

TECHNOLOGY

"Thinking" Machines Take Over

Machines with "brains" are used in an ever-growing number of production operations and services. They are by now a necessity, Judy Viorst reports.

► WITH THE ADVENT of the "thinking" machine, people are beginning to understand how horses felt when Ford invented the Model T.

Men can still do everything a data-processing machine can do. But it takes a thousand of them working their entire lifetimes to compute what the latest electronic "brain" can do in a day.

Automation is no longer merely the most modern or money-saving way to do a job. It is becoming, in many instances, the only practical way that job can be done.

Take the airlines. Any frequent user of planes knows the maddening mixups and delays that can occur in getting a reservation. And no wonder. A person can walk into a ticket office anywhere in the country and book a seat on a Chicago-to-New York plane leaving at 3:10 p.m. on Dec. 14.

How does a ticket agent know if the seat is available? The man-handled procedure for finding out is surprisingly cumbersome.

The agent has to call a central reservation office, where the status of the plane's seats is recorded on a huge blackboard. If there is space available, he makes the sale and informs the person in charge of inventory control, who then changes the blackboard's figures. Anyone who has ever been left holding the bag because 45 seats were sold on a 44-seat plane has found out that this system is not entirely reliable.

With more than 50,000,000 people a year currently using scheduled airlines, automation is becoming crucial to a speedy management of plane reservations. Most of the major airlines are already using special purpose computers to do the job or are planning to install them.

Automatic Reservation System

Basically the automatic reservation system consists of a boxlike device connected to a central magnetic storage drum that transmits and records flight data. By inserting a metal plate into the box and pushing a couple of buttons, the ticket agent can get swift and accurate information about seat reservations. The box is even equipped with a lamp that flashes on if the electronic brain decides that the human brain is processing the query incorrectly.

Electronic "brains" and mechanical hands are indispensable to this country's telephone system. Automatic switching equipment connects virtually all local calls. About half the telephone users in the U. S. can now dial long distance numbers directly, and there will soon be automatic handling of person to person calls as well. Message accounting tapes make it possible to record automatically the time of a call, how long

it lasted, the calling number and the number called.

Without automation, the telephone system would probably break down. Even if the companies could hire enough operators—and chances are they could not—skyrocketing phone bills would drastically cut the number of users.

The United States Post Office initiated a large-scale program of automatic mail handling in 1953. It hopes someday to use machines to read addresses and direct letters to their proper pigeonholes. Men cannot move the mail fast enough—not when 65 billion pieces a year have to be processed.

Eventually the sheer quantity of mail could do what neither rain nor sleet nor snow has yet accomplished—unless the "thinking" machines take over the job.

People disagree about whether this period can be called the Automated Age. But if the strides automation has taken since the end of World War II are any measure of what can be expected in the next 10 or 15 years, a new machine revolution is on its way.

Already automation has resulted in:

Giant transfer machinery—vast complexes of steel guided by an electronic brain to perform hundreds of operations on a part without human intervention.

Electronically guided machine tools capable of doing the most delicate cutting, drilling and welding operations.

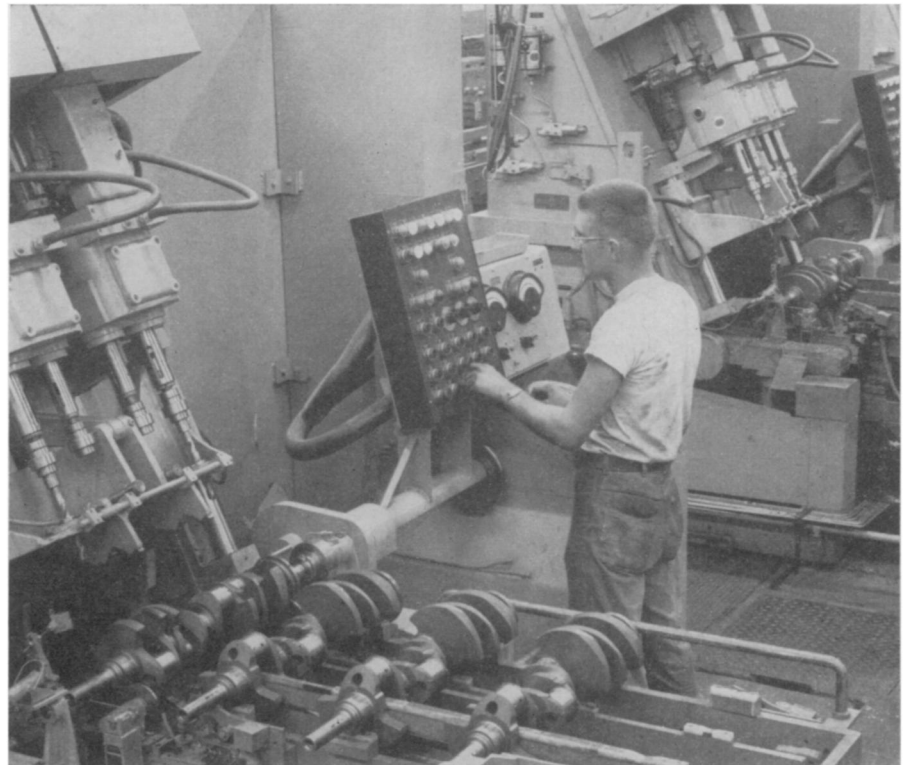
Automatic controls that measure and adjust temperature, pressure, quantity and speed of flow in any number of oil and chemical processes.

Data-processing equipment that is breaking new speed records every day computing salaries, billing insurance premium holders, tracking satellites, working out the census figures and predicting the next president.

Machines Use Their "Brains"

What is new about these machines is not their brawn but their "brains." The brawn has been around for a hundred years. But only now have people begun to use—and need—machines that do their thinking for them.

A recent cartoon showed a robot assuring a human job applicant that there was great room for advancement in his office. "After all," the robot pointed out, "only a few years ago I was just a pile of junk in the back yard."



ELECTRONIC BALANCING DEVICES—Crankshafts for automobile engines are tested on electronic balancing devices at Ford Motor Company's new engine plant in Lima, Ohio. The machine determines how much the crankshaft is out-of-balance and where the unbalance is located, then drills counterweights to give perfect balance before further operation on it.

There is no doubt that "thinking" machines will continue to have room for advancement. Like the horseless carriage, they are here to stay.

Having established themselves firmly on the scene, the machines are now challenging engineers and scientists to find new and unusual uses for their superhuman "brains."

At a conference of electronic computer experts held in Paris last year, it was pointed out that the machines are a thousand times faster than they were three years ago, and a million times faster than ten years ago. Still faster machines are being developed. These phenomenal increases in speed mean that ever larger amounts of data can be stored, manipulated, analyzed and quickly turned over to human researchers.

The University of Pittsburgh's plans for a recently acquired computer indicate the great versatility of data-processing computers.

The health laws of Pennsylvania have been codified into an electronic "library," so that any piece of health legislation can be obtained from the computer within minutes. The application of this technique to other laws, perhaps to all laws, will be studied, as well as application to other types of research.

Estimates of how much merchandise a customer will buy, and from whom and at what price, will be made by the computer. The basis of its analysis will be information fed to it about a wholesaler's salesmen and the buying habits of their customers. Business executives will be able to use the machine to test a variety of different marketing strategies.

The computer will also examine the records of more than 20,000 patients to determine whether there is a correlation between the blinding eye disease, glaucoma, and previous health history. This is just one of several medical projects using computers that are currently under way around the country.

Many experts believe that electronic brains can duplicate all of man's logical thought processes. If this is true, their potential uses are virtually limitless.

• Science News Letter, 78:362 December 3, 1960

Do You Know

A stamp can be removed from an envelope by applying lighter fluid to the inside of the envelope behind the stamp.

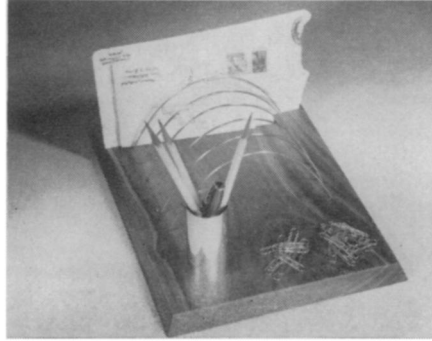
An oral contraceptive, approved for distribution by prescription by the U.S. Food and Drug Administration, is reported to have an anti-cancer side effect.

Over 1,000,000 fires in 1959 cost the nation \$1,275,000,000 with 11,300 persons dead.

It has been estimated that a large metropolitan newspaper consumes the equivalent product of 80 acres of woodland each week.

• Science News Letter, 78:363 December 3, 1960

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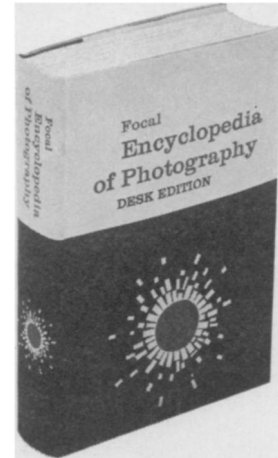


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