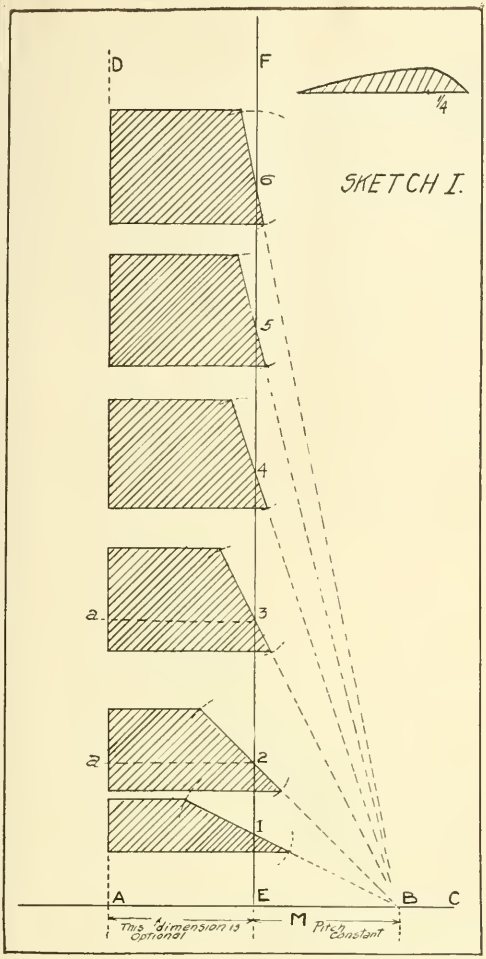


SKETCH I.

How to Make a Propeller ::

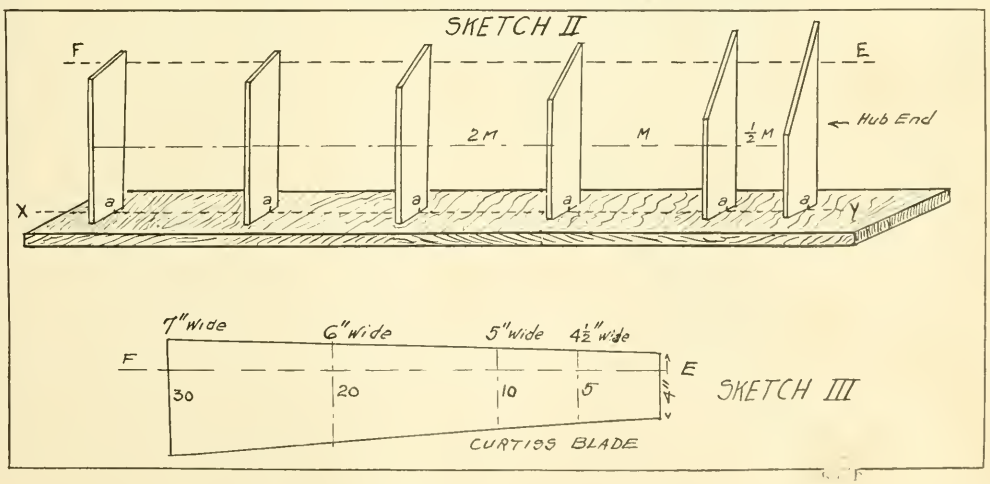
TO make a propeller templets for a uniform pitch propeller, using the Drzwiecki method, one follows the plan below, which has been adapted from the French of M. Drzwiecki's book. You can take the pitch and diameter you have figured out yourself, or take the diameter and pitch of such propellers as mentioned in AERONAUTICS.

First obtain the pitch constant M, i. e., Pitch divided by two times 3.14159265, or roughly, pitch divided by 6-2/7, or $\frac{P}{6}$ as it is near enough.

Having obtained your pitch constant M, lay it out on the horizontal line AC (sketch I). This will give you the distance EB. Draw a line EF perpendicular to AC from the point E. On this, starting from E, mark off lengths equal to ½M, M, 2M, 3M, 4M, 5M, giving you the points 1, 2, 3, 4, 5, 6. Lines are then drawn through these from the point B.

From these points 1, 2, 3, etc., with a radius equal to ¼ of the specific width of the blade. (This width is the width of the proposed propeller at *that point* and may be any width you choose.) arcs are drawn to intersect the lines 1B, 2B, etc., on the same side of the vertical line EF as the point B. Lines parallel to AC are then drawn through these points of intersection of the arcs with 1B, etc.

The same procedure is carried out on the other side of the vertical axis EF, with the same centers, but with a radius equal to ¾ of the specific width and lines parallel to AC are again drawn through the points where these arcs cut the lines 1B, 2B, etc.



The fourth sides of the templets are bounded by the vertical axis AD drawn perpendicular to AC at any optional distance from the point E. Drzwiecki used narrow blades about one-tenth of the diameter wide.

The templets thus obtained are cut out of thin pieces of wood and the points "a" are marked upon them at a distance of ¼ their width. The ¼ of width point "a" is measured from the front edge of the blade, i. e., the same side as axis EF is on and directly under the axis EF. This is where the thickest point of the blade comes, or the shank in a metal blade, and is near the front, to be at or in front of the center of pressure. (See sketch I.) These templets are numbered as in sketch I and fastened to a board with their plane perpendicular to the board. All the points "a" are placed on the axis "xy" in sketch II. These templets are spaced ½M, M, 2M, etc. The axis "xy" is directly under EF.

St. Louis Active in Ballooning.

Charles F. Wenneker, president of the Million Club, has placed an order with H. Eugene Honeywell for a balloon of racing size, which S. Louis Von Phul will pilot in the elimination race to select the American team of three balloons to represent the United States in the international balloon race, which will start from St. Louis, October 17. The elimination race will be held September 17 from Indianapolis.

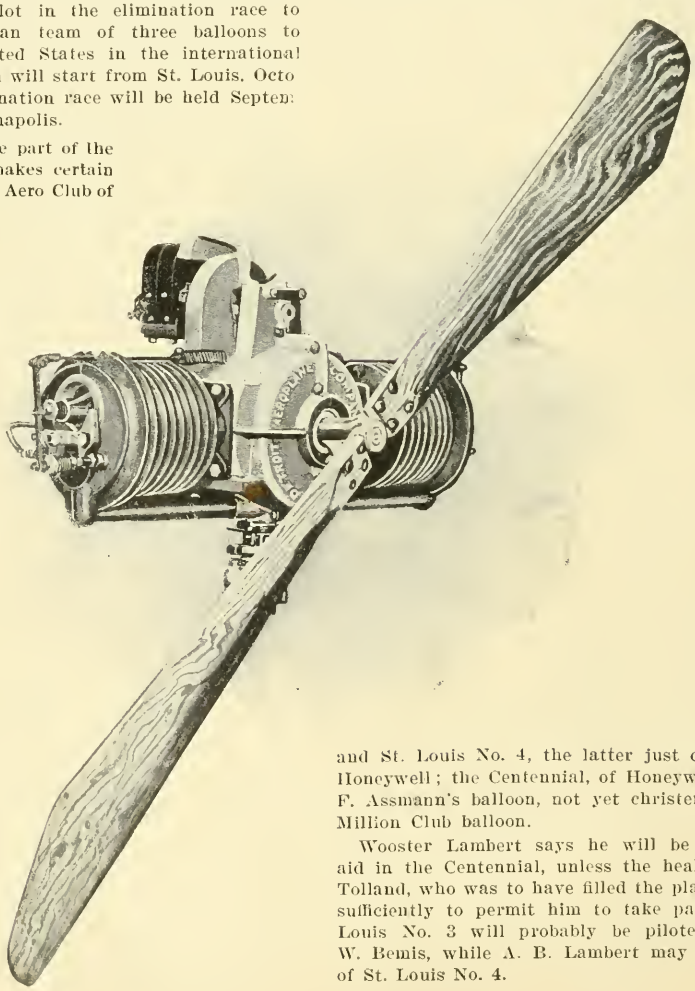
This action on the part of the Million Club now makes certain five entries from the Aero Club of St. Louis in the elimination race, and gives the club a chance to win all three places on the American team. It is not expected that any other club will enter more than three balloons in the elimination race.

These templets, of course, may be curved to form segments of a circle. It will be seen that the inclined edges of the templets form a guide to determine the shape of the blade of the propeller.

For illustration, take a Curtiss 6-ft. diam. and 5-ft. pitch propeller, 4 in. wide at hub, 7 in. at extremity. (Sketch III.) One blade is 3 ft. from the center of the hub. Draw a line 3 ft. long. Pitch is 60 in. One-sixth of 60 is 10 in. Lay off 10 in. on line EC. Then take distances, 5″=½M, 10″=M, etc. This gives only four templets, due to the fact that Curtiss' propeller is shorter than Drzwiecki's standard length. (According to Drzwiecki, a propeller with a 5-ft. pitch ought to be about 100 in. long.) This will duplicate, however, a Curtiss' propeller, as it is not of uniform pitch.

The balloons piloted by members of the St. Louis club will be the club aerostats, St. Louis No. 3 and St. Louis No. 4, the latter just completed by Honeywell; the Centennial, of Honeywell; William F. Assmann's balloon, not yet christened, and the Million Club balloon.

Wooster Lambert says he will be Honeywell's aid in the Centennial, unless the health of J. W. Tolland, who was to have filled the place, improves sufficiently to permit him to take part. The St. Louis No. 3 will probably be piloted by James W. Bemis, while A. B. Lambert may be the pilot of St. Louis No. 4.



New Engine of Detroit Aeroplane Company