Reply

Joanne Simpson
ESSA, University of Miami Branch, Coral Gables, Fla.
Michael Garstang
Florida State University, Tallahassee
Edward J. Zipser
National Center for Atmospheric Research, Boulder, Colo.
and Gordon Dean
Florida State University, Tallahassee

13 November 1967

We agree wholeheartedly with Mr. Carson's statement that "streamlined wind fields from 3000 through 15,000 ft commonly provide synoptic insight into elongated shower belts...." We had examined the lower and middle troposphere at 6-hr intervals from 0000 GMT 15 August through 1800 GMT 16 August 1963 and had been unable to maintain continuity of the asymptote so prominently drawn by Carson in his Figs. 1 and 2.

Our analysis of the pilot balloon and rawinsonde data had revealed to us that the weak asymptote near 13N (Carson's Fig. 1) had moved southward rapidly during the next 6–12 hr and did not reappear again on the intermediate charts until 1200 GMT 16 August and then only between the 5000–7000 ft levels, being non-existent below 4000 ft and above 8000 ft. We believe that the northerly wind component indicated on the pilot balloon sounding at Martinique (1200 GMT 15 August) was the forerunner of northerly components of the wind that subsequently spread throughout the Lesser Antilles in the lower troposphere. In fact, the northerly wind components even appeared at Trinidad by 0000 GMT 16 August from the surface to 14,000 ft. Thus, the southerly components assumed to prevail for 24 hr by Carson between his Figs. 1 and 2, to the south of the asymptote at 13N, are not verified. Therefore, we did not attach significance to the asymptote as the "essential part of the anatomy of the disturbance and thus a factor which must be taken into account if we wish to understand it."

Furthermore, it has been our experience that confluent asymptotes in the tropical wind field must exist nearly vertically through the lower and middle troposphere before significant weather is associated with them—and then only if the speed field is also convergent. Unfortunately, the data did not permit us to suggest this synoptic feature (the asymptote) as an explanation for the observed weather in our case study.

We should like to suggest a relocation of the asymptote downstream from 60W in Carson's Figs. 1 and 2. The wind observation at Maricaibo shows the wind to be 1805 at 5000 ft and not 1815 as plotted in Fig. 1, and the wind at 6000 ft to be 0914. Thus, the southerly winds do not spread to 15N, as implied, and continuity of the flow pattern could have been more easily maintained in Figs. 1 and 2 by placing the asymptote just to the north of the South American Coast.