but the walls of buildings, the sides of valleys, and adjacent trees diminish the free exposure and the chance to radiate.

It would be difficult to say, a priori, just where to look for dew on the tops of high trees, but it occurs so frequently on the tops of high buildings that we are persuaded that it must sometimes occur on the tree tops. We hope that some of our correspondents may discover such locations and communicate directly with Mr. D. M. Rodgers, Special Field Agent, Bureau of Entomology, Department of Agriculture.—*C. A.*

HURRICANES AFFECTED BY MOUNTAIN RANGES.

In the Meteorological Bulletin of the Observatory Saint Martial, Port au Prince, Haiti, for the month of October, 1908, Prof. J. Scherer, director of the observatory, writing about the hurricanes of the 28th of September, says:

This cyclone was announced on the 25th by the Weather Bureau at Washington as then existing south of the island of St. Kitts and moving toward the WNW. It entered the island of Haiti at the Bay of Neybe [Neyda?] on the evening of the 27th. Traversing the northern slopes of the mountain ranges Santa de Bahoruco and La Selle, it past to the south of Fonds Parisien and of Ganthier, over Fonds Verretes, Pays Pourri Troucoucou and the upper courses of Grande Riviére du Cul de Sac, only to descend into the basin of the Momance and enter the ocean between Léogane and Port au Prince. Thence it continued its path toward the eastern point of Cuba, which it past over at 7 p. m.

The orography of the island has had a deflecting influence on the path of this hurricane. Without getting free from the high mountains of 2,000 meters it remained at an altitude of 1,000 meters thruout its principal path, leaving the crests of the high mountains on its left. After entering the island its first destruction was at Anse à Pitre, Grand Gosier, and Sale Trou, where there were 260 houses destroyed and 98 deaths. * * * On the right-hand side of the hurricane lies the Plaine du Cul de Sac, which suffered most. The principal rains fell after the passage of the hurricane; every river in the plain rose above its banks.

Here at Port au Prince the wind remained from the northeast up to 4 a. m.; at 5:10 a. m. it turned to the north where it remained only until 5:30 a. m., after which there was a calm of fifteen minutes. At 5:45 a. m. the wind suddenly jumped to the southeast and south-southeast.

The maximum velocity was 23 meters per second at 5:50 a. m.

The barometric readings were at 9 p. m., 756.9 mm.; at midnight, 756.2 mm.; 3 a. m., 753.1 mm.; 5 a. m., 746.0 mm.; 5:25 a. m., the minimum, 743.2 mm.; 6 a. m., 744.5 mm.; 7 a. m., 750.4 mm. During the calm the pressure rose 1.5 mm., but fell again until 5:55 a. m.

The minimum temperature occurred at the moment of the calm.

The relative humidity fell 10 per cent.

The direction of the motion of the clouds was, successively, NE., E., and S.

It is very desirable that some one should explain, in detail, the mechanism by which a given range of mountains or the coast of a continent deflects the path of a hurricane center. The east-west ranges in the West Indian Islands and the northeast-southwest Appalachian Range appear to have appreciable influences on some storms, but not on others.—*C. A.*

IS THE EARTH DRYING UP?

Under this startling heading the Literary Digest of July 11, 1908, discusses a memoir by G. Guilbert, published in the Bulletin of the Calvados Meteorological Commission.

We assume that our colleague does not intend to start a new sensational paragraph on its travels around the globe, but yet some of Mr. Guilbert's paragraphs have been so translated that, taken by themselves, the average reader would easily be led to infer that meteorologists are face to face with a climatological revolution. Thus a reviewer in Cosmos, under date of May 30, is said to have written:

The progressive diminution of rainfall is a fact that is becoming better and better established and even universally known. As meteorological observations are perfected and prolonged the phenomenon is more certain and forces itself upon our notice.

The writer then quotes the records of total annual rainfall and melted snow at Nancy, in the Department of Meurthe-et-Moselle, showing a diminution from 896 to 628 millimeters, or 28 per cent in thirty years, between 1878 and 1907, or at the rate of 1 per cent per annum, but he recognizes the fact that, of course, the rainfall can not go on constantly decreasing at this speed.

In nature everything vibrates, everything oscillates, the more the rainfall decreases the nearer will come the time when it will begin to increase.

Facts and logic alike concur in showing that a diminution of rainfall thus observed in one portion only of France has no counterpart elsewhere and is not universally known, and is not likely to be true everywhere.

But granting these alternations of wet and dry periods our colleague goes still further and adopts the theory that the diminution of rainfall—

* * * is a persistent and progressive phenomenon which nothing has checked since the origin of rain on the globe, at least since the glacial period, and which nothing will modify in the future—the rain will continue to diminish century by century as it has always done over the whole globe since prehistoric times.

From this wild statement an argument for the necessity of reforestation is then drawn: "If we do not wish to grow rapidly drier and drier * * * reforestation is necessary." One can but regret that such palpable errors, long since dropt by conservative students, should continue to be disseminated among the people.

Forests do not increase rainfall, but merely conserve it in the cool, sheltered, porous forest soil. Forests do not give back to the air and clouds more moisture than do cultivated fields or swamps or lakes or oceans; they are conservers, not lavish spenders; they do not themselves rob the air of moisture. The influence of reforestation, as such (to increase the rainfall or that of deforestation to diminish the rainfall), has been abundantly demonstrated to be quite inappreciable and probably nothing at all. To be sure forests grow on rocky slopes of mountains wherever there is sufficient soil and rainfall and heat, or a cloudy and moist atmosphere, but they also grow at sea-level on such plains as that of the Amazon, and wherever there is enough moisture, light, heat, etc.

The only way to prove that forests increase rainfall is to measure the precipitation before and after and during the process of reforestation *and be certain that your measurements are correct.* It is this last point that is most difficult of all. The slightest change in the exposure of a rain-gage to the wind *affects its catch, but not the rainfall,* and as for *correct* measurements of snowfall we are completely at sea.[1]

Local reforestation is advisable and necessary for many good reasons, but not in hopes of *increasing* the local rainfall. As for the so-called secular diminution of rainfall, we venture to assert that neither meteorology, nor geology, nor any other branch of geognosy gives clear, unimpeachable evidence of the progressive drying up of our globe as a whole. The fact that great glaciers, lakes, and rivers once covered regions now free from them merely shows that in those regions there was once a different relation than now exists between rainfall, snowfall, evaporation, and run-off, so that snow accumulated then more than now. At the present time there is more rain and less snow, or possibly more snow and more melting (possibly due to changes in altitude), so that the snow can not accumulate. The ratio of the snowfall in the cold half of the year to the rainfall in the warm half, must in general be large before snow will accumulate as in the glacial epochs of previous geological ages. Glacial phenomena tell us nothing whatever as to the absolute quantity of rain or snow.

As to the rainfall over the whole earth, all the statistics that have been accumulated in the past century have not sufficed to give us satisfactory information.

The works of Supan, 1898; Bartholomew, 1900; Herbertson, 1901; and Murray, 1903, serve only to give us very general ideas as to the *present* amount over the whole globe; as to the

[1] See "The measurement of precipitation," reprinted in the Monthly Weather Review for 1899, Vol. XXVII, p. 464–468.

secular change we know nothing at all. We can, however, perceive that the snowfall of winter results from water that was evaporated long before from tropical and equatorial regions, and that any excess of the glaciers of the Antarctic Continent over those of the Arctic must be due largely to the more abundant supply brought by moist ocean winds.

When the African Continent was 10,000 feet above ocean level with its great gorges of the Nile, the Congo, and the Zambesi, and when the submarine gorges off the mouths of the Congo and the Hudson were being eroded, both the African and the American continents *may* have had a larger snowfall and rainfall and a much larger outflow than now; but the existence of these gorges does not prove this since we see similar gorges now being cut down slowly by a comparatively small outflow in the Valley of the Colorado. Duration and quantity are equally important.

We think it is safe to say that no great changes in continents, oceans, or plateaus, arctic or antarctic, are likely to have made any correspondingly great change in the rainfall of the globe as a whole, and that therefore the globe is not now slowly drying up. The maximum annual rainfall that can occur on this globe as a whole is determined by the maximum total annual evaporation that can be caused by the sun's heat acting on the ocean, taken in connection with the maximum vertical interchange of air currents, since it is the cooling due to the latter that produces clouds and rain.—*C. A.*

TASMANIA AND THE TOTAL SOLAR ECLIPSE.

The meteorologist of Tasmania, W. H. C. Kingsmill, has called attention to the fact that the total solar eclipse of May 9, 1910, will be visible from that locality, and as this is one of the few places where observers can be located on land he anticipates that many government expeditions will be sent to that region. As these expeditions generally include not only technical astronomers but those representing other branches of science, such as meteorology, botany, and geology, it is likely that this event will be made the occasion of a very considerable addition to our knowledge of that region. American scientists are especially invited, and it is hoped that our meteorologists and botanists will improve the opportunity. An extensive scientific expedition analogous to that sent by the United States Government to the west coast of Africa in 1889 would be quite in order and probably yield as important results as those attained by the members of that expedition.—*C. A.*

DRIEST YEAR AT PORTLAND, ME.

By E. B. JONES, Local Forecaster. Dated Portland, Me., January 4, 1909.

In connection with the "Annual Index of Meteorological Notes," I will state that the year 1908 was the driest in the history of this station. Every month in the twelve was drier than normal, with three exceptions. The nearest approach to this record was in 1883, but this year had 1.25 inches of rain more than 1908.

During the year just ended there were only 30.74 inches of precipitation. The normal precipitation for the year in Portland is 42.51 inches, making a deficiency of 11.77 inches, or practically 1 foot.

June was the driest, for this month, on record and September was one of the driest, for the month, in the history of the local office. May was the only month which had any noticeable excess of precipitation.

As a result of the extreme dry weather, Maine suffered one of the greatest droughts in her history, forest fires destroyed hundreds of thousands of dollars worth of timber and other property, and crops were seriously injured and in many cases completely cut off.

At the present time the dry weather is being severely felt by mill owners and by farmers, who in many cases are hauling water from long distances. Many large industries have been obliged to shut down.

ADDRESS TO THE MATHEMATICAL AND PHYSICAL SECTION OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, DUBLIN, SEPTEMBER, 1908.

By W. N. SHAW, Sc.D., LL. D., F. R. S., President of the Section.[1]

It is with much misgiving that I endeavour to discharge the traditional duty of the president of a section of the British Association. So many other duties seem to find a natural resting place with anyone who has to reckon at the same time with the immediate requirements of the public, the claims of scientific opinion, and the interests of posterity, that, unless you are content with such contribution towards the advancement of the sciences of mathematics and physics as my daily experience enables me to offer you, I shall find the task impossible.

With a leaning towards periodicity perhaps slightly unorthodox I have looked back to see what they were doing in Section A fifty years ago. Richard Owen was President of the Association, William Whewell was President of Section A for the fifth time.

At the meeting of 1858 they must have spent some time over nineteen very substantial reports on researches in science, which included a large section of Mallett's facts and theory of earthquake phenomena, magnetic surveys of Great Britian and of Ireland, and, oddly enough, an account of the self-recording anemometer by Beckley; perhaps a longer time was required for fifty-seven papers contributed to the section, but very little was spent over the presidential address, for it only occupies two pages of print. My inclination towards periodicities and another consideration leads me to regard the precedent as a good one. That other consideration is that Section A has always more subjects for discussion than it can properly dispose of; and, in this case, discipline, like charity, might begin at home.

Since the section met last year it has lost its most illustrious member and its most faithful friend. Lord Kelvin made his first contribution to Section A at Cambridge in 1845, on the elementary laws of statical electricity; he was president of the section in 1852 at Belfast for the first of five times. I have looked to see what suggestion I could derive from his first essay in that capacity. I can find no reference to any address in the published volume. I wish I had the courage to follow that great example.

Lord Kelvin's association with Section A was so constant and so intimate that it requires more than a passing word of reference. There is probably no student of mathematics or physics grown into a position of responsibility in this country but keeps among his treasured reminiscences some words of inspiration and of encouragement from Kelvin, spoken in the surroundings which we are once more met to inaugurate. I

[1] On the occasion of the recent meeting of the British Association at Dublin the Senate of Dublin University conferred honorary degrees on many distinguished men including the following well-known meteorologists:

Dr. W. N. Shaw, Director of the Meteorological Office, London; Capt. H. G. Lyons, Director-General of the Survey Department in Egypt.

Also the following, who have contributed more or less directly to our science:

Sir David Gill, late Director of the Royal Observatory, Cape Town, South Africa; Dr. Horace Lamb, Professor of Mathematics, University of Manchester, England; Dr. E. Rutherford, Professor of Physics, University of Manchester, England, formerly of McGill University, Montreal, Canada.

The elegant address of Dr. W. N. Shaw, as President of the Mathematical and Physical Section (Section A) of the British Association, will, we believe, be instructive to every reader of the Monthly Weather Review, and we therefore reprint it in full.