

took place, I may say, in a closed room, with few, if any, disturbing currents.

No. 2. I received the idea of this machine from an article in your valuable paper *re* the Dunne aeroplane. This has a considerable camber at the apex, less at the first joints, and a negative angle at the extremities. This would *vol pancake* when released from a height of 6 ft., and flown horizontally; when launched at an incline of about 45 degs. it would dip and rise for about a dozen yards. When there was a negative angle to the planes; but on their having a positive angle and under the same conditions as the last experiment, it would form an "S" in its flight towards earth—that is, as per diagram Fig. F—every time.

There were no distinctive flights made by No. 3, so I will pass on to No. 4. This machine is a biplane. (I must acknowledge my indebtedness for the idea of this to Mr. Mateyka, of Kensington, from whose patent I evolved this form.) It consists of two surfaces, the ends of which are made to join octagonally, including the panel in each. There is one further panel in the middle to which is attached the elevator boom. This is a remarkably steady and safe machine; it has no camber, but the elevator is a broad  shape aerofoil.

The idea of No. 5 is taken from the Handley Page monoplane at Hendon. This is a very swift machine, it dives and soars in a very peculiar fashion. Its most remarkable flight was a spiral *vol plane* from a height of about 12 ft. I found in launching it I had knocked a weight out from one side, and in consequence it flew in circles, ever decreasing in diameter until it landed almost under its starting point.

No. 6 is to all appearances an ordinary monoplane glider. However, there are certain points in it I would like to point out.

The *fuselage* is a thin strut of ash, the wings are paper, but of ichthyoid form, viz., instead of the lower surface curving in the same direction as the upper it bends in the opposite way. Fig. G: I do not know if anyone else has thought of making built-up wings for gliders, but in case some would like to try, I will specify the method I have adopted. First cut out as many pieces of the required shape as are necessary for keeping the wings in shape. Next cut out a piece of paper for a surface, then gum at equal distances the pieces you first cut out, so that when it is dry you will have half of the surface covered, and the other half showing the ribs. Then when the top is quite dry, gum the other edges of the ribs, and put on top the other surface. In cutting out these surfaces be sure to see that they are of the same length, and also longer by about  $\frac{1}{8}$  of an inch than the width of the plane. Further, see that the top surface is brought right up to the middle of the ribs—that is, the chord and the front edge of the plane should be  $\perp$ . Then stick the lower surface in such a way that the extremity of the plane just reaches the extremity of the ribs. Then there will be  $\frac{1}{8}$  of an inch of paper to overlap at either end, and thus makes up a neat piece of work.

So far as the flying capabilities of this design are concerned, I have not so far been able to test it, but I shall be glad to let you know later on what the results are.

### Some Further Notes on Steam Plant Models.

Mr. H. G. Stevens writes us as follows: "I note with pleasure that my note on Steam Plants was interesting enough for publication in FLIGHT. At the time of writing, my new steam-driven monoplane, except steam plant and wing coverings, is complete. It weighs 17½ ozs., and with the planes silk surfaced, will total some 19 ozs., which I think is not too heavy. The planes and elevator are those used on my old machine, but are to be recovered and strengthened by two additional longitudinals in each wing. The wings are of 12 gauge steel wire, and are very light (6 ozs. the two), a strong and not too flexible area of main plane, 504 sq. ins.; elevator, 84 sq. ins. As regards my new plant, the engine is finished, and is  $\frac{1}{8}$  in. by  $\frac{1}{8}$  in. as before, but is made in cast iron, and weighs, minus propeller, 12 ozs. No packing is used; a brass ring is fitted in the piston. It runs well, and is at present used in a small racing boat, which it drives when 'all out' at quite eight miles an hour. The blow lamp is also finished, and has been tested and works very well, giving a hot flame of good size. It is made of  $\frac{1}{8}$  in. brass S.D. tube, about 3 ft. being used. The [boiler] coils are not yet made, but will be of  $\frac{3}{16}$  in. steel tube as before; length, 8 ft. I note you recommend me to use a pump for feeding the boiler. I did make a pump for my old plant, but it was never tried. I estimate that a water tank 6 ins. by 1½ ins. of S.D. brass tube  $\frac{3}{16}$  in. thick would weigh 8 ozs., and a pump and all gears 4 to 5 ozs., so I think I shall use a pump. I have designed one from Mr. H. H. Groves' articles in the *Model Engineer*, and have already made the 4 to 1 gear, and the variable stroke crank disc. The proposed pump is  $\frac{1}{8}$  in. bore by  $\frac{1}{8}$  in. stroke (variable). I note Mr. Groves attains a 32 oz. thrust 'all out,' so I think my new plant should give 16 ozs. thrust fairly easily. I estimate the weights as follows; those marked with a \* are actual: Machine, minus wing covering, 17½ ozs.\*; wing coverings, 1½ ozs. Engine, 12 ozs.\* Pump and

gears, 4 ozs. Boiler coils, 7½ ozs., this being actual weight of the 8 ft. coil quoted above. Casing and asbestos, 3 ozs. Lamp, 3 ozs.\* Water and petrol, 4 ozs. Propeller, 2½ ozs. Total, 54.75 ozs.—i.e., 3 lbs. 6¾ ozs. approximately. Loading, approximately, 13 to 14 ozs. per sq. ft.

"I fully intend to test this machine thoroughly with its wings on, and of course will let you know results, which, I hope, will be obtained in about 4 weeks' time. In conclusion, I wish to thank you for the encouragement I obtained from your notes on my former letter."

We stated Mr. Stevens' former plant weighed 1 lb. 5 ozs.; this, it appears, should have been 1 lb. 15 ozs.

Mr. R. V. Tivy writes: "Referring to the description of my steam plant and the 'Weiss' type model, on which it is to be tested, the weight of model given, viz. 14 ozs., does not include rubber, gear bracket and cowl, also tractor screws, total weight 7 ozs. The total weight lifted by 2.5 ozs. of rubber being thus 21 ozs. The tubular boiler has been tested up to 120 lbs. pressure, and the safety valve will blow out at 65 lbs. pressure, so I do not think there will be any risk of its bursting. However, Messrs. Palmer and Co. are building me another tubular boiler of more efficient design, and this should be ready for tests in about a week's time.

"The 16 ozs. includes 3 ozs. of water and fuel, and you know that this is a much lighter plant than that of Mr. Groves. The total weight of the model and power plant, with water and fuel for 2 mins., should be under 30 ozs."

The mere weight of the plant, as stated by Mr. Tivy, has, of course, absolutely nothing to do with the question of efficiency. One of Mr. Groves' plants gives a static thrust of 32 ozs., its own weight, and will fly a 4 lbs. model for which a 24 ozs. thrust is ample when loaded for a 2 mins.' run; another plant which he constructed weighed 9 ozs., and gave a static thrust of from 6 to 8 ozs., according to how the pump stroke was set. When loaded with fuel and water for 1½ mins.' run, the complete model weighed only 17½ ozs. This model unfortunately came to grief in its very first flight, owing to its hitting an obstacle, and breaking the *fuselage* in two. It has not yet, we believe, been repaired. In the case of every type of model: yacht, model locomotive, mono-rail, aeroplane, &c., there always is some particular weight, size, &c., which gives the best results. In the case of mono-rail models, the writer finds this to be about 2.5 lbs. Mr. Groves considers for a steam-driven model aeroplane some 3 to 4 lbs. a very suitable size. When one comes down below a certain size and weight in any form of model work, one always finds the mechanical difficulties increase out of all proportion to the results obtained. Personally, however, we are glad to see that Mr. Tivy's plant is *not* of the same type as Mr. Groves'; the more types tried the better for our knowledge of the subject.



## KITE AND MODEL AEROPLANE ASSOCIATION

### Official Notices.

#### British Model Records.

Hand-launched	Distance	... R. Lucas ...	590 yards.
	Duration	... J. E. Louch ...	100 secs.
	Distance	... L. H. Slatter ...	365 yards.
Off ground	Distance	... A. F. Houlberg ...	80 secs.
	Duration	... J. E. Louch ...	...
Hydro, off water	Duration	... L. H. Slatter ...	45 secs.
	Distance	... F. G. Hindsley ...	173 yards.
Single-tractor screw, hand-launched	Duration	... J. E. Louch ...	68 secs.
	Distance	... L. G. Tucker ...	148 yards.
Do., off ground	Distance	... L. G. Tucker ...	148 yards.
	Duration	... J. E. Louch ...	45 secs.

**Official Trials.**—The usual monthly official trials for the purpose of registration and establishing records took place on July 26th, on Wimbledon Common. The official observers were Messrs. C. Davies and W. H. Akehurst. The results were as follows: Hand-launched, duration—J. E. Louch, 100½ secs.; hand-launched, distance—R. R. Weston, 522 yards; off ground, distance—L. H. Slatter, 335 yards, L. H. Hutcheon, 237 yards; single-tractor screw, distance off ground—L. G. Tucker, 148 yards. There were 11 entries but the machines were not tuned up, therefore no other results can be given. But by the above it will be seen that the hand-launched duration record of 89 secs., held by A. F. Houlberg since Whit-Monday, 1912, has at last been raised, and the record now stands at 100 secs. The distance record (off ground) being captured by L. H. Slatter with 365 yards, the previous best being held by C. C. Dutton with 296 yards. A new record was established by L. G. Tucker, with single-tractor screw, distance off ground, with 148 yards. There had not been an official record in this class.

**Hydro Competition.**—All entries should be sent in by to-day (Saturday) for the Royal Aero Club's competition, which takes place on August 9th, at the Welsh Harp, Hendon. For details see last week's official notices.

**Displays.**—A team of members attended by invitation the Mayor of Poplar's Garden Fête on July 24th, with the result that the demonstration was much appreciated, and the Mayor has tendered his thanks to the team for their kind services.

**Competitions.**—Burton-on-Trent Meeting. There will be a keen contest for the championship of the Midlands, 31 entries having been accepted. The judges will be on the ground and start the competition at 11 a.m. prompt, therefore all competitors are asked to tune up their machines before that time, as the time-limit will be strictly enforced owing to the number of spectators who will be present to witness this contest. Messrs. G. Haddon-Wood, of Birmingham Aero Club, C. F. Cudworth, of the Sheffield Aero Club, and W. H. Akehurst will act as judges.