

TECHNOLOGY

Ships Going Atomic

Submarines, tankers, merchant ships, whalers and ice-breakers are being powered by atomic energy as nations throughout the world become interested in nuclear ships.

► WHEN THE Russians launched their ice-breaker Lenin on Dec. 5, the world had its first atomic-powered surface vessel. It will not be the first atomic-driven sea-going craft, however, and most certainly, it will not be the last.

At present, the United States is going down to the sea in atomic ships faster than any other nation. With a brilliant record already chalked up by the world's first A-submarine, the Nautilus, the U. S. Navy has at least 13 more nuclear-powered submarines built, being built or planned.

In addition, the keel for the nation's first atomic-powered merchant ship, the N. S. Savannah, will be laid next spring. It will be powered by a pressurized water-cooled reactor, and is expected to enter service in early 1960.

To this can be added the nation's first atomic aircraft carrier and cruiser. The nuclear-powered carrier, scheduled for 1961, will be a forerunner of six such carriers expected to be commissioned by 1966. It will be powered by eight nuclear reactors and its cruising range will equal "many" non-stop trips around the world without refueling.

The atomic cruiser has already had its keel laid. Its completion, like that of the carrier, is set for 1961. When built, the U.S.S. Long Beach will not only be an A-powered ship, but will be capable of firing atomic missiles.

An atom-powered destroyer, called a frigate, is also planned.

The Russian ship is powered by a boiling water reactor. Displacing 16,000 tons, the Russians have reported their ice-breaker will be able to touch both the North Polar region and the South Polar region without refueling. Its speed in open water will be 18 knots. In addition to the atomic ice-breaker, the Russians are also known to be building an atomic whaler.

Both these Russian vessels are thought by naval observers to be test craft for a proposed Red nuclear-powered warship of battleship size. The Russians are also reported to be building atomic-powered submarines.

In addition to the United States and Russia, other strongly maritime nations have shown more than drawing board interest in nuclear ships.

The British are planning to construct a

large nuclear tanker and an atomic submarine modeled after the Nautilus.

Germany's four maritime provinces of Bremen, Hamburg, Schleswig-Holstein and Lower Saxony have pooled their assets to produce an atomic-powered ship.

Japan has announced plans to build a 16,000-ton atom-propelled submarine tanker capable of traveling along at 22 knots.

Norway and The Netherlands have worked out a research program at the Norwegian-Dutch Joint Establishment for Nuclear Energy near Oslo, with the chief aim of constructing a prototype atomic reactor for marine propulsion in the next two years.

In 1955, Rear Adm. H. G. Rickover, father of the first atomic submarine, predicted that within five to ten years all new major warships would be propelled by atomic power. The same may very well be true for merchant ships in the foreseeable future.

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TECHNOLOGY

Automatic Device Reads Numerals

► A DEVICE for reading handwritten numerals or identifying numerals as they are being written was demonstrated at the Eastern Joint Computer Conference meeting in Washington, D. C.

The equipment could be used to read handwritten letters with some modifications, Tom L. Dimond of Bell Telephone Laboratories' systems engineering department reported.

The machine, about the size of a portable typewriter, is expected to become a valuable addition to telephone offices and other offices where large quantities of numerals are written and identified. The numerals have to be written with a pencil containing conductive lead.

Since each long distance ticket contains 20 to 30 handwritten characters and approximately 2,000,000,000 of the tickets are processed each year, the device is expected to be valuable in preparing telephone bills.

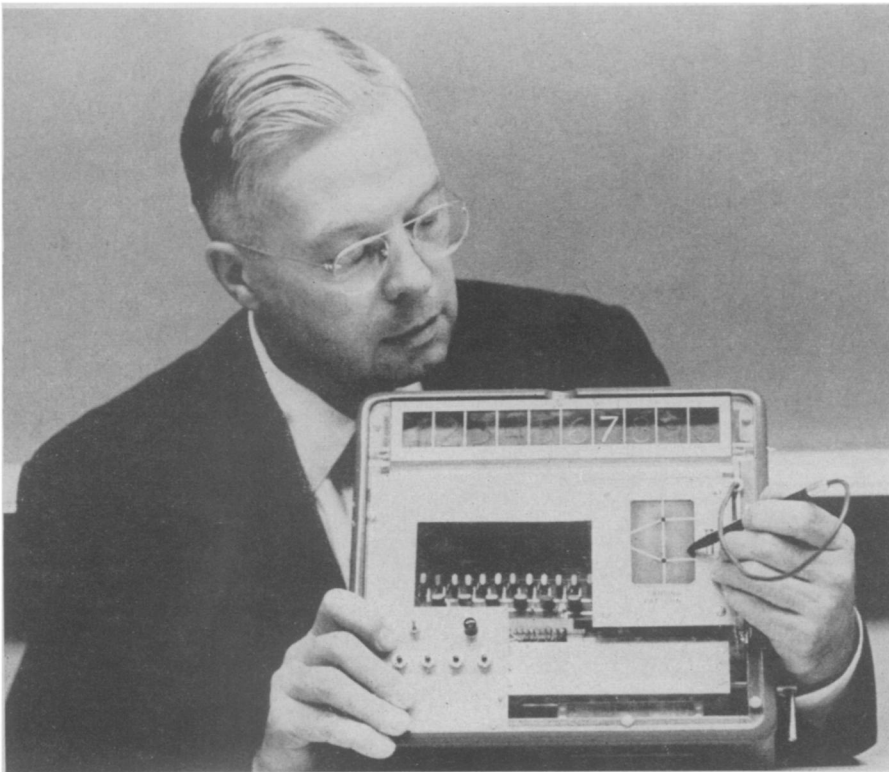
The machine recognizes numbers as they are written with a metal stylus on a special writing surface, indicating the numeral by lighting up the correct digit on a numbered panel. The information could, however, be transferred directly to an accounting machine or computer.

The numbers have to be written around two dots, placed one above the other. Seven sensitive lines extending radially from these two dots identify the numeral written depending on which lines are crossed.

The technique can be extended to permit identification of handwritten letters, Mr. Dimond reported. To do so, a four-dot system with 12 radial lines is necessary. Identifying letters as they are written is somewhat simpler, since advantage can be taken of the order in which the radial lines are crossed. Then the two dot system is sufficient.

The device is operated from flashlight batteries and requires no outside power source. Its small size is made possible by use of transistors.

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READING MACHINE—Tom L. Dimond of Bell Telephone Laboratories points to the writing area on the experimental machine he invented to read handwritten numerals. He holds a metal stylus for writing the numbers which appear in the panel at the top.