A NOTE ON THE DISTORTION OF THE HURRICANE SAN FELIPE (II) BY THE MOUNTAINS OF PUERTO RICO

Robert G. Stone

In Figure 1 the reports of lowest pressures and times at which they occurred as collected by Dr. Fassig from various amateur observers around the Island are plotted. [A description of this storm is given on Mon. Wea. Rev., September, 1928, pp. 347-352. The data used here were only in part published, some in the above reference and some in a mimeographed account by the Weather Bureau, San Juan. The rest of the data and information are from manuscript sources on file at the United States Weather Bureau, San Juan; R. W. Gray, official in charge of that Office, kindly made this information available to the writer.] Lines have been drawn through points at which the lowest pressure was reached at the same hours, namely, for 1 p.m., 2 p.m., etc. These generally trend north-south but show that as the hurricane moved west the Luquillo Mountains and central Sierras held back the center of the storm locally while the parts of the

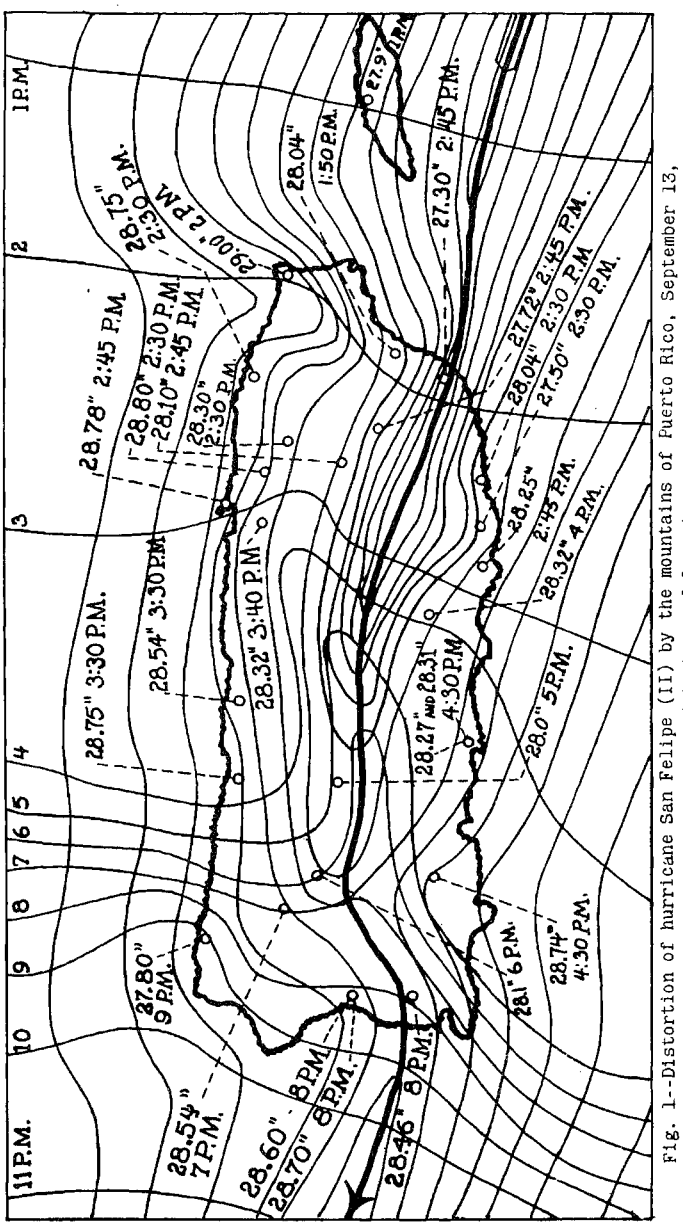

Fig. 1--Distortion of hurricane San Felipe (II) by the mountains of Puerto Rico, September 13, 1928--isochrones and isobars of lowest pressure

storm over the smoother lowlands and over the sea moved on ahead with the usual speed. Then when the storm-center reached the central part of the Island (on September 13, 1928) the delay became so great that even the outlying parts of the storm slowed down for awhile (4 to 10 p.m.) until the center could slowly make its way along the crest of the western mountain and down to the coast. There the normal symmetry was apparently quickly regained (by 10 p.m.) over the smooth ocean, and the center soon (by 11 p.m.) picked up the speed it lost by friction over the rough terrain of the Sierra. Lack of reports from any ship near the coast leaves us only to speculate on the positions of the isochrones over the surrounding waters, but we give what we believe is a reasonable interpretation.

In addition, lines were similarly drawn through points having the same values of lowest pressure; these are not true isobars but merely serve to show the path of the center, which is drawn in a bold arrow. There are two particularly interesting features: First, the slight southward deflection just as the crest of the range in the center of the Island was reached so that thereafter the track ran parallel to the main divide instead of crossing it; and second, the sharp turn southwestward and then northeastward taken by the storm in passing off the mountains back of Mayaguez. The storm thus crossed Mona Passage in a direction quite parallel to that it had before striking Puerto Rico but with its position shifted a few miles farther south. Note also that the Luquillo Mountains caused a great deformation in the isobars of the northwest quadrant, but this distortion hardly altered the general direction of the track since most of the storm was still over the sea.

We have in this case a very interesting example of the well-known effect of mountains in delaying and weakening a hurricane and of its regeneration upon descending the leeward to the sea or lowlands again.

One questionable detail should be noted. The barometer at Isabella (northwest corner of the Island) is reported to have fallen to 27.80 inches; this observation, if it can be relied upon, is the lowest on the west end of the Island and would suggest that the center of the storm passed over that place instead of over Hormigueros, Cabo Rojo, and Mayagüez as drawn. However, the barometers (mostly aneroids) in these cases are admittedly subject to errors which are difficult to ascertain under such circumstances. Since the hour of lowest pressure at Isabella (9 p.m.) seems rather too late compared with the times at surrounding stations, one is led to question the report. Dr. Fassig, however, took these reports at face value and published a map showing the path as passing over Isabella. Reports received some time later, from a ship in Mayagüez harbor and from the log kept by Honorable Jaime Annexy of Hormigueros, leave little doubt that the storm-center passed at least as far south as Mayagüez, if not farther, as we have drawn it. The rather long calm periods observed at Mayagüez and Hormigueros during the passage of the "eye of the storm" would also lead one to doubt that the <u>center</u> passed so far north as Isabella. The track as drawn here is now accepted by the Weather Bureau officials at San Juan and Washington, D. C. However, it is just possible that the calm center when over the west end of the Island was much elongated in a northeast-southwest direction reaching from Isabella to Cabo Rojo or beyond, that is, a distance of 40 miles or more; only the two-hour delay in time of minimum barometer at Isabella leads us to doubt this. The center may even have been split in two by the mountains; or, the mountains may have caused the axis of lowest pressure to lean somewhat to the southwest in the lower levels so that the surface-isobars near the center became elongated as suggested above.

Blue Hill Meteorological Observatory, Harvard University,
Milton, Massachusetts

NEW PROBLEMS AS THE RESULT OF RECENT RADIOSONDE-WORK ON SHIPBOARD IN THE NORTH ATLANTIC

H. W. Rahmlow

Due to the paucity of weather-reports in the North Atlantic as a result of the European conflict, the United States Weather Bureau, in cooperation with the United States Coast Guard, inaugurated the Ocean Weather Service during the first week of February, 1940.

On February 5, the U. S. Coast Guard cutters <u>Duane</u> and <u>Bibb</u>, equipped with the necessary Weather Bureau instruments, proceeded to the designated stations, lying one-third and two-thirds of the distance between Bermuda and the Azores, on the route of the trans-Atlantic clippers.

The daily routine of work on a "floating weather-station" is practically the same as that of an average airport-station. Surface-, pilot-balloon, and radiosonde-observations are taken