

OSTIV Trophy 1965

Report by Jury

1. Composition of the Jury

The Chairman of the Jury was appointed by the OSTIV Board in 1964; the remaining four members were selected at the meeting of the OSTIV Board held in Zurich in February, 1965. At this meeting it was agreed that the gliders would be judged, as far as possible, during the practice week of the World Gliding Championships held at South Cerney in 1965.

The members of the Jury, together with details of their experience, are listed below. Each of these members has flown more than 700 hours in at least 60 different types of gliders.

Lorne Welch (Chairman)

Engineer. Member of the British Gliding Association Technical Committee. Glider test pilot since 1946. OSTIV Jury 1958, 1963.

Julian Bojanowski

Dipl. Ing. (Aeronautical Engineering). Manager of Flight Test Department for Gliders at Aviation Research Institute, Warsaw (Poland). Active glider pilot since 1945. Licensed test pilot since 1950. OSTIV Jury 1958, 1960, 1963.

Ilbert de Boer

Flight Test Engineer, Netherlands Aeronautical Research Institute. Licensed Instructor, twice participant in World Championships. First time OSTIV Jury member.

Hans Zacher

Dipl. Ing. Glider pilot since 1927. 7 years glider test pilot (P.F.L.). Now at German Aeronautical Research Institute, Department of Sailplanes (D.V.L.). Leader OSTIV Varese courses. OSTIV Jury 1960, 1963. Technical Committee DAeC.

Paul Schweizer

Aeronautical Engineer. Glider pilot since 1930. Has been involved in flight testing of sailplanes for more than 20 years. Was Chairman of OSTIV Jury 1958.

Jack Purchase acted as Technical Assistant to the Jury.

2. Gliders Entered

A total of 15 gliders was entered for this competition, but the Elfe from Switzerland and the Utu from Finland were withdrawn; this left the following 13 gliders to be evaluated:

Glider	Country	Designer
Boomerang	Australia	H. Schneider
Dart	Great Britain	F. Slingsby, J. Reussner, W. Slater
Delfin	Yugoslavia	Z. Gabrijel, T. Dragovic
Edelweiss	France	J. Cayla
Foka	Poland	W. Okarmus
Havukka	Finland	J. Jalkanen, T. Tervo
HP-12	USA	R. E. Schreder
Libis	Yugoslavia	M. Berkovic, V. Kucera
M 100 S	Italy	A. Morelli, P. Morelli
Olympia 465	Great Britain	M. Reed
Phoebus	Germany	H. Nägele, R. Eppler, R. Lindner
SF-27	Germany	E. Scheibe, K. Weckerlein
Uribel	Italy	E. Ciani

3. Method of Judging

It is stated in Art. 31 of the F.A.I. Sporting Code, Section 3, Class D (issue January 1st, 1965, page 29) that

"OSTIV will, at the end of each Championship, award a prize to the Glider which, in the opinion of the examining committee, most nearly achieves the object of the Standard Class."

This object is defined in Art. 2 e), page 23:

"The object of the Standard Class is to encourage the design and construction of gliders, cheap to build, and safe, cheap and simple to operate and repair, and thus to promote the expansion of gliding throughout the world."

The obligatory requirements and the Recommendations of the F.A.I. Sporting Code are given on pages 30 and 31.

The Jury assembled at South Cerney on Friday 21st May. After discussing various methods of assessing the aircraft, it was finally agreed that any detailed marking system would be unsatisfactory owing to the great difficulty of proportioning marks between the various desirable characteristics. Accordingly, it was decided that each member of the Jury would produce his own assessment on a ground examination and after flying the aircraft. The aircraft would be marked under the following 20 headings, using a code from 0-5 as follows:

- 0 = Not acceptable
- 1 = Bad
- 2 = Sufficient
- 3 = Good
- 4 = Very good
- 5 = Excellent

No attempt would be made to add up the scores of individual aircraft.

Ground Examination

Flying

- | | |
|---|--------------------------|
| 1. Philosophy of design and cost | 11. Take-off and aerotow |
| 2. Aerodynamic design | 12. Stalling |
| 3. Detail design | 13. Stability |
| 4. Pilot's protection and safety | 14. Controls |
| 5. Cockpit layout | 15. Rate of Roll |
| 6. Ground handling | 16. Circling |
| 7. Repair and maintenance | 17. Airbrakes |
| 8. Workmanship and finish | 19. Landing |
| 9. Rigging and derigging | 19. Comfort |
| 10. Certification and range of pilots weights | 20. Pilot's view |

It was planned that each aircraft would be examined by the Jury on one afternoon, that there would be a demonstration of rigging and derigging by a crew of 3 or 4 men, and that the designer of the aircraft (or his deputy) would answer questions and explain any special features. Next morning, starting at 6.0 a.m. the aircraft would be flown by each member of the Jury, the flight comprising an aerotow to 1,200 m. Owing to the poor weather, this plan had to be modified but the evaluation and flying of all 13 aircraft was completed by midday, Sunday 30th May. After carrying out the ground examination and flying of all the aircraft, the Jury discussed their merits. Throughout these discussions there was remarkably little difference of opinion on the qualities of the aircraft themselves, the difference lay in the importance attached to each aspect. The main difficulty was to decide on the relative merits of cheapness, simplicity and efficiency.

When considering the aircraft, Jury members did not evaluate aircraft of their own countries, nor vote for them.

4. Decision of the Jury

The following statement was handed to the President of OSTIV on June 4th:

OSTIV TROPHY

4th June, 1965
South Cerney

The members of the Jury appointed by the Board of OSTIV to judge the 1965 context for the OSTIV Trophy recommend that it should be awarded to Mr. F. N. Slingsby, Mr. J. C. Reussner and Mr. W. Slater, the designers of the 15 m Dart.

The Jury considers that special commendation should be made to Mr. W. Okarmus, the designer of the Foka 4.

Ilbert de Boer
Julian Bojanowski
Paul Schweizer
Hans Zacher
Lorne Welch (Chairman)

5. Comments on Gliders

Instead of describing each individual aircraft in detail the Jury decided to make brief notes on the Dart and Foka and to list some general suggestions.

In addition, because of their interesting structural design, further notes about the HP-12 and Phoebus are given.

Dart

The Dart seemed to be a good compromise aircraft and although not the cheapest it was felt that the extra cost was justified by the improved qualities of the glider. The comfort, cockpit layout, pilot's view and safety were specially appreciated by Jury members. The aircraft was easy and pleasant to fly and was considered suitable for general club use.

Foka 4

This Jury followed the example of previous juries—in Cologne, 1960 and Junin, 1963—in considering the Foka to be an excellent glider. It is one which has been very well developed with outstanding flying characteristics and a good performance.

Phoebus

This was the first plastic aircraft to be submitted to the Jury. The structure of glass fibre and epoxy resin skins on balsa wood cores appeared to have been carefully thought out; the surface finish was outstanding and the aerodynamic design one of the cleanest. The Jury thinks that this is a promising approach and awaits with interest the results of further experience and of structural and fatigue tests.

HP-12

Although built entirely of aluminium alloy without any fabric covered surfaces, this aircraft was one of the lightest of those entered. The structure appeared to be remarkably simple and strong and the wing had an exceptionally good finish.

Remarks

(1) As regards tail configurations, the conventional design is still considered to be the best solution. The swept back fin (and even tailplane) is thought to be inferior structurally as well as aerodynamically; the V-tail is not considered an improvement due to the undesirable interactions between elevator and rudder, and the T-tail, although aerodynamically sound, clearly presents some structural problems.

(2) It seems that trailing edge airbrakes may have advantages, both aerodynamic and structural, over the conventional D.F.S. type. It is suggested that further investigation should be made into this form of brake, specially as regards the control mechanism and the reduction of operating loads.

(3) None of the gliders had any shock absorber in their undercarriages, other than the tyre itself. It is suggested that the risk of damage both to the glider and its pilot would be reduced if some shock absorber was built into the undercarriage attachment.

(4) Pilot's safety should receive more consideration. It should be made easier to bale out by providing a grab handle, and ensuring that the pilot could easily remove his feet from underneath the instrument panel. Canopies should be readily jettisonable, and the catch should be foolproof.

(5) The longitudinal stability of some gliders was insufficient, particularly those with all-flying tailplanes without stabilising tabs.

(6) Some aircraft had a small range of permissible pilot weights and did not have suitable ballasting arrangements. The OSTIV airworthiness requirements recommend that the aircraft should be suitable for pilot plus parachute weights of from 55 kg to 110 kg. Preferably this range should be achieved without ballasting.

(7) Some aircraft had very small ground clearance for fuselage and elevator.

(8) It was noted that the wing loading of the gliders submitted was higher than in the past and consequently their stalling, circling and operating speeds were also increased.

This tendency undoubtedly gives improved performance on good days at the price of greater difficulty in staying up in weak lift. The wisdom of increasing speeds still further should be carefully considered.

(9) The flat seating position of the pilot is no longer so unusual; however it should not be too extreme.

(10) Some gliders had poor stalling characteristics with a pronounced wing and nose drop, and no stall warning.

(11) All the gliders were reasonably easy to rig and de-rig, but in some cases they could have been improved by reducing the number of loose parts.

6. Acknowledgments

The Jury would like to record their gratitude to the organisation at South Cerney for making such good arrangements. They would also like to thank the crews of the gliders, tug pilots, airfield marshalls, and all those on whom extra work fell as a result of the early morning flying.

Lorne Welch
for Jury

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Technics and Training

OSTIV Diplomas

The OSTIV Diploma for the technical paper read during the 10th OSTIV Congress at South Cerney, being of particular value to OSTIV, has been awarded to *Dipl. Phys. H. J. Merklein*, DVL Munich, Germany, for presenting "Vergleich der Kreisflugeleistungen einiger Segelflugzeuge auf Grund vermessener Flugpolaren". Honorable mention was given to *Dipl.-Ing. Justyn Sandauer*, Warsaw Technical University, for "New look at the problem of safety in sailplane design", and to *Dipl.-Ing. J. Gedeon*, University of Budapest, for

"Messzahlen und Methode für die Berechnung und Kontrolle der dynamischen Flugeigenschaften von Segelflugzeugen".

The meteorological paper "Satellite wave observations as an aid to wave soaring" was considered to be of particular value to OSTIV, and its author, *Charles V. Lindsay*, U.S. Weather Bureau, USA, has also been awarded the OSTIV Diploma.

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