AERONAUTICS

Air Weapon in Reserve

Hit-and-Run Raids by Medium-Range Bombers Can Be Made Possible by Catapult Ships in Mid-Ocean

By DONALD G. VAN DE WATER

ONE powerful weapon of aerial warfare, potentially devastating, still awaits use in this air-conscious World War II.

It is not so much a weapon, really, as a technique of hit-run fighting, wickedly effective, hard to combat and very much to the taste of the Nazis as well as Japan.

It involves the use of fast flying boat bombers operating not from land or from huge, expensive and vulnerable aircraft carriers, but from smaller mother ships. These mother ships are much larger and more effective than the small seaplane tenders such as the U. S. S. Heron which distinguished herself so notably in Pacific waters recently. But they are catapult ships, not ships with decks for take-off runs as are the aircraft carriers.

Such catapult ships can be based as much as 600 miles from the objective and can continually change location in order to escape detection. Low, small, and fast, they are extremely difficult to locate or to pursue with other surface craft. Even if sunk, they are no serious loss, for they can be built for about the cost of three large bombing planes and can be turned out in large quantities by mass production methods.

Only one effective weapon is known against this combination of flying boat bombers with a catapult ship which is at the same time fueling station, hospital ship, weather observatory, repair station, launching device, arsenal and even at times radio beacon. That weapon is a better use of the same combination.

Have Had Practice

Dress rehearsals for a possible projected surprise attack on New York were conducted by Germany under the guise of commercial operations not long before the outbreak of the present World War.

A fleet of motorships, powered with economical Diesel engines, of which the "Friesenland" (shown on the front cover of this week's SCIENCE NEWS LETTER) is typical, were operated by the Deutsche Lufthansa—transatlantic air line.

The "Friesenland" dispatched over one hundred transatlantic flights from the Port of New York to Germany in 1938 by catapult-launching seaplanes and flying boats. The aircraft used were the 4-engine Blohm and Voss Hal seaplanes (Ha 139), which has a cruising range of 3,230 miles, and also the flying boat Dornier Wal.

The "Friesenland" is a 6,813-ton boat, 461 feet long and with a 54.12-foot beam and 19-foot draft. She has a speed over 16 knots. She has a raking square stern to aid in the launching of seaplanes.

Her unusual catapult system was developed especially for these vessels by German aircraft engineers. It not only gives the aircraft a push forward, providing flying speed, but actually a toss upward into the air at take-off. This enables the seaplane to take off from the deck of the mother ship fully loaded with a heavy "cargo."

Landing even on comparatively rough water is made possible by the aid of a drag towed from the stern of the mother ship. By landing into the wind in the protection of the wake of the ship, a seaplane can negotiate water much too rough for ordinary landing at sea.

Here are some of the possibilities of such catapult ships, as envisioned by U. S. aviation authorities who looked them over critically when they operated off New York:

They can be equipped and sent to sea for long periods of time with little or no replenishment of supplies.

They can be supplied with sufficient fuel not only to maintain the four-engined seaplanes that they start out with, but also to service submarines that might operate in their vicinity.

They can operate with Diesel engines, using the same fuel required by the submarines and aircraft engines they service. This insures economy as well as convenience, and avoids the fire hazard of gasoline.

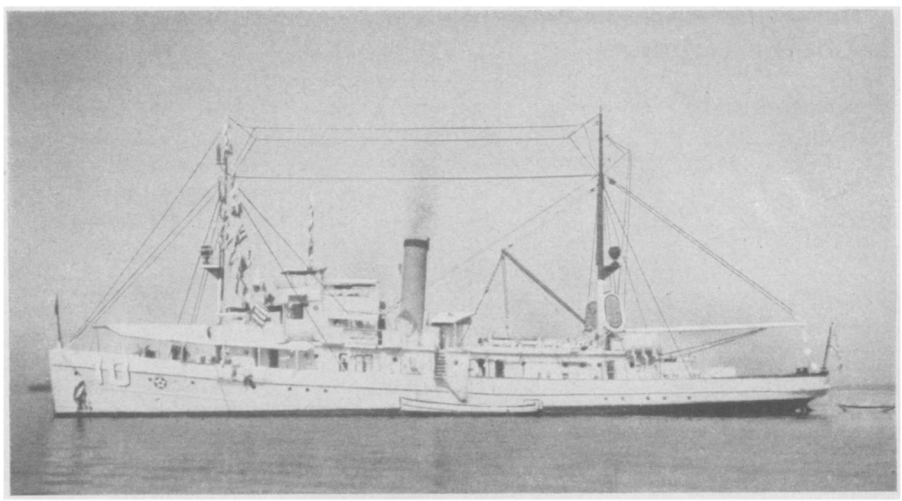
No Conspicuous Smoke

Because they have Diesel engines they do not throw out much tell-tale smoke to reveal their position.

They can be stationed far at sea—roughly halfway between home port and enemy targets. By so doing, if a seaplane should be lost, it could be replaced direct from the home port.

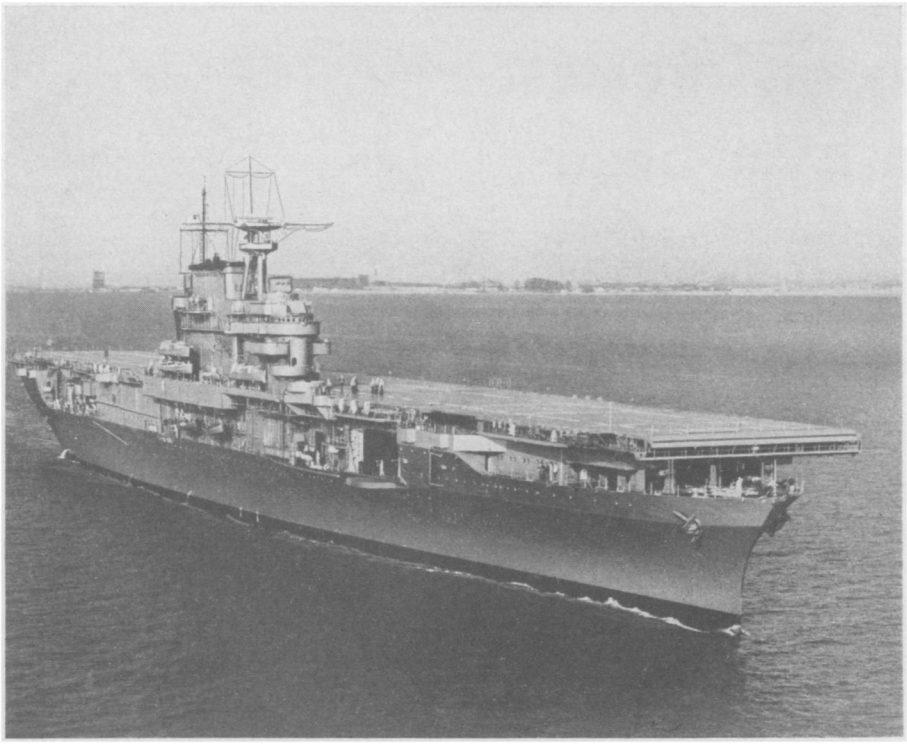
Bombers based on such catapult ships could be of moderate cruising range. Long-range bombers are very expensive and difficult to replace. Even the biggest of them when making a cross-ocean round trip must cut down on the load of bombs carried to make room for the fuel necessary for return.

The catapult ships can double as ma-



TENDER

The U. S. S. Heron, distinguished in action in the Pacific, is a converted mine sweeper. It acts only as a nautical filling station for large flying boats and cannot be used to aid in launching of any type of aircraft. This is an official U. S. Navy photograph.



CARRIER

Newest aircraft carrier in America's Navy is the U. S. S. Hornet. On the decks of this ship, nearly a hundred airplanes can take off and land. This type of vessel, although very effective, is expensive, slow to build, and vulnerable to torpedo attack. This is an official U. S. Navy photograph.

rine raiders. They can be equipped with sufficient armament to prey on cargo vessels.

Although obviously not calculated for any sort of mass bombing of cities like that practiced in the past on London, the seaplanes based on catapult ships could conduct a series of hit-run surprise raids which might destroy coastal oil supply bases, reservoirs and city water supply systems, power supply centers, transportation centers, and so on. Piloted by men already familiar with the lay of the land, the raids could be devastating.

Trusting to her ability at a quick get-away from one unmapped location to another, and to the difficulty of detecting a small boat on a mighty ocean, the mother ship might boldly summon her catapulted planes to the shelter of her decks by a radio homing device operated for brief intervals. Even though all the Coast Guard and Navy vessels on the sea should pick up her signals, they could not speed to her destruction fast enough, unless they happened to be in the immediate vicinity. Her only fear is from aircraft.

If Germany plans a surprise attack on the United States using these catapult ships—apparently not yet sprung on her enemies in this World War—it is logical to suppose that the time she would pick would be in the early summer months when weather and water conditions are best for catapulting and retrieving seaplanes that have come down on the water.

Best protection against such an eventuality would seem to be in a superior use of the same weapon. The United States has the facilities to launch any number of such catapult ships. They could be stationed 300 to 400 miles from the coast. From their decks an air patrol could be on the constant lookout for enemy aircraft, enemy carriers or catapult ships, submarines or any other signs of enemy activity.

These "outer defenses" would stand a chance of spotting aircraft headed for our shores in time to take action to warn our coast defenses. They would be better placed for trapping catapult ships, surface raiders and submarines than would an air patrol that must return to shore for refueling or aid.

As an offensive weapon, the seaplane catapult ship team would be just as effective for the United States as for our enemies. For relatively little cost in money and precious construction time, a whole fleet of such small ships could be placed at strategic points in the Pacific that would enable our airplanes to conduct the sort of paralyzing raids on Japanese island bases that Japan attempted on Pearl Harbor.

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GEOLOGY

Torrential Rains Held Responsible for Erosion

TORRENTIAL rains called "gully-washers" in some parts of the South are just that; they are largely responsible for the disastrous deepening and spreading of gullies in Southern fields. So Prof. Stephen S. Visher of Indiana University has concluded, after a study of data accumulated by the U. S. Soil Conservation Survey and the U. S. Weather Bureau (*Journal of Geology,* Jan.-Feb.).

Soil erosion, blamed in various quarters on slack farming, lack of permanent ground cover, etc., involves also one neglected factor—the intensity of individual rains, Prof. Visher believes. Total annual rainfall does not tell the whole story by any means: 50 inches of precipitation distributed as a hundred half-inch rains will not do a minute fraction of the mischief that would be caused by the same amount concentrated in ten five-inch downfalls. And the Gulf States, the present studies indicate, have heavier single rains, and more of them, than any part of the North with comparable annual precipitation.

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There are some plant names in the Bible that often lead modern readers into confusion. The "husks that the swine did eat" have nothing to do with our familiar corn-husks; they were the pods of a leguminous tree known as the carob. Coarse and tough to chew, they are nevertheless sweetish and really nutritious. So the Prodigal Son might have been worse off than he was, at that.

Sycamore does not mean the tree known by that name in this country. That tree is called the plane-tree in the Bible. The Biblical sycamore (properly sycomore) is a species of fig. The "lily of the field" was not a lily; Miss King says it was an anemone. "Mulberry," in I Chronicles, seems to be a mistranslation for quaking-aspen. There are other instances of this kind, where it is always interesting, and sometimes important, to have incorrect impressions set right.

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