modern standard the records made by self-recording wet bulbs, where no artificial ventilation is practicable, and which consequently show a diurnal periodicity due to the stronger winds that prevail from 9 a. m. to 4 p. m.

METEOR OBSERVED AT SOUTH BEND, IND.

Mr. W. T. Blythe, Section Director, Indianapolis, Ind., forwards the following note by Mr. H. H. Swaim, Voluntary Observer at South Bend, Ind.:

I was waiting at our railroad depot for the train to Indianapolis to start when, at 4:50 a. m., September 15, 1902, a very bright meteor passed across the eastern horizon from south to north at an altitude of not more than 15° above the horizon, leaving a fiery trail, which disappeared as the sun rose. The atmosphere was somewhat hazy at the time and the first appearance of the sun was natural, but as it reached the altitude at which the meteor passed it assumed a peculiar tint, changing from pink to blue, like a blue gas, and later to a clear white, like the electric light. During the earlier stages of this phenomenon a person could easily look at the sun with the naked eye. My observation of the sun's appearance was made from the railroad train.

The color of the sun as seen through hazy and cloudy air varies with the smallness of the particles of haze; it may be red, pink, yellow, green, or blue, passing from one end of the spectrum to the other as the particles change in size, and again passing through a second and a third series of changes as the particles grow larger, until finally they become too large to produce this effect. All these changes are elaborately described in the experimental work of Prof. Carl Barus, published as Bulletin No. 12 of the United States Weather Bureau, Report on the Condensation of Atmospheric Moisture. The whole subject is one of equal importance to molecular physics and meteorology and is still being investigated by Professor Barus.

The presence of a slight haze is so common and has such a decided influence on the color of the sun that we should naturally attribute to it the pink and blue colors observed by Mr. Swaim. We believe the first observation of this kind was made about 1840, by Mr. J. D. Forbes, when he accidentally viewed the sun through a column of steam issuing from a locomotive; and this led him to his beautiful investigation on the influence of moisture in the atmosphere, the sunset colors, and kindred phenomena. The quantity of gas or vapor constituting the trail of a meteor is so exceedingly slight that we could not expect it to affect the color of the sun. Nevertheless, the suggestion by Mr. Swaim is worthy of consideration. In the present case, however, nearly an hour must have elapsed before the sun could have risen to the altitude of the meteor trail so as to be seen through it, and by that time the trail must have become extremely attenuated. South Bend is in a region where the whole atmosphere is permeated with gases and smoke from soft-coal fires, so that the special influence of gases or dust from meteors is not likely to be appreciable.

In general the long trails that are sometimes left floating behind a meteor are supposed to demonstrate the existence of an atmosphere at great altitudes, and as these trails frequently change their shapes within a few minutes these changes are said to indicate something with regard to the winds prevailing at that high altitude. All observations that can be gathered on this subject are desirable as a possible contribution to the meteorology of the highest atmosphere, but all argumentation and deductions must be held in abeyance until more accurate observations have accumulated.

TERRESTRIAL GLOBES.

Several requests have come from stations desiring terrestrial globes, especially such as show some general meteorological phenomena. Observers will regret to learn that it is at present impracticable for the Central Office to purchase and distribute such globes. On the other hand, as nothing contributes to clearness in our geographic and meteorological conceptions more than the handling of the globe, the Editor suggests that teachers and students either correspond with those who make a cheap and practicable form of globe such as the American Book Company, or Ginn & Company of Boston, or still better try to make one themselves. Nothing better impresses a student than handling the figures, or drawing the lines, or shading the areas that occur in meteorology. As a practical part of every course in meteorology it has always been customary to require the student to transform columns of figures into curves or charts. Just as one makes the morning chart from the manuscript reports, so one may profitably transfer to a globe the figures or the diagrams that are usually published on the plane surface of the pages of a text book or atlas. The main trouble is to obtain a spherical surface. Plain globes with a surface adapted to the use of chalk, slate pencil, or ink are sold by several companies. Perhaps the most convenient and inexpensive globe consists of a large india rubber ball. Balls of 3 to 8 inches in diameter have been used with great success. One may write on these with ink, paint them with water colors, and wash them clean at will. The lines for the equator and the circles of latitude can be left on them permanently. A chart of rainfall or temperature or pressure drawn on the usual Mercator projection becomes more instructive when transferred to such a globe, and we hold it as very important that all school children should be familiar with this true presentation of the meteorological features of the earth.

PERIODIC FLOODS IN THE MISSISSIPPI.

Referring to our note on page 423 of the MONTHLY WEATHER REVIEW for September, 1903, a recent letter from Dr. Cyrus Thomas states that his attention was called to the periodicity of rainfall, chiefly by the general belief of the people of the Mississippi Valley in the periodicity of high water in that river. This belief was current among the aborignies. They looked for it every fourteen years. It is mentioned by De Soto's Chroniclers (See Garcilaso de la Vega, Lib. 5, pt. 2, Chap. VII, p. 222, 1722; and Shipp, Hist. Hern. De Soto, 450, 1881.)

ISLAND STATIONS IN THE SOUTH ATLANTIC OCEAN.

Lieut H. Ballvé, of the Argentine Navy, announces that the Government of the Argentine Republic has determined to give a permanent character to the first class Meteorological and Magnetic Observatory on the island of Año Nuevo, see fig. 1, situated in the vicinity of the Island des États (Staten Island) in latitude 54° 39′ south, and longitude 64° 07′ 30″ (4^h 16^m 30^s) west of the meridian of Greenwich, and which was established in order that the Republic might cooperate with the International Antarctic Expedition.

The island of Año Nuevo is very small and elevated but little above sea level, and we have, therefore, been able to install the observatory under excellent conditions at a distance of only 6 miles, or 12 kilometers, from the mountains of Staten Island. Consequently the observations recorded there must agree essentially with the climate of this region.

A pamphlet giving a full description of the outfit will soon be published, at present it need only be said that the observatory possesses a complete instrumental outfit, such as is appropriate to a station of the first order.

At the end of this present year the observatory will begin the publication of the results obtained during the International Antarctic Expedition, as also of the observations for the present year. Thereafter the results of the observatory will be published regularly.

An exchange of publication is desired. All correspondence

FIG. 1.—Meteorological and Magnetic Observatory of the Argentine Republic on the island of Año Nuevo.

should be addressed Observatory of Año Nuevo, Ministry of the Marine, Buenos Ayres.

The observatory of the island of Año Nuevo, as well as the one soon to be established at Bahia Blanca, will form a part of the proposed network of observatories on the Atlantic coast of the Argentine Republic, under the direction of the Ministry of the Marine.

A NEW SUGGESTION FOR THERMOMETERS.

Mr. Charles F. Talman, United States Weather Bureau, contributes the following extracts from two papers recently published in the Atti della Reale Accademia dei Lincei,[1] by Prof. G. Guglielmo, of the University of Cagliari, describing a new method of mixing liquids contained in closed receptacles.

In the study of thermic phenomena it is often desired to render uniform the temperature of a liquid by mixing. It often happens, however, that the liquid is inclosed in a receptacle, and the usual methods of agitating liquids are not applicable. In this case the most obvious expedient is to inclose in the receptacle, with the liquid, a mill or movable system containing iron or small magnets, and to cause the mill to rotate or the movable system to oscillate by means of magnetic or electromagnetic action. * * *

The use of the preceding method requires a construction and a preparation more or less complex; nor is there excluded the possibility of an injury which would render the mechanism inactive, without this fact appearing externally, and, lastly, it is hardly applicable if the dimensions of the receptacle containing the liquid are small.

An active agitation can be produced in all cases with perfect certainty, if, before closing the receptacle, there be fixed on its inner walls laminæ (palette) of convenient number, position, and inclination, and if the receptacle, after being closed, is given a movement of rotation in opposite directions alternately on any axis.

If the receptacle, being, for example, cylindrical, had a smooth wall and were made to rotate about its axis, the liquid would at first remain almost completely motionless, and later, as a result of internal friction, the rotary motion would be communicated from the wall toward the axis; this movement of the liquid would, however, be regular and would not produce any mixing of the various parts.

If on the other hand, the inner wall of the receptacle is provided with laminæ, these, at the beginning of the rotation, impinge upon the motionless liquid, and communicate to certain parts of it various velocities and pressures in various directions, as a result of which, as well as of centrifugal force, there is produced a mixture with those portions which are still motionless, or whose motion is not identical. The effect is almost the same as if the laminæ were in a motionless receptacle and were fixed to an axis issuing externally.

If the rotation continued indefinitely, all parts of the liquid would finally acquire the same angular velocity, viz, that of the receptacle, and would move as a solid without appreciable mixing of the parts: if, however, we stop the rotation of the receptacle abruptly the liquid continues to rotate, certain parts of it pass without hinderance between the laminæ, others, striking the laminæ, change direction, and the desired mixing is thus produced. Then, by producing a rotation in the opposite direction, the phenomena, already described, are reproduced, etc.

As to the form, number, position, and inclination of the laminæ, it seems to me useful that they should be small and numerous, that they should extend or be placed near the axis of rotation, and, perhaps, also that they should be perforated. It seems advisable, also, that they should be inclined at an angle of, say, 45° to the axis and to the direction of motion in order to give to the liquid a movement parallel to the axis as well as a movement of rotation.

* * * * * * *

The above arrangement for agitating a liquid * * * certainly appears useful for thermometers, especially if they have large bulbs and are very sensitive, and particularly if the internal liquid is other than mercury, and hence a poor conductor of heat.

[1] Vol. XI, Fas. 11, and Vol. XII, Fas. 6, dated, respectively, December 7, 1902, and March 15, 1903.

CORRIGENDA.

In MONTHLY WEATHER REVIEW for October, 1903, p. 478, first column, twelfth line, for 12° 35′ read 120° 35′.

THE WEATHER OF THE MONTH.

By Mr. W. B. STOCKMAN, District Forecaster, in charge of Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart IV and the average values and departures from normal are shown in Tables I and VI.

An area of high mean monthly barometric pressure overlay the country from the middle and northern Plateau regions southeastward to the Gulf of Mexico and the south Atlantic coast, with several crests, the principal one overlying the Ohio Valley and Tennessee, extreme northern Louisiana, and eastern and southwestern Arkansas, with mean values ranging from 30.15 to 30.18 inches.

Two areas of low mean pressure obtained, one over southeastern California and southwestern Arizona, the other and principal one, both with regard to area embraced and lowness of readings, over the north Pacific coast district, where a minimum mean of 29.85 inches was reported.

The mean pressure was below the normal in New England, eastern part of the Middle Atlantic States, along the coast of the South Atlantic States, and over Florida; also in southwestern Arizona, eastern California, and the middle and northern Pacific districts; elsewhere it was above the normal.

Over western Tennessee, the Ohio Valley, New Mexico, Colorado, Kansas, northern Missouri, the upper Mississippi and Missouri valleys, eastern and central Montana, and central Wyoming the departures ranged from +0.05 to +0.08 inch. Over the middle and north Pacific coast districts the departures ranged from —0.05 to —0.13 inch, the greatest departures being reported from the coasts of Washington and northwestern Oregon.

The mean pressure decreased from that of October in northern and eastern New England, and in the north and middle Pacific districts, and in portions of the middle and northern Plateau regions; elsewhere the pressure increased over that of the preceding month, the greatest changes, +0.10 to +0.12 inch, being reported from northwestern Minnesota, northern South Dakota, North Dakota, and northeastern Montana. Over Oregon and Washington, increasing from east to west, the decreases ranged from —0.05 to —0.18 inch, the greatest change being reported from Tatoosh Island.

TEMPERATURE OF THE AIR.

The distribution of maximum, minimum, and average surface temperatures is graphically shown by the lines on Chart VI.

Eastward of a line drawn from eastern Minnesota to eastern Texas, and also in the western portions of the Dakotas, Montana, eastern and extreme western Washington, and north-