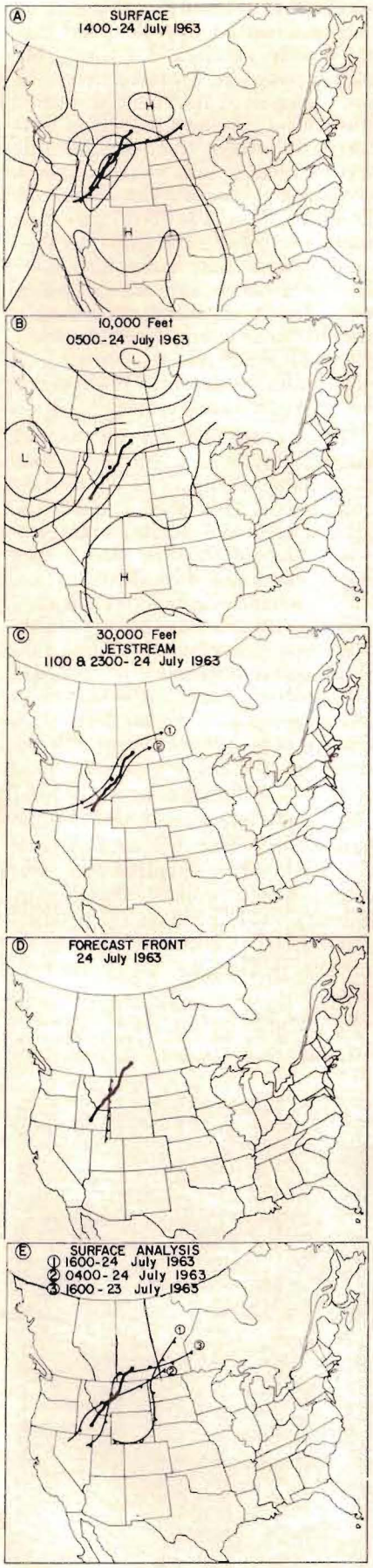

Figure 2.

riving in the same dead area east of Helena some two hours later than I did. Frank Kelsey also flew his K-16, an Aeronca fuselage with strut-braced glider wings, to his goal at Butte for his Diamond goal and Gold distance.

A real booming day but how do you tell it by looking at the weather ahead of time? Since the flight, weather data has been obtained from all possible sources and considerable effort has been expended in attempting to sort out just what this might mean in terms of making another such flight. In Fig. 2 I have shown five of the more interesting charts that were examined. Plot (A) shows the surface pressure pattern and locates a weak front in such a position that the first half of the flight would have been more or less along it while the second half would have been behind it. Plot (B) shows the pressure pattern at 10,000 ft. and the dominating influence of the low off the Washington coast which produced the strong winds from the SSW as well as an area of convergence along the flight path. No particular frontal line is indicated. Plot (C) shows a wind analysis at 30,000 ft. with the axis of the jet stream essentially over the flight path from Great Falls north. Also shown is the position of the jet stream some twelve hours later which again agrees with the observed progress of the storm in an easterly direction. Plot (D) shows the position of the surface front as presented at the pilots' briefing. Plot (E) shows the position of the surface front according to the weather bureau analysis at the time of the flight, 12 hours before the flight and 24 hours before the flight. I find it difficult to put these together in a manner which fits the conditions as I observed them.

Temperature lapse rate data is presented in Fig. 3. Three curves are shown, one for the area ahead of the storms, one for the area of the storm and one for the area southwest of the storm. These show that the air at lower altitude under the storm was cooler than the same air ahead of the storm. Was this a cold air wedge pushing ahead or does it reflect the lack of ground heating due to the extensive cloud cover? The third curve does show a cooler air mass moving in from the southwest.

The reader is invited to draw his own conclusions. My own best judgment is that the precise location of the surface front was not a major factor. The various locations shown in the plots of Fig. 2 lead me to believe that it was poorly defined and subject to a wide variety of interpretations. Of greater importance appears to be the upper air situation. The influence of the low off the Washington coast in producing high winds along the first part of the flight has already been mentioned. These winds across the mountain ranges produced orographic lift which augmented the rather weak convection that would normally be anticipated from the plus 7 stability index forecast at the pilots' meeting. My guess is that the jet stream at 30,000 ft. over the second part of the flight was an important factor in triggering the thunderstorm line northeast of Great Falls later in the day.

One can not help but be impressed with the difficulty of forecasting or analysis of the relatively small-scale weather situations of interest to the soaring pilot on the basis of observations and analysis of data directed toward a nationwide weather summary. This may be of value in a classical, clear-cut frontal passage but is most difficult in the more usual, more complex situations that usually confront us.

The story of this flight should be of interest, not so much for what was accomplished but, because of the indications of what could have been accomplished. With adequate instruments, maps, oxygen and a better prepared pilot, it could have been over 700 miles.

Fig. 3. Temperature lapse rates.