

FUTURE CONCEPTS

This section depicts several principles and arrangements of suspension, propulsion, and hull configuration design, and is submitted here to furnish food-for-thought-stimulus as regards the many different arrangements and methods of operation as to further point out the many avenues of amphibian vehicle furtherance which are open to the engineer who dares to deviate from the stereotype shoe-box design of past developments.

This group of illustrations include little or no vehicle dimensions, weights, or actual component selections; as to accomplish these specifications would require individual feasibility studies which are regarded as being beyond the scope of this particular contract.

Nevertheless, it is hoped that these concepts may trigger sufficient interest to promote continued research and development in this new and exciting field of Amphibiology.

AIROLL VEHICLE CONCEPT

The Airoll Vehicle is a radical departure from standard wheeled or tracked vehicles because the axle does not support any of the vehicle weight. Rather, the weight is distributed over a series of tires that are compressed between the ground and the bottom of the hull sponsons. In operation, the sprocket and chain picks up each of the tires as it leaves the rear of the vehicle, carries them to the front of the vehicle and places them on the ground so that the hull can continue to roll along over them. The effect is the same as placing a series of rollers under a heavy object and shoving it along. As the rather large soft tires will absorb bumps, they alone act as the springs and the conventional suspension system with its resultant weight is eliminated.

The new principle by which the Airoll Vehicle is propelled should result in greater ground-holding tendencies and bring about more efficient performance at less cost. By adjusting the diameter and spacing of the tires, any degree of flotation and ground pressure can be provided. Also, by the use of large tires and drop gears to the sprockets, the belly can be raised to such an extent that the vehicle will become virtually bellyless. This together with the large tires should practically float the vehicle through any type of bog.

Several very distinct differences exist between the present day laterally rigid track-laying vehicle and the Airoll principle of locomotion. Probably the first in importance is that the suspension system is entirely eliminated because its former function is assumed by the Airoll Track. As the pneumatic tire, which functions at ground level, becomes the spring the next difference then is a vehicle of zero unsprung weight. And finally, in a track-laying vehicle there is no relative movement between the track and the ground as the vehicle progresses at the peripheral speed of the sprocket. In the Airoll version, the vehicle progresses at twice the peripheral speed of the sprocket, and the chain or track moves in relation to the hull at a linear speed equal to one-half the ground speed in the same direction as the hull.