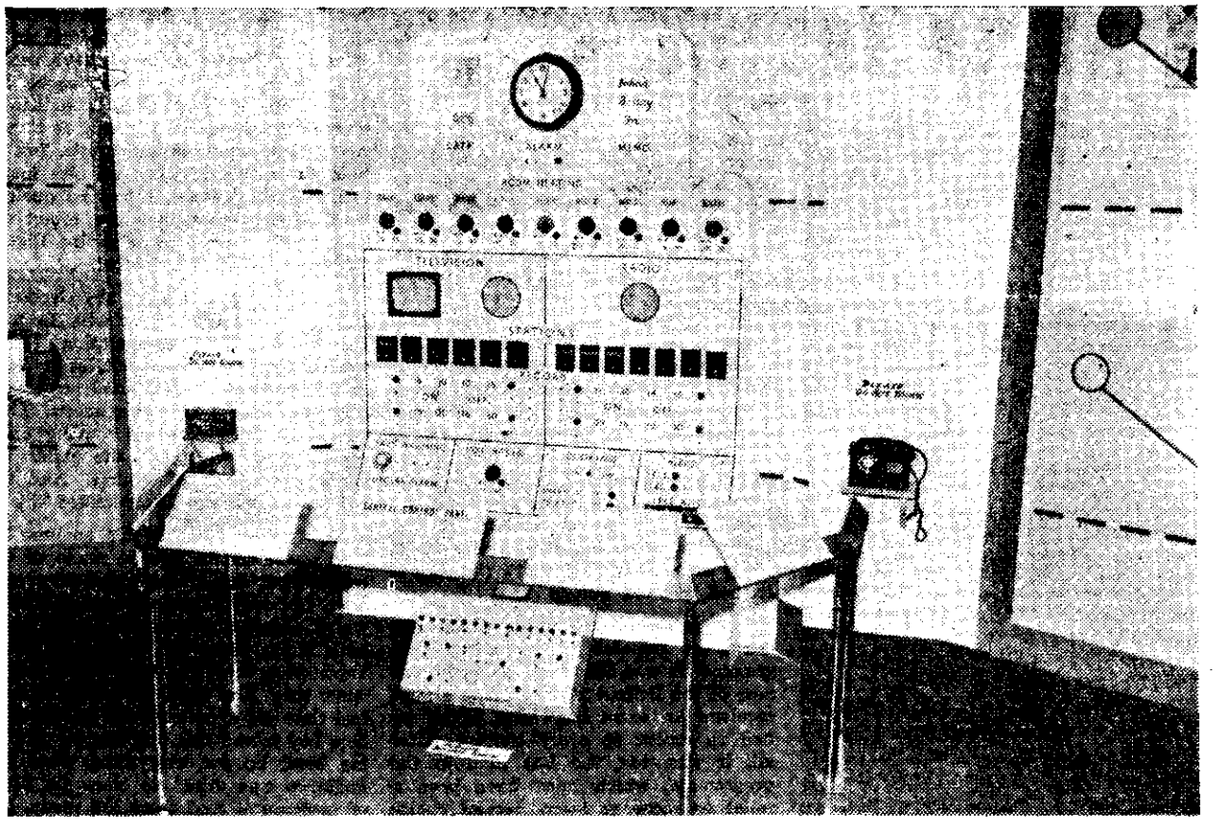


MASTER control panel of an electronics unit which could be used in the home to control all electric household appliances—exhibited at Earl's Court last year.

Mr. Reuther gave examples to illustrate this latter contention. An electronic computer is in use which will do the jobs of many bank employees. When a cheque comes to the bank, an operater merely punches into the machine the amount on the face of the cheque. The cheque itself carries a code, printed in magnetic ink, which identifies the account number. The machine scans this code to identfy the account. It then refers to its "memory bank" which contains information on 32,000 separate accounts, makes sure there is enough in the account to meet the cheque (if not, a warning "overdraft" light blinks at the operator's desk), and deducts the amount of the withdrawal from the account. The machine also checks up to make sure that there is no stop-payment order against the cheque. And how long does all this take? The answer is—one second!

At the end of the month this computer also calculates the service charge, and connected to a high speed printer, prints the customer's monthly statement in less than five seconds. And only in science fiction is such a machine likely to embezzle to support its penchant for gambling or fast living. Similar computers are being used to make up salaries, to prepare insurance premium notices and record payments, to prepare telephone bills, to keep stock records, to compute interest on saving bank accounts, and for many other similar purposes.

Automation, in fact, is not at all restricted to manufacturing plants as is popularly supposed. Its truly revolutionary nature exists in its wide applicability.

Again and again, of course, one comes to the same question—What will happen to the displaced workers? The answer to this in the opinion of some authorities is three-fold. They will be taken up by new industries created by automation; or absorbed, as technicians and maintenance men after retraining, by unaffected industries.

These two alternatives are covered by the theory of the "mobility of labour." Of this theory Reuther said:

> There is a theory that workers who are displaced from their jobs in one community will simply move to another community where jobs are plentiful. Because of financial obligations, family responsibilities, strong community ties, or simply because they are too old to hope to find new jobs, workers will continue to cling to their home communities. Stranded, in time they give up the search for non-existent jobs . . . so it is assumed they have shifted. The concept of mobility represents merely the use of statistics to camouflage the reality of a myriad of individual tragedies.

Similarly, the *Manchester Guardian:*

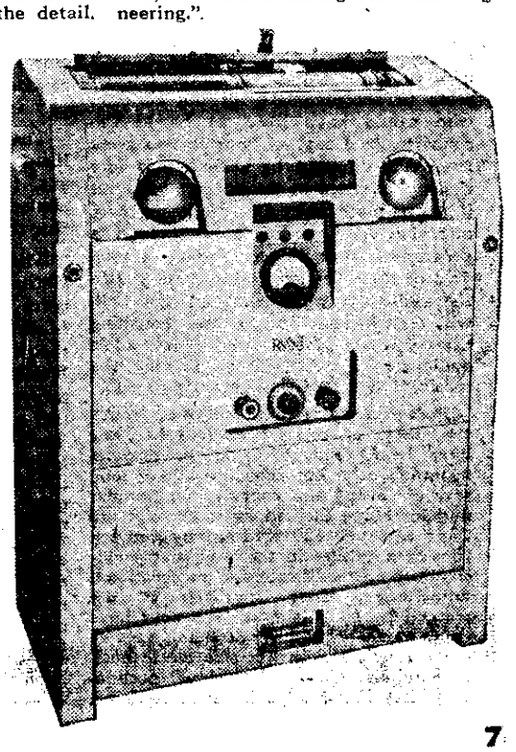
> The manual worker no longer travels through life as lightly as once he was expected to; high wages for a decade or more in one industry may have made him a man of property, with roots and possessions in a particular place. How can he face cheerfully a heavy loss on the forced sale of his house if he has to move to a job in another district at a lower wage?

The second solution—the retraining of personnel as technicians and maintenance men—gave rise to the fatuous claim by one industry spokesman that "the hand-trucker of today's assembly line may well be the electronic engineer of tomorrow." His son *might* be—if he himself gets another job to pay for that son's education.

It is only too true that all over the world, but especially in Britain, there is a desperate shortage of technicians. It may well be that the pressure from increasing automation, and the needs of industry for men of higher skills will further schemes for the training (possibly subsidised) of technicians and other key men. Thus a beneficial side effect of automation could be the return of the human and psychological values of craftsmanship that the assembly-line techniques have debased.

Automation already exists to some extent in New Zealand. The State Hydro-Electric power stations are controlled by automatic machinery, and so are certain processes in the pulp and paper mill at Kawerau. Examples of automatic control often taken for granted are: telephone exchanges, remote-control radio transmitters, lifts, central heating and thermostatically controlled devices. Other examples are less well known. The electronic stencil illustrated on this page can reproduce documents and photographs—even water colour drawings, no matter how precise the detail. As the original to be duplicated is scanned on one section, an electronic spark—covering detail of 500 lines to the inch—cuts the stencil on another. Also in use in this country are such instruments as the infra-red spectrophotometer, which does in hours the analytical work that by ordinary methods would keep a chemist occupied for weeks.

But what are the wider implications? Above all, what are the possible economic consequences for New Zealand of increased automation overseas? On these matters we consulted Dr. W. B. Sutch, of the Department of Industries and Commerce. He looked first at the question of markets. Automation, he said, is costly, and only those firms able to think in terms of long runs and millions of units can stand the expense. New Zealand lacks the markets which make production on that scale practicable. Even if our population is five million by the year 2000, it will still be very small in terms of fully automated process. Only countries with large and assured markets can afford to automate.



THIS electronic stencil can reproduce photographs as easily as letterpress.

"Another factor in this country," said Dr. Sutch, "is the high cost of transport. If, for instance, we automated brick manufacture, the advantages would be entirely lost through transport costs. As I said, automation is tremendously expensive, and this cost must be spread over hundreds of thousands of products, if high priced, or over millions if low priced."

The effect of automation overseas might be to eliminate all competitors. It may indeed be necessary to eliminate them just in order to take advantage of automation. "So far as New Zealand is concerned—if other countries automate, and *if* they lower the price of their products, they could compete with certain of our industries and possibly put them out of business. And we can't say, 'Don't let the imports in,' because then we're not taking advantage of the higher productivity. If we do let them in, we sacrifice full employment. Either way our standard of living would decline. Against this, however, is the possibility that there will be an increased demand for food, if automation results in higher living standards overseas. Therefore the food-producing countries, of which we are one, should benefit."

Dr. Sutch agreed that the subject was complex from several angles—social, economic and human. "It seems true," he said, "that automation takes the drudgery out of repetitive processes, and makes for more interesting work—that is, for those who remain on the job."

He thought that Governments should provide means to cope with labour displacements, and also controls for the monopolies that could result from automation.

"There is only one answer to automation, and that is far-sighted social engineering."