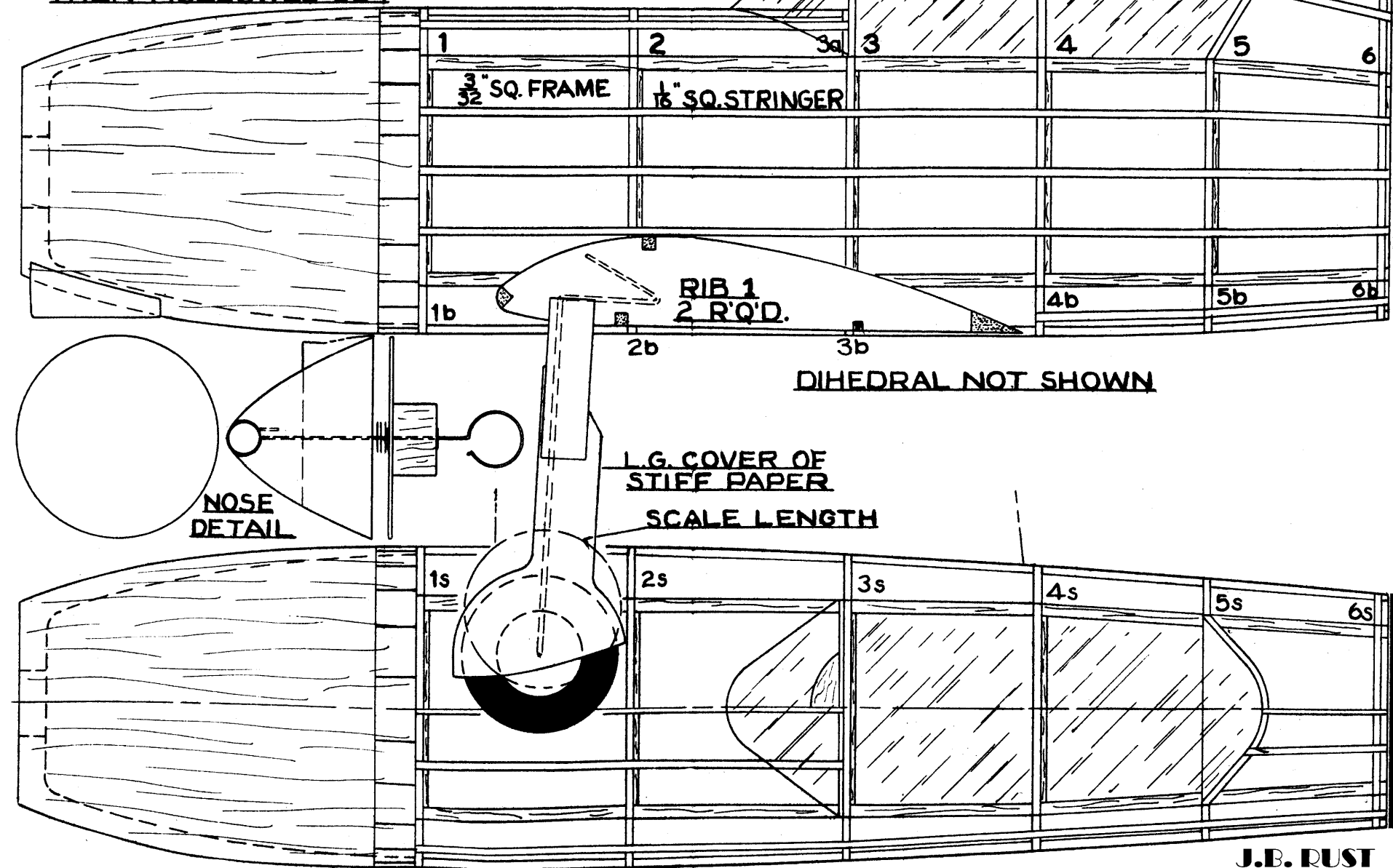


VULTEE "VANGUARD" 61

ENTIRE NOSE SHAPED
FROM BALSA, HALVED,
THEN HOLLOWED OUT

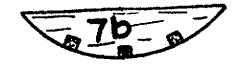
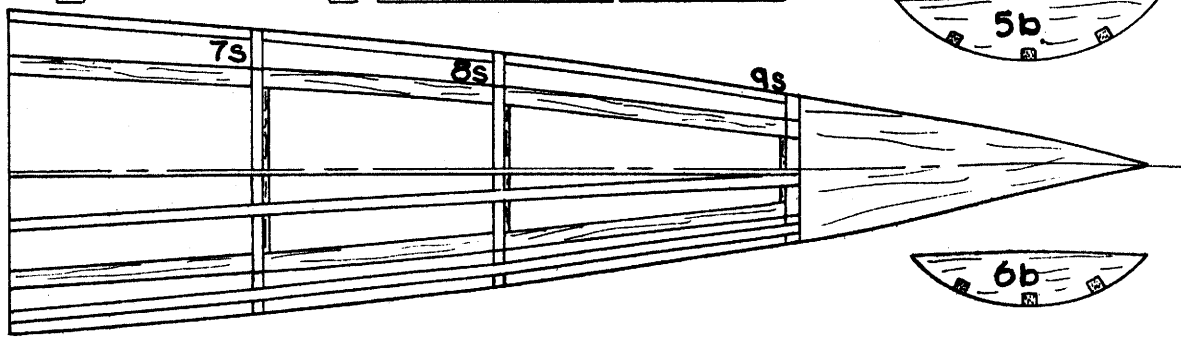
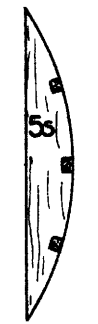
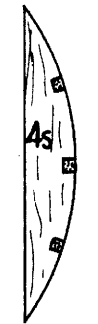
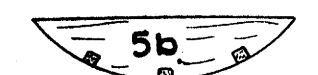
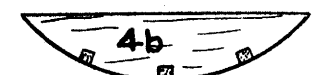
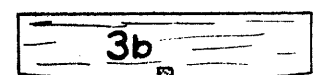
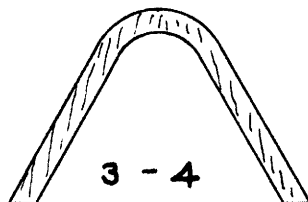
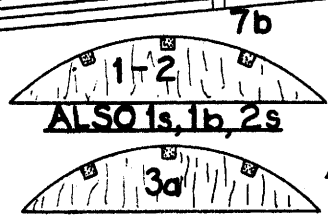
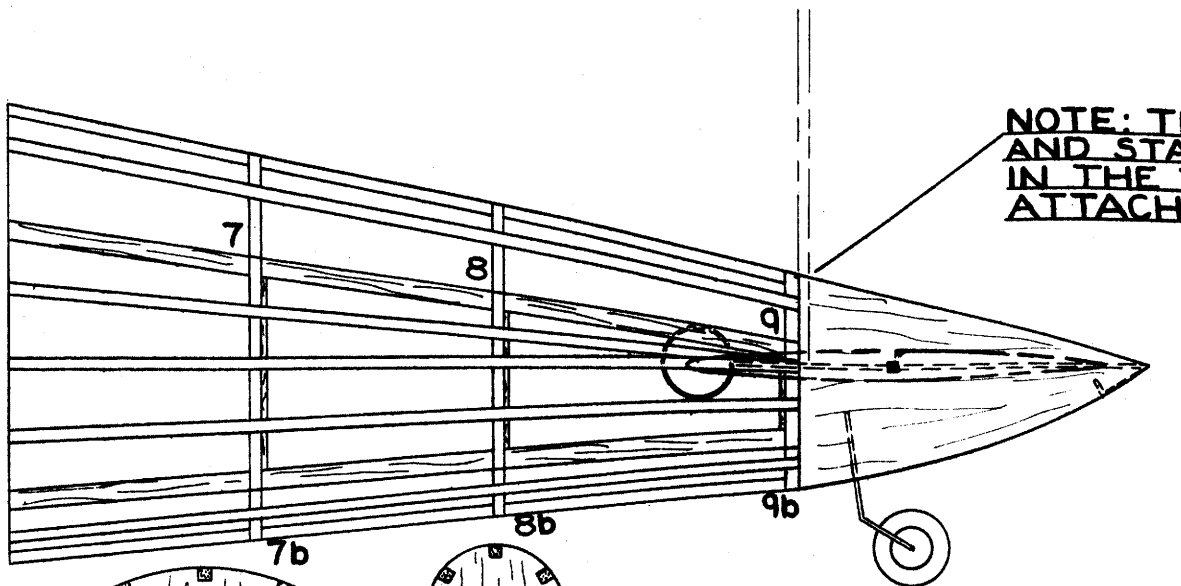
CARVED FROM
BALSA BLOCK

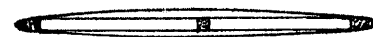
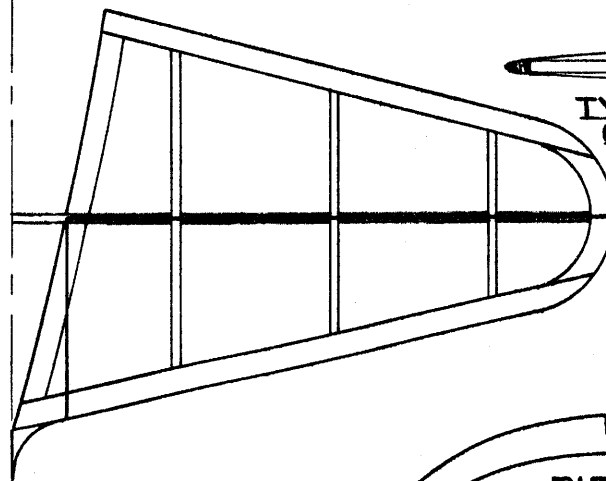
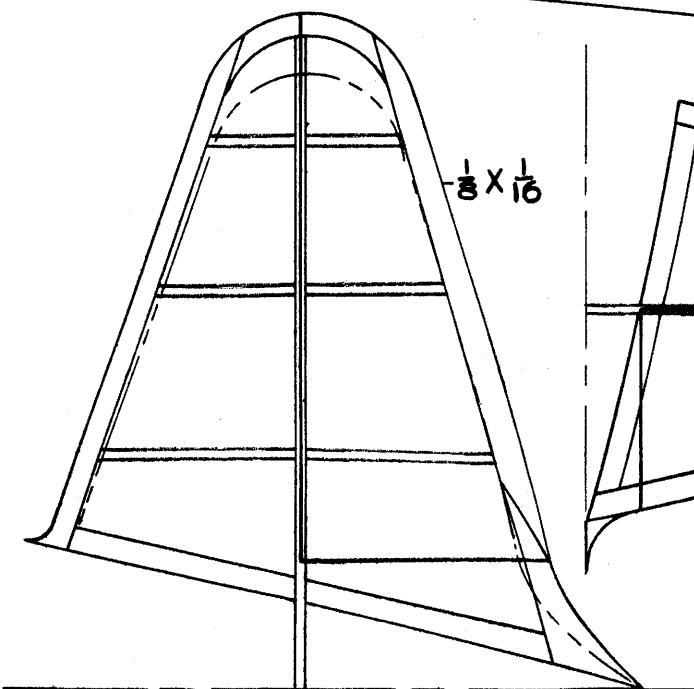
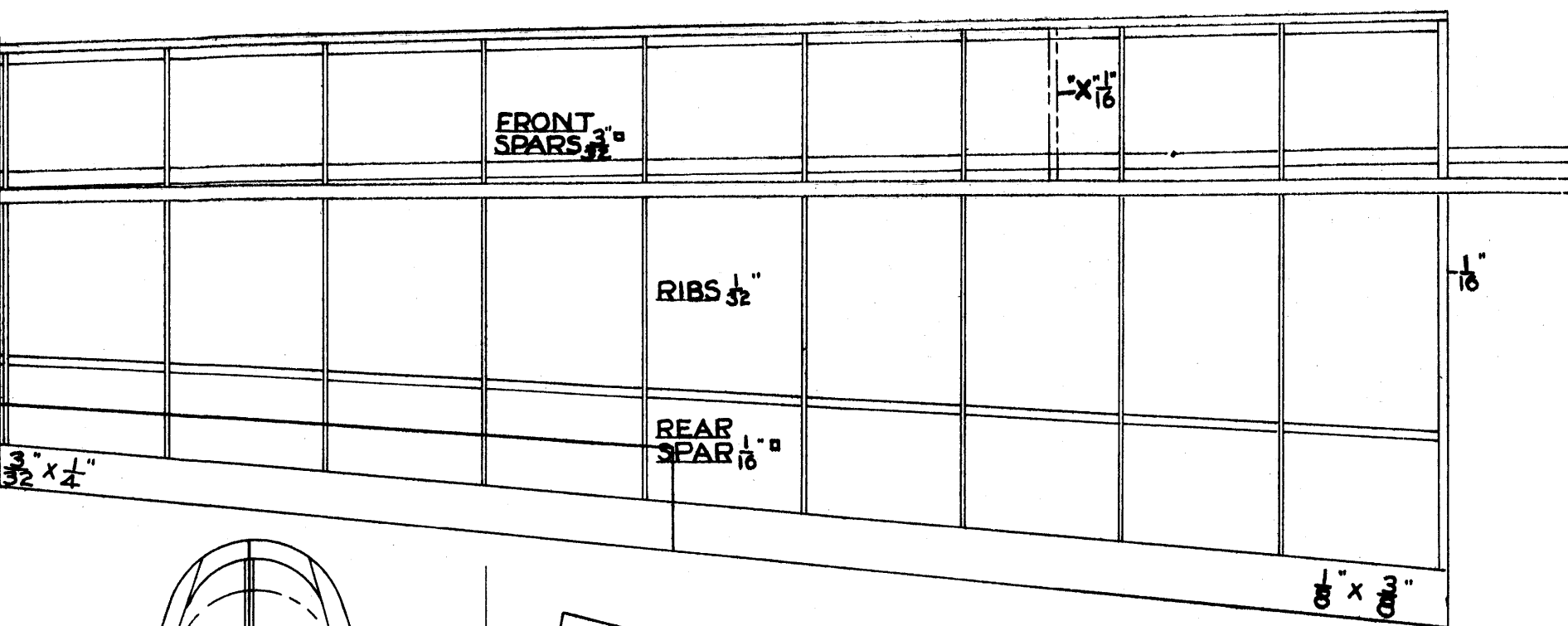
CELLULOID



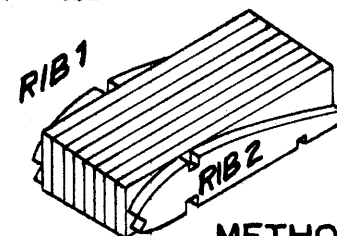
J.B. RUST

NOTE: THE ENDS OF THE RUDDER AND STABILIZER SPARS ARE INSERTED IN THE TAIL BLOCK AFTER IT HAS BEEN ATTACHED TO THE FUSELAGE FRAME.

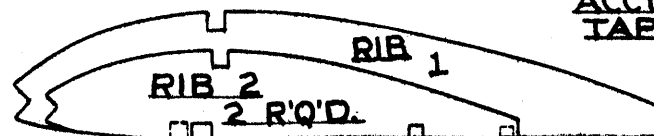




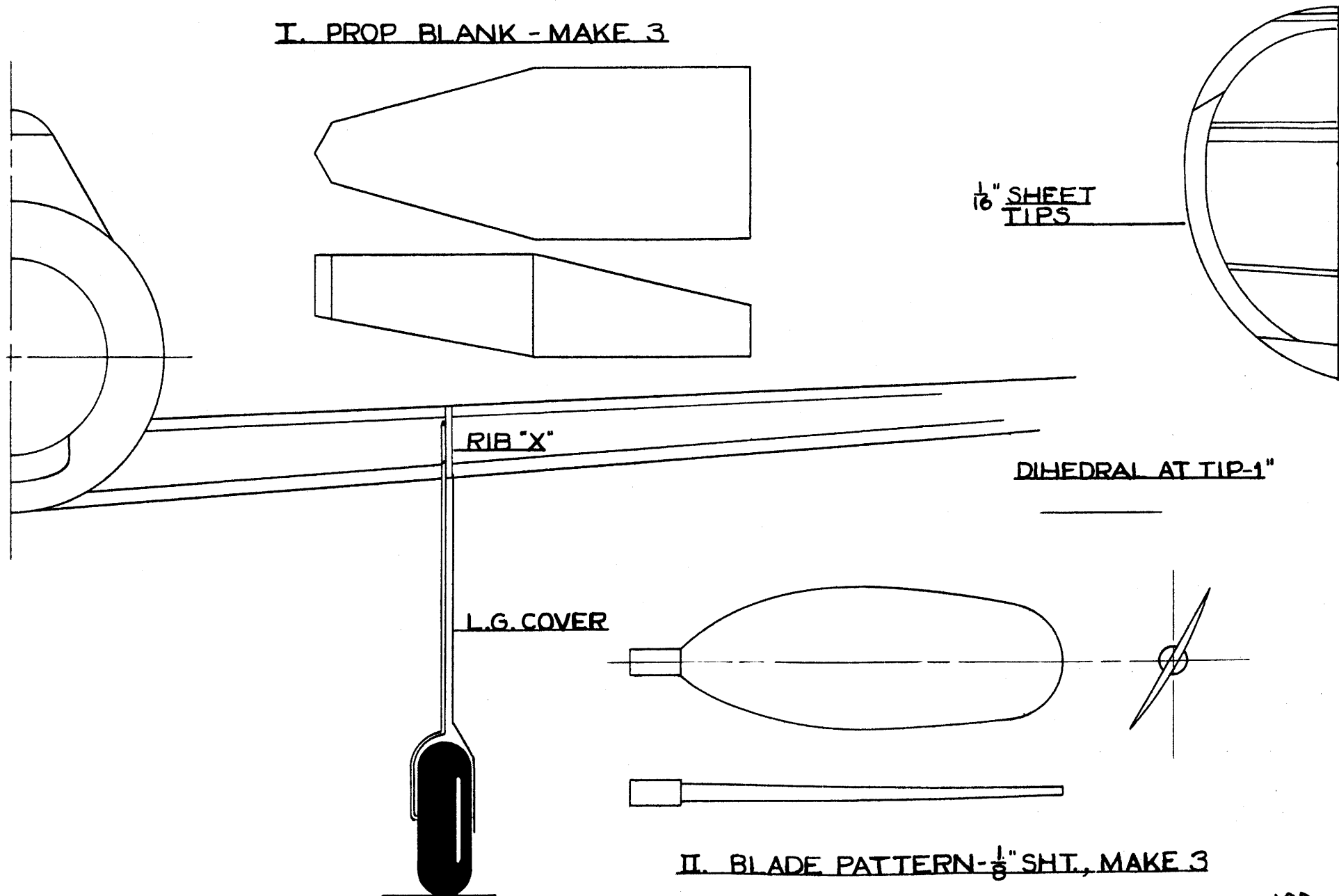
TYPE OF TAIL
CONSTRUCTION



METHOD OF MAKING
ACCURATE RIBS FOR
TAPERED WING



I. PROP BLANK - MAKE 3



II. BLADE PATTERN - $\frac{1}{8}$ " SHT., MAKE 3

Here's the VULTEE "VANGUARD"

By J. B. RUST



The sharp, clean lines of this flying scale model make for steady, successful flights.

OUR MODEL OF the "Vanguard" 61 has very few departures from the actual scale, since the original ship is of such design that few changes are necessary. One of this model's advantages is its long landing gear which will permit a large diameter prop to be used.

The construction of the model follows common practice and little trouble should be encountered in its building.

FUSELAGE

The rectangular framework of the fuselage is made of 3/32" square strips of medium balsa. The two sides are best built one over the other so that it is certain they are identical. After they have dried thoroughly, join them together with 3/32" square cross pieces.

The formers are made from 1/16" sheet, or from laminated cross-grained 1/16" sheet consisting of two 1/32" sheets. The position of the stringers is marked on each former, but do not cut them out until the stringers are ready to be put in place. The formers are now cemented in place on the framework and the 1/16" square stringers put in place. At this point the tail block should be carved out and cemented to the end of the fuselage. The nose of the ship is carved from a block of balsa made up of two halves cemented lightly together. After the nose has been sanded to the correct outline, these two halves are separated and hollowed out as shown on the plans. It is then cemented carefully to the front of the fuselage. The small air scoop under the nose was formed from 1/64" sheet on the original model, but it may be carved from a small block of balsa if desired. This air scoop offers an excellent place to put any additional weight to balance the finished model if necessary.

WING

The method of making the ribs for each half of the tapered wing is clearly shown on the plans. It is necessary only to cut two each of

Rib 1 and Rib 2. The correct number of blanks is placed between the two ribs and the whole sanded down to a taper from Rib 1 to Rib 2, after which the notches are cut in their correct positions. All ribs are of 1/32" sheet except Rib 1 and the small false rib "X" which is 1/16" sheet. The two front spars and the leading edge are 3/32" square strips, the rear spar being 1/16" square hard. The trailing edge is tapered from medium or soft balsa strip and the wing tips are cut from 1/16" sheet.

The landing gear is now formed by bending from 1/32" or 1/16" wire. It is then securely bound and cemented to Rib "X," which is then placed in its proper position in the wing. This small false rib extends only from the leading edge back to the two front spars.

TAIL SURFACES

The rudder and stabilizers are made of 1/16" square and 1/8" by 1/16" strips with the streamlining ribs being added over them. The ends of the center spars are left projecting as shown, so they may be inserted in the tail block when assembling.

The scale outline of the rudder is indicated on the plans by phantom lines. The stabilizer surfaces are shown to scale but they may be enlarged if desired.

PROPELLER

Two methods of making the three-bladed prop are shown. The first (I) is the conventional way, that of joining three blades at the center and carving the spinner to fit around them. The second (II) is perhaps the best method since it is much simpler to build and has the advantages of light weight and ease of replacing broken blades. In making the propeller mechanism a shaft is bent from .040 wire and the nose plug placed over it. Several washers are then added and the shaft run through the spinner, bent into the winding loop shown on the plans, and

cemented securely to the spinner. Since this is one of the largest spinners to be found on any model, practically any form of free-wheeling may be installed in it.

COVERING

BEFORE THE COVERING is applied, the entire structure should be sanded smooth. In covering the fuselage only the stringers should touch the paper, therefore, the formers should be scalloped between them. Colored airplane tissue is used and you may choose your own colors. The original model has yellow wings and tail, and a blue fuselage. Use separate pieces for each side of the wings and tail surfaces. After the parts have been smoothly covered, the paper is sprayed with water from an atomizer to tighten it. After the covering is smooth and tight, the assembly is begun.

ASSEMBLY

In attaching the wings to fuselage, it will be necessary to cut away the lower parts of formers 2s and 3s so that the wings may be cemented directly to the basic rectangular frame. The wing tips are blocked up to give a dihedral of 1". Notice also that the wings have a slight incidence angle. The rudder and stabilizer are inserted in holes in the tail block and firmly cemented to it. The wheels are made of hard balsa with a 1/16" sheet disc cemented to the outside of each to cover the washer which holds the wheel to the wire landing gear. Thus we have formed a streamlined, hubless wheel. The final details such as the celluloid cockpit covering and stiff paper landing gear covers are now added. The entire model is then given one or two coats of dope and the wheels and other parts such as the inside of the air scoop are doped black. Ailerons, rudder, and elevators are outlined either with strips of black tissue or with ink and ruling pen.

Eight strands of 1/8" flat rubber form the motor. One end is dropped through the fuselage and hooked to

(Continued on page 72)

the demands have been accelerated at home and abroad.

Wood is a renewable resource—a crop that can be grown from the land. The forest lands of the United States and Alaska, under efficient management, are capable of meeting the nation's present and future requirements for timber.

Three years ago, the idea that, in this age of metals and machines, airplanes and other instruments of war would be made of wood, would have seemed fantastic. Now we know that future progress of the aircraft industry, and future welfare of the nation generally, may depend in no small measure upon our forest-land production, the growing of spruce, in particular. THE END

WAR FLYERS

(Continued from page 32)

in getting the trapped men out just before the tide covered the entire plane.

Captain Derrol W. Rogers

In saving the lives of his crewmen, when his bomber was damaged during takeoff, Captain Derrol W. Rogers of New Britain, Conn., who was an honor student at Dartmouth College, lost his own life. Immediately following the takeoff mishap Rogers swung the big bomber back over the field so that an injured member of the crew could bail out and then flew out to sea, dumped his bombs and returned again to the field to permit the remaining members of his crew to parachute to safety. After all had jumped except his co-pilot, 2nd Lt. Norville J. Gorse of Chicago, Capt. Rogers again headed back to sea to avoid having to make a crash landing that might have endangered those on the ground. Both Rogers and Gorse then bailed out. A rescue boat picked up Lt. Gorse, but Capt. Rogers was dead when found. THE END

"VANGUARD"

(Continued from page 43)

the rear wire hook, which is a part of the tail block.

FLYING

The finished model should balance when held at the tip of the spinner and tip of the tail block, and also when held at the tips of the wings at a point about $\frac{1}{4}$ " behind the ends of the main spars.

Before flying the plane it should first be made to glide satisfactorily. When it has been adjusted so that a smooth, flat glide results, a few turns may be given the motor and a short power flight tried. Gradually increase the number of turns with each flight, correcting any faults as you go along. The wide landing gear

and the large landing angle gives the model great stability in takeoffs and landings.

BILL OF MATERIALS

(Medium balsa unless specified)

Five strips $3/32$ " by $3/32$ " by 36" for longerons, spars, leading edges and cross pieces.

Five strips $1/16$ " by $1/16$ " by 36" for stringers, spar, and tail.

One strip $1/8$ " by $1/8$ " by 36" for tail.

One strip $1/8$ " by $3/8$ " by 24" for wing trailing edge.

One sheet $1/16$ " by 2" by 24" for wing ribs, formers, wing and tail outlines.

One balsa block $2\frac{3}{8}$ " by $2\frac{3}{8}$ " by 3" for nose.

One balsa block $1\frac{5}{8}$ " by $1\frac{5}{8}$ " by $1\frac{1}{8}$ " for spinner.

One balsa block $1\frac{7}{8}$ " by $1\frac{1}{8}$ " by $\frac{7}{8}$ " for tail block.

Either one block hard balsa $1\frac{1}{4}$ " by $\frac{3}{4}$ " by 10" or one sheet $\frac{1}{8}$ " by $1\frac{1}{8}$ " by 10" for prop blades.

One pair $1\frac{1}{8}$ " streamlined balsa wheels, three yards $\frac{1}{8}$ " flat rubber,

two feet .040 wire, celluloid, colored tissue, cement dope, washers, still paper, etc. THE END

CLUB NEWS

(Continued from page 41)

young men who very obviously considered model building as a temporary, if very necessary, stage preliminary to their entrance into aviation. Plainly enough, even model building was growing up, advancing from a state of haphazard experimentation to a deliberately contrived stage in the steady growth of future flyers, designers and professional airmen of all types. A glance around confirmed this view. Quite a number of the gas jobs and gliders on the flying field showed extraordinary originality in design. Most of them were pine or basswood jobs and the whole spirit of the assembled model builders was that of a group of people seriously intent upon what they felt was important work. From their

AVIATION BOOK REVIEWS

By John Michel

THE MODEL PLANE ANNUAL, 1943. By David C. Cooke and Jesse Davidson. Robert M. McBride and Co., N.Y. Price, \$2.50.

America's biggest and most widespread hobby aside from stamp collecting is the building of model airplanes. Most suburbanites are familiar with the sight of young men (and lately, young women) standing in groups on vast, wind-swept meadows and fields revving up the motors of countless power-driven and hand-launched craft, constructed with all the care given a new-born baby or an expensive wrist-watch. From the pursuit of this hobby has grown a national model-kit industry of enormous extent and a program sponsored by the government, which is regarded as highly important. Behind all this activity, both in peace and war, is the restless surge of American youth toward the open, limitless reaches of the skies. The Model Plane Annual is a thorough survey and logging of the field, profusely illustrated and laced throughout with pictures of model building activities, plans of sky craft for the beginner and a whole plethora of useful information for the novice who wishes to embrace the hobby, not only as a source of amusement, but also as a direct aid to the model-building program of our government. Among its more interesting features are a series of photographs and descriptions of many makes of gas engines, with a specifications chart giving innumerable technical details of construction, a chapter on handhints for the builder, with suggestions on wartime substitutes for the now rare materials formerly universally employed and a history of model building, identifying the

humblest hobbyist with some of the greatest minds and men in aviation throughout the world. The Model Plane Annual, 1943, gives a helpful insight into a phase of progress that bids fair to become one of the most important parts of our national life following the victorious conclusion of the war.

STUDENT PILOT HANDBOOK. By Jack Hunt and Ray Fahringer. Books, Inc., N. Y. Price \$2.50.

A far cry from the usual dry textbook on flight training, the Student Pilot Handbook makes use of the medium of the cartoon in an effort to simplify the complicated business of learning how to take a ship into the air and set it down again without shaking the motor out of its housing and the teeth out of the flight instructors. Based upon current needs for the rapid and efficient training of capable men for the Army, Navy and Marine Corps Air Forces, this tiny volume is written in a clear, dryly humorous style that sweeps into the dustbin the misconceptions usually cluttering the heads of men timidly approaching the business of flying. The book takes the subject from its earliest phases on the ground, where the student pilot begins to get the feel of the air, through theory and practice up to the point where he is expected to perform the most difficult feats of aerobatics without the flicker of an aileron or the flap of a wobbly rudder. The Student Pilot Handbook is recommended, however, not only for the student pilot, but for all those interested in aviation both from the professional and academic standpoints.