

Pack your problems off to an IBM Service Bureau



IBM

speed. accuracy.



Above, right. The Data Centre at London is just one of the places where the Service Bureau runs a 1401 for the use of customers. This particular system is also extensively used as an ancillary to the much larger and more powerful 7090 system.

Below, right. The Service Bureau at Birmingham includes a large punching and verifying section. Opposite. Business is booming in Birmingham, and the IBM Service Bureau plays its part in the commercial and industrial life of the city.



management control. economy.

Data processing by the hour, by the job

Few businessmen nowadays would deny the advantages of modern data processing methods – speed, accuracy, management control and economy. But many can legitimately object that they cannot afford to install the necessary machines on their own premises. Data processing equipment pays for itself time and again if you can make proper use of it; but to install a machine which would be standing idle for much of the time would be as uneconomic as it is unnecessary.

Unnecessary, because IBM provides a service of data processing by the hour, by the job, through its Service Bureaux. The customer provides the work, and there his worries stop. He is not concerned with finding the space and the staff for his own installation; he is not concerned with programming and operating problems; he is not concerned with balancing maximum efficiency with minimum running costs.

All these worries are taken from his shoulders – perhaps from your shoulders – by the staff of the IBM Service Bureau.



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Who can benefit from a Service Bureau?

The short answer is, 'Almost anyone'. The flexibility of service bureau operation is such that, whatever your field, you are likely to benefit from a discussion with one of our representatives. In commerce, we can help you with invoicing, accounts payable, and all sorts of other paperwork. In industry, with production control, payroll and so on. In science, with the calculations that can take up so much of the time of skilled men and women.

If you have no data processing equipment

Many of our service bureau customers have no data processing equipment of their own. They provide us with the source documents containing the necessary information, and tell us what results they want, and when. The rest is in the capable hands of our service bureau specialists – method study, planning, programming and processing.

Other customers may be considering an installation of their own. Some want to gain experience before committing themselves, and therefore have their work handled by the service bureau for a trial period, or do it themselves on our machines and with our help. Such customers rarely return to manual methods, even though they may decide to go on using the service bureau instead of getting their own installation.

Customers who have equipment on order sometimes make use of the service bureau facilities until it is installed, with the added advantage of smoothing the transition from the old systems to the new.

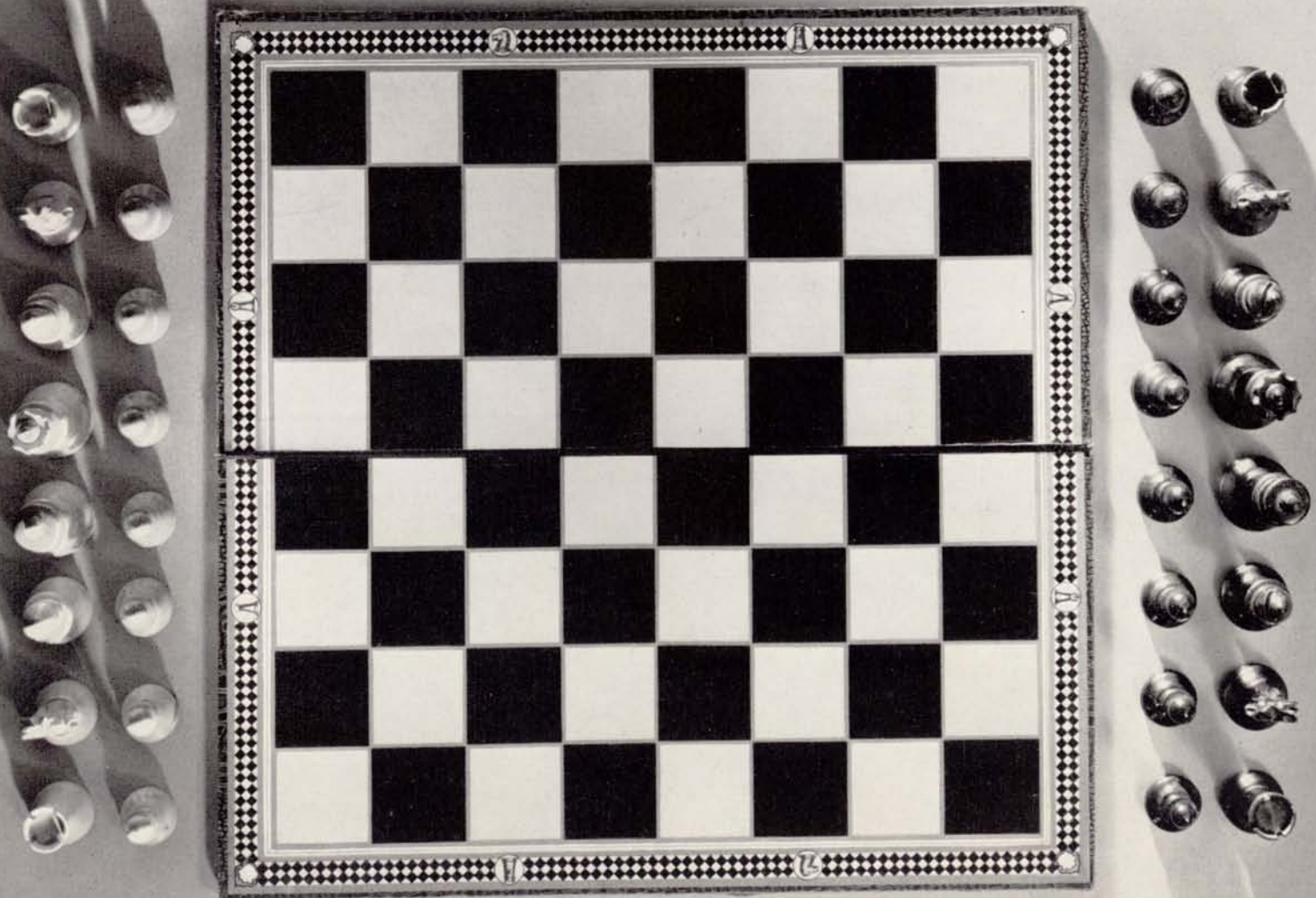
It often happens that a group of scientists or engineers who do not normally use data processing equipment come up against a difficult calculating problem. Their normal slide-rule and desk calculator procedures would take too long, but their work is delayed or made less effective if they cannot solve the calculation. The service bureau, however, is well able to undertake the solution of all sorts of one-time problems of this sort, using an electronic computer to handle the complex or repetitive arithmetic.

Augmenting an existing installation

Many service bureau customers have their own installations (ranging anywhere between a handful of punches to a computer in the 7000-series), but still find the service bureau useful.

Some of our customers need help in the first stages of a new installation, in particular in converting their files to punched cards, or converting unsuitable cards to standard IBM 80-column cards. Instead of putting their staff on overtime, or taking on people

Even we can scarcely claim to have handled as many problems as there are combinations on a chess board; but modern data processing machines and techniques equip us to handle most jobs that you have ever thought of, and many that you haven't.



for a short time only, the whole job can be done for them in the service bureau, and be ready as soon as the installation is ready to start working.

Any installation is liable to suffer from peak loads, regular or irregular. These peaks can disrupt the smooth processing of other work or make overtime unavoidable – unless the service bureau is called in to absorb the excess. Thus, to take a simple example, the service bureau might prepare the month-end sales analyses while the customer's installation continues without interruption with invoicing and statements.

Similarly, an installation may have occasional work for a particular machine – an electronic calculator, for example. By sending this sort of work to the service bureau for processing as and when it is required, it becomes unnecessary to install a machine which would usually be idle.

A problem which occurs particularly in a scientific installation is the occasional computation which is too big for the equipment. To scale down the problem to suit the machines may be possible, but is scarcely desirable. The service bureau, on the other hand, has access to some of the largest and

most powerful computers in the world and can therefore handle practically any computation in its original form and provide the results that are really wanted.

What sort of work can the Service Bureau handle?

Again, the short answer is, 'Almost anything'. IBM's experience already covers almost every aspect of science, commerce and industry, and it is by breaking new ground at every opportunity that we have achieved this wide coverage.

Commercial and industrial work

The range of work that has been undertaken by IBM Service Bureaux for commercial and industrial organisations is too wide for any jobs to be singled out as 'representative'.

Any operation that uses the same information for different purposes, or involves calculation, repays careful consideration. Data processing machines can copy data at

high speed and without errors, can sort cards into different sequences, and can print information at speeds as high as 1285 lines a minute. Calculations varying between the simple $A+B-C=D$ of stock control to the complexities of payroll and PAYE – all are dealt with quickly and surely by IBM machines.

Although repetitive processes are as grist to the mill, flexibility of operation has always been a keynote of these machines, and variations of all sorts can be accommodated. Clearly, therefore, such jobs as pay-

Commercial and industrial work (continued)

roll and stock control are 'naturals'; but many others can show similar gains in efficiency and savings in cost.

One of the banes of office life is the rising tide of paper work. IBM's purpose is not, Canute-like, to ignore its power, and certainly not to multiply it. Rather, we turn it into working paper, a weapon in the hands of management in maintaining proper control over the operations of their business.

Technical and scientific applications

Many calculations are commonplace with a computer that would have been impracticable in the past through the sheer weight of arithmetic involved. The reason becomes evident if one remembers that a computer like the IBM 7090 can do in seconds calculations that would take weeks to do on a desk calculator, or years with paper and pencil. 'Give me ten minutes on the 7090' is one thing: 'I'll give you the answer in 1970' is another.

An important aspect of the use of IBM computers for technical and scientific work is the availability of high-powered programming systems. FORTRAN, for example, enables the scientist or engineer to express his problem in a form very like normal mathematical notation, and programming and debugging in FORTRAN language is, therefore, sufficiently easy to make it invaluable for the solution of one-time calculations of considerable complexity – yet, at the same time, FORTRAN produces a highly efficient program for repeated use.

Another aid in programming for scientific and technical application is the availability of many programs in the program library. These programs, written both by IBM and by our many customers, have passed the test of use before they are contributed to the library. Although they may require amendment for a particular purpose, they too can help reduce programming time.

Operational Research

Operational Research (often called simply 'OR') overlaps science and commerce, for it is the application of scientific principles and methods to the solution of problems encountered in any competitive situation, such as business. Some of the tools of OR are mathematical, and some involve massive arithmetical work, so that it is only with the availability of the electronic computer that business has become aware of the advantages OR can offer.

The mathematical tools of OR include such techniques as Linear Programming and Monte Carlo simulation. Linear Programming is used for the solution of problems – *eg* finding the most economical blend or mix, schedule or distribution pattern – which can be expressed mathematically in linear form. The object is to obtain an 'optimum' solution, in terms of cost or time.

The Monte Carlo technique simulates a dynamic situation by generating random numbers constrained by a set of equations, or 'mathematical model', representing the situation. By this means, a short time is enough to study the effects of years' operations of such continuous processes as production governed by the arrival of specific orders; the behaviour of groups of people in their buying, working or travelling habits; or any other combination of random operations.

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range from routine, small scale repetitive work*

to large, complex,



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or it can help you with jobs
that would be difficult,
even impossible,
by other means.*

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or unusual and difficult,
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to help you.*

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