirable.—*C. A.*

A HOMEMADE GLOBE.

For some years past the officials of the Central Office have been familiar with the use of the plain india rubber balls 3, 4, or 5 inches in diameter as a basis for representing the earth, its meteorological features, the solution of spherical triangles, and many problems that daily present themselves for study. Especially has Professor Bigelow frequently advocated the advantages derived from using such small spheres on which lines can be drawn and erased. We find the following note, by A. Morley Davies, on the same subject in the Geographical Teacher, published for the Geographical Association at London, vol. 2, p. 173.

Listening at the Conference to Mr. Smith's paper on the use of globes, it has occurred to me that a simple plan I have followed might be of interest to other teachers. I obtained some plain india rubber balls, 3½ inches in diameter, of a terra-cotta color, for a few pence. I then thrust a long hat pin carefully through each, as the axis of my globe. Some I left at this stage for general use; others I marked with a few circles (such as equator, ecliptic, etc.) in paint; the advantage of the terra-cotta color is that white and black markings show equally well on it, so that different circles can be clearly distinguished. To illustrate either the plane of the ecliptic or the division of the earth into sunlit and dark halves, I use a piece of stiff cardboard with a 3½-inch circular hole cut out of it, into which the globe easily fits. The classes for which I use these balls are small ones; possibly in the case of large classes each pupil might make his own globe in this way. If anyone can suggest any substitute for hat pins, equally long and sharp but more rigid, it would be an improvement.

C. A.

DOES THE AURORA EVER ENVELOPE THE WHOLE EARTH?

No aurora is on record as having enveloped the whole earth simultaneously. The most extensive auroras, such as August 28–29, 1859, were visible in the course of that night over the greater part of Europe, West Africa, North America, and the Atlantic; or September 1–2, 1859, visible in the same way in North America and west to the Sandwich Islands, but not visible in Europe, where it was daylight, but magnetic disturbances were recorded there. These auroras of 1859 also occurred simultaneously in the southern and northern temperate zones, being observed in Australia and Chile. The most extensive aurora I know of was February 4, 1872, visible from Siberia and northern Greenland to India, Egypt, and Florida; also in Australia, Mauritius, and Natal. It seems plausible that if we had complete auroral records from all over the world, these great auroras might have been traceable farther east and west, north and south, but of course they could not have been in the daylight. If an aurora is seen on three successive nights at any one place, it is usually spoken of as three different auroras. It would only be allowable to call this one continuous aurora over the whole circle of latitude when we can prove that it was continuously visible during the night time at stations in different longitudes entirely around the globe. I believe this has never been done, but we came very near it in this last aurora of October 30–November 1, 1903, for which we have records from eastern Europe, the Atlantic, North America, and a large part of the North Pacific, while Asia is still to be heard from.

As regards "an aurora enveloping the whole earth," that would necessitate observing auroras in the tropical regions, so as to connect the north temperate with the south temperate auroras. Certainly this has never occurred, and it is not even plausible as an actual occurrence during the last two centuries, although plausible as a hypothesis applicable to some other condition of the atmosphere and the earth. Aurora encircling the earth between latitudes 40° and 70° north or south is plausible, but not yet proven to have occurred by actual observation.

Among the general works on auroras are: Das Polarlicht, Hermann Fritz, Leipzig, 1881. Aurora Borealis, Alfred Angot, International Scientific Series, vol. 81, London, 1896. Auroræ, Their Characters and Spectra, J. Rand Capron, London, 1879.

The general catalogues of auroras give the stations from which records have been received, and therefore the geographic extent. These are: Verzeichniss beobachteter Polarlichter, Fritz, Wien, 1873. On the periodicity of the Aurora Borealis, Joseph Lovering, Memoirs of the American Academy of Arts and Sciences, vol. 10, Cambridge, 1868.

In Nature, 1878, vol. 17, p. 373, there is a later note by Fritz discussing the question as to the simultaneity of auroras in America and Europe. Of 2878 days on which auroras were observed in America, there are 1065 on which they were also seen in Europe.

Especially during the years 1869–1872, out of 715 aurora days in America, there were 379 simultaneously in Europe. The author argues that the aurora is not a cosmical but a local phenomenon. The last extensive catalogue of auroras is that of Tromholt, published by the Academy of Sciences at Christiania. It contains several studies on auroral frequency and geographical extent by the editor, J. F. Schroeder, according to which the maximum frequency occurs in the northern regions of Norway in January, but in the southern regions in September and March, again confirming the idea that it is a local rather than a cosmical phenomenon.—*C. A.*

FAKE FORECASTS.

In ordinary mercantile business it is quite a common experience for the manufacturer of a good article that is rapidly growing in popular favor to find counterfeits or infringements on his patent springing up like mushrooms, and sometimes offering very serious and illegitimate rivalry. The Weather Bureau has gone through a very similar experience. In 1870 there were, we believe, no long-range forecasters known to the country, except the ordinary farmers' almanacs, and we doubt whether any but the most credulous placed any faith in them. I have often told of the confession of one of these almanac weather makers, who with a twinkle in his eye said that after the proper astronomical part of the almanac was completed, and when he was in the spirit for writing up the weather, he would sit down and make it up for a year ahead, or so long as he felt in the mood. He fully understood that some people can be gulled sometimes, but we all know that we can not fool *all* the people *all* the time. So far as we recall the names of those who have distinguished themselves for making popular weather predictions based on principles that are contrary to all our knowledge of meteorology, the list runs somewhat as follows: Vennor, 1875–1890; Hicks, 1890 to date; Dunne, 1892 to date; Foster, 1885 to date; Elmer, 1903 to date; Snavely, 1902–1904.

While these have been active in the United States, the rest of the world has also had its varied experiences. In England, Mr. Hugh Clements and his great expounder, Hon. William Digby, have vexed the printer with an imposing volume and the public with daily predictions in the local newspapers. These authors speak as confidently about the moon as Rev. Mr. Hicks does about Vulcan, Jupiter, and the other planets, real and imaginary. Italy and Austria have gone through a