

record sales for the last quarter of 1968 have proved too tough a yardstick for the first few months of the year, which are usually lean, the overall trend must be considered quite promising. The increase in exports of computers from Britain is particularly encouraging, with an increase of 29 per cent compared with the first quarter of 1968 to give total sales of £10.6 million.

TABLE OF COMPUTER SALES FROM BRITAIN

	Total	Exports	Running totals	Running exports
1966 Q4	29,405	7,622	114,938	33,580
1967 Q1	25,907	8,481	114,184	33,993
Q2	29,702	9,443	114,613	34,391
Q3	35,186	9,473	120,200	35,019
Q4	36,438	9,905	127,233	37,302
1968 Q1	33,819	8,244	135,145	37,065
Q2	36,785	10,246	142,228	37,868
Q3	44,147	10,147	151,189	38,542
Q4	50,596	12,203	165,347	40,840
1969 Q1	43,037	10,641	174,565	43,237

The table, which shows how the sales of computers from Britain have fluctuated during the past two and a half years, is based on figures issued by the Ministry of Technology. The first two columns show the actual quarterly figures, and the others contain running totals for the four quarters up to and including that in question. The latter columns give a more accurate guide to the overall trends in sales. Turnover relating to the repair and maintenance of existing computers has been excluded, but both British manufactured and "factored" computers are included. The irregularly high figure for sales in the last quarter of 1968 is attributable almost entirely to a boom in factored hardware.

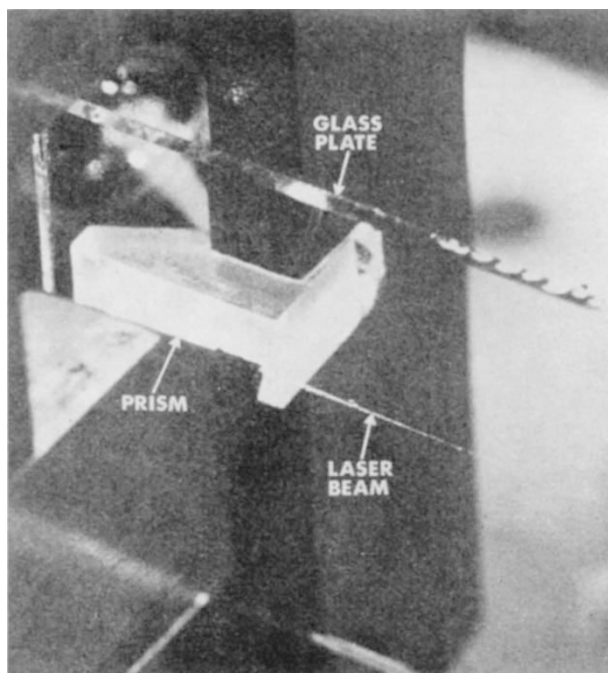
The pattern of export sales will be a source of satisfaction to those who have put their faith in the healing powers of devaluation. Apart from the predictable plateau immediately after devaluation in November 1967, the figures have risen at a rate which can certainly be called promising, and which may within the next two quarters turn out to be quite remarkable. Total orders at March 31 were at the record level of £258 million, according to the Ministry of Technology.

LASERS

Thin Film Modes

AN unexpectedly obvious method of guiding laser beams into thin crystal films by means of a simple prism looks like being the solution to a problem that has been plaguing Bell Telephone Laboratories for some while now. By allowing laser light to tunnel across the junction between a prism and a thin semiconducting film, P. K. Tien, R. Ulrich and R. J. Martin of the Bell Laboratories have managed to transfer more than 50 per cent of the energy of the laser beam to the film. The efficient introduction of laser energy into thin crystal films is crucial to the development of laser amplifiers, light modulators and other components of a potential laser communication system.

Earlier attempts to direct a laser beam through the edge of a semiconducting film have been flawed by scattering from ragged edges of the film. In addition,



The bright streak of light is a laser beam travelling in an invisibly thin crystal film deposited on the back of the glass plate.

the films are usually much thinner than the width of the laser beam and, even if the problem of focusing the beam had been overcome, there would be immense difficulties in aligning the beam with the film.

In the experiments at the Bell Laboratories, the base of the prism was placed parallel to the film and at a precise distance from it. A proportion of the laser light then passed through the prism, tunneled through the gap and set up electromagnetic oscillations in the film. This prism-coupling technique has the advantage, it seems, that a single mode of oscillation can be excited in the film by the appropriate orientation of the laser beam. The photograph shows the laser beam travelling in a thin film. One of the chief problems of thin film laser beam circuitry is the loss of light by scattering at microscopic imperfections in the films. A good deal of research is being carried out both at Bell and elsewhere to improve the production of these very thin crystal films.

A possible use for the prism film coupler is to split light beams into groups of different wavelength to form the separate channels of a laser communication system. Within the film, the beams could be modulated or amplified. They could then be taken out of the film, travel to some destination by a "pipeline", and then be coupled into a new film for signal processing.

TELECOMMUNICATIONS

Stored Programs for Sale

COMPUTERIZED telephone systems are finding new applications in Australia. L. M. Ericsson, the Swedish telephone equipment manufacturer, has just received a contract of undisclosed value from the Overseas Telecommunications Commission for a computer controlled exchange which is to deal with calls between