EMI

Emidec computer news 1

First Emidec computer starts work for Boots

The Emidec 1100 computer installed at the Nottingham office of Boots Pure Drug Co. Ltd. was the first large transistor computer in the country to go into operation for business use.

Boots Glasgow branch

In this issue ...

EMI ELECTRONICS LTD HAYES MIDDLESEX

Introducing Emidec Computer News

Modern data processing systems—built around the digital computer—bring to the aid of management the most powerful and efficient technique yet devised. Clerical staff can be relieved of much of their burden, whilst up-to-date statistics, previously obtained at prohibitive cost, can now be supplied automatically to aid decision making in the effective day-to-day control of business. The ever-increasing awareness of these facts is reflected in the demand for information about computers and the rapid developments in computing techniques. To meet this demand Emidec Computer News has been produced.

Emidec Computer News will talk about the work and achievements of the Computer Division of EMI Electronics Ltd. which exists solely to deal with the design, manufacture, installation and application of electronic data processing equipment for commercial, industrial and government organisations. The Computer Division is backed by the knowledge and experience gained through many years successful working in the electronics field. The policy of EMI is one of continuous research and development—a policy which ensures the Company's place in the forefront of the Industry.

The Emidec 1100 is a comprehensive data processing system, which makes full use of the latest magnetic core and transistor techniques. The system was designed specifically for commercial and industrial applications, and is notable for its flexibility, its wide range of peripheral equipment and its reliability.

Clifford Metcalfe, C.B.E.,
Managing Director of EMI Electronics Ltd.

The Emidec 2400 is a more powerful and larger data processing system developed by EMI in conjunction with the National Research Development Corporation, collaboration which resulted in the design of a system well ahead of contemporary machines.

Emidec Computer News will bring to the notice of all interested parties the work and achievements of the many persons concerned with the successful working of Emidec Computers.

Emidec 2400 computer—capable of performing over and a half million complete calculations per minute—has already been ordered for the Royal Army Ordnance Corps, and by the Ministry of Pensions and National Insurance to process data for the Graduated Pensions Scheme.

Picture shows the largest computer under construction at EMI's Hayes factory.

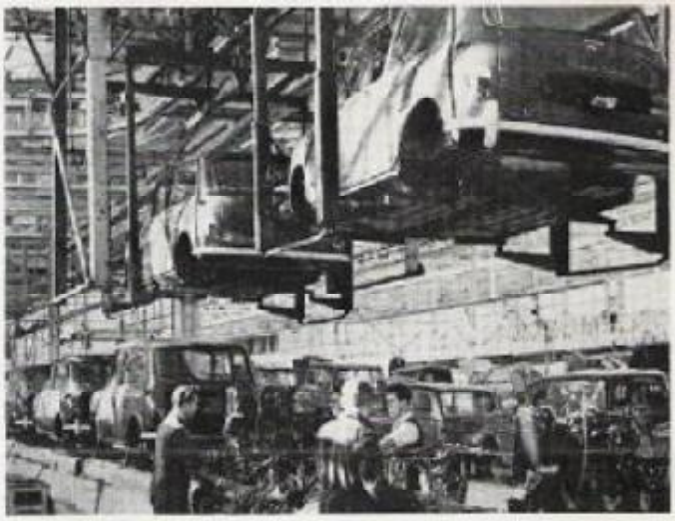
B.M.C. have always looked years ahead

For many medium sized companies, the purchase of a general purpose digital computer can be justified only if the data processing system is used for the integration of the many statistical and accounting services required for the adequate provision of up-to-date facts for management. By contrast the British Motor Corporation is so large that after initial investigation, a decision was taken in 1956 to go ahead in close partnership with EMI for the construction and installation of a computer, specially designed for payroll applications; to be followed, in due course, by another for invoicing and sales analysis and a third for material and stock control. Nevertheless, the work of each computer was to be integrated into complete data processing systems—a far seeing and worthwhile project.

The design of the first computer was immediately put in hand and the resulting hybrid computer—called 407—represents, from the technical viewpoint, a most interesting transition stage between computers using valves and those employing magnetic cores and transistors. It does, in fact, use both techniques in the same installation. The 407 was delivered in 1958, and after some initial experimentation an increasing proportion of the Company's payroll was put on the machine until the present time when practically all of the Longbridge payroll of 20,000 employees is currently being processed. And B.M.C. operates a complicated production bonus which, together with piecework and overtime working results in a payroll which is probably one of the most complex in the country.

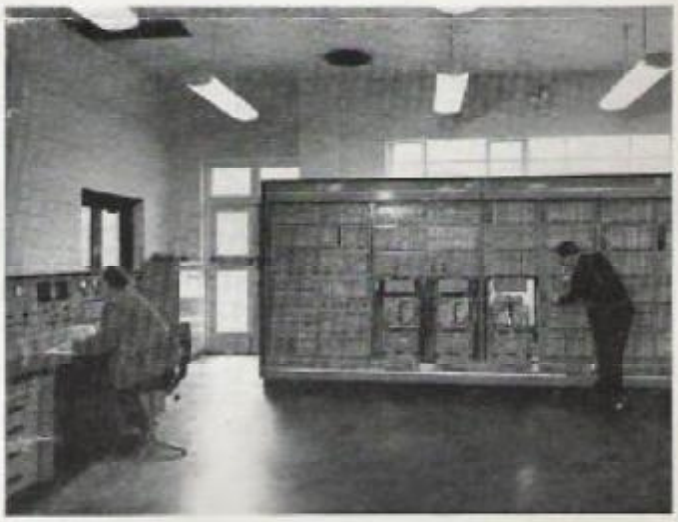
Following experience gained in designing this special purpose payroll computer, EMI decided to construct a completely general purpose computer, utilising the core transistor technique employed in part of the payroll computer and so the Emidec 1100 was born. Even before the payroll computer was delivered, B.M.C. had ordered an Emidec 1100 Data Processing System to work alongside the payroll computer to handle sales of invoicing and accounting order analysis, production scheduling and the compilation of sales statistics.

From the first, it was a close partnership between the two great firms, at all levels, from directors down to departmental staffs; an unprecedented example of co-operation in computer development. B.M.C. had the foresight to devote considerable talent and resources to the operation, in fact today's new generation of business computers probably owes as much to B.M.C. as to EMI.



The Austin Seven body shell suspended on the overhead conveyer ready to be placed on top of the twin sub-frame chassis units.

Finished. The completed Austin Seven rolls off the final assembly line. Here a minor scratch on the engine block is touched out.



Austins' Emidec 1100 Computer at work.

First Emidec computer starts work for Boots

The first large transistor computer in the world to go into operation for business use was the Emidec 1100 which started working in the Nottingham office of Boots Pure Drug Co. Ltd. on September 5.

The Emidec's immediate task will be to replace the paper-work that goes on behind the scenes in connection with the ordering of goods from branches. It is now processing all orders for photographic equipment from 1,300 Boots shops, and will gradually take on other classes of goods until it covers all the 60,000 different lines stocked in Boots warehouses. It will keep a perpetual inventory of every one of these lines, showing how the stock stands at any given moment.

Representatives of the national, trade and technical press and B.B.C. visited Nottingham early in October to witness a typical day's working of the new computer, and to discuss its advantages with senior executives.

"Even when the Emidec is dealing with all goods for all branches," Mr. D. S. Greensmith, General Office Manager for Boots, told journalists, "its 'run' on branch orders will not occupy the whole of its day. But the information about people's requirements that it will accumulate in the process will be absolutely vital in the shaping of our business. We shall certainly be able to find plenty for it to do in the remaining time.

"As chemists our first job is to provide the customer with what she wants. The electronic office will give us a chance of anticipating demand far more accurately than has ever been practical before. What is more, it now becomes possible, at least theoretically, to gear a whole organisation to a forecast of demand so that ordering, warehousing, buying and production are all marshalled automatically to meet it."

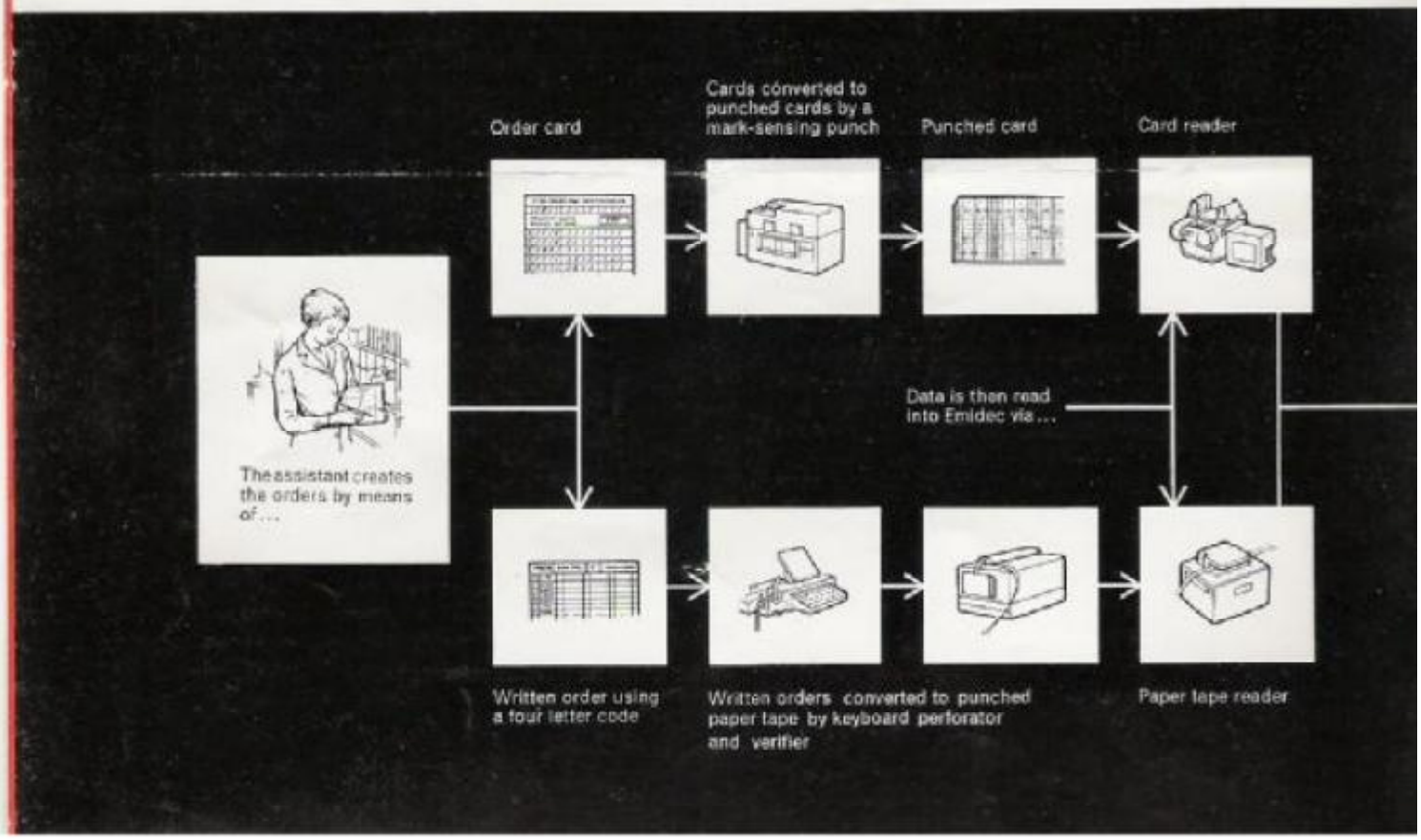
The Emidec 1100, which has been ordered by leading commercial organisations and Government departments, is already in quantity production.

Capable of performing nearly half a million calculations a minute, the Emidec 1100 data processing system was designed from the outset as a business machine. It is ideally suited for all types of clerical work from sales and payroll accounting to stock control and production planning. It also provides management with up to the minute statistics in a fraction of the time taken by conventional methods.

Transistors and solid-state physics ensure a higher degree of reliability than has ever before been possible. Earlier thermionic valve machines suffered from the handicap that the dependability of components could never be guaranteed. With the advent of transistors, trouble-free service over many years is ensured. A typical Emidec 1100 uses 10,000 transistors, 60,000 ferrite cores, and 25,000 diodes.

A high degree of flexibility has been achieved in the Emidec 1100 design, and this enables it to be used with a wide variety of input and output equipment. Standard units are so arranged that installations are capable of carrying out a wide range of jobs. Some 1,000 plug in printed circuit cards are employed and these can be quickly replaced when necessary.

To meet the needs of an expanding organisation, Emidec computers have been designed to be extensible. This



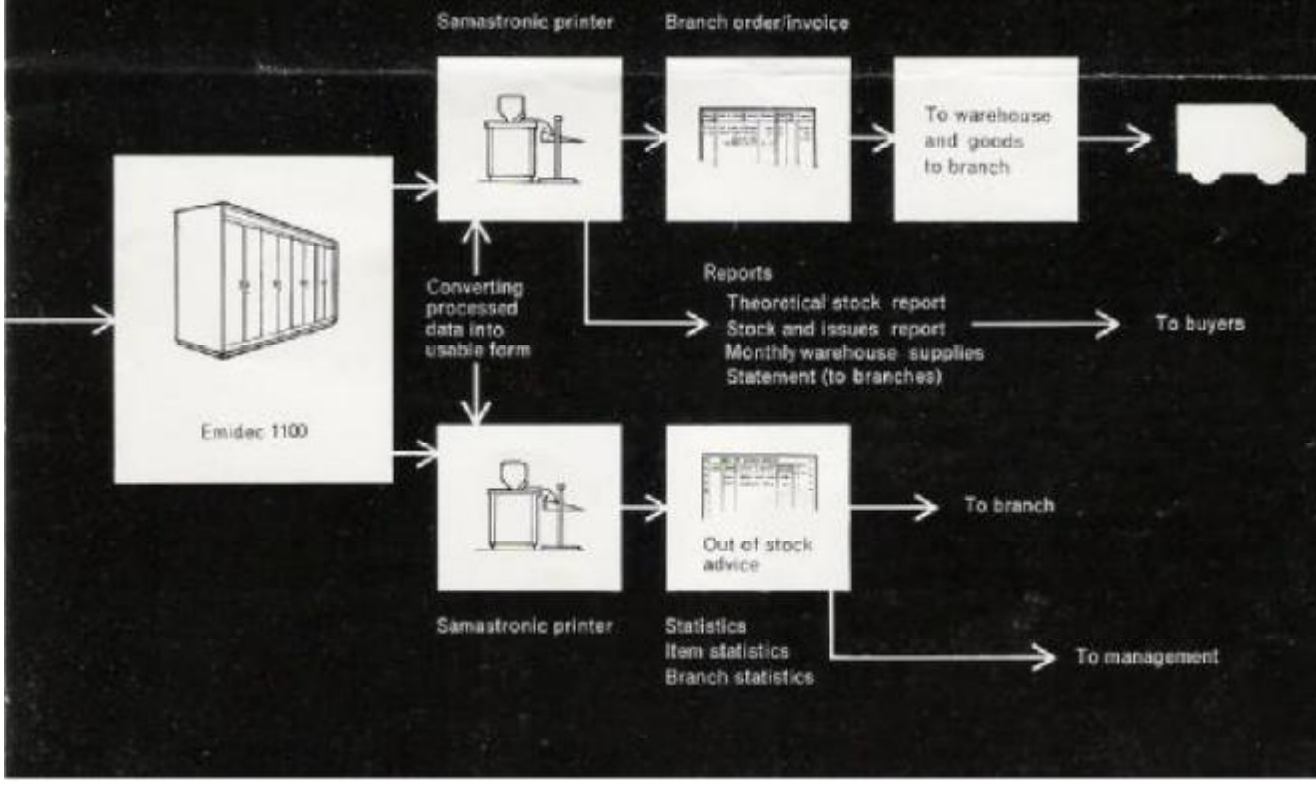
ensures that basic units can be extended as demands grow.

"In an organisation such as ours", said Mr. Greensmith, "no computer would earn its keep simply by doing routine work. Its advantage to us is not just in the speeding up of calculations or the elimination of much drudgery but in the new thinking that it makes possible.

"To us it means the integration and the viewing all-of-a-piece of a whole range of tasks that have formerly had to be carried out separately. Not only the sorting out of orders but the accounting for supplies delivered to branches will be handled by the computer. Right from the start we shall be able to get automatic critical stock warnings from the buyers whenever supplies of a particular line are getting low. And for the planning of buying and production we shall be able to provide almost infinite variations of statistics, breaking down the figures in different ways to give the information needed for business decisions.

"More important than any one possibility revealed by electronic data processing," said Mr. Greensmith, "is the variety of possibilities. The stimulus that it gives may often spread through many departments of a company. The atmosphere created by a chance to think through old methods from first principles can be an extremely infectious one."

Boots



On-line and off-line working

A constant problem that is met in computer applications is whether to work on-line or off-line. Experience has shown that the attractive advantages of off-line working and its apparent gain in working speed are often illusory, and that the gain in simplicity and directness of operation promised by the on-line mode are frequently more than offset by lack of flexibility.

In Emidec 1100 these difficulties are resolved in the simplest and most powerful way—by avoiding the necessity to choose either of these alternatives. There is no distinction between off-line and on-line equipment, and the same printer, for example, can be used either on-line, as a direct output from the computer, or connected to a magnetic tape unit to work independently of the computer, while the computer and other peripheral units are used on another job.

The Emidec 1100 now working at Boots includes six magnetic tape units and two line printers, and in the diagrams opposite are illustrated the various ways in which the printers can be used either off-line or on-line.

In Fig. 1 both printers are used on-line, their buffers being connected directly to the computing centre. All the tape units (three are shown) would in this case be available to the computing centre, although one or more could at the same time be used to record results for subsequent off-line printing.

In Fig. 2 the buffers of Printer A and Magnetic Tape Unit 3 are interconnected to provide an off-line printer, while Printer B and the remaining five tape units are working under computer control.

In Fig. 3 both printers are used off-line, which still leaves four magnetic tape decks available for use with the computing centre.

All these conformations are achieved with exactly the same equipment, merely by the variation of buffer connections. Thus in a single installation is available a power and flexibility which in any other way would only be obtained at great equipment cost.

Other off-line operations are possible, for example, the transfer of punched card data on to magnetic tape by connecting card reader and tape buffers, or the punching of paper tape.

How to Program for off-line working

When writing a program which involves printing, various sequences of instructions are used to send out the data to be printed into the printer buffer. To record the data instead on a tape for printing off-line, the only differences in the program are:

(i) That the sequences of output instructions address a magnetic tape channel instead of a printer channel.

(ii) That the tape unit must be set to write at the beginning of the program and the tape rewound at the end.

A means is also provided for stopping the off-line printing process by means of a signal recorded on the tape, for example to allow a change of stationery.

Once the tape has been prepared, it may be loaded on to a unit whose buffer is connected with a printer for off-line working, and the data recorded on the tape is then printed independently of any computer operations.

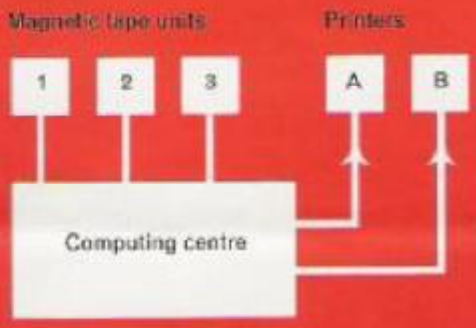


Fig. 1 On-line working

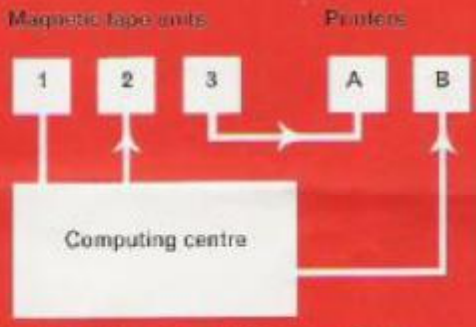


Fig. 2 On- and off-line working

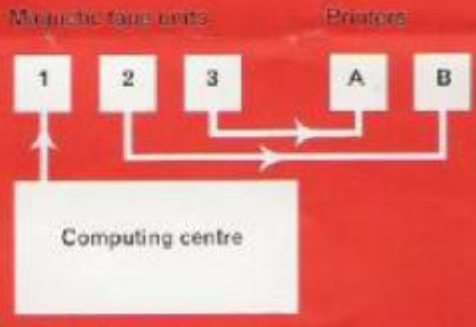
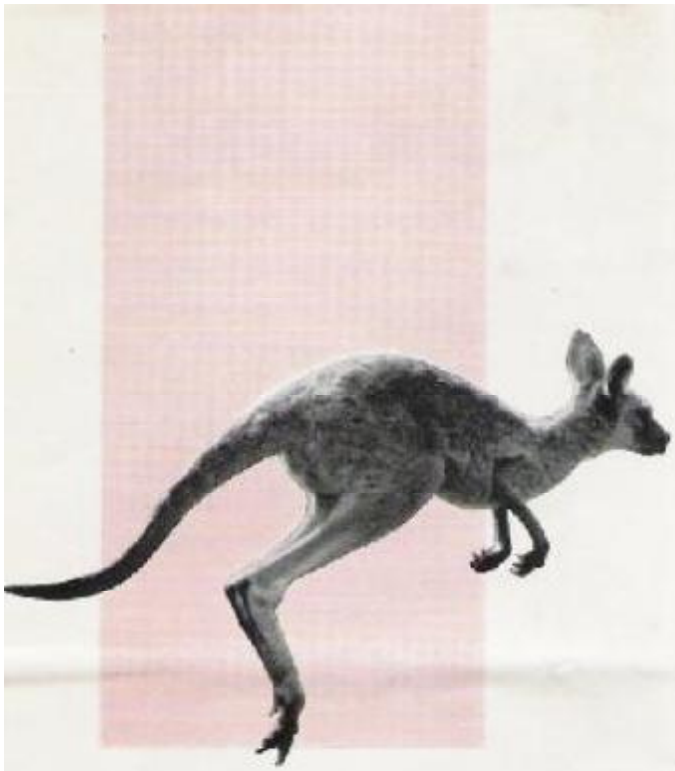


Fig. 3 Off-line working



Australian tour

One of the top technicians behind the fully transistorised Emidec computers has recently returned from a visit to Australia. During a five-week tour, Mr Norman D. Hill visited Sydney, Canberra, Melbourne and Adelaide. On his way home Mr Hill also visited Japan, where he gave a number of lectures.

The main purpose of his trip was to investigate the market possibilities for computers in Australasia. In this connection, Mr. Hill had consultations with various parties who are interested in the Emidec computers and also made a study of computer applications in Australia.

Mr Hill, who is Chief Computer Executive with responsibility for computer policies and planning, has made several visits to America, Europe and Australia in order to study at first hand computer problems and applications. He has also written a number of articles and given many lectures in various parts of the world.

The Emidec Programming Team

The Applications Department of the Computer Division — for this title gives a truer picture of its activities—covers a wide and varied field of responsibilities. The picture is graphically presented in colloquial language in saying that the responsibilities are concerned with 'soft ware' rather than 'hardware'. 'Hardware' is concerned with engineering —the machinery package; 'soltware' is the programming package required for the application of hardware.

Clearly then, programming in its various aspects forms the basic activity of the whole department, but its main purpose may be defined as the provision of support and assistance to all organisations which have ordered or are already using Emidec computers.

Within the Division there are a number of sections which bear the responsibility not only for working with users' teams in the planning and programming of their work, but also for the training of programming and operating personnel, assisting and advising in such fields as data preparation and data handling, the selection and supply of ancillary equipment and materials, and the other varied problems that arise during the course of installing successful data processing installations.

However, this field is so wide that these sections must be supported by specialist services. For each of the present computers (Emidec 1100 and Emidec 2400) there is associated with the Applications Sections a Programming Section, whose primary job is the development and enlarging of the programming systems employed on the computers, and the supplementing of the efforts of the Applications Sections where specialist programming work is required.

A further specialist field is the province of the Operational Services group, which is responsible for the computer operation and deployment within EMI Electronics, the organisation of training and dissemination of information, and co-operation with the engineers in the commissioning of Emidec computers not only to maintain but further to improve the very high standards of performance being achieved.

To meet these tasks the whole team of sixty has been built up in the last five years from a very wide field of experience, both within the computer field and outside it, and with its increasing successes the Programming Team is expanding daily, ready to deal with all the work required for the effective application of computers for the data processing work of Commerce and Industry.

D. C. Heny,
Computer Applications Department Manager

Emidec comes to town

The first transistor computer to be installed in Central London for full-time working on data processing problems will be the Emidec 1100 which was delivered to E M I House, Manchester Square, during November.

The computer will gradually take over sales invoicing, stock control, artists' and copyright royalties, payroll and management statistics for E M I Records Ltd., the largest recording organisation in the world.

Nearly 3,000 invoices will be produced daily, for any of 12,000 different titles. By entrusting such important work to an Emidec 1100, E M I show their faith in the future of electronic computers for large-scale data processing.

Above: The computer was guided through a specially-prepared opening, only half an inch taller than the largest crate.
Right: The main computing unit passing Marble Arch on the way from Hayes to Manchester Square.

Stop press

Colgate-Palmolive Ltd.—one of the largest manufacturers of toilet preparations in United Kingdom—have ordered Emidec 1100 computer for sales invoicing and accounting, stock control and statistics.

C-P studied use of computers for five years before choosing Emidec. Computer will be delivered end 1961.

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