

## *MSP PLANS - HISTORICAL NOTES*

### *ODENMAN'S 1950 NORDIC A2 GLIDER*

The history of the modern FIA International Glider class can be traced back to its development in the Scandinavian countries and the adoption of the A2 class for internal competitions there from 1946. The first World Championship was inaugurated by the FAI in 1951 adopting the A2 class with minor modifications. However a major open International Championship was staged by Sweden in 1950 at the SAAB airfield of Trollhattan, north of Gothenburg, to recognise the 50<sup>th</sup> anniversary of the Royal Swedish Aeroclub. This was the first occasion for a direct comparison with models outside of the Scandinavian countries, and it was anticipated with considerable interest.

Twenty eight individuals competed, including teams of three flying for their countries. 100 m (328 ft) towlines were in use, and three flights were made, each to a six minute maximum. Flown through the day in clear air, the weak thermals were difficult to detect, but each of the top competitors achieved two maximums. The event was won by Stjepan Bernfest of Yugoslavia with a score of 15:20 minutes, Ragnar Odenman coming second for Sweden with just 17 seconds less.

The Aeromodeller Annual of 1950 shows diagrams of both models with the competition results, and contains a well presented description of the Nordic A2 class by Ing. Per Weishaupt. It is clear that the Scandinavian countries dominated the event, Sweden taking the team award ahead of Finland, Denmark and Norway. Then came Yugoslavia with Great Britain in sixth place followed by Switzerland. The best British individual place (6<sup>th</sup>) was taken by sixteen year old J. M. Bennett with 13:02 minutes. His model was his well known 'Satu' design.

One of the surprises to the Scandinavians was to see British A2 gliders built predominantly in balsawood. Their models used spruce and thin plywood, with balsa relegated to wing tips, fins and fairings. Probably the absence of balsa in earlier years had spurred them to use the available hardwoods, which proved quite suitable for their A2 gliders. The competence of the Scandinavians in launching models from 100 m towlines was decisive. However the greatest impact was achieved by Odenman's A2, because without doubt it pointed the way forward in design and development.

Until the A2 class had become established, gliders tended to be large, low aspect ratio and cumbersome in appearance. Indeed Bernfest's model owed something to that heritage, a typical short coupled, low aspect ratio machine, with thick sectioned wing and a 'V' tail. The Scandinavians did not consider the model to be well made by their standards. By contrast Odenman's A2 was of much higher aspect ratio, with a thin arched wing section. The thin diamond fuselage met the cross-section rule requiring 34 sq.cm (5.26 sq. in) at the wing mounting, blending into a short nose with an attractive glazed cockpit feature. The wing section was attributed to 'Egna'. The work of Sigurd Isacson strongly influenced Scandinavian Wakefield and A2 wing design at the time, and this may have been influential.

In common with many Scandinavian types, a flat centre wing with short upswept tips was used. This was considered to aid towline stability, in conjunction with the correct tow hook position, which was adjustable. Other strong competitors were moving in this general direction, notably Arne Hansen of Denmark in 3<sup>rd</sup> place, which contributed to an acknowledged Danish school of design in later years, following their international successes in the A2 class.

In 1950 Ragnar Odenman worked as a teacher on the summer courses at Allberg, the gliding centre in SW Sweden. One of his students, Inge Ahlin, made an outline plan from Odenman's working drawing of his A2 glider design. This was preserved by Sven-Olov Linden as the best contemporary record of the original glider available today. He had taken part in the Trollhattan event as a timekeeper. A similar design was later kitted by Norrlands Modellflygindustri, known as 'Kondor' and later as 'Viking' which confirm the exclusive use of spruce and plywood in the design.

### **Quoting from Sven-Olov Linden's translation of the article in 'Hobbyfolk':**

*'Ragnar Odenman did not become champion of the first World Glider Championship as we had guessed. But (he was) not far from it, Nordic Champion and second in the World Championship. It is not bad at all. Odenman needed 18 seconds extra in his last round to defeat the Champion from Yugoslavia.'*

*'Let us follow Odenman during the contest. He started amongst the first (to fly) and first of the Swedish team. A grandiose launch, top height and in a thermal and far away the model flew, 560 seconds as a result. It has to be told this was the 4<sup>th</sup> maximum in a row for the model made in a contest. The plane was found, by the way very few models were lost this day in spite of all the long flights. Odenman was in no way leading after his first flight. There were a lot (of flights) of more than six minutes.'*

*'In the second round the thermals and warm air over the field had gone, (there were) rather many downdraughts. Odenman got (a) chance of the good thermals of the first round and was one of the few making a good result. At the end he was in the lead together with Arne Hansen, (Denmark) and Bennett, (GB). They all had two max's. Quite astonishing in the history of model contests. Regardless of max's Odenman and Hansen were the leaders (taking their full flight times, which would have been decisive if a draw resulted after three maximum flights).'*

*'Then the third round came. Odenman got a good start, but already during the launch the downdraught was noticed, (into) which the model flew in a part of the flight. It was not as good a height as during the two first flights. The plane fell dangerously and it did not look good at all. Down at 50 metres the air was better and the model showed its good glide, but it was only 183 seconds, quite an ordinary flight, but we had been used to max's at the World Championship. Now it was like this, Bennett or Hansen or the Yugoslav Bernfest (could win). He had a maximum from the first round but a bad flight in the second. He (Bernfest) was the only one whose bad result was better than Odenman's bad flight of the third round. If Bernfest made a max. he would be better than Odenman. The Finn Wallenius was in the same situation, if he made a max. he would be two seconds better than Odenman.'*

*'It went like this: Bernfest made a max. Hansen flew less than Odenman. Bennett made a bad flight and Wallenius got no lift. It was a tremendous, thrilling contest.'*

### **Interpretations**

In collecting the evidence from which to recapture a design from fifty years ago, inevitably there seems to remain some mystery or uncertainty about some details, and it is here that one can simply state the evidence as it is known, and offer an interpretation of the evidence. In the references Odenman's photograph appears three times in relation to the Trollhattan event and in one he is clearly holding a different, but similar, model. One model wing has stripes, the other does not. Which was the Championship model, perhaps both were flown?

One model clearly has only three rib bays in each wing tip. The other model had four rib bays in the tips (with stripes) and 23 bays in the flat centre wing. Odenman's sketch in 'Hobbyfolk No 3' which was used again in the Aeromodeller Annual, is in agreement with the latter details where the flat span is given as 160 cm (63 in), and the chord as 18 cm. This is generally regarded as the definitive Championship model.

Now if we turn to Inge Ahlin's 1950 drawing it is clearly not depicting entirely Odenman's Championship model. It is found that she made the flat span 167 cm (65.75 in), with a chord of 17.8 cm, and showed 25 rib bays in the flat centre wing. Indeed the geometry is the same as the later 'Kondor' kit model. It seems that Inge's drawing, made under Odenman's instruction, was intended as a follow-on model to meet the top limit of wing area as permitted by the new FAI specification.

The A2 specification, as adopted with minor modifications by the FAI, required the total projected area to be in the range 32 to 34 sq.dm. A calculation of the total areas of these models gives the following results:

| <b>Model</b>                 | <b>Championship</b> | <b>Follow-on</b> | <b>Specification</b> |
|------------------------------|---------------------|------------------|----------------------|
| Total surface area (sq.dm)   | 33.15               | 34.28            | 34 (A2)              |
| Total projected area (sq.dm) | 32.36               | 33.4             | 34 (FAI)             |
| Recorded by Odenman (sq.dm)  | 33.60               | -                | -                    |

Both versions meet the respective A2 and FAI requirements and, as published 1950 designs, they are both genuine vintage models. Nonetheless Odenman, the Nordic Champion, flew the slightly smaller model in the 1950 Championship, achieving his excellent and worthy second place.

### Recreating the Design

Having done the research, one can now produce a modern drawing with English text. It seemed so worthwhile because of the seminary value of Odenman's model and because of its success in 1950. The plan produced is fully detailed and will permit the construction of a replica of the 1950 Championship model, rather than the follow-on FAI machine.

It will be easier today to substitute balsa wood for the sheet spruce ribs, and the spruce leading and trailing edges, and such construction is also shown. A further simple optional modification is the introduction of a two piece wing to aid transportation.

The facility for a dethermaliser is also shown on the plan, a feature remarkably not used by all the Scandinavians back in 1950, who travelled to competitions armed with numerous models expecting some flyaways, and ready to pursue them by motorbike.

I hope you enjoy this model, whichever version you choose, because it is a truly outstanding design of the vintage era.

### References:

|                              |  |  |
|------------------------------|--|--|
| Aeromodeller, January 1950   | Nordic A2 Sailplanes   | Per Weishaupt                          |
| Aeromodeller, May 1950       | Finnish Model Gliders  | Arne Ellila                            |
| Aeromodeller, August 1950    | Wakefield and A2 Glider Trials   | H G Hundleby                           |
| Model Aircraft, October 1950 | Nordic Glider Contest<br>(Photograph of Odenman with his A2, page 374)   | Ing. Per Weishaupt                     |
| Aeromodeller Annual 1950     | Development of the Nordic A2 Sailplane<br>Swedish Glider Cup for A2 Sailplanes (results, page 135)<br>Odenman's A2 Nordic Glider (outline of model, page 61) | Ing. Per Weishaupt                     |
| Hobbyfolk No.3, Sweden 1950  | A2 Segelmodell (Sketch with dimensions)  | R Odenman                              |
| Hobbyfolk No.6, Sweden 1950  | Among Glider Champions in Trollhattan<br>English translation   | Robert Lowen-Aberg<br>Sven-Olov Linden |
| Personal photograph album    | Swedish team, Trollhattan, 1950<br>(2 <sup>nd</sup> R Odenman, 5 <sup>th</sup> L Persson, 7 <sup>th</sup> K Sandberg.)                                       | Sven-Olov Linden                       |