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Whirlwind I
geared

"Whirlwind I", once the largest, fastest digital computer in the nation, will cease operations tonight (May 29) at midnight, a victim of the incredible pace of modern technology.

A pioneering marvel of the age of computers, Whirlwind I went into operation less than eight years ago, operated by the Massachusetts Institute of Technology under contract with the Office of Naval Research.

Today--although its memory is not failing from senility and can deliver as many as sixteen numbers at the rate of 20,000 times a second--it is too slow, cumbersome and expensive to maintain and is no longer feasible for research and development operations at M.I.T.

Located in the Barta Building on Massachusetts Avenue, two blocks north of M.I.T.'s main campus, Whirlwind goes into retirement with a record of important achievements in the field of information processing, including use as the prototype for Sage system computers now being put into operation as the air defense system for the North American continent.

When Whirlwind was started up late in 1951, it was the only large-scale computer of its kind in full operation in the United States. Specially designed by the Digital Computer Laboratory of M.I.T., (no longer in existence) Whirlwind was used initially for a variety of engineering, scientific and industrial applications. Later it was utilized for research on projects sponsored by the United States Navy and Air Force.

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Because Whirlwind was devised as an original general-purpose computer in an early period of the development of such large "electronic brains," it is different from any other in existence. Today, many commercially produced computers are available that can equal or surpass the performance of Whirlwind. Libraries of information which can be used by any one of many commercial computers through tapes or cards are impossible to use with the M.I.T. machine. Maintenance and modification of Whirlwind has become increasingly expensive in recent years.

Last December, Lincoln Laboratory--the primary user in recent years--notified M.I.T.'s Division of Sponsored Research that the facility was no longer required. In April, Dr. F. L. Foster, Director of the Division of Sponsored Research, wrote the Office of Naval Research in Boston that M.I.T. requested disposal of the famed computer.

According to standard procedures, the Navy Department, cognizant government agency, is checking Department of Defense installations to see if a requirement exists for a computer of this type. If the answer is no, the Navy will dispose of the facility through sale or lease. If no user is found who can utilize the Whirlwind I to the satisfaction of the government, it is expected that the massive device will be demolished, with some valuable components being retained by M.I.T. for use on other government contracts and the remainder being sold for junk.

The Navy will dispose of only the original or basic Whirlwind Computer. In the nearly eight years since it went into operation, the computer has been modified and expanded for scores of different projects. Much of the equipment now used in the Barta Building is

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owned by the Air Force. This means that the Air Force must follow a similar disposal routine before the fate of the Whirlwind complex as it now exists is determined.

Most computer authorities agree that Whirlwind probably has seen its last days. The complete computer consists of thousands of tubes, hundreds of miles of wiring, a bewildering array of switches, diodes, lights, knobs, dials and other components that fill four or five large rooms in the building. To move and re-install the giant machine would require a large number of experts, all thoroughly familiar with the facility. Many of the original M.I.T. group that installed Whirlwind are no longer in this area and persons unfamiliar with the mechanism would find the task of re-assembly lengthy, if not impossible. It would be far easier and less costly to acquire a commercial computer.

One reason for M.I.T.'s decision to halt work on Whirlwind I is the nearby Computation Center on the main campus where for the past two years a modern IBM 704 computer has been available for many projects. Faster, more economical and utilizing standard operating procedures, the 704 can do a better job than Whirlwind. At Lincoln Laboratory, where computers are needed in many areas of important work concerned with the air defense effort, several transistorized systems are now used.

From its "drawing board" stage, which started in 1946, until today's final operation, Whirlwind I cost the government approximately seven and one half million dollars. Few investments have resulted in larger returns. The air defense system--which will cost billions--is a direct result of several years of an experimental project performed during the mid-1950's using Whirlwind I. Called the "Cape Cod" system, this secret project ran from approximately 1953 to 1956.

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The Barta building was the focal point to which information was sent from a network of radar stations ranging from Maine to Connecticut. Information from the stations was fed into Whirlwind I and the giant computer digested and stored facts on approaching "enemy" planes seen on radar scopes, then presented the information through a control center to direct "friendly" aircraft to intercept the bombers. From these beginnings evolved the Sage system, which became operational a year ago.

It was on Whirlwind that the first magnetic core "memory" was installed in early 1954. This development, sparked by Professor J.W. Forrester, then director of the Digital Computer Laboratory and now a professor of Industrial Management at M.I.T., doubled the speed and memory of the computer. Memory cores are arrangements of tiny magnetic rings, each about one-tenth of an inch in diameter. Smaller, lighter, and more enduring than vacuum tubes, they are now used in nearly all computing devices. During one period soon after the original memory core was installed on Whirlwind, the computer functioned for six consecutive weeks without an error. In this time the machine consulted its memory and came up with the right answer more than 100 billion times.

Hundreds of other projects requiring lengthy computations employed Whirlwind I. Some of the nation's leading experts in computer technology, now working in industry, government and education, received their original training on the "Beast" as it is fondly called by engineers and technicians.

"This can properly be called the 'Grand-Daddy' of modern computer technology," a member of the staff of the Office of Naval Research said recently. "The courage, vision and hard work of M.I.T. scientists resulted in discoveries and techniques that are now used for extremely important applications. Industry and our military departments have received great benefits from Whirlwind I during the past eight years."