

ANNUAL MEETING

The Soaring Society of America plans to hold the 1929 Annual Meeting and the Second National Gliding and Soaring Conference in Philadelphia over the week-end of February 10-11-12. High points of the very interesting program now being drawn up are: A reception given by the Aero Club of Pennsylvania, and a presentation of "The Wonders of Flight", the famous travelling air show of The Franklin Institute.

The program and other details will be published in the February issue of SOARING.

AIRPLANE TOWING

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Towplane below and sailplane above can many times be straightened through the use of spoilers, carefully avoiding slack in the rope which, being somewhat elastic, is not harmed by an occasional tug. Under convection conditions, the use of the spoilers is the only means of controlling position to prevent overtaking the towplane other than fish tailing, side slipping or flying to one side.

The tow pilot should always consider the fact that the sailplane is flying in tow sometimes twice its normal speed and should fly his airplane as slowly as he safely can and at all times keep his speed constant. Of frequent use to him is a rear view mirror, which should be on every tow ship. Unfortunately, at the present time, we have very few conscientious and experienced tow pilots.

In making the first turns with the towplane, the glider pilot may be troubled with two things; one is dropping below and the other is climbing high above the power ship, with slack in the rope. In the first case, when the line tightens, the tug is advantageous, for through coordinated control, the pilot can climb back to position again, carefully avoiding the slipstream. In the latter case, the tug may accelerate the ship, causing it to go even higher. Here the spoilers should be used to get down into position. In order to

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make a clean turn, point the ship slightly outside of the turning circle. By holding enough rudder, causing just enough drag to keep the line taut, the ship can be made to track perfectly and at the same altitude as the towplane.

Experience, of course, is the best teacher, but the experience in this case should be had only after careful ground instruction. Perhaps these few suggestions may help new pilots about to be initiated into the pleasant art of airplane towing.

ACCIDENT AT SCHLEY FIELD

It is with deep regret that we have to report that Mrs. Gustave Scheurer, wife of the S.S.A. Director, died on December 13th as the result of injuries received in a gliding accident at Schley Field, Liberty Corners, N. J., on Sunday, December 11th. Notice of this tragic happening reached us just before going to press, so we are unable to give full details of what caused the accident. From information of reliable witnesses, however, it seems probable that she fainted in the air. A spokesman for the Associated Glider Clubs of New Jersey has informed us that an official report will be sent to the S.S.A. It will be published in the February issue.

CHICAGO MEETING

Plans have been drawn and tentative dates of January 22nd or 29th set for the annual meeting of the members of the Chicagoland Glider Council, according to Clemens W. Luecker, Secretary-Treasurer of the Council. Peter Riedel expects to be in Chicago at this time, and it is hoped that he will be able to give a talk at the meeting. Definite announcements regarding the date, time and place of meeting will be mailed out to all members of the C. G. C.

CLASSIFIED ADVERTISEMENTS

NEW YEAR MESSAGE

The Airhoppers Gliding and Soaring Club extends best wishes for a Happy New Year to all the readers of SOARING.

ALBATROSS SAILPLANE for sale. Being completely reconitioned by Ted Bellak. Complete with trailer and tow line. Price \$995.00. May be seen at Glen Rock, N. J. Write for terms to Warren Merboth or Chester Decker at 366 Lincoln Ave., Hawthorne, N. J. Hawthorne 7-3127.

WANTED: Licensed secondary glider. Give complete details, including price, in reply. Greenbelt Glider Club, Box 163, Greenbelt, Maryland.

FOR SALE—One standard Franklin wing (right)—excellent condition—never been flown since being rebuilt and recovered. Price \$75.00. Chester J. Decker, 34 Cambridge Place, Glen Rock, N. J.—Ridgewood 6-1505J

DVL RELEASES—Imported from Germany, which we advise builders to use on their new ships, can be obtained at cost—\$5.00 each—from The Soaring Society of America, Room 502, 1500 Locust Street, Philadelphia, Pennsylvania.

New additions to our equipment line—**COLUMBIAN ROPE** for tow lines. It pays in the end to use the best. **FEIBER SOARING BAROGRAPHS.** A sturdy instrument designed especially for soaring. Ideal for gifts and prizes. For details write: Schweizer Metal Aircraft Co., Peekskill, New York.

BACK ISSUES OF SOARING available through the S.S.A. headquarters: Complete set of 1938 issues—\$2.00; nine issues of 1937—\$2.00.

THE SELECTION OF THE OPTIMUM ASPECT RATIO

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$$A = A_{\text{fuselage}} + A_{\text{tail}}$$

$$A_{\text{fuselage}} = (1)(2)(\pi)(.1) = .63 \text{ ft.}^2$$

$$A_{\text{tail}} = 25(.01) = .25 \text{ ft.}^2$$

$$\text{or } A = .63 + .25 = .88 \text{ ft.}^2$$

$$b = 55 \text{ ft.}$$

$$B = \frac{\pi A}{b^2} = \frac{.88 \pi}{(55)^2} = .00091$$

$$h = \sqrt{\frac{2W}{\rho B}} = \sqrt{\frac{2(600)}{.00237(55)^2}} = 12.9$$

$$X = \pi C_{D00} = 3.1416(.01) = .0314$$

$$Y = \frac{X}{C_{Lx} - C_{Lo}} = \frac{.0314}{(1.05)^2 - (.4)^2} = .0334$$

The aspect ratio for flattest gliding angle is

$$A_G = C_{Lx} / \sqrt{B} = 1.05 / \sqrt{.00091} = 34.8$$

or it can be read from Fig. (1) for the given value of B.

The aspect ratio for lowest sinking speed is

$$A_s = \frac{\sqrt{C_{Lx}}}{3B} \left[\sqrt{(C_{Lx} - C_{Lo})^2 + \frac{3B}{\sqrt{2}}} - (C_{Lx} - C_{Lo}) \right] \text{ or}$$

$$A_s = \frac{.0334(1.05)}{3(.00091)} \left[\sqrt{(1.05 - .40)^2 + \frac{3(.00091)}{1.414}} - (1.05 - .40) \right]$$

$$= 12.82 \left[\sqrt{.422 + 2.45} - .65 \right]$$

$$= 12.82 [1.04] = 13.3$$

or it can be read from Fig. (2) for the given value of B.

In other words the aspect ratio to be used should lie between 34.8 and 13.3. If it is desired to put the choice of aspect ratio on an exact basis either the minimum acceptable sinking speed or gliding angle must be decided. Since this is supposedly a cross-country design the thing to do is probably to get as flat a gliding angle as possible, consistent with some satisfactory minimum sinking speed, say 2 ft./sec. or: $V_v = 2$ and $V_v/h = 2/12.9 = .155$.

From Fig. (3) at $V_v = .155$ and $B = .00091$ it can be seen that the aspect ratio should be 22.

From Fig. (2) at $B = .00091$, and an aspect ratio of 22 it is seen that the gliding angle will be about 29.5 to 1.

From Fig. (4) at $B = .00091$ and an aspect ratio of 22 it is seen that the best cruising speed, or forward speed in M.P.H. for flattest gliding angle, over h is about 3.45 and since $h = 12.9$

$$V' = 12.9 (3.45) = 44.5 \text{ M.P.H.}$$

REFERENCES:

- 1—Kosen, R. The Effect of Weight and Drag on the Sinking Speed and Lift/Drag Ratio of Gliders, Technical Memorandum No. 759.
- 2—Castles, W. Selection of the Optimum Aspect Ratio for a Cantilever Sailplane, J.A.S., August 1938.
- 3—Eastman N. Jacobs, Robert M. Pinkerton, and Harry Greenberg, Tests of Related Forward Camber Airfoils in the Variable Density Wind Tunnel, Technical Report No. 610.
- 4—Eastman N. Jacobs and Albert Sherman, Airfoil Section Characteristics as Affected by Variations of the Reynolds Number, Technical Report No. 586.