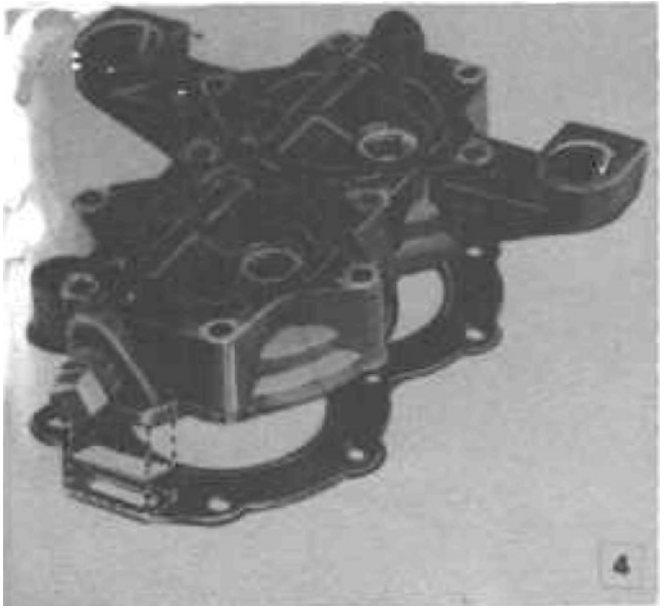
OUTBOARD POWERS SNOW SLED

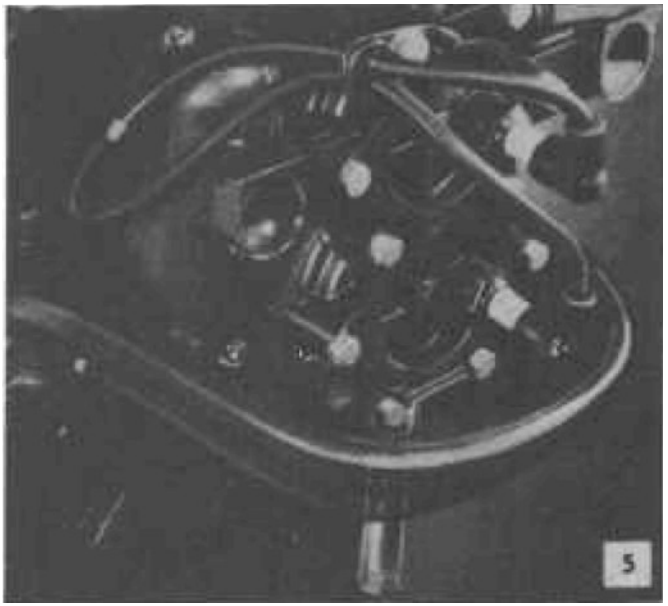
By Harold W. Grube

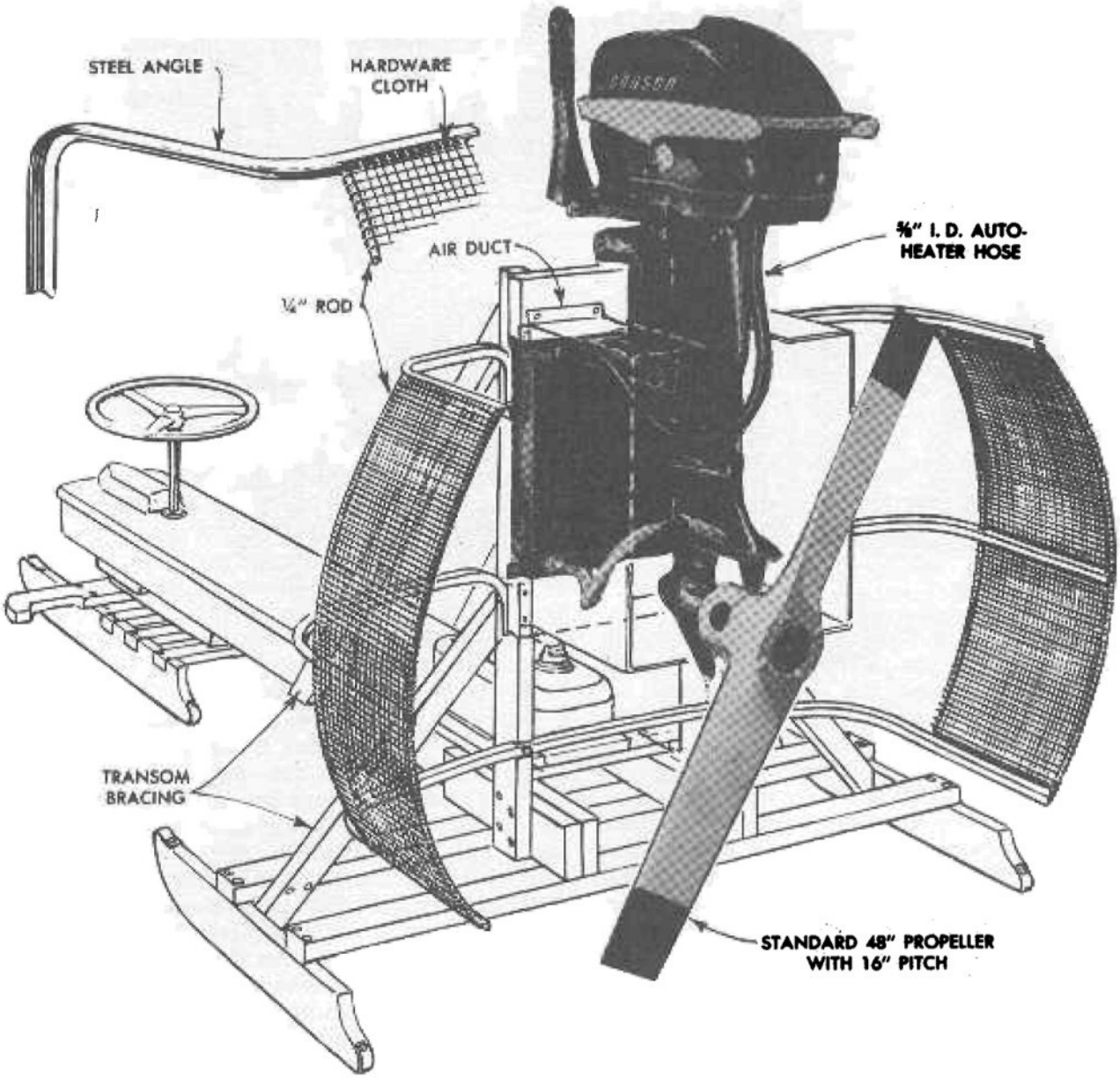
YOUR OUTBOARD MOTOR doesn't necessarily have to be put away when the boating season ends. With a few mechanical changes, almost any 10-hp, or larger motor can be put to work the year 'round and used to propel an ice sled. Speeds up to 35 m.p,h. are possible with a payload of three. The change-over in no way reduces the efficiency of the motor as an outboard motor.

Other than making a propeller hub and replacing the original propeller with a purchased air propeller, the change-over for the most part involves sealing the water system so the water pump can be used to cool the motor by circulating water through a radiator. The original conversion was made on a Johnson 10-hp. water-cooled motor. Figs. 1 and 2 show how the motor is clamped securely to a rigid transom

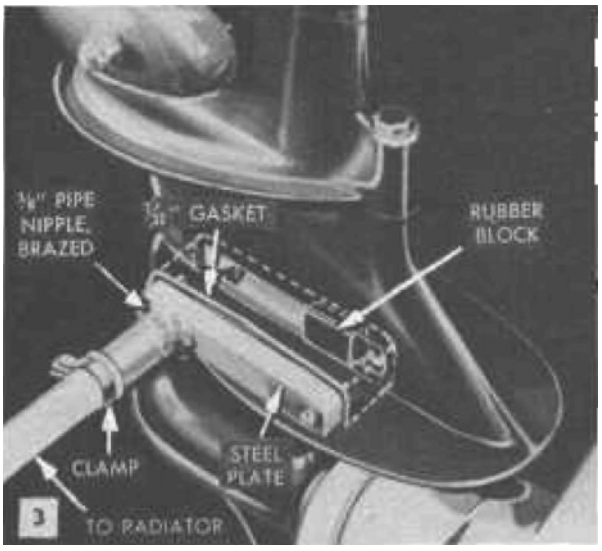


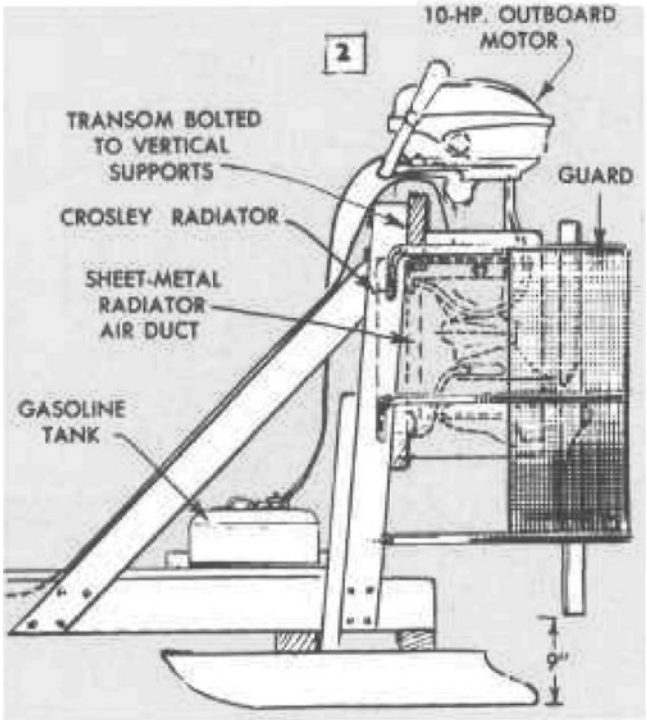
Connection for return-water hose is provided by drilling and tapping hole in cylinder head for nipple

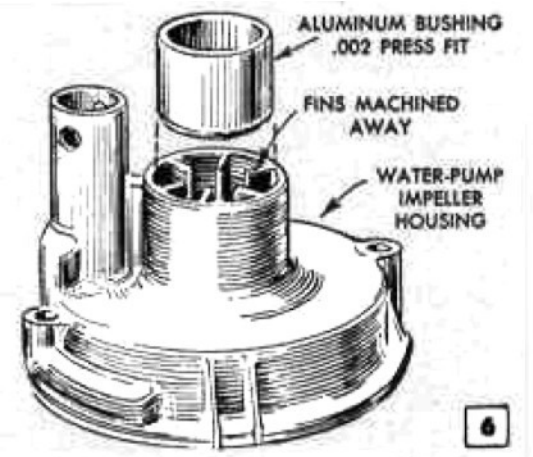


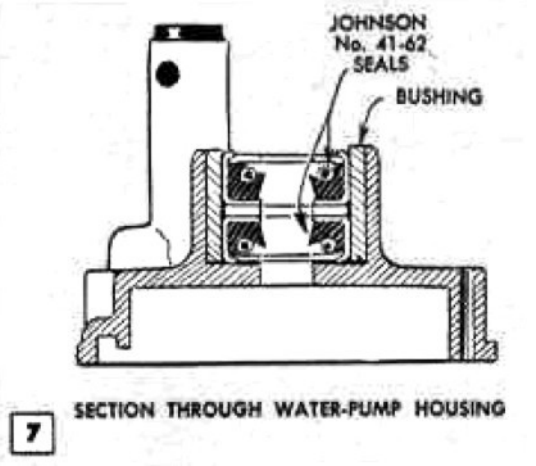


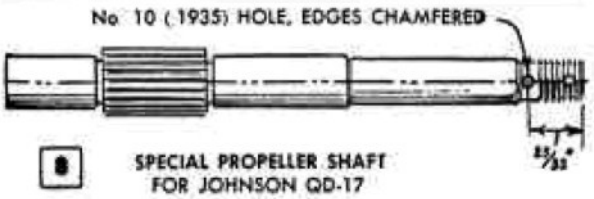
New cover plate with hose connection replaces original. Rubber block under plate closes water passage.







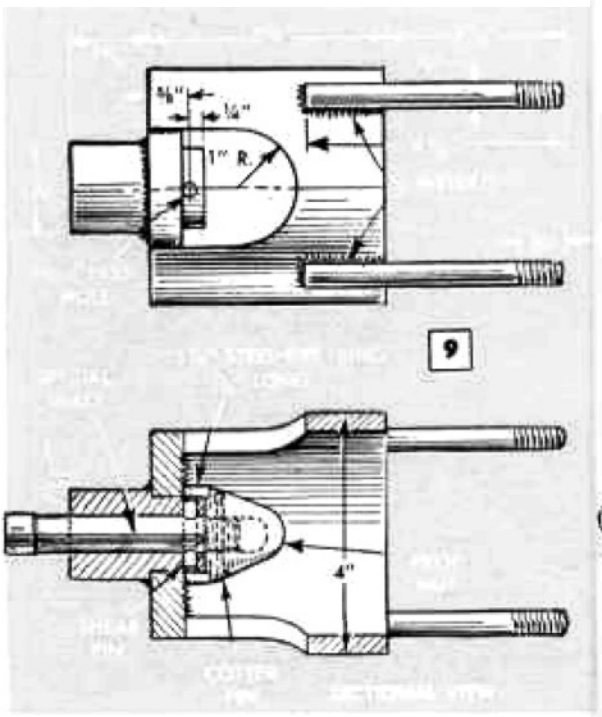


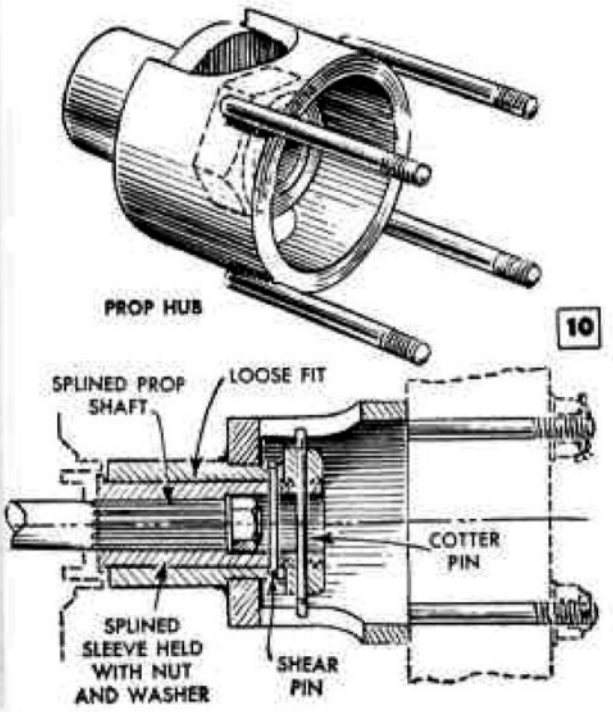


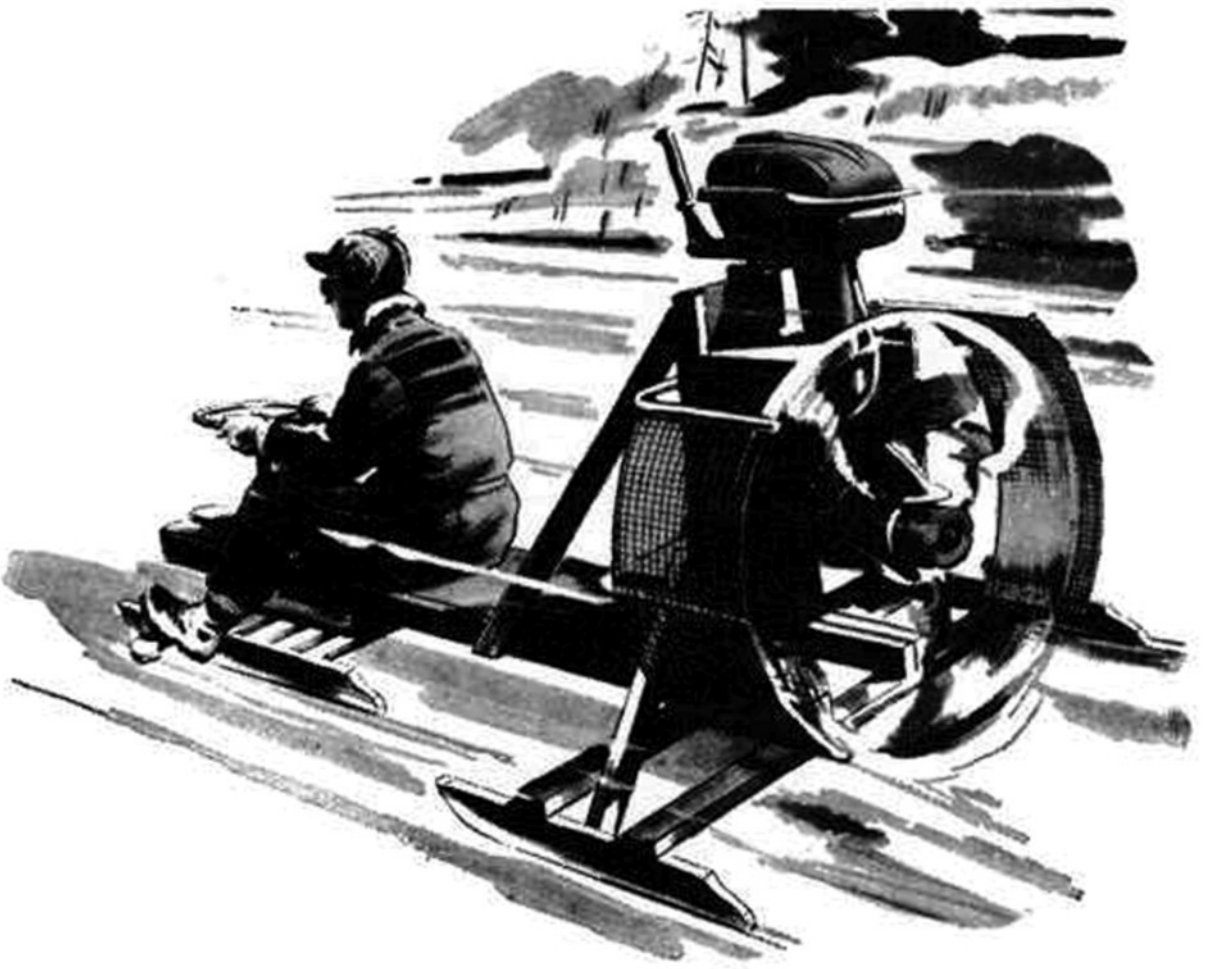
mounted high on supporting members bolted to the tear of the sled. A Crosley or other small-car radiator is mounted between the vertical supports, and a sheet-metal duct is attached directly in front of the radiator to direct the air over the gear case to help cool the gears and water within. You'll notice in Figs. 1 and 2 that two pieces of steel angle are fastened to the transom and to the screws of the lower rubber motor mounts to prevent the motor from swinging from side to side. With the top of the radiator above the point of the water pump, priming is no real problem. The radiator can be drained in the normal manner through a pet cock at the bottom.

Sealing the water system requires removing the cover plate on the upper gear-case housing and replacing it with a heavier steel plate as shown in Fig. 3. A 3/8-in. pipe nipple is brazed over a hole in one end and then the plate is drilled and tapped to suit the original mounting holes. Passage to the water-intake screen is blocked with a rubber block. To convert back to outboard use, remove the block and replace the cover plate with the original.

To provide a connection for the return-water hose, the cylinder head is removed and a hole is drilled and tupped in the end to take a 3/8-in. pipe nipple, Figs. 4 and 5. A standard 3/8-in. pipe plug is used to close this hole when converting back to outboard use. A hole is required in the lower half of the motor cover to accommodate the hose nipple. Water is kept from entering the exhaust by covering the port in the cylin-







der-head gasket with a shim as in Fig. 4. Regular 5/8-in. auto-heater hose is used from the radiator to the motor. The water outlet at the bottom of the radiator is soldered shut and a new 7/16-in. hole is made in the side of the radiator at the bottom. A short brass tube having a 5/8-in. outside diameter is soldered over it for the lower-hose connection. The upper inlet to the radiator is cut off and replaced by a plate-fitted nipple and gasket

The conversion requires an extra water-pump housing since this part requires altering to where it cannot be reinstalled. Fig. 6 shows how a portion of the casting is machined to receive a press-fit aluminum bushing which in turn is rebored to receive two lip seals as in Fig. 7. The seals, which prevent water from leaking out the top of the pump, can be purchased from the manufacturer of the particular motor used. Sealing cement is applied to the plate under and above the pump.

If the shear-pin hole in the motor shaft is near the end rather than near the gear case, the original shaft will do. However. this was not the case with the motor used and it was necessary to machine a duplicate shaft and locate the shear-pin hole at the end, Fig. 8, to assure adequate strength. Fig. 9 details the special propeller hub that was made for the Johnson QD-17. If your motor has a splined shaft, it will require a hub like the one detailed in Fig. 10. In each case, the mounting bolts welded around the hub are spaced to correspond with the mounting holes in the propeller. In ordering the 48-in. prop, be sure to specify the rated horsepower at the shaft, maximum r.p.m. of shaft at top horsepower (approximately 2400), direction of rotation, whether pusher or puller type and tipped or untipped. The propeller used was purchased from Banks-Maxwell Propeller Co.. Ft Worth, Tex.

A remote-control cable is used for controlling the throttle. The engine should be started in neutral, allowed to warm up and be shut off before shifting into forward and restarting. Shifting while the motor is running is apt to shear the pin in the shaft due to the very high inertia of the propeller. Likewise, throttling down from a high r.p.m. and shutting off the motor quickly is apt to shear the pin. It is best, therefore, to throttle the motor down slowly before shutting off. Naturally, the propeller must be fitted with a suitable guard and under no circumstances should be driven without being fully protected. Make it a point to see that no one stands near the propeller while it's being revved up. Fig. 1 suggests one type of guard that can be made from steel angle, ¼-in. rod and hardware cloth. * * *