

## ENGINEERING

# Adventures of a 4c Stamp

Orbital post offices probably will be here some day, but right now the Post Office is developing more immediate ways to achieve its goal of one-day mail service anywhere in the U. S.

By ALLEN LONG

► THEY ARE talking about satellite post offices to orbit the earth and give swift mail service from here to yon. But that is blue-sky stuff—although dreams often come true sooner than expected. Much more urgent at the moment is finding immediate ways to improve our earth-bound postal system. It has been estimated that in a generation's time, the entire U. S. labor force will be unable to cope with the flow of America's letters and packages by using today's methods.

Today's methods are essentially the same as in Ben Franklin's day. Each of the 60 billion letters and packages mailed in the U. S. is processed largely by hand. Handling by automatic machines now appears to offer the most hope for meeting the tidal wave of mail that grows by about 2 billion pieces a year.

The day may be near when post office workers will think of their shop as a "plant" rather than an "office."

Briefly, here is what will likely happen to a letter in the immediate future: It will be collected from the corner red-and-blue mailbox and carried back to the post office. It may be swept high into the rafters by a conveyor system which holds it there awaiting its turn at the equipment below. Then it may be dumped along with parcels, hotel keys, wallets, and baby chickens—even the family kitten once was "mailed" by a toddler—onto a conveyor belt that feeds a culling machine.

## Mechanical Hands

Mechanical linkages will skim off the letter and dispatch it to facing, canceling, and distributing machines. Here other mechanical "hands" may flip it around so that the stamp faces the proper direction for canceling. Then a machine which figuratively squints an eye at the typewritten address on the letter will decide which mail sack should receive it. A conveyor will carry it to the proper point, then drop it. In another few minutes, the letter may be on its way out of town.

Arriving at its destination, the letter may run through other machines to be fed automatically to the proper delivery sack. Then friendly hands, missing so far, now will put the letter in the front-door mailbox.

All this may sound as futuristic as the satellite post office. But that is not so. The post office, with help of private industry, already has moved a great distance toward its dreamed-of 24-hour mail service in the U. S.

The Department installed in Detroit in

December, 1956, its first electronically controlled "Mail Flo" conveyor system. This shuttles mail to and from sorting areas, eliminating hand-trucking. Side conveyors feed mail to sorting clerks, then take letters to proper dispatching points. The system worked so well that other installations were announced late last year for post offices in New York, Boston, Washington, Chicago, Los Angeles, and Ogden, Utah. All told, there are 11 such systems now in use.

The Department already is using a machine for facing mail and canceling stamps at the rate of 15,000 an hour. And developmental work is approaching a climax on equipment that culls, faces and cancels mail in an integrated operation. This machine will handle 30,000 letters an hour.

Rabinow Engineering Company, Takoma Park, Md., working with the Post Office Department and the National Bureau of



**AUTOMATIC MAIL HANDLER—**  
*This prototype can handle 36,000 letters an hour. The little wheel assemblies carry letters. Each of the 12 wheels on each rod can be shifted into one of two positions, giving a total of 4,096 possible combinations. As the conveyor moves, each set of 12 wheels rolls over tracks. When correct destination is reached, all wheels drop into depressions and the letter falls into correct pocket. The prototype was developed for the Post Office by Rabinow Engineering Company and National Bureau of Standards.*

Standards in Washington, has developed a prototype machine to handle and distribute 36,000 letters an hour into as many categories as needed. Right now, the "thinking" operation is handled by a man. Each letter is presented so he can see the address. He punches a group of keys which imprint a code on the back of the envelope. The machine does the rest.

President Jacob Rabinow said it took three years to develop the machine. It has a memory for 200,000 to 300,000 individual addresses in Washington, D. C., where it is now being tried out.

Machines now are being developed, he said, which can read typewritten addresses, and get letters on their way to proper mail sacks in about one-tenth of a second.

Most machines of this sort scan the letter the way a television beam scans the screen. The light and dark signals are stored in patterns, and the machine says to itself: "This looks a little like an 'a' and a 'b'." Then the machine studies the character to decide whether it is more like an "a" or a "b".

The day is coming, experts predict, when machines may even be able to read handwriting. There will always be some sort of a reject gadget for letters with addresses too illegible to be machine-read.

## Cooperative Projects

The Post Office Department has various projects under way with industry. In addition to Rabinow Engineering Company, private companies associated with the Department on various projects include American Machine & Foundry Company, New York City, and Emerson Research Laboratories, Silver Spring, Md., to develop machines that cull, face, and cancel 30,000 an hour in a single coordinated operation; Burroughs Corporation, Detroit, and Pitney Bowes Inc., Stamford, Conn., for keyboard-operated sorters; Intelligent Machines Research Corporation, Alexandria, Va., for machines that read typewritten addresses; Jervis B. Webb Company, Detroit, and Aerojet-General Corporation, Azusa, Calif., for parcel post sorting systems; Electric Vendors, Inc., Minneapolis, for a jukebox-like machine to sell postal supplies; and Food Machinery and Chemical Corporation, San Jose, Calif., for machines to handle rolled newspapers, flat magazines, etc.

And in February, the Post Office Department signed a contract with InteleX Systems, a subsidiary of International Telephone and Telegraph Corporation, for a "turnkey" post office—the first to be fully mechanized. When completed, the employees will simply "turn the key, walk in, and start moving the mails," said Edson O. Sessions, deputy postmaster general.

This is scheduled for Providence, R. I., and is expected to speed deliveries of all classes of mail to 14 nearby communities.

The plant will have central electronic con-

trol of all activities in the office. Machines will sort parcels and letters, and synchronized conveyors will bring mail into the plant, shuttle it among processing machines, then carry it out.

The post office will be situated strategically next to railroad facilities only five minutes from downtown Providence and 20 minutes from the airport.

Many automated post offices can be expected in the future. But at the moment, Post Office Department officials believe the first ones will have to be used where mail flow hits at least 200,000 pieces a day.

Figures are not available to indicate whether automated post offices would be feasible in towns of 20,000 population. It is not the population that counts, but mail volume.

In general it is thought post office automation will not portend any big changes in what can be mailed. Automatic machines are being designed to handle letters up to 1/4-inch thick, six inches high and 14 long. For off-sized letters, thank-you notes and greeting cards, which the machines might be unable to handle, the post office may ultimately have to charge special postage to compensate for hand-processing.

You can see what the Post Office Department is up against: Postmaster General Arthur E. Summerfield told Congress at 1959 budget hearings that the Department handled 50.9 billion pieces of mail in 1953. But by 1958, the volume reached 61.4 billion, an increase of 10 billion pieces in five years. This year, mail volume is expected to set a 63.5-billion-piece record. This would be a 24.7% increase over 1953, and handling this volume will require 562,000 man-years' labor.

**Mail Costs Rise**

Postal rates already have been jacked up several times in recent years, yet post office books are still colored with red ink. The Post Office Department estimates it will cost \$53.85 to handle each 1,000 pieces of mail in 1959. If each piece carried four cents of postage, the Department's revenue would be \$40. Therefore, it would lose \$13.85 on each 1,000 pieces it handled.

The Post Office gets four cents an ounce only on first-class mail, and there is a huge bulk of other mailed material which is handled at lower rates.

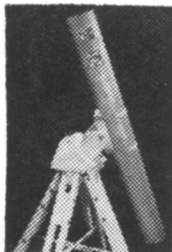
Unless something is done, the Department may find itself running headlong into a situation both physically and economically impossible.

The day is coming when automatic machines will likely handle a sizable hunk of the total mail volume. Officials believe automation is its most currently promising salvation. In addition to speedier, cheaper mail handling, the purpose of automatic mail-handling machines is not to replace men but rather to cut down on the number of new employees that will have to be hired in the future.

And the new cost-cutting, mail-speeding machines being developed hold thrilling roller coaster-like adventures in store for your stamps in the very near future.

Science News Letter, March 21, 1959

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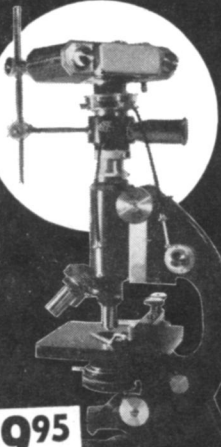
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