

TABLE 1.—Synoptic view of elements and effects of the five severe cold waves in Florida.

Dates of occurrence of cold waves at Jacksonville, Fla.	Highest pressure and location 24 hours previous.	Lowest pressure at Jacksonville during passage of preceding low.	Range in pressure.	Lowest temperature at Jacksonville.	Effects of cold wave.
Jan. 12, 1886.	Dakota, 30.8	29.5 on 8th	1.3	15	Vegetables killed; citrus fruits frozen in north and central portions. Many fish frozen in shallow waters.
Dec. 28, 1894.	Texas, 31.0	29.8 on 26th	1.2	14	Vegetables and pineapples killed; citrus fruits frozen in north and central portions. Trees defoliated.
Feb. 8, 1895.	Dakota, 31.1	29.6 on 7th	1.5	14	Citrus trees killed north and central and damaged some sections south portion.
Feb. 13, 1899.	Texas, 31.0	29.6 on 7th	1.4	10	Severest cold wave of record in Florida. Destroyed most of citrus trees except in extreme south. Heaviest snow fall of record, trace of snow occurring in south-central portion of State.
Feb. 3, 1917.	South Dakota, 30.9.	29.5 on 1st	1.1	16	Trees defoliated and fruit frozen on trees in north and central portions; some damage in south portion of State. All truck killed.

It is noted that, including the one of February, 1835, four of the six cold waves occurred during February when the thermal tendency is upward, and only one during January, the coldest month of the year. The cold wave of February, 1899, was the only one whose preceding low dipped to the Gulf of Mexico and thence across the Florida Peninsula. It was also characterized by Florida's record snowfall and low temperature for, possibly, 60 or 70 years.

Figures 1 to 4 (Charts XLV-85 and 86) are reproductions of the 8 a. m. and 8 p. m. weather maps for February 2-3, 1917. In a general way they are typical of the pressure distribution in the severe cold waves that reach lower latitudes. A study of antecedent conditions show that, although cold waves lose intensity as they push southward, yet the outflow of cold air from the phenomenal HIGHS is so pronounced as to reach even the lower portions of the Florida Peninsula. Figure 5 shows the lowest temperatures ever recorded in Florida.

Hitherto, the limiting southern position of the frost line in Florida has been a geographical enigma. Since January, 1886, which brought some of the severest abnormally cold weather since that of February, 1835,

the southern limit of frost in Florida has been a feature of every cold wave, each increase in severity, pushing the known frost line farther equatorward. During 1916 the Chief of Bureau authorized the establishment of a cooperative meteorological station at Long Key, Monroe County, Fla., which is about equally distant (60 miles) from Homestead on the north and Key West on the south. On February 4, 1917, a temperature of



FIG. 5.—Extreme minimum temperatures in Florida, 1870-Feb. 28, 1917.

37°F. was recorded at Long Key. This temperature, of course, indicated frost deposit provided other factors were favorable, which was the case. In all probability, Long Key is the southern limit of frost formation on the islands adjacent to, or on the littoral of the United States.