

Push-Button

IF it takes a clerk an hour to post 100 accounting entries, how long would it take to record the same information on punched cards like that you see reproduced below on this page? The answer is three minutes—two thousand entries in an hour. And this is just as well for the NZBS, because—to take only one part of the work done in its Head Office Ledgers section—13,000 cards recording information about radio advertisers are punched each week, giving the date, time, station and description of each broadcast and the fees paid. It needs no adding machine to figure out that while it would take 130 hours to do this manually it takes only six and a half hours to do it by the machines.

"All the ledger work for the NZBS from the first entry right through to the annual balance sheet is carried out on Powers-Samas accounting machines," said the Chief Accountant of the NZBS, E. L. Hutchens, to *The Listener*. "A year's book-keeping entails well over four million 'work cycles' or entries. This work which manually would take a staff of not less than 30 is now handled competently by five girls, saving the Service over £10,000 a year."

The system used to record all the necessary data is basically that used by tram conductors every time they punch a ticket. Only instead of merely recording one fact—the distance the traveller is authorised to travel—the cards used by the NZBS have 65 columns, each with 12 positions, each position having a pre-determined significance. And instead of the human eye and brain having to interpret the meaning of the punch marks, the cards are fed into an "interpreter," which senses the holes and interprets them in ordinary script on the punched card.

Take, for instance, the 28,482 cards recording the payments of fees last year to 4098 radio performers. These recorded the date of the broadcast, the artist's name, the station and description of the broadcast, the fee paid and the number of the cheque. By feeding these cards into a tabulating machine at the rate of 80 cards per minute, NZBS accountants can learn the following facts: the total amount of money needed to meet all payments on a given day; an analysis of the monthly expenditure under either station or item headings; the amount posted to the pri-

vate ledger for ultimate incorporation in the half-yearly accounts; and up-to-the-minute record of payment made to artists; and, at the end of the year, the information to be supplied to the artist—and to the Inland Revenue—of the total amount earned. All this, which manually would involve five or six operations, is recorded and interpreted from one card.

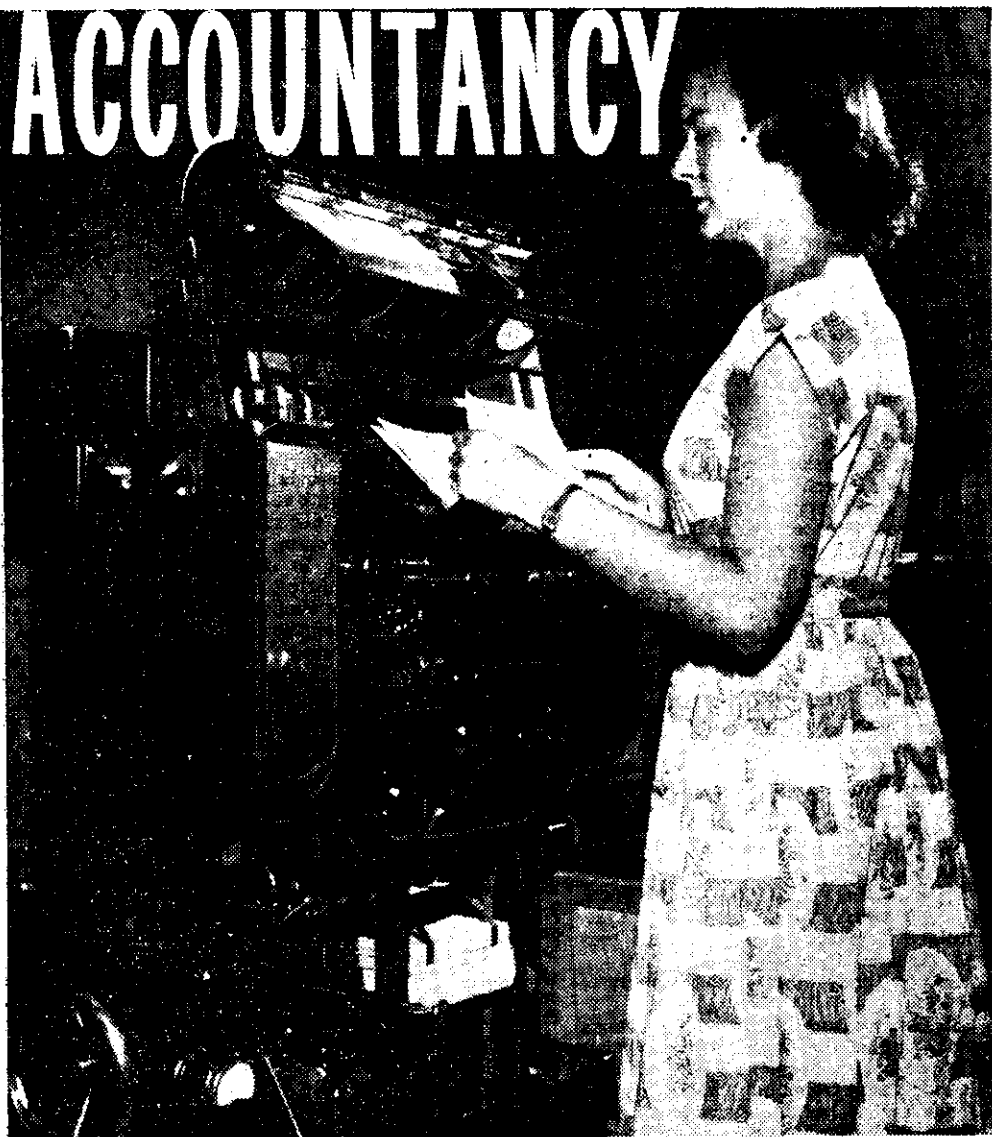
But without accuracy, speed would be worse than useless. A check on the human element occurs right at the start when the operator punches the information on the cards. They are then given to another operator, who sets the machine at a new position and repunches the same information. If both girls make the same punches, an elongated hole replaces the original circle. Should the first girl punch, say, a seven instead of an eight in column 26, and the second girl punch correctly, then that column will have two circles instead of an elongation.

The cards are then fed into an automatic verifier. At the rate of 200 cards a minute the machine senses whether any column has two holes instead of an elongation. If an error is found, a different coloured card from another feeder is automatically thrust in on top of the wrongly-punched card. Both can then be taken out at the end of the run and the mistake corrected.

Another machine is the automatic sorter, which, as the name suggests, can take a set of cards and arrange them in any desired order at the rate of 600 a minute, for instance, in alphabetical order of the advertisers or of the artists.

Impressive though the machines are, however, they still have to be set up and worked by the girls in Head Office Ledgers. "We consider the machines merely as tools," said Mr. Hutchens. "To use them efficiently, the girls need to

ACCOUNTANCY



N.P.S. photograph

OPERATOR AT ACCOUNTING MACHINE
Five girls can handle four million "work cycles" a year

know what they are doing; they need to have a thorough knowledge of book-keeping principles and of the system behind the machines." To this end the girls must sit a two-hour examination. Even *The Listener* representative can work out the cost of nine units at 5/- each, but when he was asked how to arrive at the answer by "progressive digitizing," as the girls had to do in last year's exam, he found it not even an intelligible question. (It was explained to him that the progressive digitizing method is used where the number of calculations of that kind runs into thousands, which the machine can do at the rate of 80 a minute.)

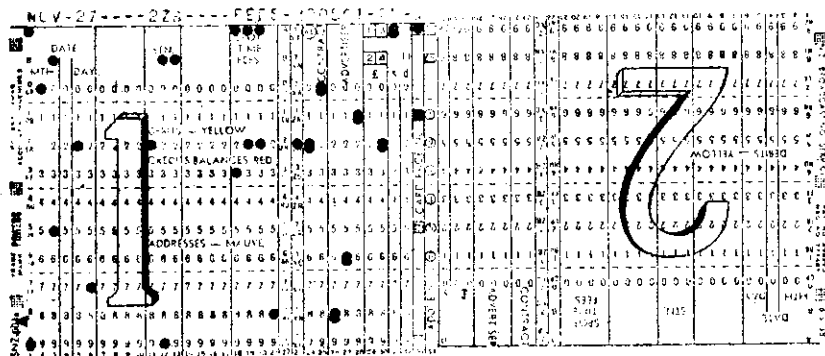
"The complexity of the job means that girls content with humdrum routine are of little value," said Mr. Hutchens. "The variety of work and the training they get would enable NZBS girls to take a responsible job anywhere in the world where modern accounting methods are applied." He added that one NZBS operator was probably among the fastest in the world.

The use of machines for office work has gone a long way from the early typewriters—which most businessmen of the day refused to use as being much too complicated gadgets—to the accounting machines just described. But

the future offers even more startling developments once the modern electronic "brains" now being developed overseas have been reduced to a size economic for office use. The new science of cybernetics which studies and designs such brains promises (or should it be "threatens"?) a revolution comparable to the Industrial Revolution in which "thinking" machines will take over much of the work done by men and women today.

Impossible? Actually, the study of electronic brains and the study of the human brain have in the past few years been advancing side by side with a constant comparison between the two. To give one example, in some of the more complicated mechanical brains an electrical impulse will sometimes circulate uncontrollably, upsetting the working of the machine. Similarly, according to at least one theory, one kind of human insanity is caused by memory impulses of worry or fear going round and round the brain on a neuron circuit till the brain can think of nothing else. The cure for both: shock treatment in which the brain is jolted by an extra-strong electrical impulse which will stop the uncontrolled circulating.

Will an electronic brain some day take over your job?



A PUNCHED CARD typical of those used in the latest accounting machines employed by the NZBS. Two thousand of these card entries can be made in an hour