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PICTURE OF THE MONTH

A Cyclonically Curved Jet Stream

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Large sheets of anticyclonically curved cirrus are frequently seen on satellite photographs and can be associated with the jet stream. This thick cirrus is usually in the region of strong upward vertical motion between an upper level trough and the next ridge downstream. Cirrus advected over the ridgeline into a cyclonically curved flow usually dissipates rapidly in this region of sinking air. Thus, cyclonically curved cirrus is seen infrequently; and this portion of the jet stream is difficult to locate on satellite photographs.

The ESSA 9 photograph shown in figure 1 has an extensive sheet of thin cyclonically curved cirrus, from A to B, associated with the cyclonically curved portion of a polar jet stream off the west coast of North America.

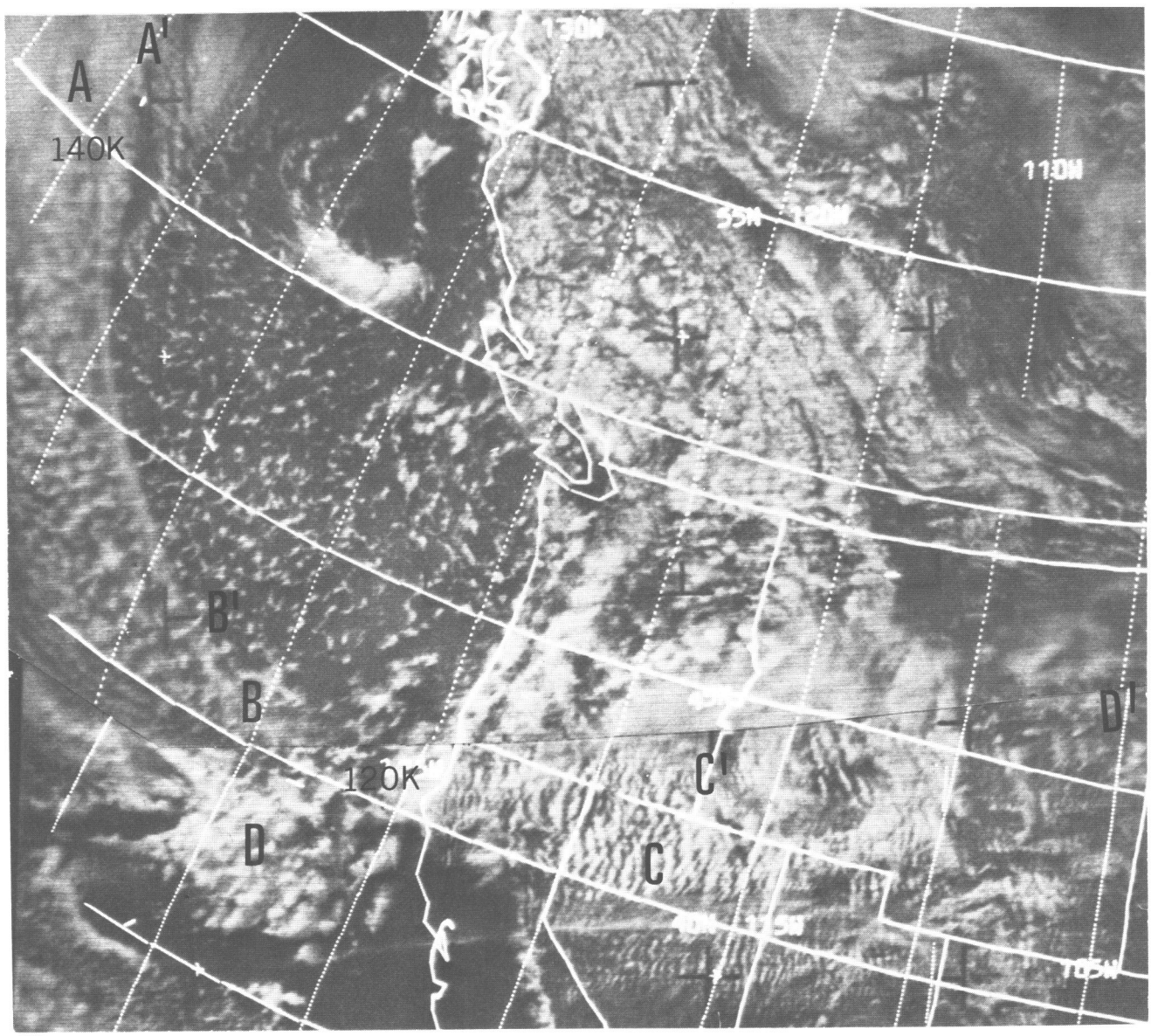

FIGURE 1.—ESSA 9 view, pass 5290, at 2130 GMT on Apr. 25, 1970.

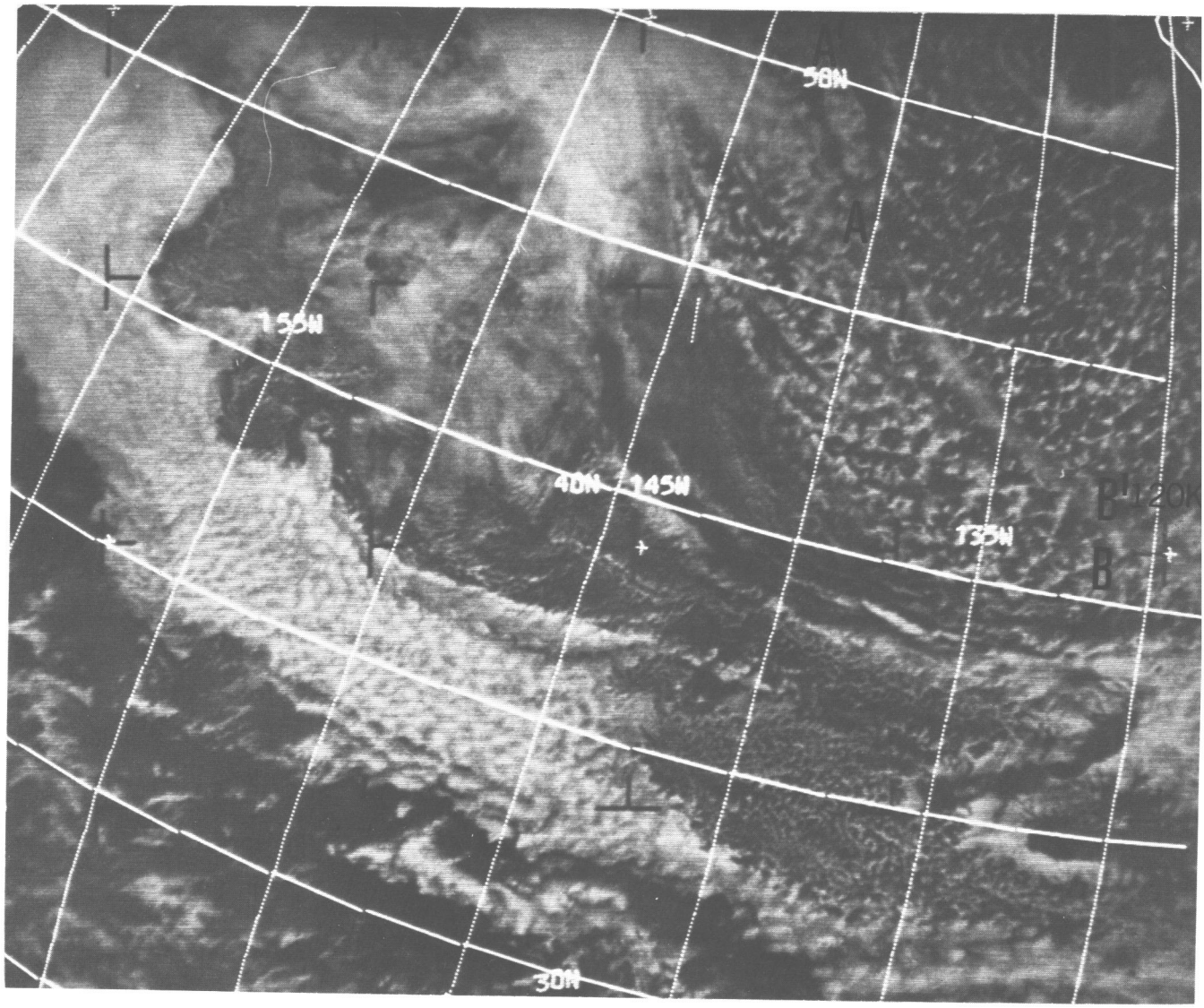

FIGURE 2.—ESSA 9 view, pass 5291, at 2330 GMT on Apr. 25, 1970.

The large area of mountain wave clouds, at C, over the Western United States is further evidence of this belt of strong winds.

The cyclonically curved portion of the jet stream, from the 0000 GMT NMC (National Meteorological Center, Suitland, Md.) 300-mb chart of Apr. 26, 1970, extends from A′ to B′ to C′ to D′ on figure 1 and from A′ to B′ on figure 2. Representative wind speeds from the 300-mb chart are also plotted on the photographs.

Figure 2, an ESSA 9 photograph taken approximately 2 hr later than figure 1, shows the cirrus associated with the jet stream extending from A to B. The rapid rate of dissipation of the cirrus during the 2-hr period is illustrated by comparing the large cirrus sheet on figure 1 with the remaining cirrus streak on figure 2.

In this case, the change from unstable cloudiness poleward of the jet to stable cloudiness equatorward of the jet is minimal, except at D where the change to stable cloudiness is more complete.