Indoor News



Issue 22 May 1993

DIARY

19-20 June Orleans France	11th Orleans International. F1D, F1D-Beginner, EZB. J. Delcroix, 7 Rue de Foncemagne, 45000 Orleans, France, tel 33 3863 4957.
8-11 July Brno	European Indoor Championships F1D + Open Indoor and Scale International. J. Kalina, Tasovska 365, 155 00 Praha 5, Czech Republic. For details see IN 21.
26-29 August Liège Belgium	16th International Indoor. All classes. F. van Hauweart, Rue de l'Ermitage, 8, B-4400 Flémalle, Belgium. **Note address change!**
25/26 Sept Nottingham England	INTERSCALE '93 Reg Boor, 103 Crow Hill South, Middleton, Manchester M24 1LA, England
25-26 Sept Slanic Pradova Romania	Slanic Pradova Cup, F1D. Federatia Romana de Modelism, Str Vasile Conta 16 Sect 2, 70139 Bucarest, Rumania. Tel. 40 131 20160, fax 40 131 20161

Indoor News Interscale Special Issue

On the next page detailed information is given about the Interscale '93 Open International Event for Indoor Flying Scale Models to be held in September in Nottingham, England.

In cooperation with organizer Reg Boor I will try to put together a Special Scale Issue of Indoor News. This will be handed out to the participants and sent to the regular subscribers. I hope that it will be a truely International issue with contributions from many countries. Contributions could be anything: plans, scetches, an article, tips or photographs. Simple scale designs will be particularly welcome to give the juniors and beginners something suitable to build. Any class or type is welcome, not just Peanut or Pistachio, but also Profile Scale or No-Cal Scale, etc., as well as 3-views of (rare) airplanes. The issue will contain as much info as I have about books, plans and sources.

I would welcome your contribution by mid-july. I need some time to put the issue together to be able to present it to the Interscale participants in time.

"The Joy of Flying Free"

The American National Free Flight Society has produced an excellent, professionally done video titled "The Joy of Flying Free".

Approximately 45 minutes long, it covers both indoor and outdoor free flight. The video is narrated and has appropriate musical background.

It was professionally done by free flighter Bill Harding of Harding Productions. Harding and his crew filmed several free flight events, including the US Outdoor Champs. The still pictures in the video were supplied by Bob Clemens.

If you want to show others the joy and magic of free flight then you must get this video! Clubs need it for mall shows, recruiting new members, and telling the world what free flight is all about. It gives a very good picture of the sport.

Arrangements have been made to make this video available in the European PAL video system. Cost of this PAL version will be about $35.00. This low price will only be possible when a minimum number of orders is received. Therefore the orders will first be collected and when there is enough interest then the offer will become firm. Send a self addressed envelope and a note, by which you commit yourself to ordering the video, to: Thedo André, Meijhorst 35-43, 6537JD Nijmegen, The Netherlands. Do **NOT** send any money. You will receive further details about ordering and payment method after receival of your SAE. Your SAE has to be received before July 15.

COLOPHON

Indoor News is published at least three times a year and covers all types of indoor models, from peanuts to microfilm. Texts can be sent in Dutch, English, German and French (I can read the latter two, but not write them). Please type your texts on 12,5 cm width. Texts can be sent on floppy disk (3½ or 5¼) in Wordperfect or ASCII format. I can make the drawings, if you are no draftsman. I prefer payment of subscriptions per six issues. Paying by Eurocheque, Postal Money Order or sending bank notes is free of handling charges to the recipient. Please bear the handling charges yourselves when paying by Eurogiro or with foreign cheques. The Eurogiro account number is 4406860.

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British Model Flying Association

Patron: HRH The Duke of Edinburgh KG
President: Air Vice Marshal Sir Bernard Chacksfield KBE CB CEng FRAeS RAF(Ret)

INTERSCALE '93 INFORMATION BULLETIN NUMBER 2, February 1993.

AN OPEN INTERNATIONAL EVENT FOR INDOOR FLYING SCALE MODELS.

ORGANISERS: The British Model Flying Association.

COMPETITION RULES:The major events flown at INTERSCALE '93 will be for classes F4D (Rubber), F4E (CO2/Electric) and F4F (Peanut) according to the F.A.I. Provisional Rules ratified in 1992. Also, a Pistachio class, open to proxy entry, will be flown and the rules and details are included with this bulletin.

ADDITIONAL EVENTS: In addition to the major competitive events there will be three less serious competitions. These will include two "mass launch" competitions for rubber-powered propeller-driven scale models which have been built either from kits or from kit plans. One of these will be for low-wing aircraft and the other for jet aircraft. The types of model envisaged are those from the Keil-Kraft or Veron kit ranges, but others will be welcomed. Plans for a large range of both jet and low-wing aircraft models are available on request to overseas modellers. Those who are interested in these events should ask for a list of the plans on returning their entry form. Note that you will have to modify the jet models for rubber power yourself. The third event will be an "Air Race" around pylons for models of genuine air race aircraft. For this event the models must be within a span limit of 310mm to 510mm. There will be no charge for these three events, neither is pre-entry required.

DATE AND PLACE: INTERSCALE '93 will be held on the 25th and 26th of September in the Sports Complex of the University of Nottingham, England.

ENTRY AND ACCOMMODATION: The most enjoyable way to attend Interscale '93 will be to spend the weekend in the Sherwood Hall of the University of Nottingham. This is a short walking distance from the Sports Complex where the flying is to take place, but there is ample parking for cars at both sites. Although the accommodation in Sherwood Hall is in single place rooms, arrangements can be made for families or couples to occupy adjacent rooms with shared bathroom facilities. Ground floor rooms are available. The form for competition entry and request for accommodation is ~~included with this Bulletin~~ and we are asking you to return these forms together with payment before the 31st of May 1993. You will receive a confirmation of your requirements but your welcome pack with tickets will be available when you register with us either on Friday the 24th from 15-00hrs or on Saturday the 25th from 09-00hrs. PLEASE NOTE THE ADDRESS TO WHICH THIS FORM SHOULD BE SENT.

THE TIMETABLE: The timetable for the complete weekend is as follows:-

Friday 24th September....Registration from 15-00hrs. Reception 19-00hrs.
Saturday 25th.....Contests for F4E and F4F classes from 09-00hrs.
Sunday 26th.....Contests for F4D and Pistachio classes from 09-00hrs.Banquet and prizegiving from 19-30hrs.
Monday 27th..... .....Breakfast and farewell.

INTERSCALE '93

PISTACHIO COMPETITION RULES

For rubber-powered scale models of man-carrying aircraft that have flown.

Size of model is limited to a maximum projected wingspan of 8 inches(203.2mm) or to an overall length of not more than 6 inches (152.4mm), excluding the propeller.

4.1.01 DOCUMENTATION.

To gain maximum scale marks the minimum documentation is as follows:
a) A general arrangement drawing of at least 2 inches (50.8mm) wingspan but not more than 12 inches (304.6mm) wingspan.
b) Proof of colour.
c) One photograph of the subject aircraft.

4.1.02 FLYING SECTION.
Each competitor is allowed up to 9 official flights. An official flight is counted each time the model is released for a declared flight - but this must be of at least 5 seconds duration.
Models will be hand-launched.
The times of the longest two flights (each rounded-down to the nearest second) will be aggregated to form the competitor's flight score.

4.1.03 APPEARANCE SCORE.

Models will be judged visually by one or more judges in comparison with the documentation provided.
No measurements will be taken.
Marks will be awarded as follows:

a) Workmanship	0 - 10
b) Complexity and authenticity of colour and markings	0 - 5
c) Authentic details	0 - 3
d) Scale dihedral	2
e) Scale tailplane/stabiliser	2
f) Surface finish (no penalty for single surface)	0 - 5
g) Complexity:	
low wing	4
biplane	4
triplane (or more)	7
more than one powered propeller	3
floats	2
helicopter/autogiro	5
for each flying-surface with separate controls	1 each
fuselage cross-section	0 - 3
pilot	0 - 2
exposed engine	0 - 2
wheel spats/pants	1
rigging or flying wires	0 - 3
extra complexity points for features not already assessed	0 - 3
h) Deviations to aid flying performance	minus 2 each

The competitor's appearance score will be the sum of the marks awarded in 4.1.03 a) through 4.1.03 h).

4.1.04 SCORING.

The order of marking in 4.1.02 and 4.1.03 will produce a "place" in the flying and appearance sections respectively.
Each competitor's numerical "places" in the two sections are added together.
The lowest overall totals then determine the final overall placings in the competition. Ties will be decided by the best appearance score. Further ties will be decided by a duration fly-off, the sum of the longest two flights from three declared flights will decide the winner. In the event of a tie for Appearance or Flying the next lower position receives a "place" one greater than the total number of competitors ahead of him.

oo0oo

THE INTERSCALE '93 PISTACHIO POSTAL COMPETITION.

IF YOU ARE NOT ABLE TO COME TO INTERSCALE '93 THEN WHY NOT CONSIDER TAKING PART BY SENDING US A PISTACHIO MODEL TO BE FLOWN BY A PROXY PILOT ?. MAKE A MODEL TO THE RULES GIVEN ABOVE, PACK IT IN THE LIGHTEST BOX THAT YOU CAN MAKE THAT WILL WITHSTAND THE JOURNEY TO THE U.K AND MAKE CERTAIN THAT ALL THE OTHER EQUIPMENT, SUCH AS THE NOSEBLOCK/PROPELLER, THE DOCUMENTATION AND TWO RUBBER MOTORS ARE INCLUDED AND FASTENED TIGHTLY. DON'T FORGET TO PUT IN SOME INSTRUCTIONS FOR YOUR PROXY PILOT, HOW MANY TURNS ON THE MOTOR, DOES IT FLY IN RIGHT-HAND OR LEFT-HAND CIRCLES, DOES IT NEED DOWNTHRUST ETC.ETC. PLEASE DON'T SEND AN UNTRIMMED MODEL. PUT IN A RETURN ADDRESS LABEL AND POSTAGE. MARK YOUR ENTRY FORM "PROXY" AND RETURN IT TO US BEFORE THE END OF MAY 1993. SEND US THE MODEL BEFORE THE END OF AUGUST 1993 TO:

ASK: (and act quickly)

167 MORLEY ROAD
OAKWOOD
DERBY
DE21 4QY
ENGLAND

FORTY MINUTE CLUB

March 1993

NAME	COUNTRY	TIME	1*	2*	YEAR	SITE
ASLETT, BERNARD	ENGLAND	52:22	X		1983	CARDINGTON
RICHMOND, JIM	USA	52:14	X		1979	AKRON
KOWALSKI, DICK	USA	50:41	X		1976	AKRON
ROMAK, BUD	USA	49:35		X	1991	LAKEHURST
BANKS, CEZAR	USA	49:00		X	1991	LAKEHURST
RICHMOND, JIM	USA	47:44		X	1986	CARDINGTON
RANDOLPH, BOB	USA	47:30	X		1987	SANTA ANA
BARR, LAURIE	ENGLAND	47:28		X	1982	CARDINGTON
HARLAN, RAY	USA	47:13		X	1980	AKRON
DOIG, RICHARD	USA	46:24	X		1983	AKRON
RODEMSKY, ERV	USA	45:50	X		1974	SANTA ANA
RIEKE, K. H.	W. GERMANY	45:40	X		1962	CARDINGTON
BROWN, STEVE	USA	45:25		X	1987	SANTA ANA
REDLIN, CARL	USA	45:17	X		1962	CARDINGTON
HUNT, BERNARD	ENGLAND	45:16		X	1986	CARDINGTON
ANDREWS, PETE	USA	44:59		X	1979	AKRON
MATHER, CLARENCE	USA	44:44	X		1974	SANTA ANA
BUTTY, RENE	SWITZERLAND	44:44		X	1990	LAKEHURST
ASLETT, BERNARD	ENGLAND	44:37		X	1985	CARDINGTON
RANDOLPH, BOB	USA	44:37		X	1986	SANTA ANA
HACKLINGER, MAX	W. GERMANY	44:20	X		1961	CARDINGTON
DOIG, RICHARD	USA	44:06		X	1991	LAKEHURST
NORE, PENTTI	FINLAND	44:01		X	1986	CARDINGTON
ANDRE, THEDO	NETHERLANDS	44:01		X	1986	CARDINGTON
KOPECKY, ERNIE	USA	43:42	X		1963	SANTA ANA
ORSOVAI, DEZSO	HUNGARY	43:37		X	1986	CARDINGTON
KUJAWA, SYLWESTER	POLAND	43:35		X	1992	WROCLAW
CUMMINGS, FRANK	USA	43:28	X		1963	SANTA ANA
ATWOOD, BILL	USA	43:17	X		1963	SANTA ANA
PLOTZKE, RON	USA	42:53	X		1969	LAKEHURST
FOSTER, JOE	USA	42:44		X	1987	SANTA ANA
LOUCKA, LARRY	USA	42:34		X	1991	AKRON
SIEBENMANN, DIETER	SWITZERLAND	42:33		X	1986	CARDINGTON
CAILLIAU, LARRY	USA	42:29		X	1985	AKRON
DOMINA, DAN	USA	42:25		X	1979	AKRON
CANNIZZO, SAL	USA	42:20		X	1983	LAKEHURST
REE, ANDRAS	HUNGARY	42:06		X	1986	CARDINGTON
PYMM, DAVE	ENGLAND	42:03		X	1986	CARDINGTON
ROMAK, BUD	USA	42:01	X		1965	MOFFETT NAS
GIBBS, BOB	USA	41:35		X	1981	SANTA ANA
OBARSKI, DICK	USA	41:30		X	1981	AKRON
FINCH, TOM	USA	41:27	X		1963	SANTA ANA
SLUSARCZYK, DON	USA	41:25		X	1990	AKRON
CHAMPINE, BOB	USA	41:23	X		1963	SANTA ANA
RODEMSKY, ERV	USA	41:23		X	1979	AKRON
STOLL, ED	USA	41:21	X		1963	SANTA ANA
HOFFMAN, EARL	USA	41:13		X	1987	SANTA ANA
MATHER, CLARENCE	USA	40:54		X	1974	SANTA ANA
DRAPER, RON	ENGLAND	40:44	X		1962	CARDINGTON
HULBERT, BILL	USA	40:39		X	1983	AKRON
BILGRI, JOE	USA	40:37	X		1965	SANTA ANA
NONAKA, S.	JAPAN	40:36		X	1978	CARDINGTON
STEVENS, DARRYL	USA	40:35		X	1986	SANTA ANA
BAILEY, BOB	ENGLAND	40:25		X	1987	CARDINGTON
GITLOW, LEW	USA	40:15		X	1987	SANTA ANA
MCGILLIVRAY, JACK	CANADA	40:14		X	1988	JOHNSON CITY
KALINA, JIRI	CZECH	40:11		X	1975	CARDINGTON
RODENBURG, OTTO	NETHERLANDS	40:11		X	1986	CARDINGTON
TRIOLO, JOHN	USA	40:06	X		1974	LAKEHURST

* CLASS 1 – Over 65 cm
CLASS 2 – FAI 65 cm – 1 gram

Official and unofficial flights included
(best effort only, by individual, by class is shown).

For additions, corrections, etc. send details to: BOB GIBBS
22870 Springmist Drive, Moreno Valley, CA 92557 USA

POLYMICRO

Polymicro is a new indoor film being offered by Richard Obarski and Wayne Trivin. It is the lightest polyester film manufactured, and the last you'll have to buy. Ideal for beginners in F1D, who can't handle microfilm yet, to repairs and even replacement, in some applications, on microfilm models. Check out the specifications below.

SPECIFICATIONS

	Wght. in oz. per 100 sq. in.*		Thickness in inches
Ultra Film (Ray Harlen)	.0045	2.89 g/m²	.00006
Ultimate (Wayne Trivin)	.00366	2.35	.000047
POLYMICRO	.00285	1.83	.0000353
Microfilm	.0015 Appx.	0.96	Varies

*Above weights determined using a Harlen beam scale. Weight for microfilm varies depending on sheet color after pouring.

Prices

Polymicro- 15' for $27.00 freight included, outside the U.S.

Ultimate, new reduced price- 20' for $18.00 freight included, outside U.S.

Send check or money order to; Wayne R. Trivin
7408 W. Hanna Ave.
Tampa, Fl. 33615 , U.S.A.

POLYMICRO COVERING & HANDLING

Polymicro is a super thin plastic material that can be applied to frames and hoops with spray adhesive such as 3m's Spray 77 or Elmer's SAF*T CONTACT CEMENT, thinned one part cement to ten parts water. Thinned contact cement permits the use of a razor blade for trimming the excess film after drying for at least 6 hours. The usual method of trimming with a pencil iron may also be used if preferred.

Covering can be accomplished with POLYMICRO as received or crinkled and restretched. Loose film at dihedral joints can be tightened by applying water on top of the film using a fine brush, much in the same way as handling microfilm. This material can also be used for patching holes in microfilm with the usual atomized water spray. The weight loss factor (approx. 2/1) of using POLYMICRO vs. microfilm is a deterrent but dimensional stability, puncture and shock resistance are much better, all of which would minimize problems of shipping and handling models.

(Note from T.A.: the quoted weight for microfilm looks a bit high to me. It is more near to .0005 oz/ 0.3 g/m², as measured by Bernd Miehe a couple of years ago, see IN 2/87.)

F1L rules

from Ian Kaynes' report on the CIAM Plenary Meeting:

The Free Flight Subcommittee had proposed reducing the minimum weight of F1L (the FAI EZB rules) from 1.2g to 1.0g. There had been some prior correspondence and views at the FFTM in favour of two alternatives of increasing the weight above 1.2 or of scrapping the minimum weight completely. In view of the lack of a clear consensus on this the subject was referred to the FFSC for further consideration, the particular need being to decide whether it was intended as a model for beginners before they develop F1D skills or as an alternative high level competition class for skilled flyers.

The Guide for Organisers of indoor contests was approved for inclusion in the Supplementary Rule Book.

from Philippe Severy (B):

I welcome the proposal to change the minimum F1L weight to 1 gram. This way we are coming near the attainable minimum weight with balsa construction. But I think we can drop the minimum weight rule altogether. At the National and International contests that I flew in 1992 there has been no weight checking. How about this in other countries? I think the weight rule prevents the senior modelers from achieving top level building skills. For Juniors a minimum weight rule might be good. We sure need rules! But the more simple they are, the more easier will be their application at World Championships and other contests.

from Boyd Felstead (AUS):

One interesting point has been put to me. As the weight difference between Polymicro and microfilm is now small (and I hear a couple of U.S. flyers intend covering F1D's with Polymicro) why not allow microfilm covering on EZB's, Intermediate Stick and Mini-Stick (if Polymicro will in future be used on F1D's as well as microfilm)? In effect this would leave it open to the builder whether he uses microfilm or Polymicro on F1D's, EZB's, Intermediate Sticks and Mini-Sticks. Along with this concept, why not dispense with the weight rule for all these particular classes?

CIAM Flyer

CIAM Flyer is the official newsletter of the Commission Internationale d'Aeromodelisme (CIAM), of the Fédération Aéronautique Internationale (FAI). The newsletter was founded three years ago and is edited by John Konstantakatos from Greece. One issue appears per year and the 3rd has just been published. It is a high quality publication, well edited and has a very nice lay-out. It contains organizational news from the CIAM, reports on World and Euro Champs, news from the Information & Education Committee, reports about world records, etc.. It tries to give particular attention to youth programs and this 3rd issue concentrates on the possibilities of indoor flying for youth involvement. There are plans and articles of simple EZB and F1D-Beginner models and a simple catapult glider.

CIAM Flyer is distributed to delegates to the CIAM Plenary Meeting each March and other people that show interest. It deserves a wider spread and more frequent publication, but I assume that that is a financial problem. Up till now the newsletter is distributed for free. Write for details to John Konstantakatos, c/o Remek S.A., P.O. Box 65 100, GR-154 10 Psyhiko, Greece.

Involving the Young

In CIAM Flyer Nr.3 Martin Dilly, chairman of the Information & Education Committee, presents a document entitled "Guidelines to Championships Organizers on Youth Involvement". It contains ideas that are useful for other contests and events than just championships only. Here is an extract from the programme.

"It may include elements such as:
a) Inviting local schools and youth groups to visit the Championships
b) Involving local young people in the organisation of the Championships (many unskilled jobs can be performed by young volunteers)
c) Organising local competitions in advance of the Championships
d) Organising seminars for teachers and youth leaders to demonstrate how the Championships could be used as a theme for project work
e) The preparation of information sheets and other materials for follow-up study
f) The organisation of lectures, films and slide-shows."

Other ideas might be a short building course previous to the event and the offer of free flight lessons. Indoor models are most appropriate for this.

Does the True Beginner Class really exist?

by Thedo André (NL)

I was struck by a remark in Sandy Pimenoff's CIAM Annual Report in CIAM Flyer Nr.3: "In order to attract Juniors to FAI Aeromodelling activities the CIAM has introduced three new categories: F4D Indoor rubbermotor Scale, F4E Indoor CO_2 or electric motor Scale and F4F "Peanut" rubber Scale. These categories are mainly aimed at the younger modellist and should make their progress in Aeromodelling easier."

Well, you all know how difficult a Peanut model is. A scale model with its tiny tailplane is by definition not designed for free flight and it is very difficult to trim such a model, not to speak about its difficult and intricate light-weight structure. There are a few simple Peanut designs but it still remains a tough job for a beginning junior. Small models are often looked at as models for beginners, certainly when they also lack radio control. I hope that not all of our officials look at indoor models this way.

But the names we gave some classes fool them into thinking so. The Easy Bee was designed to be an ideal beginners model, but after some time it proved to be a delicate experts class model (flaring props, motorstick/wing warp control). To quote Thomas Vallee from a recent letter: "We have a saying in our local indoor group that goes, "EASY B ISN'T!". That translates to "EASY B ISN'T [EASY]". Easy B is popular among established flyers. However, to do well is most difficult. Today, few people would think of Easy B as a beginner or entry level event."

Many attempts have been made to design this ideal beginners class. Other examples:
- F1D-Beginner, look at the experts models: variable pitch props, use of boron, long tail moments. The experts like the class a lot, but the name is wrong.
- Penny Plane, had soon to be complemented by Novice Penny Plane, experts are still flying in the Novice class (now called Limited Pennyplane, because "Novice" was the wrong term).

- P-15, an Easy Bee with a plastic propeller. Soon after its introduction in England the experts began carving and twisting the plastic prop!

Attempts have been made to exclude the experts from the beginner classes. They all failed. I do not think that it is possible to design the true beginners class. Expert techniques can be applied to everything. But the rules should be such that they are "beginner friendly". The repair restrictions in the F1L rules are a failure in this respect. We tend to overlook the bad effects that certain rules changes might have to the attractivity of the class to juniors and beginners.

There is only one way to attract newcomers to the hobby. Show them what it is all about and help and instruct them to build their first model. The flying sessions should be fun, the competitions leisurely and not fanatic, the beginner should get all the help and attention he needs. One helpful modeler at each club can achieve more than any new rule or class that we devise.

But creating Junior classes could indeed be advantageous. The best class would be a combination of Pennyplane and F1D-Beginner with restrictions like: no flaring (asymmetrical), VP or VD props, no use of boron. A substantial minimum weight rule is certainly needed here. The 3 gram for these classes works fine. One might say that there probably would not be sufficient juniors to hold a competition. But in a small country like Holland we currently have more junior F1D-Beginner flyers than seniors. It is the result of active promotional efforts and good cooperation. Promoting indoor can be done.

What is a good indoor beginners model?

What makes a model suitable for a beginner (let's say 10-12 years old)? The model should be easy and quick to build and be easy to trim. This means:

1. minimum number of parts
2. reasonably thick wood sizes
3. simple parts, straight outlines, solid stick
4. single dihedral
5. easy repairability
6. low wing loading
7. easy handling (loading of motor)
8. relatively sturdy and crash proof
9. (attractive design)

A beginner will choose his first model not according to the first criteria but to the last: it should be an attractive model! This will most likely be a complicated and heavy scale kit model of the Keil Kraft, Guillows, sort. Besides that it is a kit and should without doubt be a proven and well flying design. The seller will obviously recommend that model. But it is a totally illogical choice if one wants to have the maximum chance of success. But even the experienced and helpful modeler will have difficulty to withstand the temptation of trying such a model when he helps this enthousiastic youngster. A large and lighter duration model is the best choice. I realize that some fun or scale orientated flyers shy away from duration models because they seem to be too fragile. But a 3-5 gram F1D-Beginner is a very forgiving plane, it flies slowly, is less easily damaged and easy to repair. The low flight speed makes it a lot easier to see what happens when something is out of balance. It is a perfect model to learn the art of trimming and how to use rubber.

Let us rate a number of classes to the most important of the above mentioned criteria: simple construction and easy flying and handling characteristics. The best class is on top of the list.

Simple construction	Easy flying
1. F1D-B/Pennyplane	1. F1D-B/Pennyplane
2. Easy Bee	2. Easy Bee
3. Mini-Stick	3. Mini-Stick
4. No-Cal/Profile Scale	4. Bostonian
5. Bostonian	5. Sainte Formule
6. Sainte Formule	6. No-Cal/Prof.Scale

I am of course talking about the simplest designs of each class. As you see I did not include the plastic prop models like the Delta Dart, etc.. In my view they fail on the low wing loading criterium. The flight speed is too high, they are too easily damaged and adjusting the model is difficult at this speed. They have their validity as a first acquaintance with the hobby for the very young, but when you want them to learn something, then you need a larger and lighter model. That is of more value than the very simple structure of these models. In Holland we have proven many times that a model like the Moustique can be built by a 10 year old youngster. Not without help, they all need help, but all of the models are completed and fly well right at the first launch. Even though some are 6 grams heavy. An overweight Peanut or Sainte will not give much satisfaction. Besides that the building time triples that of a Moustique. A junior will not be prejudiced to duration models. When you tell him he can build such a model, he will believe you!

It would, however, be an improvement when the kit manufacturers would more actively promote Profile Scale models and include information about indoor flying activities and clubs in their kits. The first kit a newcomer purchases should be a success. A noted kit manufacturer who produces 200.000 kits per year estimates that 80% is never completed. How many of the remaining will come to good flying?

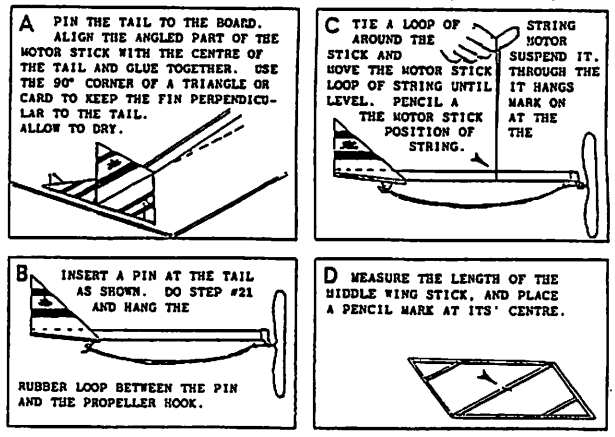
Delta Dart Tips

The Canadian version of the Delta Dart is the MAAC Cub. The following tips are from Model Aviation Canada magazine and were kindly sent by Bill Henderson:

Cub Kit Building Option

Last January, Dean Clausen of the Regina Windy Flyers, and also the club's newsletter editor, sent a suggested construction option for the MAAC Cub kit to Easy Built Models, manufacturers of the kit. By mid-March the Wilson brothers and the staff at Easy Built agreed that the new option allowed the Cub to fly with no, or very little nose weight, and have included instructions steps for the option in Cub kits. Below are the instructions:

The following construction steps are recommended to be done between steps 14 and 15 of the supplied construction instructions.

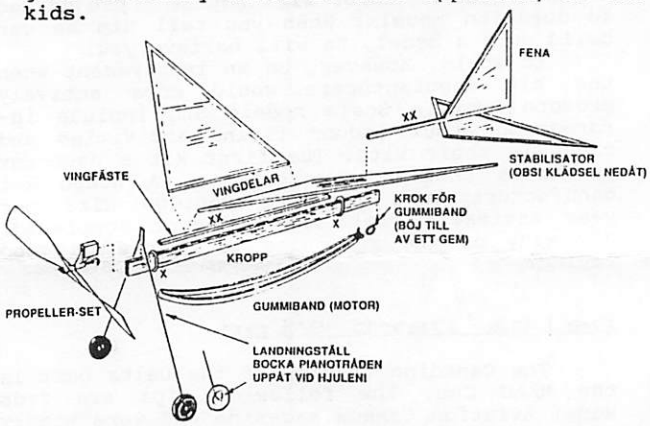


My own (limited) experience with the Delta Dart showed that it has a tendency to roll under high torque and then dive in. This can be cured by making the left wing 25 mm longer (or shortening the right one). All trim tabs should be fitted right from the beginning to minimize damage at the first flights.

Knott

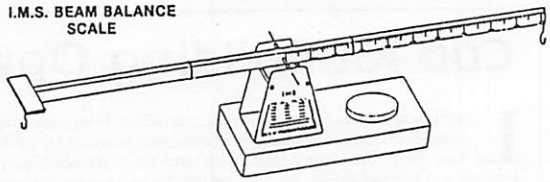
Knott is the Swedish counterpart of the Delta Dart and is marketed by Ackus (see advert elsewhere). It is somewhat smaller and has a lighter propeller. The wing loading is lower than the Delta Dart and the wing has higher aspect ratio. This slows the flight speed and gives the model more docile characteristics. The model is assembled in the same way as the Delta Dart by glueing the parts directly onto the plan. But the wing panels are built separately, which complicates the assembly unnecessarily. The wing can be shifted fore and aft for trimming. But the sample model we built was nose heavy and the wing could not be shifted forwards sufficiently. It needed more decalage than was indicated in the instructions. Elevator and rudder tabs are necessary also but were not mentioned in the instructions.

The model flies more satisfactorily than the Delta Dart and the addition of a landing gear certainly makes it more appealing to the kids.



INDOOR MODEL SUPPLY
Box 5311
Salam, Oregon 97304
PHONE
1-503-370-6350

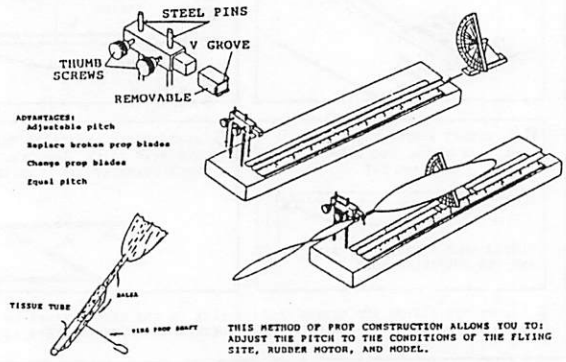
I.M.S. BEAM BALANCE SCALE



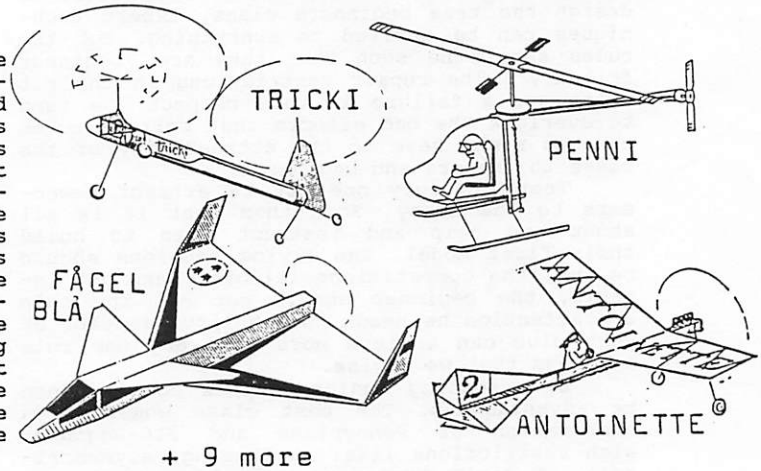
Indoor builders need a scale that will respond to as little as 3 Mg., and designed with a beam that has a SMALL MOMENT OF ENERTIA, is WELL CONSTRUCTED, a PLEASURE TO WORK WITH, and LOOKS GREAT, the I.M.S. Beam Balance Scale.

WITH WEIGHTS, SIMPLE ZERO SET, EASY TO READ Mg SCALE, Oz CONVERSION, COMPACT, READS TO 100Mg DIRECTLY, (just add this to the hanging weight), BRASS BASE with LIMIT BAR, ILLUSTRATIONS.

PROP PITCH GAUGE
COMPLETE WITH DISTANCE ANGLE FROM CENTER TABLE AND 45° DISTANCE FOR MANY CLASSES OF MODELS, DIAMETERS, AND PITCHES.



Helped and inspired by Burkam, Hannan, Hattum, Scott and SIG Co.
I have made a new line of models suitable for INDOOR & OUTDOOR use. They all fly beautifully and are simple to build with exception for PENNI & TRICKI who need more experienced builders.
ARE YOU INTERESTED IN GETTING VERSIONS FOR YOUR COUNTRY? So far English (American) and Swedish instructions are ready but I am looking forward to getting YOUR help with translations into your language.



THE KITS ARE SUITABLE FOR CLUBS BUT ALSO FOR INDIVIDUAL MODELLERS SINCE A LOT OF WORK HAS BEEN DONE ON PICTURES IN THE BUILDING INSTRUCTIONS. LOW PRICES BUT HIGH QUALITY!

PLEASE WRITE ME IF YOU WANT TO BUY OR GET MORE INFORMATION. In Britain you can get most of the kits from BALLARD´s.

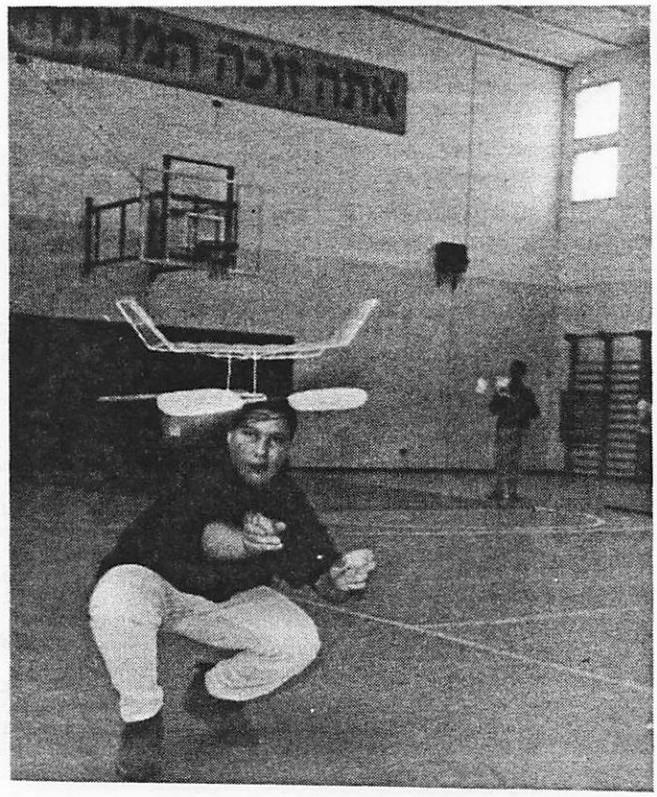
ACKUS, Rune Johansson, Åkersliden 3, 446 41 ÄLVÄNGEN, SWEDEN.

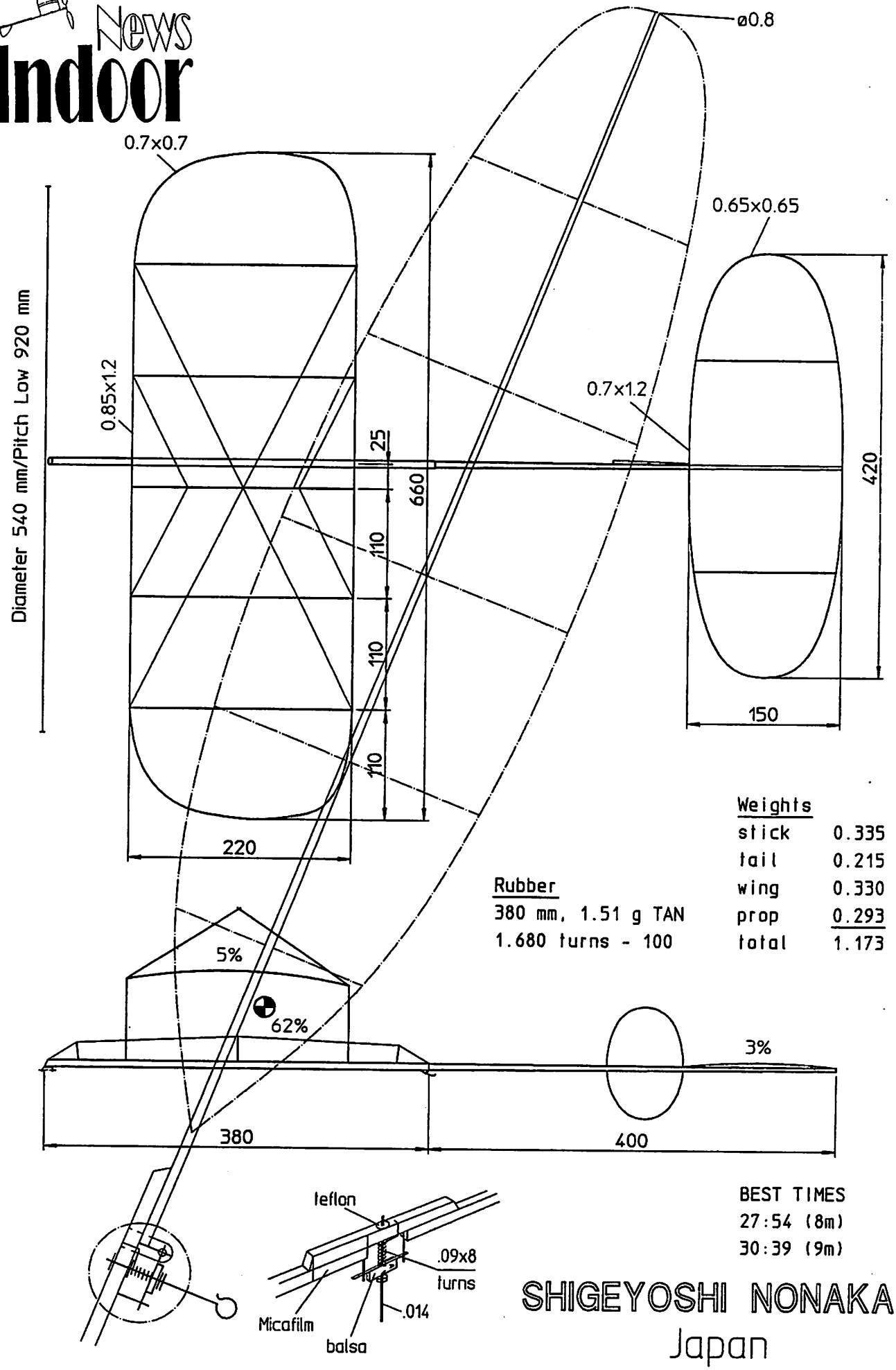
Indoor in Israël

The art of indoor flying has found it's way into Israël just recently:

טיסנאות

אסא לונטל - שוב ראשון בטיסני-פנים




ø0.8
0.7x0.7
0.65x0.65
Diameter 540 mm/Pitch Low 920 mm
0.85x1.2
0.7x1.2
25
660
110
110
110
420
150
220
Rubber
380 mm, 1.51 g TAN
1.680 turns - 100
Weights
stick 0.335
tail 0.215
wing 0.330
prop 0.293
total 1.173
5%
62%
3%
380
400
teflon
.09x8
turns
.014
Micafilm
balsa
BEST TIMES
27:54 (8m)
30:39 (9m)
SHIGEYOSHI NONAKA
Japan

Norwind News

The following article is taken from Norwind News, the newsletter of the British North West Indoor Association. The newsletter has about 6 pages and is published approx. four times a year. It is most enthousiastically produced by Dave Yates and Mike Colling. For details write to Dave at: 24 Rivington Drive, Up Holland, Skelmersdale WN8 0HB, England.

PUSHER, a new class.

During the past winter season the British have tried a new class: PUSHER. The rules are as follows:

Norwind "Pusher" Rules

"Pusher" definition: Motor in Front of Propeller.

Maximum Wing span (projected)	18 inches
Maximum Propeller dia.	one third of Wing span
Overall Length	unrestricted
Covering material	unrestricted
Minimum Weight	.10 gram per inch of Wing span or Overall length if greater)

example: 18" wing span and 16" long = 6" dia. Prop., min. weight 1.8 gram.

The first contest attracted 14 entries and they sure had fun: "Fears about Pushers and the ceiling proved well founded. Without a prop up-front weird things happen when these models touch the ceiling, some followed the slats like a bicycle wheel stuck in a tram line. In addition to the Farman, Twin Boom, Canard and Extended Shaft designs we had already seen, John O'Donnell flew an asymmetric (Blohm und Voss Vm 141) style model that didn't live-up to its early promise. After the event John re-trimmed to turn right with some improvement. Dave Yates flew an extended shaft model (that had done 4:50 a few days earlier), his third place flight was a re-launch with a damaged wing, after hitting a wall at 45 sec. Adrian Abell was second, flying a canard with a very small stabilizer!, using high power his model hit the ceiling at about 60 degrees it just bounced-off and tried again....like a Gold-fish feeding at the surface. Bill Murray had made a wide chord wing for his extended shaft model, he had problems with rubber, his winning flight of 4:29 was made right at the end of the contest, using (so we were told) a 'borrowed' motor."

PONDERING A POSSIBLE PUSHER

by John Barker (GB)

I think that it is interesting when a new model specification is published - unless it is like the Living Room Stick which, from the design point of view, is so boring. However we cannot say that about this winter's project, a Pusher. I haven't yet decided what to build but I have done quite a lot of thinking and I would like to share those thoughts with you. It will then be interesting to see how wrong I am at the end of the season.

As you will have read elsewhere the rules are: a max span of 18"; a min weight of 0.1g per inch of span or length, whichever is the greater; a max prop dia of 1/3 of the span and the prop must be behind the rubber. I decided to see how the specification requirements were likely to affect performance and to this end I needed a measure of performance. I proceeded as follows:

ENERGY AVAILABLE The energy available to fly the aircraft depends on the weight of rubber used (Wr), the specific energy of the rubber (E) and the efficiency (η) of the propeller (it is a propeller on a pusher!) in converting the energy into thrust. In symbols:

$$\text{energy available} = Wr\ E\ \eta$$

ENERGY REQUIRED PER SECOND Common sense tells us that if an aircraft has more drag it will need more energy to push it along and also if we try to push it along faster it will need more energy. Standard aerodynamic theory agrees with common sense so that:

$$\text{energy reqd per sec} = \text{Drag} \times \text{Velocity}$$

DURATION If we divide the total energy available by the energy required per second it will give us the number of seconds that the aeroplane will fly. Thus

$$\text{duration} = (Wr\ E\ \eta)/(\text{drag} \times \text{velocity})$$

Now that equation is not particularly useful as it stands but if I replace the drag with its equivalent W(Cd/Cl) and the velocity with the usual formula for velocity based on wing loading and lift coefficient we get to what we want.

$$\text{duration} = \frac{Wr\ E\ \eta\ Cl^{1.5}}{W\sqrt{(W/S)}\ Cd\sqrt{(2/\rho)}}$$

W = total weight
S = wing area
ρ = air density

That may look horrible but a second look will shew that you knew all of it already but just had not put it down in that form. Anything you increase on the top line increases the duration, ie. more rubber, better quality rubber, more prop efficiency or a better lift coefficient. On the down side we have weight, wing loading and drag coefficient. The air density term is virtually constant unless you have some clever scheme I haven't thought of.

This formula will not give precise results, mainly because it assumes an even power output which we certainly do not get with a rubber motor but on the other hand the figures are not ridiculous. For example, if I put in a typical EZB with 1.2g airframe, 1.0g rubber, 2400 ft.lb/lb energy, 55% prop efficiency, 1.0 Cl and 0.2 Cd it gives a duration of 15 minutes. However the purpose here is not to obtain precise durations but to see the sort of influence that design changes might have on duration. As a starting point I took an EZB wing, 18"x3", which, under the new rules, allows an airframe weight of 1.8g. I further assumed: rubber weight 1.2g, rubber energy 2000 ft.lb/lb, Cl 0.9, Cd 0.19 and a prop efficiency of 40%. This gave a duration of 6:12.

WING LOADING (W/S) I deal with this first because an unusual feature of the rules (that the weight is dependant on the wing span) allows us to fix one variable straight away if we want top duration. It is apparent from the formula that the lower the wing loading then the higher will be the duration; so what does this rule do to the wing loading. If we start with our 18" wing we have a weight of 1.8g plus rubber. If we make a geometrically similar model at half the size, 9" span, then the weight halves to 0.9g but the wing area decreases to a quarter so the wing loading is doubled. It will be more difficult to build to the weight at the larger sizes but obviously the largest model that you can build to the weight will be the one to go for. Putting figures into the formula for geometrically similar models, a 12" span should do 5:03, a 15" 5:40 and as before the 18" 6:12.

FUSELAGE LENGTH For most models I think this can also be fixed as equal to the wing span. There seems no point in going higher and increa-

sing the weight and no point in going lower and decreasing the stability. I acknowledge that this does not apply to a tailless which might be a good solution for anyone who knows how to trim one.

AMOUNT OF RUBBER Most flyers know that the theoretical maximum duration comes when the weight of rubber used is twice the weight of the bare airframe and yet a ratio of nearer 1/1 or less is more normally used. Why should this be? Well the increases in time become very small as the 2/1 ratio is approached and at the same time the structure loads are increased, trimming is more difficult and propeller efficiency is reduced all of which probably prevent the theoretical time from being achieved. From the formula: increasing the rubber to 1.8g should increase the time to 7:00 minutes (from our basic 6:12) which may be worth trying for, but doubling this to 3.6g could only give an increase to 7:40 even ignoring the problems mentioned. I shall not try for 2/1 rubber with the small diameter prop we are allowed.

RUBBER ENERGY A motor gives up a lot of its energy on the first few turns of the flight. Probably about 25% for the first 10% of the turns so, as ever, we would like a flat torque curve. I think that the small prop will waste high end energy which is why I guessed an energy of only 2000. Perhaps a flaring prop will help. Could a variable pitch be done at this size?!

PROPELLER EFFICIENCY Bernard Hunt did some tests which indicated peak efficiencies of 50% to 55%. The smaller ones used here will be worse so any care lavished on the prop must be helpful. It is worth noting that for a given diameter the higher the thrust the lower the efficiency therefore, as thrust equals drag, a reduction in drag will allow a more efficient prop. I suspect that the efficient blade shapes (Boor/Larrabee etcetera) that we have been using recently may give way to more rectangular blades to increase solidity and absorb the power. I am not sure that this is necessary.

LIFT COEFFICIENT A high lift coefficient is obviously beneficial as it is to the 1.5 power. What this means in practical terms is trimming to fly near the stall. This demands stability which may not be too easy with a pusher layout and the desire to use a fuselage no longer than the wing span. Although a canard suits a pusher arrangement it does have a disadvantage for high Cl because, for stability, the main plane must have less angle of attack than the fore plane.

CHORD & Cd The obvious way to reduce wing loading is to increase the wing chord. The lower loading will reduce velocity and hence the energy required but, on the other hand, the lower aspect ratio will increase vortex (induced)drag and the bigger wing area will increase boundary (profile)drag which will increase the energy required.

To use the formula to assess these effects it is necessary to split the Cd term into the two components mentioned (vortex and boundary). We can make a good assessment of the overall drag by test gliding similar models because the L/D ratio is equal to the gliding angle. I find I get L/D ratios of about 4 to 5. However it is not easy to say how much is boundary and how much is vortex drag. My estimates say that the vortex drag is the least part on indoor models and so the aspect ratio does not help as much as it does further up the aerodynamic scale. This is surprising at the high lift coefficients that we use indoors but does accord with the low aspect ratio used on most top models.

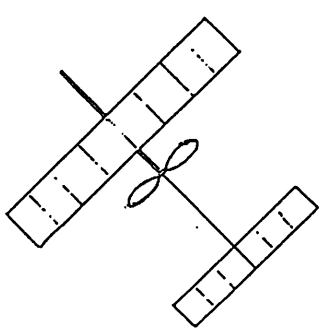
Using the formula I arrived at the following times for different wing chords on the standard model as used before. Chord 2.5" time 5:55; 3" 6:12 as before; 3.5" 6:25 and 4" 6:34. Can I emphasise again that I do not claim precise times but I think that the indicated trends are correct. Against these time increases there will be an increase in structure weight (which will not matter if you are a light builder), stability may be more difficult, and there will be a slight decrease in propeller efficiency.

LAYOUT I won't say too much about this because it is where the fun should come in, dreaming up new and wonderful shapes. Actually as I am an old stick-in-the-mud I am not likely to break new ground but I did look at some of the established layouts - mainly to see if I thought I could get them to balance.

I have built several canards and they have been very simple to fly and reasonable performers. However I shall not make one my first choice this time as they have all required nose weight to get the cg correct. A minor annoyance is that the fore planes are vulnerable. If you do build one I recommend carrying the rubber to the front which I think will demand a braced or tubular motor stick.

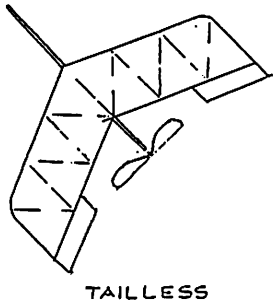
I don't like tailless machines so the quick look I took surprised me because they may have possibilities! Certainly the balance would be no problem and it would be easy to get a low wing loading. Do the swept wing and elevons loose too much efficiency? Going further on the same scheme, a delta will provide even more wing area but here I think that ballast may be needed to adjust the balance.

However, after looking around, I intend to use a Farman layout for my first try. By this I mean the arrangement with the propeller just behind the wing and the tailplane held on booms. I told you that I was unoriginal. This gives me a wing and tail (and therefore a centre of gravity) where I expect them to be. The disadvantage is the structural problems of the booms. My present proportion are as the plan view below. I have made a mock up with an old EZB wing and everything balances OK. I think if I feel in the mood for some light building I shall push the wing chord up half an inch but as usual I think the main work before the first comp will be getting a good prop and matching the rubber!



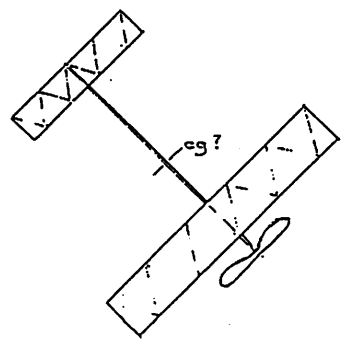
FARMAN

Familiar!



TAILLESS

Could provide a big wing



CANARD

Looks long but remember cg

RECORDS

37'12 F1D Microfilm Cat. II World Record

Bob Randolph (USA) July 20, 1992

Bob's world record has now been officially approved by the FAI.

Hungarian Records

Andras Ree has set two new Hungarian records:

Cat. III	43'27	(Debrecen)
Cat. I	30'53	(in a Gym)

I assume these were flown with 65 cm F1D models, but Andras did not specify.

Peanut Rules

The following changes to the F4F rules have been approved by the CIAM Plenary Meeting:

6.6.5. Appearance Score. Amend subparagraphs b), and e) as follows:

b) complexity of colour and markings 0-10
of the model 0-10

e) Type of covering:

1 - paper

Colour doped 9
Clear doped tissue 5
Undoped tissue 3
Condenser paper 2

2 - other material

Colour 9
Uncoloured 3
Microfilm 0
Polypropylene 0

Add the following to sub paragraph i)

Canard, tandem 10
Flying wing 10
Oval fuselage cross section 8
Two or more motors, any additional propeller (functional or not) 15

(For the full rules see Indoor News 20. The new revised Provisional Rule Book will be ready in 2 to 3 months)

No Ceiling Touch

Bill Henderson (CAN):

In your most recent Indoor News you ask for comments about flying with no ceiling touch. We have been doing this for some of our cross-Canada postal contests, particularly Limited Pennyplane and have found it to be very challenging. Typically, on no restriction flights, we will do 9 minutes plus in a category 1 hall, but in the no touch class it is very difficult to do 7 minutes. Many of our flyers like the challenge of no touch because it requires very careful selection of the propellor/rubber combination and one learns a great deal about the fine trimming of the model. I have found that I do my best Bostonian flights in the no touch mode and the three Canadian records I hold in this class were all done without touching the building structure. I attribute this to the weight of the model (7 grams) and the altitude loss during recovery from impact, which is difficult to regain with the power available.

NFFS 1992 Sympo Report

The Annual NFFS Symposium Report is now available. For the first time it was edited by a non-american: Paul Masterman from the UK. Many of the papers are written by British flyers.

Nordic wing constr. techniques	A. Schlosberg
Low advance ratio propellers	Max Chernoff
Optimum rubber weight	Bob Meuser
Bernard Hunt's F1D model	Bernard Hunt
FAI funding	Martin Dilly
Rubber motor heater	Bill Turner
Choosing the best Wakefield prop	Bob Meuser
Coupe d'Hiver design	Peter King
Wing wigglers for F1B	Mike Woodhouse
Testing of indoor propellers	Bob Bailey
Tailpiece about indoor flying	Laurie Barr

Not much for indoor flyers at first glance, but Bernard Hunt's article about the design and development of his 'Tandem' design (plan in IN 20) is sure worth acquiring the book. You can learn a lot about propellers from the various articles about this subject. The report concludes with the ten models of the year. Among them are Cezar Banks' Novice Penny Plane, Indoor Catapult model by Chuck Markos and a Special award goes to the Lacey M10 by Peck Polymers and Butch Hadland.

The report is available from NFFS: Fred Terzian, 4858 Moorpark Avenue, San Jose CA 95129, USA, at $16 + $2.50 surface mail anywhere in the world ($4.50 for 2 to 4 books in one order), + $8 air mail to Europe or + $13 to Far East and Pacific. The report is also available from Free Flight News, 7 Ashley Road, Farnborough, Hants. GU14 7EZ, England, at £11.80 incl. postage in UK or worldwide surface mail, or £15 by airmail to anywhere outside Europe.

Flapper Facts

Flapper Facts is the official newsletter of the Ornithopter Modelers Society and covers both outdoor and indoor ornithopters. Editor is Nathan Chronister and he tries to make this a quarterly publication. Membership dues, incl. subcription to Flapper Facts, are $4 per year or $7 per two years. Overseas members must pay $6 per year due to higher postage. Make checks payable to Nathan Chronister, 3140 Rt. 209 # 2A, Kingston NY 12401, U.S.A..

Indoor Modelvliegen

"Indoor Modelvliegen" is the title of a beginners handbook about indoor flying compiled by the dutch indoor modelers. It might be of interest if you can read dutch! It gives detailed articles about building F1D-beginner, EZB, Microfilm, Sainte Formule and Peanut models. There is an extensive chapter about flying techniques and concluding chapters with tips and organizational information. Write to the editor when you are interested.

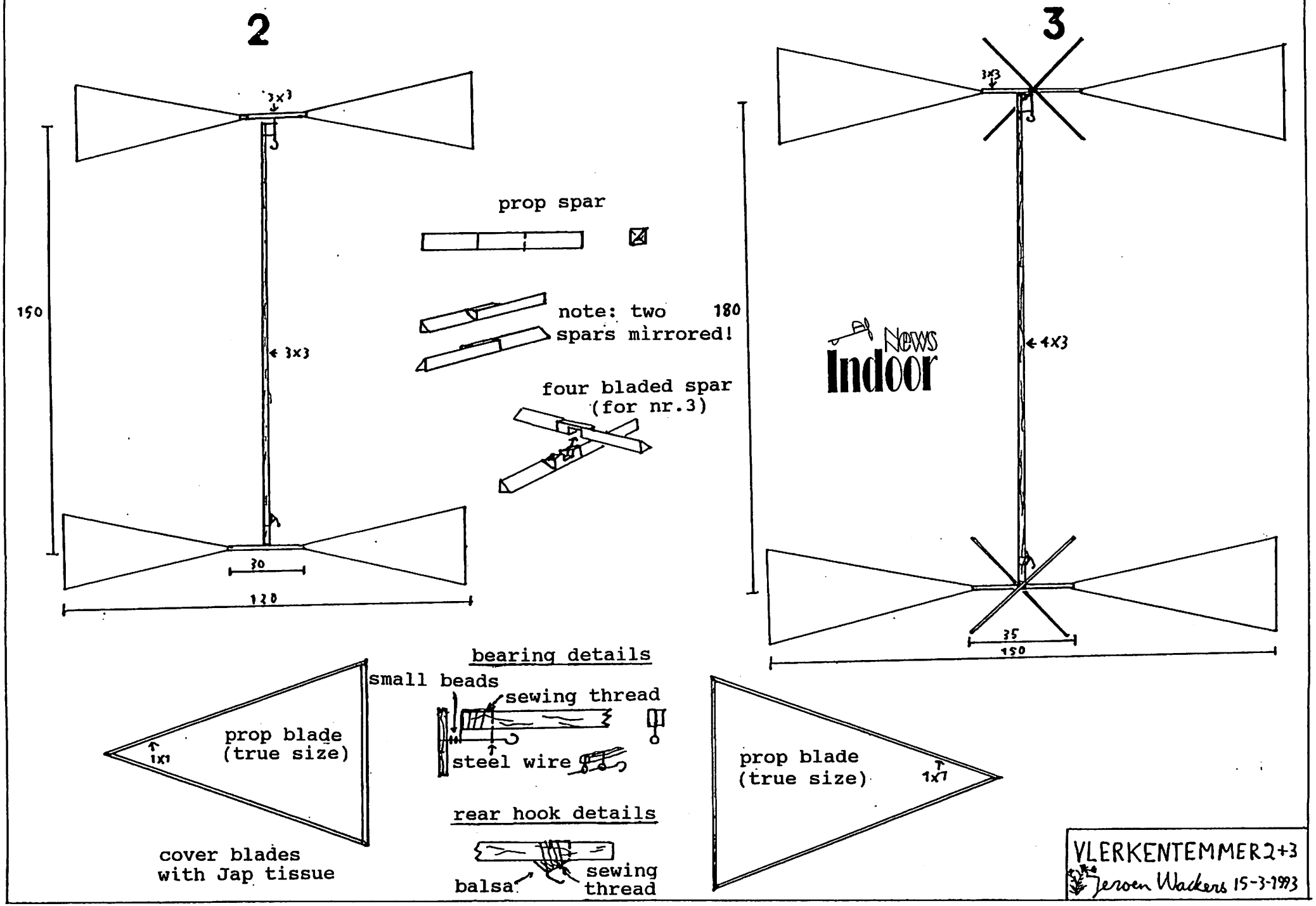
Indoor News & Views

The well-known U.S. Indoor News & Views newsletter has a new editor: Dr. Lester Garber, 2324 East 5th Street, Duluth, MN 55812. Les takes over from Plenny Bates, who did an excellent job as an editor. He revived the newsletter and gave it much more variety. Well done, Plenny!

INAV costs $9.00 for U.S.A., Canada, Mexico, $12.00 Air mail all others.

Spoked Wheels

Making your own miniature spoked wheels is an art that many scale flyers want to master. Stan Fink explains how to do it in his book The Domeduster Spoked Wheel System. The book costs $8 and is available from him at 1810 Pine St., Philadelphia, PA 19103, U.S.A..


2
3
3x3
150
3x3
30
120
prop spar
note: two spars mirrored!
180
four bladed spar (for nr.3)
News
Indoor
4x3
35
150
bearing details
small beads
sewing thread
steel wire
rear hook details
balsa
sewing thread
prop blade (true size)
1x1
cover blades with Jap tissue
prop blade (true size)
1x1
VLERKENTEMMER 2+3
Jeroen Wackers 15-3-1993

How to use cyanoacrylates and carbon fiber on indoor models

by Gerrit Jan Breteler (NL)

Cyanoacrylate glue is a widely used type of glue nowadays. But indoor flyers tend to shy away from it, afraid as they are that the soft wood will suck up too much glue and add much useless weight to the model. But with help of some little tricks it is well possible to build an indoor model entirely with cyano. I will present some tips which might be of use to other modelers as well.

Before we look into the way the glue has to be used some general information about the characteristics of this glue will be presented.

Properties of cyanoacrylates.

Cyanoacrylate glue, also called instant glue, consists of fluid methyl- and ethylacetate and a stabilizer which has to retard polymerisation (curing). The glue cures under pressure and contact with moisture. The water particles that are normally present on every object, neutralise the stabilizer in the glue, after which the polymerisation can take place. The curing goes quicker the thinner the layer of glue is. So for quick curing the parts to be glued have to fit perfectly. This is also important to reduce the amount of glue needed as much as possible. These requirements are mostly met when building indoor models. When the parts to be glued contain relatively less moisture, then the curing of the glue can be speeded up by breathing onto the surfaces shortly before applying the glue.

Cyanoacrylates can be purchased in a variety of types for different fields of application. We know the thin, penetrating kind and the thicker, gap filling types. The penetrating type is the most appropriate for use on balsa. The thin glue can suck itself into the glue seam, so that just a tiny drop will be sufficient. The Japanese firm OK-models markets a thin CA glue that is specifically formulated for balsa and with which I have excellent experiences. A joint of balsa parts made with CA glue is stronger than with cellulose or PVA based glues. The bond is so strong that failure will occur in the balsa next to the joint and not in the glue itself. With use of cyano failure of joints will be history. Because the joints are so strong and stiff the structure can take up the applied forces much better. It is advised to use CA glue for the heavier loaded places.

Cyanoacrylate glue melts at about 160°C. Because the glue regains its original strength after cooling it is possible to correct joints after curing through controlled application of heat. As will be shown this is a particularly useful feature when building and trimming indoor models. Curing of CA glue can be speeded up by use of accelerator spray. The accelerator neutralizes the earlier mentioned stabilizer. An accelerator is particularly of benefit with thicker CA glues and is of less interest for glueing balsa. Removal of CA glue is possible with specially formulated cleaning means. The glue can also be softened with acetone. In this manner sticked fingers can be freed. Glue on metal parts can be removed by taking them through a lighter flame.

This was the general information. Now on to the use of CA glue on indoor models.

Application to indoor models.

The earlier mentioned objections against use of CA glues on this particular application primarily stem from the fact that this glue cannot be thinned and applied sufficiently sparingly with the commonly used syringes. The performance of an indoor model obviously depends on the weight of the model, and the amount of glue used has to be minimized as much as possible. The traditionally used glues are thinned down and applicated through use of a syringe. This way the applied drop of glue can be carefully tuned. CA glues cannot be accurately dosed with the bottles it is delivered in, not even when it is fitted with a syringe needle. The needle will quickly be stuck with glue too. But the glue can be applied accurately with a piece of thin wire or a pin by picking up a drop of glue and applying it to the right spot. For this it is required to keep a small amount of glue outside its package and to keep it fluid for some time in order to be able to pick up the glue drops.

When a drop of CA glue is put onto a sheet of polyethylene foil (one of the few materials that cannot be glued with CA), then the glue stays fluid for more than an hour. With time it will become somewhat thicker of course. To prevent your hand or arm from accidentally getting into the glue, it is advised to fix the foil to a cover or jar lid. From this set-up the glueing and building can proceed quickly as the glue joint is almost immediately cured.

The possibility of adjusting a joint through application of heat is particularly useful for microfilm wings. These wings have to be built flat to allow for covering with microfilm. After covering the dihedral has to be made. When the dihedral joint is made with CA glue it can be softened with a light, controllable soldering iron. Tissue tubes, which have been rolled in the usual way with dope, can be strengthened by applying CA glue to the outside. Excess glue can be sanded away with fine sandpaper. This type of tube is well suitable for adjustable pitch hubs. When the correct pitch has been found the position of the spar can be fixed with a small drop of candle wax. This hub stays adjustable (through heating).

Cyanoacrylates and carbon fiber.

The high tensile and compression strength and low specific weight of carbon fiber are properties which make this material particularly suitable for strengthening an indoor model in strategic area's. Sole carbon fibers are not used. The fibers always have to be impregnated. Normally epoxy's are preferred for this. It's purpose is to protect and bond the fibers and to transfer the loads evenly over each fiber. Carbon fibers can also be impregnated with CA glue. But applying the fibers onto the balsa directly with CA glue does not give satisfactory results. It is better to pre-impregnate the fibers with CA. A strand of fibers is braced at an angle with tape, f.i. from the edge of a table towards the floor. Drops of CA glue are applied downwards along the strand until it is fully saturated. Excess glue can be immediately removed from the still tight strand with a piece of plastic foil between two fingers. After a quarter of an hour the strand is ready for use. Pieces can be clipped from this, despite its small size, very stiff strand with tweezers. The piece is glued with CA onto the parts to be strengthened. Parts like wing posts and prop spars have to strengthened on both sides to prevent bending and warping under varying temperature and humidity.

Finally.

The applications of CA glue have been described for use on indoor models primarily, but can be of use to other models also. Cap strips are an example. If you have any idea's about the use of materials, just let us hear from you.

It should be stressed that using CA glue

requires, like every other glue, strict application of the safety precautions as supplied by the manufacturer. Do the job in a well ventilated area and use your common sense.

TIPS

from Boyd Felstead (AUS):

Microfilm Tank

I have a very heavy wooden "mike" tank 5'x3' with a bung hole in one corner for drainage purposes - and have several 2"x1" wooden stiffeners across the bottom to keep the masonite flat. This tank is awkward to lift onto the table on which I pour, so I have now made a tank 5'x3' using high density white polystyrene 20 mm (7/8") thick, as used in ESKY coolers, food containers etc.. Sides and ends of the same material were cemented by silicone to the "bung" hole so there would be no leakage when the plug was inserted. Obviously this featherweight tank is very much easier to handle, with less risk of busting my back lifting the heavy wooden tank. (Note by T.A.: the weight of the water is considerable, so this foam tank bottom has to be supported evenly by table or floor. Do not support it at the edges only!).

Because of the material the tank was painted with heavy duty acrylic paint (2 coats dark green). When using for the first time I found the film wasn't spreading as wide as usual. For a reason I checked with my trouble-shooting friend Bernard Smith. His opinion - a few months ago the acrylic paint was still giving off chemicals which were absorbed by the water and affected the surface tension, hence the poor spread. Cure - change the water a couple of times and add a small amount of detergent, "lather up", which would help to absorb the offending chemicals. After a good rinse out and fresh water put into the tank I am now getting a good wide spread of film.

Have since painted the inside of the tank with high gloss black enamel to see the film better when poured, and from past experience (my wooden tank was painted similarly) I should not have any film spreading problems.

from Bill Henderson (CAN):

Dying Tissue

I recently faced the problem of trying to lose 3 grams on my Hosler Fury No-Cal model in order to make it competitive. One area that a significant weight saving could be achieved was to find an alternative to the precoloured Jap tissue I was using, especially since more than one sheet was required to cover such a large structure. The pre-coloured sheet weighed 3.7 grams per preshrunk and lightly doped sheet, whereas some lightweight, white Jap I had weighed 2.7 grams per sheet in the unshrunk, undoped condition. Dying this lightweight tissue to the desired colour would probably not increase the weight significantly, but I had not tried this technique before.

The process was much easier than expected and I thought you might be interested. The white tissue was mounted on a solid wood frame with masking tape and preshrunk with water. A solution of DYLON cold water dye was made up according to instructions (without salt fixer) and sprayed onto the tissue which was immediately rinsed with a cold water spray to even up the colour and remove the excess dye. After drying, the dye was sealed with a very light coat of thinned, low-shrink dope. The dyed sheet had an even colour and weighed 2.8 grams after sealing and hence there was a 0.9 gram weight saving per sheet. Deep or strong colours may need a second dye and wash application, but the important thing is to use cold water dyes since both RIT and TINTEX dyes are designed to be used with very hot water which will cause thin tissue paper to disintegrate.

from Jeroen Wackers (NL):

Storing your Motors

Build a flat to store your motors by stacking match-boxes up each other! You can write the data of each motor on the box or put a note in it and change that when a motor breaks.

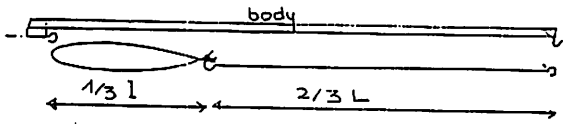
Note from T.A.: one might argue that the paper or cardboard will affect the rubber, but this is a very slow process and will worry top competitors only. It is a good system to teach the juniors how to handle and treat rubber motors. Jeroen is a junior, who incidentally just became the first dutch Champion in the new Sainte Formule class, beating all the seniors!

from Michel Caillaud (F):

Shortened motors

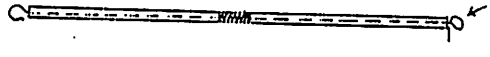
Purpose : principle of rubber loop at its third in F1D Category.

l. length of normal rubber loop
P. mass of normal rubber loop
L. distance between the axles of fixing points on body -



The rubber loop at its third must be equal to the third of l in length and to the third of P in mass. The balancing bar must be equal to the two thirds of L in length and to the two thirds of P in mass.

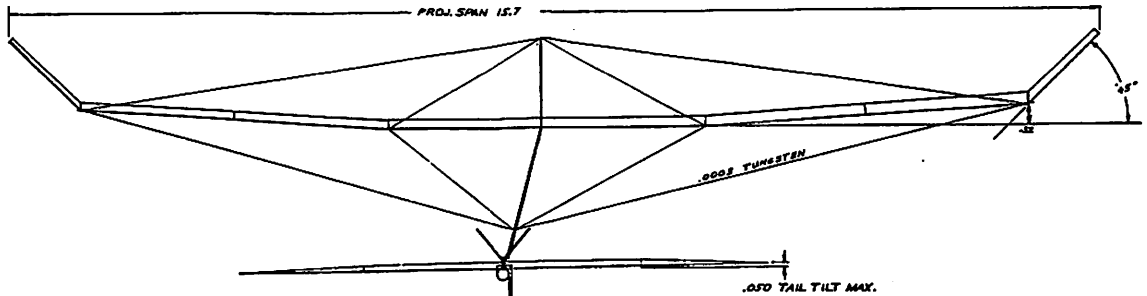
The balancing bar is made of 6/10 or 7/10 piano wire and can be covered with balsa all along its length to be rigidified. The adjustment of the mass is done with copper or fuse wire; take care of the centre of gravity. To make the hooking of the bar easier, it is possible to twist the piano wire as follows.



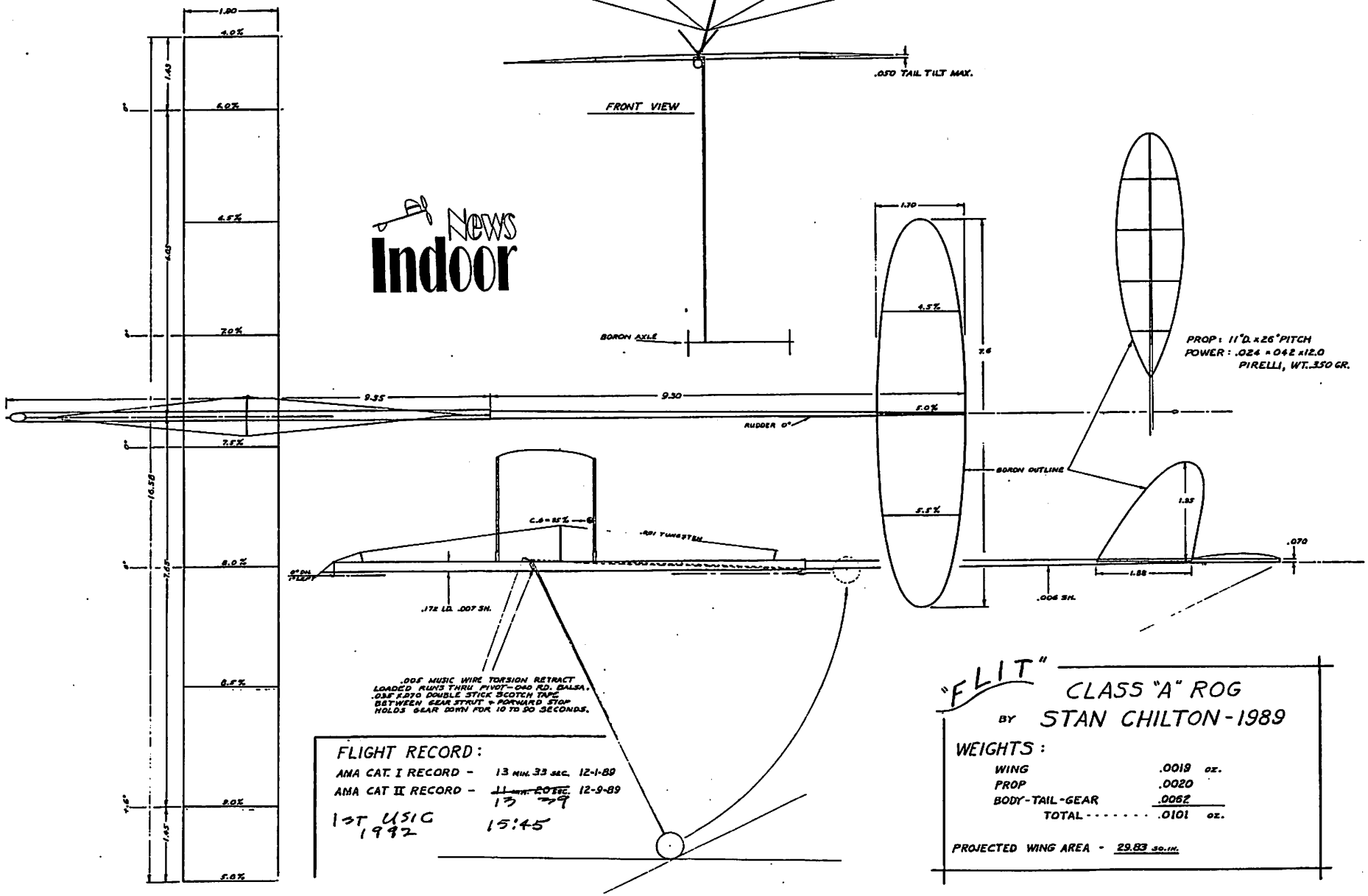
FLIT

by Stan Chilton (USA)

The next page shows a 3-view of an "A"-ROG model with a retractable gear that really works and only adds .001 oz.. I have found that the "timer", the double stick Scotch tape works best (about .035"x .060", 0.9x1.5mm). All airfoil thicknesses are thinner for ceiling heights above 40 ft (12 meter).



FRONT VIEW



PROP: 11"D. x 26" PITCH
POWER: .024 x 042 x 12.0
PIRELLI, WT. 350 GR.

.005 MUSIC WIRE TORSION RETRACT LOADED RUNS THRU PIVOT-.040 SQ. BALSA. .032 R.R.D DOUBLE STICK SCOTCH TAPE BETWEEN GEAR STRUT & FORWARD STOP HOLDS GEAR DOWN FOR 10 TO 50 SECONDS.

FLIGHT RECORD:

AMA CAT. I RECORD - 13 min. 33 sec. 12-1-89

AMA CAT II RECORD - ~~11 min. 20 sec.~~ 13 min. 9 12-9-89

1ST USIC 1992 15:45

"FLIT" CLASS "A" ROG

BY STAN CHILTON - 1989

WEIGHTS:

WING	.0019 oz.
PROP	.0020
BODY-TAIL-GEAR	.0062
TOTAL	.0101 oz.

PROJECTED WING AREA - 29.83 sq.in.

THE 1993 UK INDOOR SCALE NATIONALS

April 18, 1993

Report by Reg Boor (UK)

In Open Rubber, or F4D, 13 out of 23 entries managed a qualifying flight but only three of those achieved four flights. In CO2/Electric, or F4E, eight out of 16 entries qualified and only two of those got four flights. So, flying for the mandatory 15 seconds still proves elusive even at National level and doing it consistently even more elusive. The winners of both these classes won with the marks from a single flight and Goldby's flight with his Bristol F2B was hand-launched. This must be one of the very few times that one of these major classes has been won without take-off marks. The model was extremely nice however, brand new and it dominated the static scores.

Having said that, there was some very nice flying, Newman's RWD 8, Allen's Sopwith Swallow, Strachan's Bristol Prier and Hetherington's Caproni were all a delight to watch in F4E. In F4D (the "D" is for difficult !) Hetherington's Stosser is a regular performer and Johnson always produces the flying goods with any model that he brings. The Buhl Pup of Frostick's has appeared at irregular intervals over the years but it is always scored well and can be relied upon to fly. However, the sight of the day was Granger's Blohm & Voss asymmetric BV 141 taking-off and flying well. Mind you, if you wanted to hand-launch this machine, which bit would you hold?

Every model entered in Peanut, or F4F as it is now, made a flight. First and second places were very closely contested between Horwood's SE5a and Harris's Voisin but first place carried two most attractive extra prizes presented by Ottakar Saffek. A Czechslovakian crystal vase and one of Gasparin's jewel-like CO2 engines. No wonder that Horwood looked pleased when his first position was confirmed! On the other hand it was nice to see a relatively simple model like Peppiatt's Aeronca K achieving third position overall after placing tenth in static.

The second semi-official Pistachio competion at UK national level produced 20 entries, 16 of which flew. There is a possibility that this class may get BMFA provisional status soon but if it is to remain the favourite inter-nation scale postal event must not become an FAI class for which proxy flying is not allowed. Both of the kit scale mass-launch events were great fun during the initial rounds with many models flying together and produced moments of tension in the final rounds with three models circling together near the floor. So, with one exception, the usual UK masters dominated the results. The exception? Oh yes, your correspondent was fortunate enough to be awarded the Richard Riding Trophy for the best placed UK ultra-light.





SMAE Indoor Scale Results for Open Rubber

Competitor	Model	Static	Best flight	Total
1 M. Peppiatt	Pussmoth	1403.2	1622.0	3025.2
2 M. Hetherington	FW Stosser	1356.0	1623.0	2979.0
3 R. Johnson	Pilatus Porter PC6	1108.5	1704.0	2812.5
4 P. Frostick	Buhl Pup	1290.0	1382.0	2672.0
5 R. Granger	Blohm & Voss BV 141	1015.5	1578.0	2593.5
6 P. Lee	Lacey M10	982.5	1539.0	2521.5
7 L. Smith	ME 109B	894.0	1621.0	2515.0
8 A. Halstead	Pilatus Turbo-Porter	1029.7	1417.0	2446.7
9 M. Green	Leningradec	718.5	1627.0	2345.5
10 R. Horwood	SE5a	1203.0	1107.0	2310.0
11 P. Briggs	Bleriot	1276.5	961.0	2237.5
12 R. Boor	Avro 560	966.7	1260.0	2226.8
13 D. Reece	Chrislea CH3 Super Ace	640.5	1274.0	1914.5
14 B. Pursgrove	Westland Lysander Mk 3	1213.5	-	1213.5
15 K. Bates	Buttercup	895.5	-	895.5

SMAE Indoor Scale Results for Open CO_2/Electric

Competitor	Model	Static	Best flight	Total
1 M. Goldby	Bristol F2B	1510.5	1519.0	3029.5
2 C. Newman	RWD 8	1323.0	1468.0	2791.0
3 M. Allen	Sopwith Swallow	1042.5	1675.0	2717.5
4 C. Strachan	Bristol Prior	964.5	1732.0	2696.5
5 D. Causer	Bristol Bulldog Mk 11a	1420.5	1185.0	2605.5
6 B. Hetherington	Caprioni	1038.0	1551.0	2589.0
7 D. Knight	Piper Cub J3	1474.5	831.0	2305.5
8 M. Green	Anec 1A	831.0	1289.0	2120.0
9 D. Masters	Nieuport 28	1249.5	-	1249.5
10 R. Johnson	De Havilland DH5	1216.5	-	1216.5
11 D. Sheppard	Comte AC8	1152.0	-	1152.0
12 G. Spencer	Pieseler Storch	1009.5	-	1009.5
13 P. Robinson	Loving-Wayne WR1 'Love'	961.5	-	961.5

SMAE Indoor Scale Results for Peanut

Competitor	Model	Static Score	Posn.	Flight Score	Posn.	Total
1 R. Horwood	SE5a	59.0	2	109.0	7	9
2 M. Harris	Voisin	59.0	2	95.0	10	12
3 M. Peppiatt	Aeronca K	50.5	10	111.0	6	16
4 B. Boberts	Lacey M10	39.0	16	154.0	1	17
5 P. Briggs	Avro Bullseye	59.0	2	54.0	16	18
I. Pallister	Spartan Arrow	65.5	1	52.0	17	18
7 P. Lee	SE5a	56.0	5	64.0	14	19
M. Goldby	Piper Cub	47.5	11	105.0	8	19
A. Sephton	Lacey M10	41.5	14	113.0	5	19
10 M. Hadland	Clipwing Monocoupe	51.0	8	71.0	12	20
11 P. Boys	Hamilton H47	51.0	8	68.0	13	21
C. Hutchinson	Farman Postcard	36.0	19	133.0	2	21
D. Masters	Nieuport 11	54.5	6	61.0	15	21
14 M. Green	Lenningrad	33.5	20	124.0	3	23
15 R. Johnson	Currie Mot	40.5	15	103.0	9	24
16 C. Strachan	Piper Clip Wing Cub	31.5	22	119.0	4	26
17 G. Dimes	DH60 Moth	54.0	7	27.0	20	27
18 J. Lawson	ME Broussard	38.5	17	74.0	11	28
19 P. Smart	FW 190D	46.0	12	35.0	18	30
20 K. Bates	Buttercup	44.5	13	19.0	21	34
21 B. Stitchbury	Farman F170	37.0	18	32.0	19	37
22 R. Skerrett	W. Tailwind	32.5	21	15.0	22	43

SMAE Indoor Scale Results for Pistachio

Competitor	Model	Static Score	Posn.	Flight Score	Posn.	Total
1 M. Peppiatt	Beercat	29.0	3	117.0	1	4
2 M. Harris	Voisin	32.0	2	86.0	6	8
3 P. Frostick	Lacey M10	27.0	4	60.0	7	11
G. Dimes	Lacey M10	26.0	7	93.0	4	11
C. Hutchinson	Bleriot 25	25.0	9	105.0	2	11
6 I. Pallister	Lacey M10	27.0	4	58.0	8	12
7 R. Horwood	Polkerts SK1	27.0	4	34.0	10	14
8 D. Knight	Hunter Pistachio	34.0	1	13.0	15	16
9 A. Halstead	Holsté Broussard	20.0	14	88.0	5	19
C. Strachan	Pike	17.0	16	102.0	3	19
11 A. Sephton	HP Sayers	21.0	12	36.0	9	21
12 M. Green	Ant 2	24.0	10	28.0	12	22
13 D. Masters	Kalinin K5	26.0	7	12.0	16	23
14 M. Hadland	Pike	23.0	11	27.0	13	24
15 B. Stichbury	Heret Monoplane	20.0	14	30.0	11	25
16 P. Robinson	Waterman Gosling	21.0	12	16.0	14	26

Kai Halsas (FIN) writes:

I have experimented with several kinds of glues when covering my Indoor Planes with thin mylar. I have now tried the method described by Stan Fink in his "Domeduster" newsletter. I am enclosing some photographs of covering a LRS wing and F1D-B stabilizer. After applying the glue you have to turn the frame around, place it on a sheet of glass and put some weights on the spars. Otherwise the structure can bow during drying.

Covering With Mylar--A Different View

"DOMEDUSTER" VOL. 3 No. 6 NOV/DEC 1992

Here's another way to adhere mylar films to balsa. This technique uses no spray cans, no rubber cement, no thinner, no smelly solvents. It was suggested by Joe Krush and I can testify to its effectiveness.

First, go to an art supply store, not a hobby shop, and buy a tube or jar of acrylic matte medium. This is a thick paste-like substance used by artists. It costs around $5. Also get a 6/0 or similar small artist's brush. You want a very small brush so that you don't add extra weight with the adhesive. That's all the supplies you need.

Dilute about a teaspoon of the matte medium with tap water in a jar lid or small medicine bottle. Use about 5 parts water to 1 part matte, or dilute until it looks like milk (very runny). Let the mixture stand for about an hour before using. It takes a while to dissolve completely.

For this procedure it is advisable to use a frame. The film must be taut and you need both hands to work with. Attaching the film to a frame solves both problems. Since you will be wetting your structure, it will warp if the film is not kept taut. Choose a warm day or cover in a warm room. The warmer, the better since the adhesive will dry quickly minimizing warping.

Begin by laying the part to be covered upside down on the film. While holding the part in place with one hand, paint the diluted glue around the outside edge with the 6/0 brush, touching the wood and the mylar with the brush. Ribs are optional. I leave them alone. The adhesive will dry in about an hour.

The parts are very easy to cut free with a double-edge razor because there is no gooey rubber cement clogging up the blade. You'll find that the mylar is very securely adhered to the balsa. No loose spots. Unfortunately, the film cannot be repositioned.

I just completed a wing, stab and rudder for a new EZB using this technique and none of the parts warped. This method is highly recommended.

