Finding The Best Speed For Cross-Country Soaring

By KALLE TEMMES

EDITOR'S NOTE: Mr. Temmes, a graduate of the Finnish Institute of Technology, Helisinki, is the No. 1 Golden C pilot of Finland. He began gliding in 1934, served as a fighter pilot during the war, and earned his Silver C in 1946. Last summer he established the Finnish Goal Flight Record with a flight of 301 kilometers, which also earned for him his Golden C. He is at present the Chief Technical Inspector of Civil Aviation at the Ministry of Communications and Public Works, Helisinki. This article by Mr. Temmes originally appeared in **Ilmailu,** the journal of the Finnish Aeranautical Association.

AN elevation of soaring records and results shows that cross-country flying is attaining ever increasing importance, and it may well be said that it occupies a decisive position in modern soaring competitions. It is the purpose of this article to discuss one of the salient features of cross-country soaring: the cruising speed in straight flight, and its effect on the flight as a whole.

This form of soaring may in principle be carried out in two manners:

(1) in continuous lift, as when flying along cloud strees, or

(2) in separate rising currents with straight glides between the thermals.

In this article only the latter method is enlarged upon, as the former obviously gives optimum results when flying at the highest possible speed which will allow the sailplane to average zero sink, and therefore, does not require closer survey in this connection.

Cross-country soaring using separate thermal currents is, with certain reservations, carried out as roughly indicated in Fig. 1. The

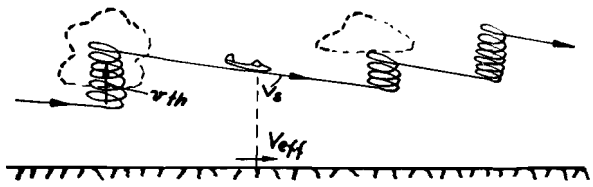

Fig. 1

sailplane gains altitude by continuous circling in the area of the strongest lift. (In this phase a bank of 30 to 40 degrees, and the lowest possible airspeed will give best results.) The upward speed of the air mass in which the sailplane circles varies within comparatively wide limits depending upon the position within the thermal, altitude, and the general weather conditions. Every situation may, however, be described by a certain average upward speed of the thermal which in practice is indicated as the mean rate of climb of the sailplane. The rate of climb registered by the variometer alternates on both sides of this value during the climb.

If we further assume that there is no wind, we may now concentrate on observing the average ground speed of the sailplane, or, as it will be termed in the following, its effective cruising speed. When we study the way in which

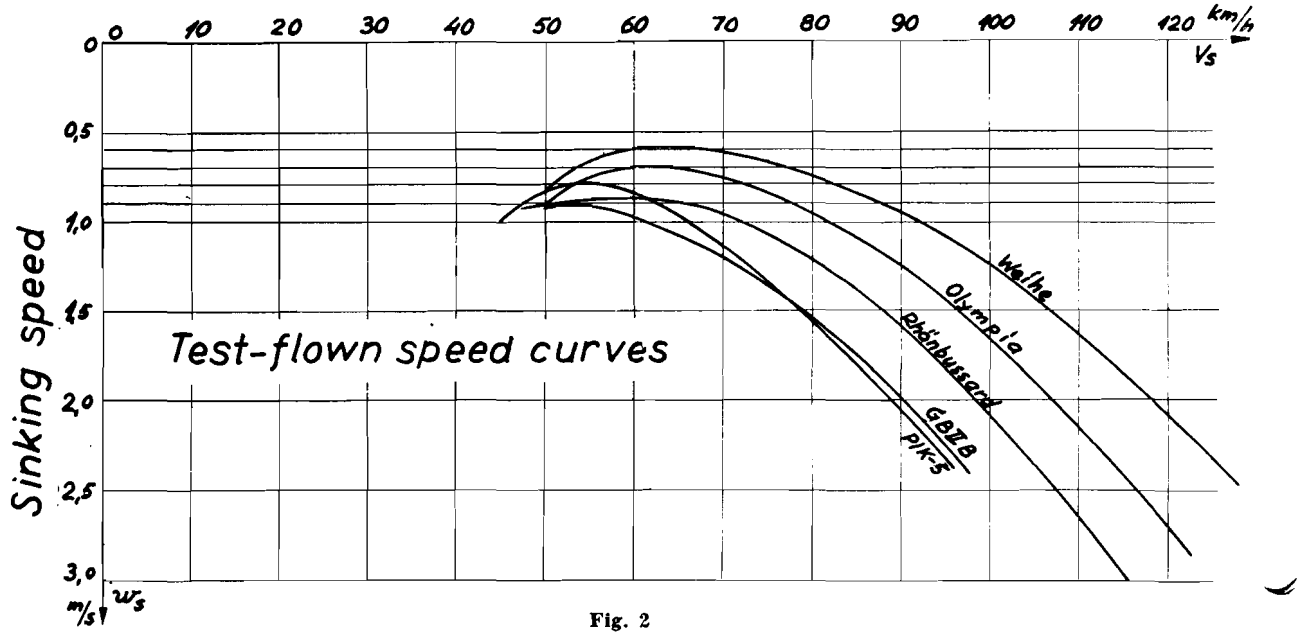

Fig. 2