NOTES BY THE EDITOR.

STANDARD TIME.

Official information has been received to the effect that on and after January 1, 1901, the official standard time for the whole of Spain will be the so-called western European time, viz, that of the meridian of Greenwich. The interval between midnight and midnight will be divided into twenty-four hours and numbered consecutively from zero to twenty-four. Midnight will be known as twenty-four hours, or the end of the day, but the intervals between midnight and 1 a.m. will not be known as 24:15, for instance, but as 0:15.

We do not know whether the meteorological observers of Spain will now keep their records on the new simultaneous standard time or will adhere to the old local time. In the United States both simultaneous and local time records were kept up for several years (1870–1884) in order that there might be no question as to data needed for the reduction of observations from one system to the other; but at the present time, we believe, only the simultaneous records and times are used. In many climatological investigations it has seemed important to preserve the ancient hours of observation in order to answer questions as to local changes of climate at any locality and as to relative climatic conditions at different localities. But it is now evident that changes in climate, properly so called, are inappreciable to our instrumental observations, however apparent they may be in the changes of flora and fauna. The actual changes of temperature, rainfall, wind, etc., have been far less than the influence upon the instruments of slight changes in exposure and surroundings, as well as in the instrument itself. If, therefore, one inquires whether a record by the same thermometer or the same rain gage for fifty years at the same place shows any change in climate, he has first of all to decide whether the changes in buildings, trees, and grass have in some way affected the records appreciably. There are, doubtless, a few places in Europe where the surroundings have been unchanged for a century, but, unfortunately, it is very rare that meteorological records have been kept in these spots, and still rarer have the thermometers, barometers, rain gages, etc., been kept in one uniform condition of freedom from error.

The modern widespread systems of self-registers now make it possible to obtain records for any moment at stations where formerly it was considered a great feat to secure personal observations every hour of the day and night for one continuous year. For all climatological purposes, the continuous self-registers give far better data than even the old hourly system, and it matters not whether the registration sheets show mean local or standard Greenwich time.

As contrasted with climatology, which deals with monthly, annual, and secular averages, the world has during the past fifty years awakened to the far higher importance of simultaneous observations and weather maps and the study of dynamic and physical meteorology. This branch of meteorology proper is best promoted by the introduction of a uniform standard time throughout the world. The system of hourly meridians, beginning with Greenwich, began to be used in October, 1884, in the United States, in consequence of the labors of W. F. Allen and as the result of a movement which began with a report presented by the Editor in May, 1879, to the American Meteorological Society (see MONTHLY WEATHER REVIEW, 1899, p. 362). This was actively supported by the Weather Bureau from the beginning, as it was evident that only thus could we secure anything like an approach to correct time among all our voluntary and regular observers. The taking of at least one simultaneous observation daily, at 1 p. m., Greenwich time, or 8 a. m. seventy-fifth meridian time, was inaugurated by the Weather Bureau in 1871 for all ships at sea, and adopted in 1873–1875 by all the weather bureaus of the world. This Bureau is still interested in every measure that can contribute to the perfecting of one or more daily simultaneous maps of the condition of the atmosphere throughout the globe.

There seems to be no reason why we should not in future years proceed still further to improve our time system. The counting of the hours from midnight onward to twenty-four hours continuously was in old times quite the custom in Italy, and now that it has been revived by Spain, we believe that the example will be followed by others and, eventually, become universal in spite of the proverbial conservatism of mankind. From this it will be but a single step to relinquish the local hour meridians and use Greenwich time proper. We have in our lifetime seen the relinquishment of Ferro, Paris, San Fernando, Washington, Berlin and other points as initial meridians for counting longitude and the gradual agreement of all geographers in the use of longitudes from Greenwich. There is no reason why Greenwich should not also be used as the origin for counting time. Our division of the day into twenty-four hours has been made by man for his own convenience and our method of keeping time, by means of watches and clocks, is also an artificial and highly civilized method. We no longer use sundials, or compare our watches with sundials and noon marks, but we go to the nearest telegraph station and compare with the standards kept by the astronomers in their observatories. There is no particular reason why any one should be compelled to change his time reckoning by just one hour when he crosses some arbitrary dividing line between two regions where different standards are used. There is no good reason why one should cable to and fro, on business, between Washington and China or the Phillipines, or Australia, and then stop every minute to figure out whether it is yesterday or to-day. We are inclined to believe that for business purposes, as well as for scientific use, Greenwich time, the Greenwich date, and the Greenwich hour, counted from 0 to 24, will be found most convenient. This globe is but a small one, and in proportion as we conquer it and come to look at it, its atmosphere and its people from a broader point of view we shall need to consider the subject of time and time reckoning from a similar point of view. Absolute uniformity of watches throughout the world would be a convenience comparable with uniformity of weights and measures, coins and language.

THE FREQUENCY OF HAIL IN THE UNITED STATES.

In the MONTHLY WEATHER REVIEW for December, 1898, page 546, the reader will find a tabular statement of the total number of days on which hail was reported in each State by our observers, both regular and voluntary, during the five years, 1893–1897. If these numbers be divided by five we obtain the annual number of reports from each State; but as the States have different areas, we do not get a rational comparison of the relative frequency unless we divide these annual numbers by the areas of the States expressed in some uniform unit, such as 10,000 square miles, or 100 miles square, or a circle of 58 miles in radius.

These numbers relate principally to the ordinary slight hailstorms, hence the frequency of destructive hail is far less;