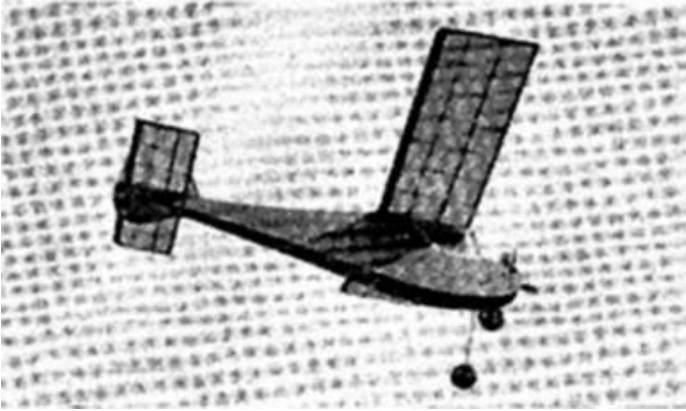


Your first **BAMBI**

TOM THUMB

A miniature 'TOMBOY' for the smallest of diesel engines



As mentioned in last month's Trade Notes, the "AEROMODELER"; offices literally buzzed after a pair of prototype "Bambis" arrived towards the end of last year, and the buzzing rose to quite a high pitched little scream on the arrival of two prototype engines, modified and incorporating several of your suggestions. There is no doubt about it, these little jobs really wind up, and they are surprisingly easy to start - once you have the knack!

Many beginners, particularly young ones, probably see in this engine an ideal means of painless power flying. To these enthusiasts we can only say "Forget it" - the bambi is a splendid little motor, but some experience of handling engines is necessary to get the best out of it, and beginners are for better off with something around the 1 c.c. mark, especially since there are more designs available for motors of this size. The Bambi is a wonderful investment for a fairly experienced sport flyer or modeler with an experimental turn of mind - suitable models can be built in an evening apiece and the small size makes them practically indestructible. The most important point about the motor is that it is practically. It will stand a fair amount of mishandling, it is tough enough to take knocks in its running (ours are piling up the hours and getting better all the time). Davies Charlton engineers are to be complimented on a fine achievement, particularly since so much of the manufacturing is hand-work - hence the price.

Our experiments with the engines covered a wide field and have given some very definite ideas on operation and use. Power output is, not unexpectedly, small - we should be amused to see the results of an attempted analysis without special gear being constructed - and although the motor will rev. over 11,000 r.p.m. with a 4 x 1 metal prop, we found that the highest usable thrust output was at slightly lower revs, using a 4 x 2 propeller. Ron Moulton's exhaustive fuel tests proved that at present, Mercury 6R is definitely best mixture, both for the starting and power output. Starting is simple enough if the propeller is whopped over instead of flicked; our technique is to fill the tank, choke until the fuel line is full, flood the engine, back off compression anything up to one turn until no danger of a lock exists, then really sock the prop over. There is adequate time to adjust compression to the running setting and the motor is certainly not critical. Whenever starting difficulty has occurred, it has invariably been due to a blocked fuel line, so if we can't start within a couple of attempts we pull the neoprene out of the tank and blow hard to clear die jet.

With regard to the weight of model it: will fly, we are faced with rather a new approach. For sport flying, the normal model-to-engine weight ratio is seldom less than 4 to 1 (i.e., a 3 oz. motor in a 12 oz. model) but with the Bambi we have to think of a 3 to 1 ratio as near to maximum. Two ounces all up is about as much as the motor wants to handle for comfortable performance, and a wing area of 70-90 sq. in. appears best for this weight. One result of the high weight ratio is that the wing automatically moves nearer to the motor, bringing accessibility problems; fingers, unfortunately, cannot be scaled down!

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During our experiments with models, the Editor suggested that a scaled-down Tomboy (now in its fifth year and still the most popular **June, 1954**

model as designed by Vic Smeed



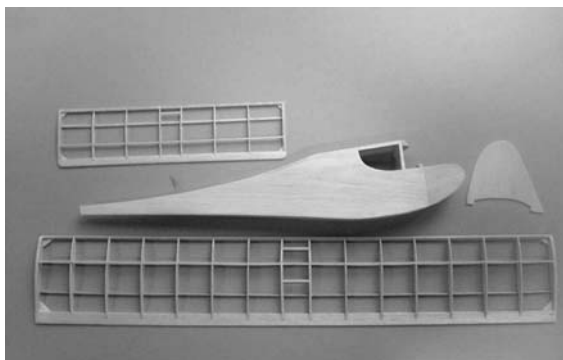
Bambi. Tom Thumb was the result; we selected 5/8 full-size as being likely to fit best in respect of wing area etc., and redesigned the structure for a target weight of 2 oz. The finished model in flying trim is an eyelash lighter than six pennies, and the result is a nice steady climb and glide.

Construction is very simple; use light, firm balsa throughout and don't slosh cement too freely. The fuselage sides are cut and assembled to the formers, binding the under-cart to F1 beforehand. If the 1/32 sheet is tangent cut (i.e., easy to roll) have the grain running across the formers. The thin capping strips stiffen the sheet edges and allow a neat covering job, lifting the tissue clear of the former tops and bottoms. Cover the cabin with thin celluloid and the whole fuselage with lightweight tissue. We sprayed on thin water-color for shrinking, which gave a nice opaque

body for practically no weight increase. One coat of clear dope completed the covering. The nose must be really thoroughly fuel-proofed, inside and around the cowling.

Wing and tail are ultra-simple and are also covered with hard tissue, shrunk, and given one thin coat of dope. Use colored tissue if required, but do not use any color dope. The model should balance on the main-spar and, if free from warps, may be given slight right rudder and power flown from scratch.

Materials: 1; 1/32 x 3, 1; 1/16 x 1/8; 1; 3/32 x 3/8, 1; 1/8 x 1/8, 1; 3/32 x 3/32, scrap 1/16 sheet. 18 gage wire, 1/4 sq. bearer, 1/16 dowel - say 3s 6d, including tissue and dope. And, if you can't wait for a Bambi, why not a simple conversion to rubber power?



Everything about this 22 in. span power model can be aptly described as "miniature," especially where the engine is concerned, as reference to the heading photos shown. The Bambi has now taken the thimble size engine right out of the experimental class and makes it a practical proposition for such tiny sport models to be flown in restricted fields where hitherto only rubber power was considered possible. Simple and easy to make, Tom Thumb is destined to be the first in a new era of power model designs. One test model is now flying with only a 14" span.

