

with ice, then, by means of a scale placed within the stem, the instrument can be used for measuring the pressure of the air. Experiment shows that this barometer fulfils the three above-mentioned conditions.

The object to be attained by Dr. Fischer is one very much desired by all, but as Professor Marvin has remarked, it will be so difficult to keep the water bath at a constant temperature in a balloon, especially when the water freezes at high altitudes, that the above arrangement will be of little value. The uncertainties due to assuming a constant temperature will always be greater than the errors of the aneroid barometer and it seems more rational to labor to bring the pressure boxes of the aneroid to at least as great perfection as the temperature boxes of the Bourdon thermometer.

The arrangement by Fischer would, we think, be inferior to a simple, straight tube, sealed at the top and open below, immersed in a bath of alcohol, glycerine, or other liquid, and having one or two thermometers closely adjoining. The length of the compressed air column, or rather its volume, and the records of the two thermometers give us the means of allowing for the vapor tension of alcohol and the reduction of the air volume to a standard temperature, whence the pressure becomes known. But, of course, in order to attain an accuracy of one one-hundredth inch of barometric pressure, one must know the volume of air to within one three-thousandth part, which implies knowing its temperature to within one-sixth degree Fahrenheit. This seems at first thought easy, but when the balloon is rapidly rising or falling, the expansion or compression of the air within the tube takes place adiabatically, except in so far as heat may be conducted through the glass tube, and this complicates the determination of the temperature.

#### LECTURES AND INSTRUCTION.

E. W. McGann, Section Director, delivered a lecture on August 22 before the Farmers' Convention at Jamesburg, N. J., on the Weather Bureau and the State weather service and what they are doing for the farmers. He continued the course of lectures on this subject before the farmers' institutes of New Jersey during the autumn and winter, but owing to the poor heating of the halls at Vineland and Hammerston he contracted a severe cold that temporarily incapacitated him from lecturing; his lecture on December 19, at Caldwell, was very well received.

Under date of November 30, Prof. Wm. M. Fulton reports his attendance at farmers' institutes, at New Market, Clarksville, and Fayetteville, Tenn. The entire middle portion of the State was well represented at these institutes and much interest was manifested by the large audiences in the evening as well as by questions during the sessions in the day time. About two thousand farmers were present, and it is believed that the value of the Weather Bureau to farming interests in this State is being greatly enhanced by the discussions at these meetings.

The institutes held at Memphis, Bell Buckle, and at Nashville during December were very well attended, nearly every county in the State was represented.

Mr. David Cuthbertson, local forecast official at Buffalo, N. Y., lectured before the Men's Club of Lewiston, N. Y., on Friday evening, December 14, and again Saturday morning before the Union School of that city, on the work of the Weather Bureau and its relations to the commercial and marine interests.

Mr. S. S. Bassler, local forecast official, Cincinnati, Ohio, writes that the public schools of that city are now informed by telephone of the forecasts of cold waves, high water, and other meteorological matters, so that the information will reach every home in the city through the children in addition to the usual methods of dissemination.

Mr. Bassler delivered the first lecture of the winter course on December 14, for the Alumni Association of the Bellevue, Ky., High School, on the study of meteorology in the public schools. A large audience paid very close attention.

Mr. J. Warren Smith delivered an address on the work of the Weather Bureau at Lerado, Clermont County, Ohio. The lecture was illustrated and apparently well received. Mr. Smith states that he is really unable to comply with all the requests for lectures before the farmers' institutes, but he has no doubt that such work benefits the public.

On September 21 Mr. A. E. Hackett, Section Director at Columbia, Mo., undertook the instruction of a class in meteorology and climatology in the Missouri State University. The class will meet on Thursdays and Saturdays, one hour each day. The instruction in meteorology will be elementary in character and the work in climatology will be confined to a study of the more important climatic features of the several portions of the United States.

Mr. R. Q. Grant, Observer Weather Bureau, gave a lecture on cyclones and weather forecasting in the Science Building at the State College, Lexington, Ky., Monday, December 10.

#### THE USE OF THE M. W. REVIEW BY TEACHERS.

We have with much interest noted the steady increase in the circulation of the MONTHLY WEATHER REVIEW among the teachers in high schools, academies, and colleges. We understand that this is largely due to the fact that all the newer text-books on physical geography, physiography, and meteorology, and the journals devoted to those subjects make frequent reference to and quotations from the REVIEW. In fact, Prof. Richard E. Dodge, at the head of the department of geography of the teachers' college in Columbia University, in a recent review of Ward's Practical Exercises in Elementary Meteorology, emphasizes the fact "that the MONTHLY WEATHER REVIEW is an essential aid in good teaching." We take it that this means that both the climatological data and the excellent special contributions from our numerous correspondents are highly appreciated by those who are developing a true system of education, based upon the study of nature and not solely on the language and literature, the abstractions and myths of human invention. One can not acquire a broad education except by going outside of books and studying with enthusiasm the world as it really is, not as man imagines it. That education is most valuable which brings us into close contact with nature, animate and inanimate; with living men and women; with the facts and laws of chemistry and physics.

#### AERIAL VOYAGES BY BALLOONS AND KITES.

The following interesting letter by A. Lawrence Rotch is copied from Science, December 14, Vol. XII, page 930:

The official report just received of the long-distance balloon race from Paris on October 9 changes somewhat the figures on page 799 of Science, which were those furnished to the press. It appears now that Count de la Vaulx and a companion traveled 1,200 miles in 35 hours and 45 minutes in the basket of a balloon containing only 57,000 cubic feet of illuminating gas. They reached a maximum height of  $3\frac{1}{2}$  miles, crossed Germany and landed in Russia, as did another of the contestants. This is probably the longest continuous voyage in the air ever made, although it was nearly equaled forty years ago by our countryman, John Wise, who, with two companions, went by balloon

in 19 hours from St. Louis to Jefferson County, New York, a distance of 1,150 miles.

It is evident that under the management of an aeronaut a balloon can be kept longer in the air than an unmanned balloon, but, nevertheless, a balloon of 8,700 cubic feet capacity, carrying only self-recording instruments, which was liberated from Berlin in 1894, after attaining a height of 10 miles, was carried 700 miles to the borders of Bosnia, at a speed of 62 miles an hour. Still more remarkable, in its way, was the flight of a pair of kites last summer from the Royal Aeronautical Institute near Berlin. Five kites, which had lifted self-recording meteorological instruments to a height of  $2\frac{1}{4}$  miles, broke the wire that confined them to the ground and the two upper kites dragged it across the country for nearly 100 miles before they were finally checked, the trailing wire, 2 miles in length, furnished sufficient resistance to keep the kites flying throughout the night.

#### TRANSATLANTIC WEATHER.

In order to respond more completely to the needs of the shipping interests of the North Atlantic, the Chief of the Weather Bureau has entered into an arrangement with the Meteorological Office at London, Mr. W. N. Shaw, Secretary, by virtue of which the Weather Bureau will receive daily meteorological reports from London, Valencia, Blacksod Point, Malin Head, Stornoway, Sumburgh Head, Paris, Cuxhaven (Hamburg), Lisbon, and Ponta Delgada (Azores). The European observations are taken at 7 or 8 a. m., Greenwich mean time; the observations at the Azores are taken at 9 a. m. It is expected that these records will all be received at Washington, D. C., not later than noon, Greenwich time, or 7 a. m., seventy-fifth meridian time or eastern standard, and will be published daily in connection with the morning map at Washington. This will give steamers about to sail for Europe the latest information as to the condition of affairs on the European coast.

#### CORRELATION OF WEATHER IN DISTANT LOCALITIES.

Reports from Sydney, New South Wales, give accounts of the most disastrous hurricane in the Island of New Britain within the past twenty-five years. The storm lasted from December 7 to 10 and came after an unusually trying season of drought. The rain and squalls began on the 2d or 3d and increased in force daily until the hurricane and tremendous sea of the afternoon of the 7th. The center of this island lies in latitude south  $6^\circ$ , longitude  $150^\circ$  east of Greenwich; it is therefore about  $28^\circ$  due north of Sydney, Australia. The typhoons or hurricanes of this region are usually moving westward when they pass these islands, and as they circulate in a direction opposite to those of the Northern Hemisphere, they give New Britain heavy east winds when they pass to the north of it, but west winds when they pass to the south of it. The prevailing wind in the winter is north and west, being, in fact, a portion of the northeast trade wind of the northern trade region carried across the equator on its way toward and around Australia. But these winds are feeble and interspersed with many calms. Hurricanes are not nearly so frequent in this region of calms as they are further southeast, in the neighborhood of Caledonia, New Hebrides, Fiji, and Samoa, or to the northwest, in the neighborhood of the Carolines and Philippines. It would not be surprising if the hurricane here reported were a very slow-moving one, just beginning and growing in the region of calms, before starting off on its travels.

The daily press has been full of accounts of the typhoons in the North Pacific Ocean, beginning with the destructive storms of November 13, at Guam, in which the U. S. S.

*Yosemite* was lost, and continuing down to the end of December, with a series of gales and hurricanes on the route between Japan and British Columbia.

The hurricane at Hongkong on November 10 is mentioned on page 558 of this number of the MONTHLY WEATHER REVIEW.

The southern portions of the North Atlantic and North Pacific oceans seem to have been unusually free from cyclonic disturbances. On the other hand, as the passage of storms eastward is accompanied by southerly winds for a considerable distance south and east of the advancing front, therefore, we are not surprised to learn that the Sandwich Islands have been experiencing unusual southwest winds and rain. The special correspondent of the San Francisco, Cal., Chronicle, under date of November 20, at Honolulu, says:

The severest "kona" that has been experienced for years swept these islands last week. The "kona" is the native name for a storm from the southwest, a direction from which few storms come in this region. In reality, it is a cyclonic disturbance crossing the Pacific, and when its track lies far enough south, it appears here as a southwest wind.

The "kona" of last week was one of the severest that has ever been known. Although there were no actual losses of vessels, the shipping suffered severely. \* \* \* The wind was accompanied by terrific rains. The Oahu Railroad suffered two washouts and a landslide, which disarranged traffic for three days. This is something that never occurred before. \* \* \* On Kanau the flood came in such torrents as to break down a protecting cement wall. \* \* \* On Molokai the torrent came down in such floods that at one time it scooped out a course for itself many feet deep, carrying millions of cubic feet of earth, rock, and boulders in its onrush. On Maui the rain fell at the rate of 4 inches a day for 3 days in succession. The telephone system of the island is in chaos. \* \* \* The whole island of Haleakala seemed a rushing torrent and streams flowed in great volume where there were never known to be any before. Kahului was under water for several days. \* \* \* During the storm on Maui the Iao River overflowed its banks, carrying a raging torrent to the sea.

The correspondent of the Washington Evening Star, Sereno E. Bishop, under date of November 21, 1900, writes as follows from Honolulu:

The exceptionally hot weather here has been succeeded by unusually heavy rains during the past six weeks. The rain was deluging on the island of Maui; being accompanied by a violent gale, there was some destruction of property. It was more of a storm than has occurred in these parts for many years. You know that our group is absolutely exempt from anything like a hurricane or typhoon, just as we are wholly exempt from the extreme heats of the tropics or of Washington.

It is a pleasure to note the practical success of the wireless telegraph between our islands \* \* \* there seems to be no doubt that by February next we shall enjoy perfect telegraphic communication from Honolulu to Hilo across three sea channels.

Although a terrible storm passed over northern England and southern Scotland, yet here, as in the Pacific Ocean, when storm centers pass by far to the north, southern England experiences the mildest winter weather. Thus, on December 26, a despatch from London says:

England has one of the greenest Christmases on record, for the weather has been so mild that primroses and corn flowers are abloom as far north as Liverpool and Yorkshire, while Devonshire revels in a subtropical climate and the Isle of Wight is a garden of roses in mid-winter. Never have flowers been more abundant in the London market at Christmas time, nor has mistletoe been cheaper. \* \* \* The London sky has been heavily clouded and the air filled with mist, while the weather has been unseasonably warm.

Reports from Nome, Alaska, say that the worst storm of the season as to high wind and heavy surf began October 31 and lasted until after November 3, when the steamer *Oregon* sailed. After the wind had blown from the southeast for sixteen hours, during which time all the vessels in port put to sea, it suddenly veered to the west and the thermometer dropped nearly  $30^\circ$ ; the rain changed to snow and hail.

Advices from Dawson and the Yukon Valley state that at