The hydrographical work by Lieutenant RYDER, the Captain of *Penola,* is the subject of a long and interesting report, too detailed for insertion in this note. It deals carefully with navigation amongst the islands and with the tides, of which a record for thirty-two consecutive weeks by automatic gauge was obtained. There are careful directions for entering Stella Creek with full notes about its suitability as an anchorage. It is interesting to note that open water reached Crulls Island, the outermost of the Argentine group, about fifteen miles from the mainland, as early as 26 September, although it was frequently beset by pack ice up to January.

For its second winter in the South the Expedition has a base on a group of six small islands in Marguerite Bay close to the Fallières coast of Dr. CHARCOT's maps and about twenty miles north of a low barrier formation. Provided that no undue difficulty is experienced with the sea ice, the new headquarters should be an ideal base for the sledging expeditions to the south. If, as seems possible, the barrier formation can be used for these journeys, good distances should be made, and there seems no reason why the main outlines of the geography of the southern end of the Graham Land Peninsula or Archipelago should not be settled once for all during the next southern summer. Already the Expedition has seen from the air that Alexander I Island appears to be part of the mainland, and it is possible that RYMILL will make at least one sledge journey to establish that fact. At the same time his main journey,if conditions are favourable, will probably be towards the south-east to investigate Stefansson Strait and the coast of Hearst Land where it faces the Weddell Sea, if possible as far as Filchner's Barrier.

SEA SWELLS IN RELATION TO MOVEMENT AND INTENSITY OF TROPICAL STORMS.

(Extract from an article by I.R. TANNEHILL, MARINE DIVISION, WEATHER BUREAU, Washington, published in the *Monthly Weather Review,* Vol. 64, N° 7, Washington, July 1936, page 231).

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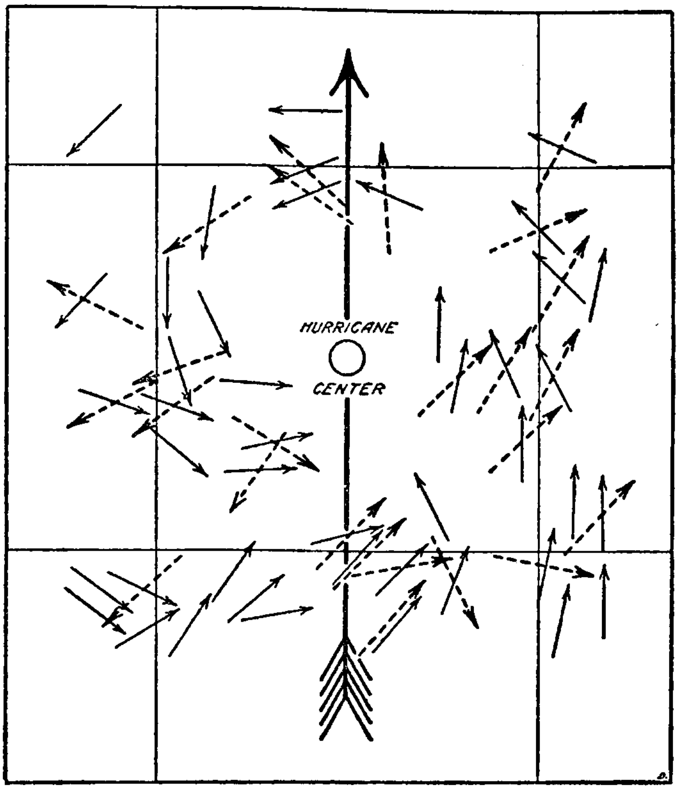
On the 18th of August 1935, a tropical storm appeared to the northeastward of Puerto Rico. It moved slowly northwestward, then recurved to the northeastward and passed a short distance to the northwest of Bermuda on the 23d. Owing to its relatively slow progressive movement and its location in the open ocean from the 20th to 22d, inclusive, this storm afforded an excellent opportunity for the study of sea swells. During these 3 days, ships' weather observations were secured by the Weather Bureau at intervals of 6 hours — at 0000, 0600, 1200, and 1800 G.M.T. Many of the reports contained observations of swells in the international code, giving character of the swells and the direction from which they were moving.

From these reports, 12 synoptic maps were prepared showing direction of wind and swell. These 12 maps were then combined to form the composite chart shown in attached figure. Each of the individual maps was oriented so that the line of progression of the storm center lay on the central meridian of the composite chart before transferring the observations. Thus the movement of wind and swell is shown in the figure in a 7° ocean square as related to a storm center with a progressive movement due northward.



The observations in attached figure show the deviation of swells to the right of the wind; that is, an observer standing with his back to the wind would find the swells moving off to his right.

By computation for a 10° square from the individual charts, it was found that the deviation of swell from wind averaged 61° in the two front quadrants of the storm, 104° in the left rear quadrant and only 20° in the right rear quadrant.

This difference in the amount of deviation in the two rear quadrants is apparently owing to the progressive movement of the storm. The forward movement of the wind field in the right rear quadrant, at some distance from the storm center, results in a prolonged action of wind in the direction in which the swells are running. In the left rear quadrant the wind field moves away from the swells, resulting in a more pronounced deviation. Along the line of progression at the rear of the storm there is a discontinuity in swell movement. A similar discontinuity is shown in the observations in connection with other tropical storms; it appears to be a genuine feature of the movement of swell in traveling cyclones.

In front and to the right of the storm center the swells in general move forward roughly in the direction of travel of the storm or a little to the right. If the storm continues to move in the same direction over the ocean, these swells become larger and reach far in advance of the storm.

. . . .

CONCLUSION

While there is a large body of observations of sea swells, part of which were connected with tropical storms, much remains to be accomplished in acquiring suitable records for study. This discussion is presented as an indication of the probable value of collecting and studying adequate and systematic series of observations, both under normal weather conditions and when tropical storms are in progress.

The available records appear to show definite relations of storm intensity and movement to the period and direction of swells, as follows :

1. Within the tropical cyclone, the winds turn to the left of the swell in the Northern Hemisphere, to the right in the Southern Hemisphere.

2. The progressive movement of the tropical cyclone results in differences in the amount of deviation of wind from swell in the different parts of the cyclone.

3. In the tropical cyclone, the length of fetch of the winds is insufficient to develop waves of the maximum length and period theoretically possible under favorable conditions with winds of hurricane force acting upon long stretches of deep sea.

4. The period of storm swells is indicative of the intensity of the storm and is not dependent upon the distance between the storm center and the point of observation.

5. There is a line of discontinuity in the movement of swell, along the line of progression to the rear of the storm center.

6. When storm swells move into shallow water along the shore, a turning movement results, so that the direction of swell tends toward the normal to the coast line.

7. Waves do not deviate from the wind in the absence of a cyclonic storm or other unusual weather conditions.

8. As a storm increases in intensity the period of the swell increases.

9. The size of waves caused by winds depends upon the extent of the water surface over which the winds blow. Waves along the southern Atlantic coast of the United States are much larger under average weather conditions than waves during ordinary weather in the Gulf of Mexico.

10. The winds over a considerable part of the storm field to the right of the center of a traveling cyclone (in the Northern Hemisphere) are directed continuously forward, roughly along the line of progression. The progressive movement of the cyclone increases the force of these winds upon the water, hence the largest swells are developed there. They run far ahead of the cyclone.

DIFFERENT MEANS OF LIGHTING AND THE RANGE OF LIGHTS WITH REFLECTORS.

(Information abstracted from a pamphlet issued by the *Anciens Etablissements* SAUTTER-HARLÉ, 16-26, Avenue de Suffren, Paris 15e, 1936).

(Translated from the French).

I. *THE DIFFERENT METHODS OF LIGHTING :*

1. *Incandescence by vaporized petroleum :* For a long time the most commonly employed means of lighting in the most important lighthouses was the incandescent petroleum vapour lamp.

The burners are easily kept in condition owing to the facility with which they may be assembled and taken apart. Use is made of soft mantles which may be transported without danger of breakage and which may be kept in storage for several years. When being put in service these mantles are incinerated on the burner itself. In most cases the intrinsic brightness exceeds 30 candles per sq. cm.

These mantles are 55 or 85 mm. in diameter. The hourly consumption of petroleum is 0.700 kgs. for the 55 mm. mantle and 1.300 kgs for the 85 mm. mantle.