

AN ANALYSIS OF JOHNSON'S FLIGHT

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The 545 mile sailplane flight which Dick Johnson completed on August 5, 1951 constitutes man's most spectacular accomplishment to date in the field of utilization of the energy in the atmosphere for human flight. It stands as a tribute to the design, construction, and refinement through flight test of the RJ-5, and the meteorological and pilotage, knowledge and skill of the Champion, Dick Johnson. For those of us who soar, the distance and time involved in this flight is information enough to give us an appreciation of the magnitude of the feat. However, an analysis of the data obtained from this flight may perhaps increase this appreciation and also help to promote future long distance flights through the sharing of meteorological and flight technique data.

This flight is outstanding not only for the distance achieved, but for the wealth of data obtained. Probably no sailplane flight in history has been better documented. The Swiss Peravia Barograph is partly responsible, for as pointed out in reference (1) the continuous record, linear altitude scale, and calibrated time base, make record analysis simple. Secondly, the sailplane research flight test experience of the Champion has taught him the value of properly recorded information, and provided him with the ability to record information in flight to supplement the barograph record. Let us take a look at this re-

cord in conjunction with Dick's description, and share, (if in a somewhat second-hand manner), the hopes and the fears, the experiences and lessons, the crucial decisions and the final victory of this amazing flight.

Thermal Strength

The positive slopes of the barogram represent the rates of ascent, of the RJ-5 in the thermals encountered. Each ascent was approximated with a straight line to obtain the average rate of ascent since this is pertinent to the analysis of cross country technique. Due to the excellent flight technique of Dick Johnson and the meteorological conditions which existed this approximation follows the record very closely. The individual peaks are sharp rather than rounded as they would have been had he worked every thermal to the top rather than leaving it when it weakened. Climbs of under 100 meters or under 1 minute duration were ignored in order to limit the reduction job to a practical length. The sinking speed of the RJ-5 in circling flight must be added to the rates of ascent to obtain the true thermal strength. As derived in various manners by Kalle Temmes, Dr. Lippisch, and this writer, the sinking speed for optimum turning flight is increased about 50% over the minimum sinking speed in level flight. This works out to 0.8 meters per second for the RJ-

JOHNSON'S 545 MILE SOARING FLIGHT OF AUG. 5, 1951

FIG. 1

