This research shows that we must re-examine the currently used simple flap theory when attempting to design an efficient lateral control.

In addition to these researches in aerodynamics there should also be mentioned the many special techniques used to attain high performance in sailplane design. Of these there are those by which the induced drag is made lower and the maximum lift coefficient increased. These are concerned with the improvement of the flow in the wing root and with the securing of a low loss lift distribution.

Then there are the techniques used to reduce the residual and profile drags. For the latter purpose laminar airfoils are used. On the latest American sailplane, the Ross-Johnson 5, a maximum glide ratio of 36.5 has been attained using a laminar section NACA 632-615. If after current improvements in airfoil contour the value of the drag coefficient measured in the wind tunnel is obtained on the RJ 5, a maximum glide ratio of 48 will result!

In order to appreciate the value of a reduction of the parasite drag we must consider that at an L/D = 30 on a sailplane weighing 600 pounds, the total drag amounts to only 20 pounds. One pound of drag reduction therefore means an increase in L/D of 1.5. It is quite clear then that every effort must be made to reduce parasite drag if one wishes a top performance from his sailplane. There are a number of suggestions which individually may mean at most a few percent of drag saving but which as a summation mean a considerable improvement in cross-country flying speed:

a. Use of nose pitot to eliminate the pitot-static mast which causes turbulent flow behind it.

b. Use of internal release for same reason.

c. Use of retractable skid which comes flush into bottom of fuselage. By these three changes the entire nose of the sailplane can have laminar flow over its surface.

d. Use of full contour canopy to reduce pressure gradients over after-fuselage and thus extend laminar boundary layer.

e. Use of V-tail to reduce intersectional losses.

f. Use of untwisted wing swept forward a few degrees. The sweep forward controls the tip stalling.

g. Use of short span ailerons in order to reduce length of gap.

h. Use of low angle of incidence so that fuselage axis is in the flight path at high speeds.

i. Use of special wing tip shapes for low drag.

One other application of the sailplane to aerodynamic research must be mentioned—its use in studying boundary layer flows in a low turbulence and low noise level field. In a wind tunnel it is possible to lower the level of pressure disturbances only to the level of the noise generated by the fan and the drive mechanism. So far, little has been done in this field of aerodynamics except some tests of profile drag in the DFS 230 sailplane in Germany.

It is not dreaming to express the opinion that more and more uses will be found for the sailplane in aerodynamic studies as its special features become better appreciated by researchers in this field.

SOARING MEETS *and* CONTESTS

By WILLIAM H. COVERDALE
Chairman Contest Committee S.S.A.

Although soaring through the sky by yourself is a lot of fun, the real sport of soaring is found in the various get-togethers and contests which are held in the various sections of the country every year. Here, besides the sheer fun of soaring, the pilots find competition adds spice to the fun. We find out who has a little better sailplane and who can perhaps soar a little better than the rest of us.

The Soaring Society of America sanctions regional and National contests through authority delegated by the Federation Aeronautique Internationale in Paris through our National Aeronautic Association. This sanction ensures that a fair and equitable form of competition will be held and the Soaring Society regulates the meets in the best interests of the sport.

In 1950 eleven Soaring Contests were sanctioned by the Soaring Society. These ranged from little more than informal get-togethers for several days to a full scale National Contest held in Grand Prairie, Texas.

An entirely different technique is required for a contest winner than is required for airport soaring. Skill and judgment come to the fore in this type of flying. Contest rules are set up to find out who can soar for the longest distance, who can stay up for the greatest length of time, and which pilot can reach the greatest altitude during the contest. The pilots arrive at the contest site at the appointed time, are usually bunked close by in a convenient barracks, and with their car and the glider and trailer, prepare to beat the other boys as best they can. Other issues of SOARING tell of the results of various contests and you can obtain from these the figures of mileage flown, hours in the air, and so on. You cannot get an idea of the fun and good fellowship around a soaring meet without attending one of these, so plan to go to one near you and get in on the fun.

In the smaller contests it is sometimes thought a little bit unhandy to spend a lot of gasoline on retrieving long flights by trailer so distance is not featured as a part of the contest. Instead the pilots indulge in all kinds of local flying and do various feats of skill such as dropping flour bags at a target to see which can come closest, balloon bursting, ribbon cutting (In which the pilot drops a ribbon of paper and tries to cut it three times with his wingtip in the shortest time) and the old stand-by, the spot landing. In this a flag is set up for a mark and the pilots try to land with the nose of the sailplane as close to the flag as they can. The accuracy of some of these landings is a revelation to those that may think of a sailplane as something at the whim of the wind. Some pilots are so accurate that they can stop their glider at or within a foot of the flag almost every time.

Notices appear in Soaring as to where and when the various contests are to be held. Contestants are always glad to have additional help on their crews and will be looking for you to join in the fun.