

to rainfall, climate has fluctuated in historic times to a much greater degree than the changes during the last century. Why shouldn't changes be greater in 2000 years than in 100? There is no conclusive evidence, however, pointing to progressive drying up of the earth.

"The changes appear to be pulsatory in nature, but have no definite periodicity. The same phenomena recur in cycles of all magnitudes from the little cycles now in progress to those that have a length of thousands of years. * * * In general the changes vary from region to region in such a way as to suggest that they are due to an alternate poleward and equatorward shifting of the great climatic belts. The matter is more complex than this however, for in the same latitude one side of a continent may differ from the other. So far as can be detected, historic changes of climate do not seem to differ from those of the Glacial period or from the little variations that we see from year to year except in degree."¹

Fortunately, glacial eras, as our contemporary, *Illustrated World* (June, 1920), pp. 619-620, would have us believe, cannot descend upon us "with appalling abruptness from the Arctic across the Northern Hemisphere, sweeping mammoth animals before them," or as "vast mountains of ice, which overwhelmed, in their course, all animal and vegetable life."

NOTES.

THE HURRICANE SEASON HAS OPENED.

The hurricane season is with us again, but unless a tropical cyclone or two appears, the elaborate preparations for the immediate detection of a hurricane and for determining its course will pass unnoticed. On account of the indications which unusual tides and the direction from which swells are coming can give as to the presence and probable movement of a hurricane (see June BULLETIN, pp. 70-71), arrangements have been made for the telegraphic reporting of unusual conditions of the sea at all regular and special Weather Bureau stations on the Atlantic and Gulf coasts south of Cape Henry, Va. Arrangements have been made with scores of American vessel-masters to make and report weather observations by radio twice daily from points south of latitude 40°. The importance of wind movements aloft appears to be great enough to justify considerable attention to them both by careful observations of clouds and by frequent pilot-balloon runs.

It is generally thought that tropical cyclones (hurricanes) move approximately in the direction and with the speed of the air * * * at no great height above the surface. If this be true, it is very desirable to obtain observations of free-air wind conditions on all sides of hurricanes, particularly on the north and west sides. Although working under severe restrictions of funds and personnel, the Weather Bureau is undertaking a campaign of this sort for the hurricane season of 1920, July to November, inclusive. Stations are being equipped and will be operated at San Juan, P. R., and Key West, Fla., in addition to those in the Gulf States at which observations are now being made by the Weather Bureau at Groesbeck, Tex., and Leesburg, Ga.; by the Meteorological Section of the Signal Corps at Ellington Field and Kelly Field, Tex.; and by the Naval Aerological Section at Pensacola, Fla. Moreover, two new stations are being organized by the Navy at Colon and Santo Domingo. These nine stations form a network which, it is believed, will furnish information of great value in the study of these destructive storms and in forecasting their direction and rate of movement. Moreover, the observations will be taken regularly twice each day, irre-

¹ Solar Hypothesis of climatic changes, *Bull. Geol. Soc. America*, 1914, Vol. 25, pp. 477-590; this quotation from pp. 537-538.

spective of the occurrence of hurricanes, and will, therefore, give us data as to trades, antitrades, etc., of the utmost interest from a theoretical point of view and of inestimable benefit in their practical application. It is probable that some of the stations will be continued throughout the year and that many others will be added, if funds permit, during the next two or three years.—*W. R. Gregg, (Mo. Weather Rev., May, 1920, p. 264).*

ANNUAL METEOROLOGICAL SUMMARIES PUBLISHED AT VARIOUS WEATHER BUREAU STATIONS.

The local annual meteorological summary is a publication in which the official in charge of the local office of the Weather Bureau takes considerable pride. It is, so to speak, his annual report to the public. As such, it contains in compact form all the information which he knows will be immediately useful to the greatest number of the people who telephone or call on him daily during the year. One of the most complete of these local climatologies is that issued under the direction of J. H. Scarr, of New York City. That for 1919 is a 16-page folder about the size and shape of a large railroad time-table. It is printed in small type. Its contents are as follows:

Annual summary (brief catalog of the general features of the year); weather by months; miscellaneous data for 1919; annual meteorological summary, 1919 (table); normal and comparative data; daily precipitation, 1919 (table and diagram); monthly and annual precipitation (1871-1919); extremes of precipitation and snowfall; daily maximum and minimum temperature, 1919; monthly and annual mean temperatures; extremes of pressure and temperature; daily and monthly maximum wind velocities, 1919; daily prevailing wind direction, 1919; wind direction (monthly frequency, 1919, and normal frequency by eight directions); sunshine, 1919 compared with normal by months; temperature, diagram showing mean daily and monthly temperature, 1919 and normal; snowfall by months and seasons, since 1884-5; snow-covered ground, number of days, and maximum depth for each month since Oct., 1893; intensity of heavier precipitations, in 5, 10, 15 and 30 minute intervals, also for 1, 2 and 24 hours (40 cases in 1919); greatest intensity of record (all years) for each month; calendar, 1919; monthly and annual mean temperature and precipitation, 66 foreign stations (all in Western Hemisphere); temperature scales, annotated with information as to means and extremes of temperature in New York, the United States, and the world.

INTERNATIONAL METEOROLOGICAL CONFERENCE.

The report of the International Meteorological Conference, which met in Paris last October, at the invitation of the French Government, has just been published. In view of the far-reaching changes that have recently taken place in the scope and methods of meteorological work—due especially to the new requirements of commercial aeronautics—this meeting was timely, and most of the national weather services of the world were represented by delegates. The Central Powers were not invited to participate; and the United States of America, which possesses the most imposing meteorological bureau in the world, was not represented, because Congress failed to make the modest appropriation recommended by the president to provide for the expenses of two delegates. The conference decided to perpetuate, with some slight modifications, the international organization of meteorology that existed before the war. Sir Napier Shaw remains president of the International Committee. Much important work was accomplished by the conference, looking to a material enlargement in the scope of weather reports and their dissemination, especially by wireless, for the benefit of aeronauts. In lieu of the old commission which bore the misleading name of International Commission on Scientific Aeronautics there were organized two new commissions; one on the applications of meteorology to aerial navigation, and one on the exploration of the upper atmosphere. There are also international commissions on agricultural meteorology, weather telegraphy, marine meteorology, solar radiation, the *Réseau mondial*, terrestrial magnetism and atmospheric electricity, and polar investigations.—*Scientific American* July 17, 1920.