question naturally arises whether it is possible, or will ever be possible, from a few given initial positions to predict the subsequent path. It will be noted that in the whole preceding discussion the energy of rotation of the cyclone has been supposed to be constant, or at least constant within certain limits. Now, this is never actually the case, though very often it is approximately so.

In the case of the last cyclone discussed it would be possible to trace its course beyond October 13, although no further record has been left us. By the law of the diminishing moment of momentum we might obtain the relative horizontal velocity for the 14th, and this, with the polar velocity which we have already calculated, would give us its position for that day. We could then plot its course for the next day, and the next, and although this path would not coincide with the one actually traced, it would give us an approximate idea of its subsequent course. But although many cyclones might have their paths predicted in advance with more or less accuracy, it is certain that others could not. The course of the Galveston hurricane could not in any way have been foreseen up to the morning of the 6th of September, 1900. Previous to that time it was a general disturbance of no very great intensity, extending over pretty much the whole of the Caribbean Sea. It is extremely difficult to plot the center of this disturbance from day to day, and, therefore, it is out of the question to attempt to deal with it analytically. But after the 6th it contracted, concentrating its energy, and becoming for all practical purposes a totally new and different cyclone. Such an abrupt change in the parameters can not be dealt with.

The problem of forecasting the track of a cyclone may later on, with increasing knowledge and more accurate measurements, be placed upon an entirely satisfactory basis. The present paper is merely a preliminary sketch, discussing the nature of the problem and giving some hints as to how it may be attacked.

In this article I have not "picked out a few cases of close agreement," but simply used the very meagre material accessible to me. It is my earnest desire to get more data of a reliable nature, and eventually find an opportunity to analyze the motion of hurricanes.

I believe that I have shown that the motion of cyclones is due to ordinary dynamical laws inherent in themselves. In some cases this motion can be predetermined. I do not pretend to say at present that the path of every cyclone can be predicted, especially where the governing quantities, or the *parameters* are changing in no ascertainable way—but in a number of cases where the moment of inertia remains tolerably constant, or where there is a constant rotational energy, as is the case in the heavy tropical hurricanes, we may predetermine a path with a considerable degree of accuracy.

Before closing, the writer desires to call attention to the remarkable conformity existing between our cyclone curves and the disposition of the coast line throughout the West Indies and the North American Continent. The Greater Antilles, the Gulf of Mexico, and the Atlantic coast line are arranged along cyclone curves. This has led some writers to ascribe the form of the cyclone path to the configuration of the coast line. The exact opposite is probably the fact.

RECENT PAPERS BEARING ON METEOROLOGY.

Dr. W. F. R. PHILLIPS, Librarian, etc.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a ——.

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CLOUDS ON THE CUCAMONGA MOUNTAINS.[1]

By Mr. G. R. ROUNTHWAITE, dated Avalon, Santa Catalina Island.

I am sending you solio prints of the storm on the Cucamonga Mountains, also a solio print of the same mountains taken on the following morning. The panoramic view of the mountains (figs. 1 and 2) was taken about 4 p. m. with the rear combination of a rapid rectilinear lens and a Bausch and Lomb color screen, or ray filter, at an elevation of 925 feet above sea level and at a distance of about 35 miles from the mountains. The summit of Cucamonga Peak is about 9800 feet above sea level. The trees in the foreground are orange trees on the Arlington Heights district of Riverside. The following points are indicated by numbers on the print:

1, 1. Sand flats of southeast Ontario. The wind coming over the mountains and through Cajon Pass is so strong that the sand is raised in the air thick enough to obliterate the view of the mountains beyond. Railroads have much trouble with the sand blowing into the cuts, and they guard against it by fences similar to the snow fences in the north. The hills in the mid-distance seem to concentrate the wind over these flats. There is now an immense vineyard planted in this district.

2, 2. The mouth of San Antonio Canyon and the higher citrus lands of Ontario Colony at the head of Euclid avenue.

3, 3. The citrus colony at Iomosa, which gets its water from the stream in Cucamonga Canyon.

4, 4. Northrup and Hurd's ranch, where oranges, lemons, plums, peaches, prunes, and olives are raised; the water supply comes from a tunnel into the mountains.

5, 5. De Mense, a citrus orchard of 40 acres; this also has a private water right through a tunnel into the mountains.

9, 9. Cajon Pass. Notice the cigar-shaped cloud crossing behind the trees. I have been at point 4, 4 and distinctly heard the roar of trains coming and going in this pass.

[1] Prof. Alexander G. McAdie forwards to the Monthly Weather Review a letter from Mr. G. R. Rounthwaite, dated Avalon, Santa Catalina Island, off the coast of southern California, but relating to some photographs of the Cucamonga Mountains, taken from Arlington Heights, latitude 33° 55′ north, longitude 117° 25′ west, and looking nearly due north. The Cucamonga Mountains lie between the observer and the Cajon Pass between the San Gabriel Range and the San Bernadino Range; one branch of the Southern California Railroad passes through Cajon Pass.

We reproduce Mr. Rounthwaite's beautiful photographs in figs. 1, 2, and 3.