interlock to prevent it from being cranked without deliberately unlocking it. The brakes are mechanical.

The cabin is fitted with dual controls, and visibility is excellent. One can see the runway eight feet ahead of the bow in take-off position. Without moving the body, one can see 120 degrees in either direction. Rear windows still to be cut in the turtledeck, will permit a rear view over the tail.

Sitting in the cabin, one is impressed with the roominess. There are no obstacles to the pilot's or passenger's head. Instruments are not in the conventional location, but are located in the roof. Control sticks, designed before shoulder harnesses became mandatory with E.A.A. members, have been angled forward to skip up over the chin in case of an accident. There is generous room for baggage.

The airframe is made of 4130 steel tubing, which sets down into the hull. It has been stressed to 2Gs with sandbags, and an additional 2Gs were induced by towing it at high speed through drainage ditches. The retractable gear has been tested to 4Gs by static loading. The motor mount was tested to 11Gs by the same method. The nose wheel was tested to a 2000 lb. impulse forward.

Since the doors open by swinging forward close to the propeller arc, the pilot wouldn't be tempted to discharge a passenger with the engine running. Yet, one could safely parachute from the "Smidgeon" if it were thought necessary.

Bob strongly recommends the use of scale models to determine the strength of structural members. Weaknesses can easily be detected by stressing the scale balsa framework with the hands. He made four versions of 1/12th scale, before beginning the full sized version. A paper hull permitted him to check the CG against the center of buoyancy. His final model, adjusted to scale weight, weighed 7½ ounces. His actual CG was predetermined from this model by assigning weights and moments to the individual components in the structure. The actual weight of the airframe came out within five pounds of the estimate.

Bob is stepping up work on this neat job, but doesn't expect to be able to fly it before late summer of this year. I suspect that business may just happen to bring me back to Endicott at that time, so I may see the first test flight.

Bob states that he will be happy to furnish interested members with sources of various materials used in the construction of his "Smidgeon".

REFERENCES: NACA REPORT NO. 543 Tank Test of NACA Model 40 Series of Hulls for Small Flying Boats and Amphibians. ..$0.15

NACA TECHNICAL NOTE NO. 2816 Water Pressure Distributions During Landings of a Prismatic Model Having an Angle of Dead Rise of 22½° and Beam-Loading Coefficients of 0.48 and 0.97.

NACA TECHNICAL NOTE NO. 2817 A Theoretical and Experimentall Investigation of the effects of Yaw on Pressures, Forces, and moments During Seaplane Landings and Planing.

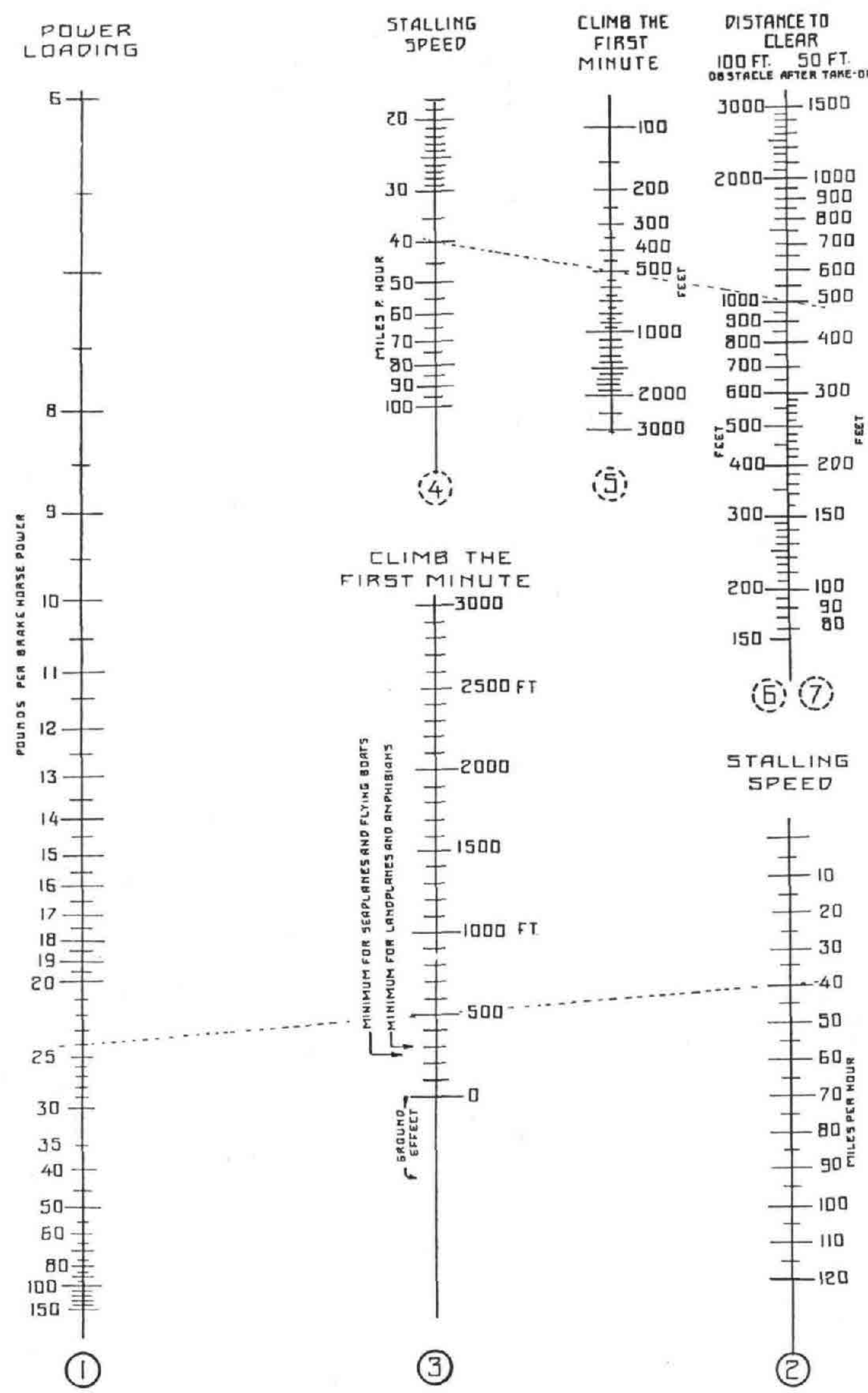
NACA TECHNICAL MEMORANDUM NO. 1139 Planing of Watercraft.

. . . a Benson Gyrocopter . . . from California way

Photo by Kenneth Krohncke

Here's a Benson Gyrocopter by Frank Edmiston of Exeter, California. Frank is using a McCulloch target drone engine in which he has made some interesting changes. He has made a point conversion so he can run on a battery, and is using an outboard motor carburetor. He will be ready to try it out as soon as the engine propeller arrives.

CALCULATING SPEED AT GROUND LEVEL by Raoul J. Hoffmann



Our momograph for this month covers the factors governing climb and take-off. First, it determines the rate of climb in the first minute and the horizontal distance required for clearing an obstacle 50 or 100 feet high. It is hardly necessary to say that these performance predictions are of the greatest importance.

Experiments reveal the fact that, up to a few chord lengths, the proximity of the ground reduces the stalling-speed and assists the rate of climb. This is probably due to the effect commonly called "ground compression," due to the interaction of the ground upon the downwardly projected airstream from the wings.

This effect is also dependent upon the aspect ratio of the wings and the elevation of the propeller axis in respect to the wing.

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EXAMPLE: GROSS WEIGHT 1080 LBS. 45 B.H.P. 40 M.P.H. STALLING SPEED FIND CLIMB THE FIRST MINUTE AND DISTANCE TO CLEAR 50 FT OBSTACLE. CONNECT 24 ON SCALE Nº1 WITH 40 ON SCALE Nº 2 THEN YOU WILL FIND LINE INTERSECTING SCALE Nº 3 AT 500 FEET, CLIMB THE FIRST MINUTE. CONNECT 40 ON SCALE Nº 4 WITH 500 ON SCALE Nº5 YOU WILL FIND LINE INTERSECTING SCALE Nº 7 AT 500 FT. WHICH IS THE DISTANCE REQUIRED TO CLEAR THE OBSTACLE.