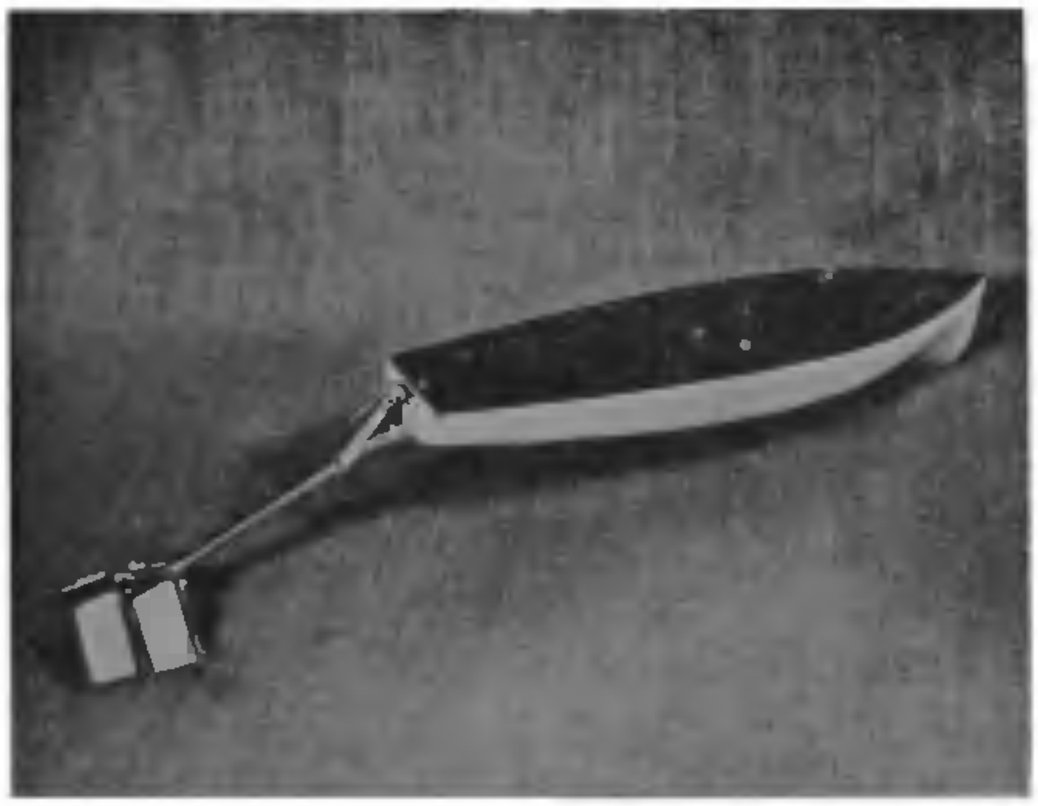
SHIP PROPULSION BY WAVE MOTION

A NEW method of driving a ship by wave motion has been invented by Mr. Sydney McCubbin of Black Rock, Melbourne, by utilising power obtained from the surface waves of the sea. His invention consists of a loaf or fin of suitable dimensions and materials, flexibly attached, or hinged to the craft, the free edge moving in a suitable arc. A spring tension is provided at, or near the hinge. When the unit lies beneath the surface at the end of an arm, a forward thrust is created by the combined factors of the rise and fall of the water, resistance of the water to the fin, and the return action of the fin.

The angular positions assumed by the leaf are proportionate to the pressure applied, to the resistance of the water, and to the return tension of the leaf.

Mr. McCubbin explains that it is the forward thrust which can be utilised to obtain power from the surface waves of the sea for the propulsion of various forms of water-craft. Single or multiple wave units may be attached to these craft in such a manner that advantage can be taken of the difference of the relative vertical or oscillating motion of the sea surface, and of the wave unit. The inventor says that his observations of a tadpole or a fish when swimming showed him that the tail did not merely move, but it also developed a true wave form. This started from the nose and flowed smoothly with increasing amplitude (not frequency) to the end of the tail.



Model craft embodying the wave propulsion unit. The tension at the hinged edge returns the leaves to their neutral position after being moved in either direction by the action of the water.

Detailed study of the wave form of movement showed Mr. McCubbin that the bodies of fish of conventional shape assumed the form of a full cycle on a horizontal plane. A tadpole at rough estimate assumed the form of a cycle and a half, but without special equipment it was difficult to judge this accurately. On the other hand the wings of a bird covered about a fifth or a sixth of a cycle only. The wings of insects in most instances had a greater cycle coverage than the wings of birds.

A special wave-propulsion raft could be designed to be incorporated in ships' equipment and used to aid survivors of wrecks. This raft would be of conventional construction, except that it would be fitted with special arms, carrying at their ends flexibly mounted fins, or leaves. These could be so arranged that the oscillating motion of the raft, due to the action of the waves, would cause the leaves to rise and fall. Thus moved from their normal position horizontally in the water, the deflection of the leaves would impart a forward thrust to the raft.

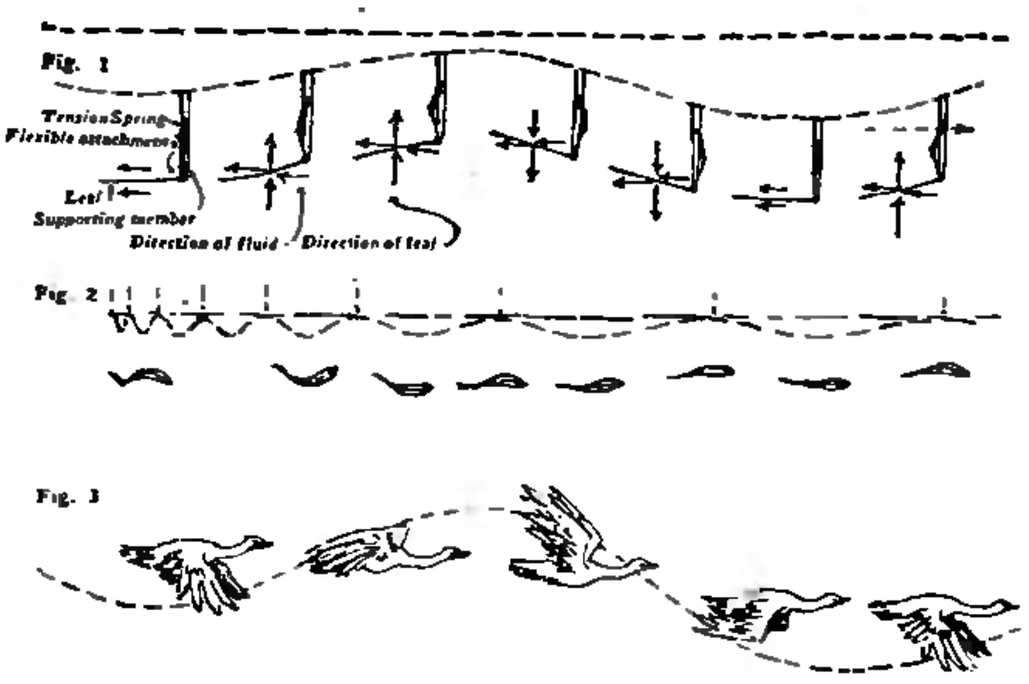


FIG. 1 shows the flexible attachment of the boat which, by reason of its movements, create the wave form. FIGS. 2 and 3 illustrate the similarity of the wave forms of a fish and a bird. The wave form from the fish's nose flows with increasing amplitude to the end of its tail. The bird adapts its wings to different speeds by a simple variation of pitch.

When not in use the leaves could be folded along the sides of the raft, where special cavities could be provided to receive the more easily damaged members of the unit.

Mr. McCubbin states that his experiments with model boats had also convinced him that wave propulsion could be used to illuminate marine beacons. A pear-shaped buoy ballasted to float in water could have a number of flexibly mounted leaves (wave units) arranged horizontally around and near the top of the buoy, but below the surface of the water. When the water was agitated the buoy would rotate a central spindle (held stationary by a vertical vane), and would enable a generator to charge self-contained batteries and supply current to the beacon. The beacon could be anchored in one spot by a cable attached to the base of the stationary vane and anchorage point.

(By courtesy of the Australian High Commissioner in India)