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HURRICANES AFFECTING THE ATLANTIC COAST, THE GULF COAST, AND THE SOUTHERN CALIFORNIA COAST OF THE UNITED STATES

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GENERAL

Hurricanes in the Northern Hemisphere are tropical storms whose diameters may vary from 50 to several hundred miles. The winds blow counterclockwise around the center and slightly inward at the surface. As defined in this paper, hurricanes have wind velocities that exceed 60 m.p.h.

These storms form in the southern part of the North Atlantic Ocean (north of 6° N. latitude) and occasionally in the Caribbean Sea, generally moving westward or northwestward to about 30° N., where they usually recurve to the east or northeast. Many hurricanes have very erratic trajectories; some even describe loops, while others remain almost stationary for days at a time.

A hurricane receives most of its energy from the condensation of water vapor, which occurs as the air in the storm is lifted. As the storm passes from a water to a land surface, the source of this energy is removed to a large extent, and the storm decreases in intensity. The velocity of surface layers of air is decreased due to the effect of friction introduced by the land surface, the water surface being comparatively frictionless. These effects combine to reduce surface wind velocities as the storm moves inland so that, at localities 200 miles inland, tropical storms are seldom or even intense enough to cause more damage than that associated with an ordinary summer thunderstorm.

In the light of the above discussion, the storm tracks shown in figures 1 through 6 should not be assumed to be destructive for distances more than 150 or 200 miles inland.

The tracks of all hurricanes which affected the eastern seaboard, all of Florida, the Gulf coast, and the coast of southern California have been plotted by months (figs. 1 to 6). No effort was made to locate the region of origin or the region of dissipation of the storm, except in those cases where the storm dissipated over the United States. The point of dissipation is symbolized by an "F" at the head of the arrow showing the direction of movement of the storm. Only those parts of the tracks were plotted at which points the hurricane would affect the areas under consideration. Circles on the hurricane tracks indicate the positions of the center of the hurricane at the end of successive 24-hour periods.

Data for the years 1887 through 1923 were examined for the North Atlantic, and for the years 1895 through 1941 for the North Pacific. Data were examined only for the so-called hurricane months, June through November.

It should be borne in mind that not all of the storms herein plotted are of sufficient intensity to destroy aircraft on the ground and other facilities. However, the violence of some of the storms which pass over the Atlantic and Gulf coastal areas is well known. The tracks of all tropical storms which had, at some time, been of great intensity were plotted to give a complete picture of the movement of tropical storms, any one of which may have been a hurricane.

SOUTHERN CALIFORNIA COAST

In view of the extremely rough nature of the terrain in this vicinity, there seems to be little reason to believe that surface winds during the infrequent hurricanes in this area could reach velocities higher than 50 m.p.h. at places more than 15 miles inland from the coast. Winds of 60 to 70 m.p.h. could, on rare occasions, occur within this narrow coastal strip.

No hurricanes passed over the coastal areas of southern California in the months of June, July, October, and November of the years for which data were available.

Southern California was visited by two hurricanes in August. Both of these storms had lost much of their intensity by the time they reached the mainland.

September is the month of greatest hurricane frequency at the southern California coast; two hurricanes passed over it during the 47 years for which data are available.

Of the two storms, that of 1939 was the most intense and the only one that produced winds of sufficient velocity to cause appreciable damage in the area. At Point Fermin near Los Angeles, an extremely exposed spot, the wind velocity is reported to have reached 75 m.p.h. Inland at Los Angeles, and at San Diego, about 100 miles south of the point where the storm reached the coast, maximum velocities of 40 to 45 m.p.h. were reported.

NORTH ATLANTIC AND GULF COASTS

The greatest number of hurricanes affecting these coasts in June of any of the 37 years for which data were used was two.

Up to two tropical storms visited the regions in the month of July of any of the years for which data were used.

The incidence of hurricanes increases in August. Three such storms is the greatest number which moved over the United States in August, 1887 to 1923.

The maximum number of hurricanes affecting the mainland in September of the years under consideration was three. More hurricanes travel over the United States in this month than in any other.

In the 37-year record examined, two was the greatest number of hurricanes reaching the United States in October.

One hurricane struck the United States coastal area in November.

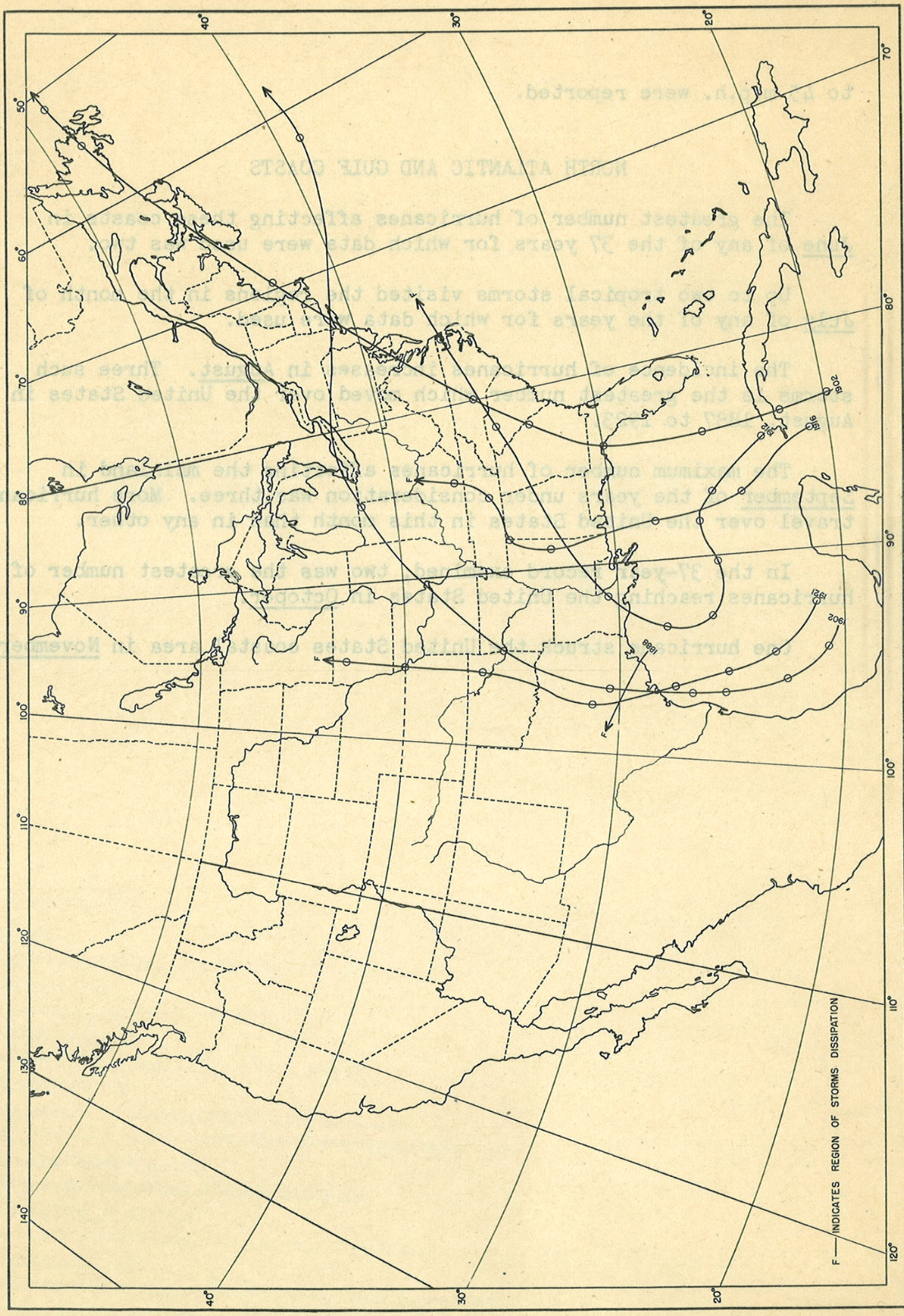

FIGURE 1.-HURRICANE TRACKS, JUNE

F — INDICATES REGION OF STORMS DISSIPATION

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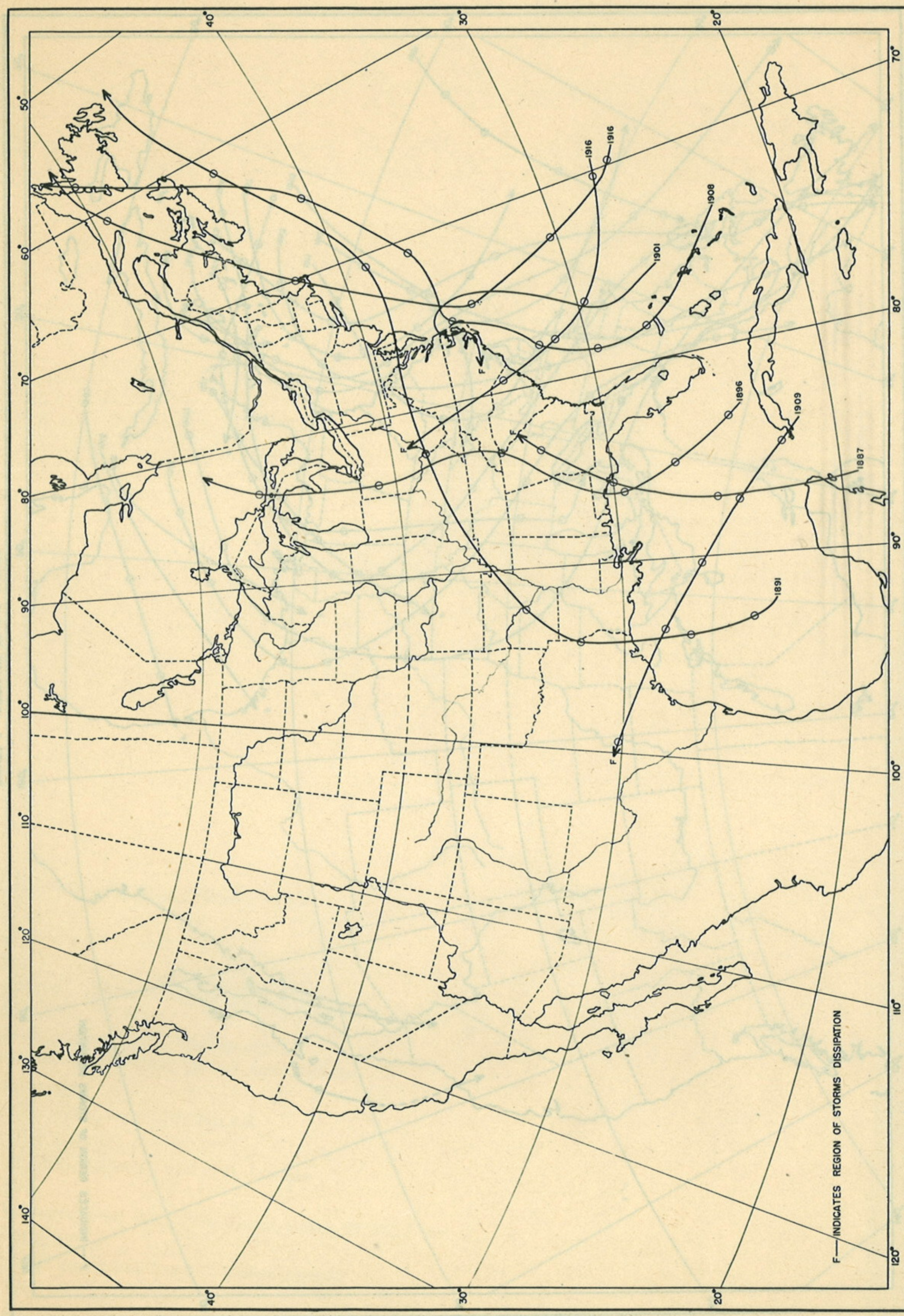

FIGURE 2- HURRICANE TRACKS, JULY

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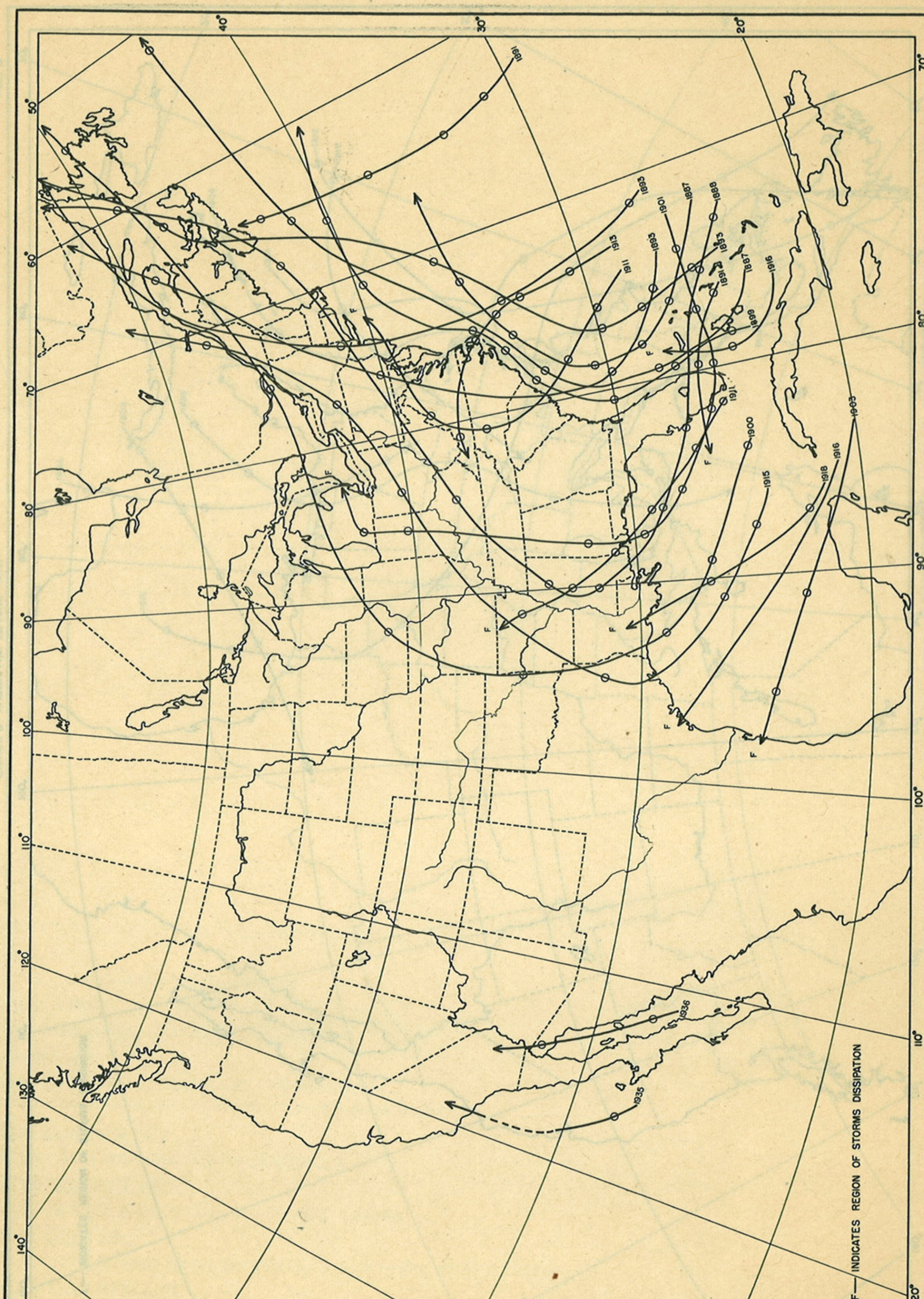

FIGURE 3.-HURRICANE TRACKS, AUGUST

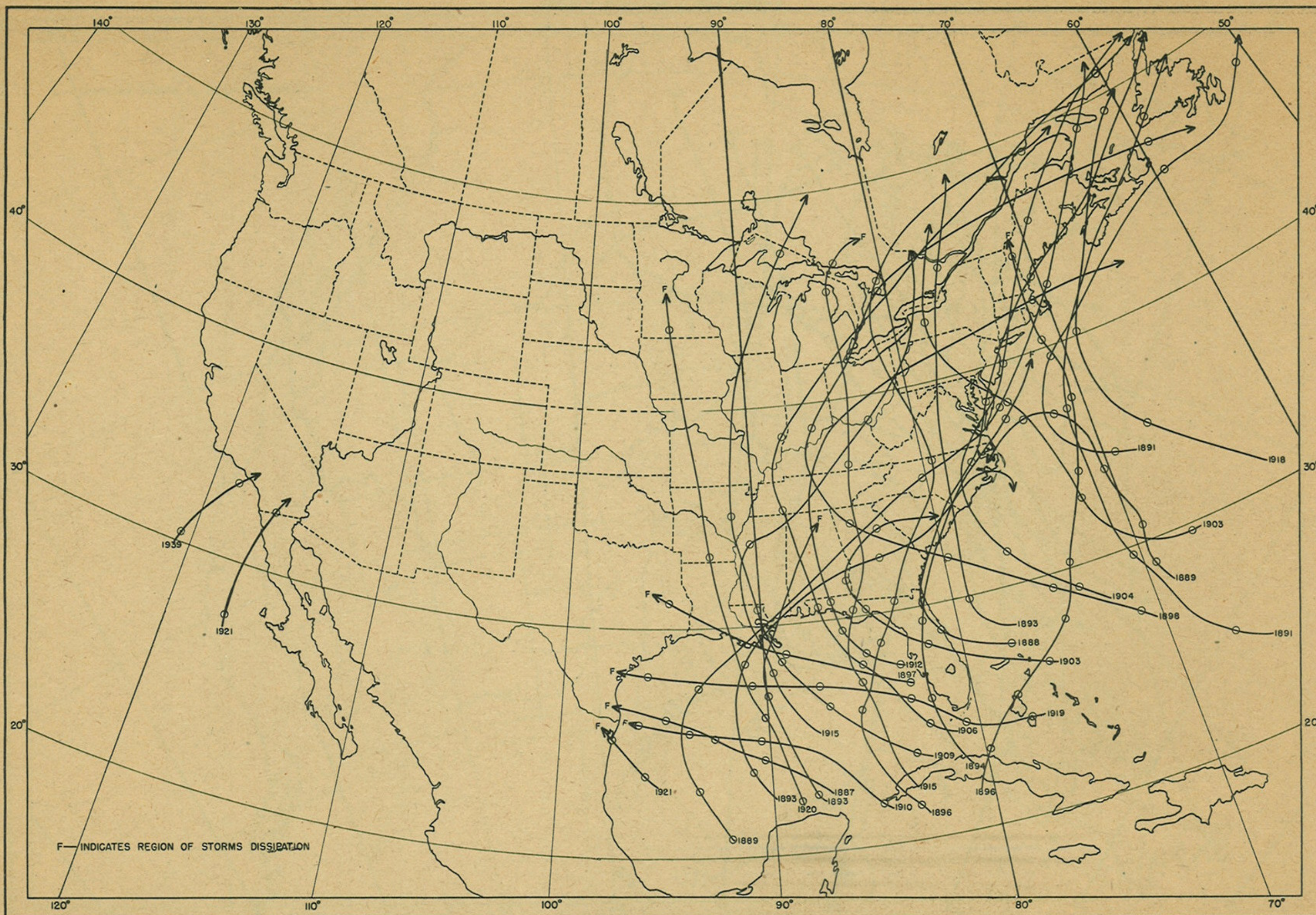

FIGURE 4.-HURRICANE TRACKS, SEPTEMBER

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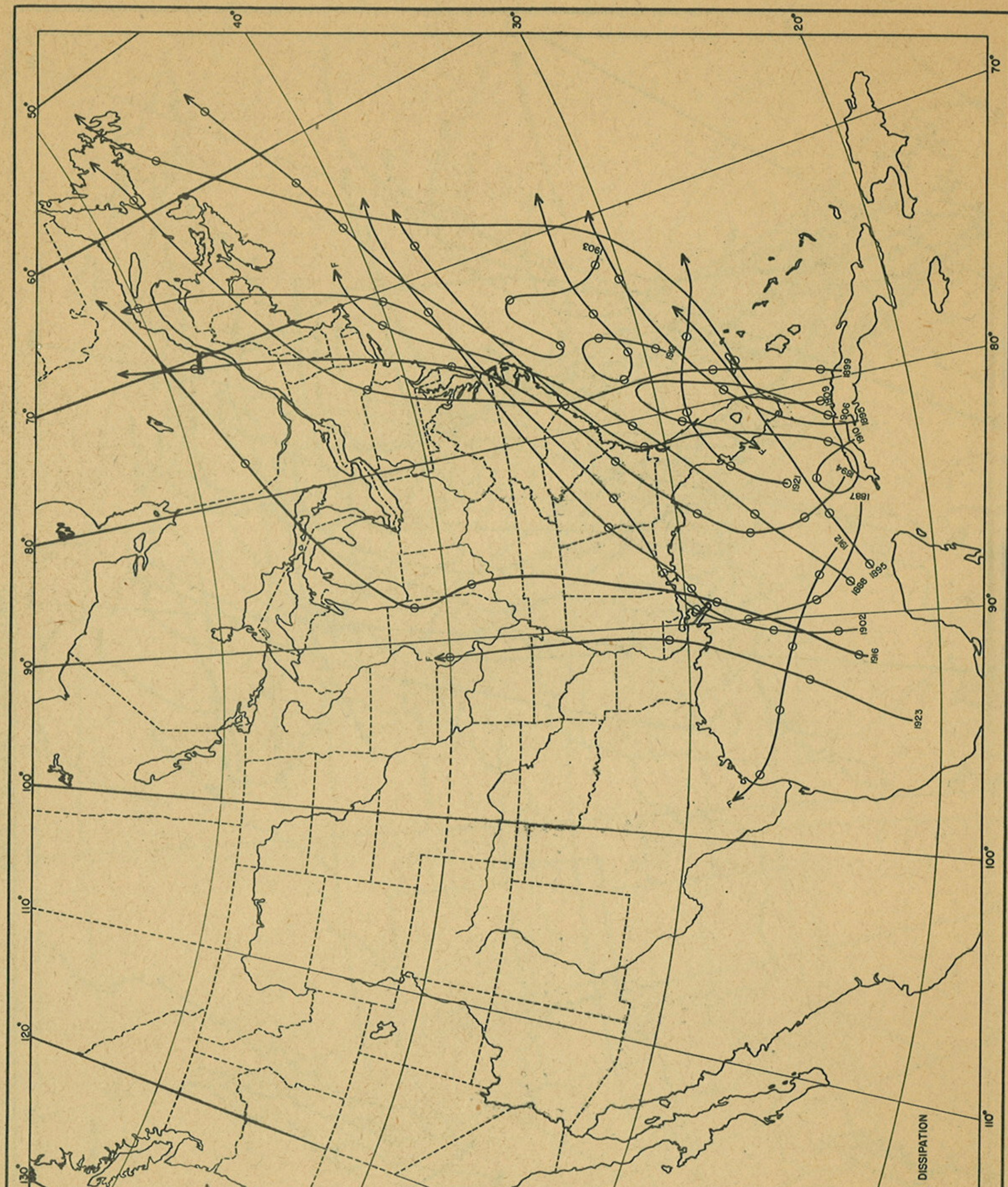

FIGURE 5.-HURRICANE TRACKS, OCTOBER

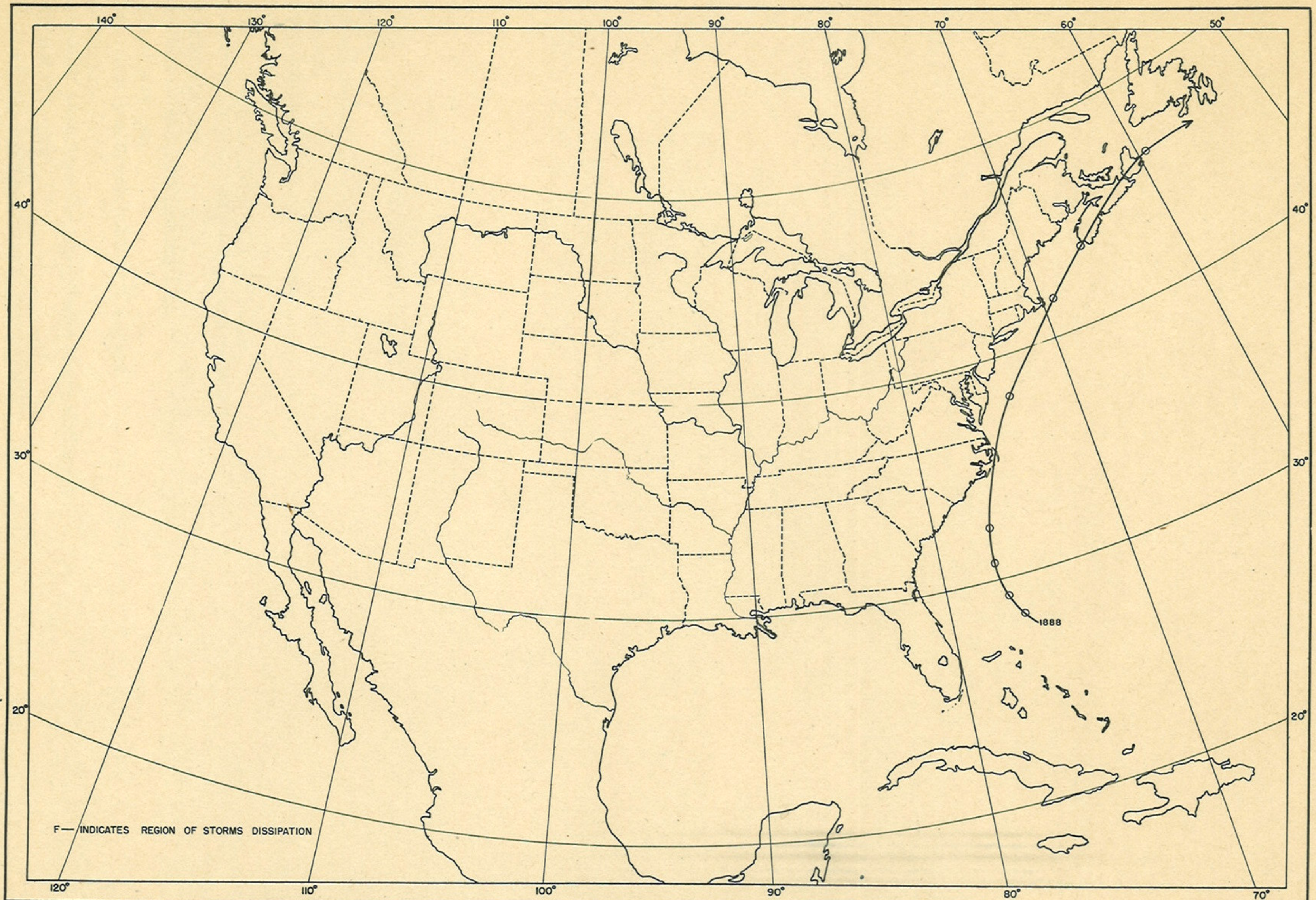

FIGURE 6.-HURRICANE TRACKS, NOVEMBER

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