RANK XEROX

mitchelldean

Right: **Chester Carlson's patent drawing for the automatic electro-photographic copying machine—1944.**

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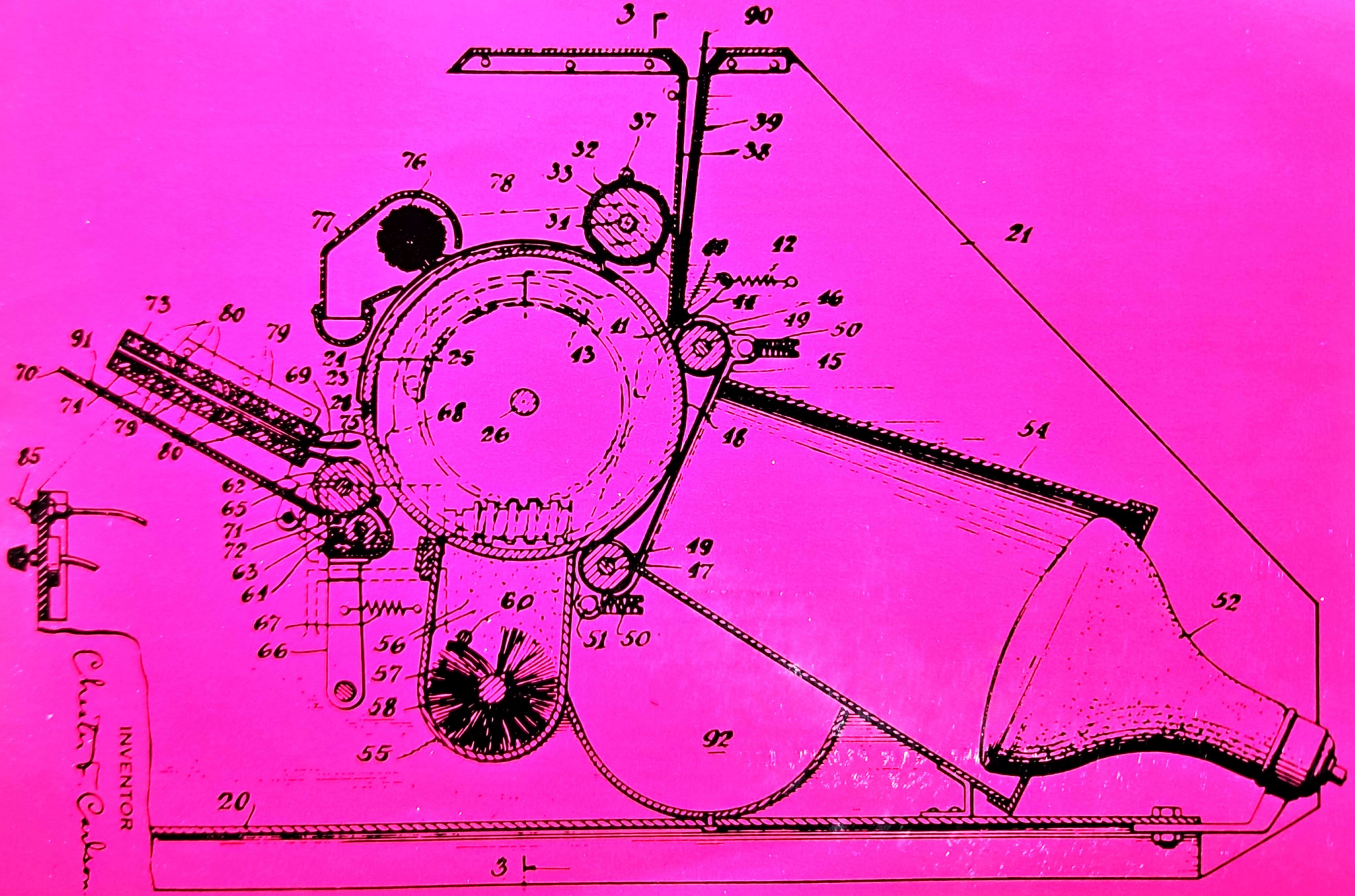
RANK XEROX LIMITED

A DMSION WITHIN THE RANK ORGANISATION
JOINTLY OWNED WITH XEROX CORPORATION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INVENTOR
Charles Carlson

Mitcheldean

There are a lot of people in the world today who know what xerography does.

By simply pressing a button, anyone, from Helsinki to Sydney and from Yokohama to Los Angeles, can make a dry permanent copy of virtually any original on ordinary unsensitised paper using a xerographic copier or copier/duplicator—made in one of three key centres: New York, Tokyo or Mitcheldean in Gloucestershire.

It is Mitcheldean that serves the Rank Xerox markets.

The turnover of Rank Xerox has increased ten-fold in the last four years to 1967 and it is Mitcheldean which has in many ways made this possible. Since production started, copiers and copier/duplicators for Rank Xerox international markets (which exclude the Americas and Japan) have been made on these 34 acres of Gloucestershire countryside. Many tens of thousands of machines are now installed—some 70% being overseas.

In 1960 there were under 1,000 people employed at the Mitcheldean Plant—and now there are over 2,500.

Precision industrial manufacture needs to employ a wide range of trades, skills and professions. At the plant a comprehensive apprentice school provides first class training for a large annual intake of school leavers, who do a five-year apprenticeship in the plant. Toolmakers, sheet metal workers, machinists, assembly workers, inspectors, electricians, engineers, draughtsmen, electronics experts, production engineers, accountants, purchasing officers, and many others are needed to run and service as large and expanding an operation as that at Mitcheldean.

Right: **Aerial view of the Rank Xerox Mitcheldean Plant showing the main buildings.**

720 PRODUCTION

660 PRODUCTION

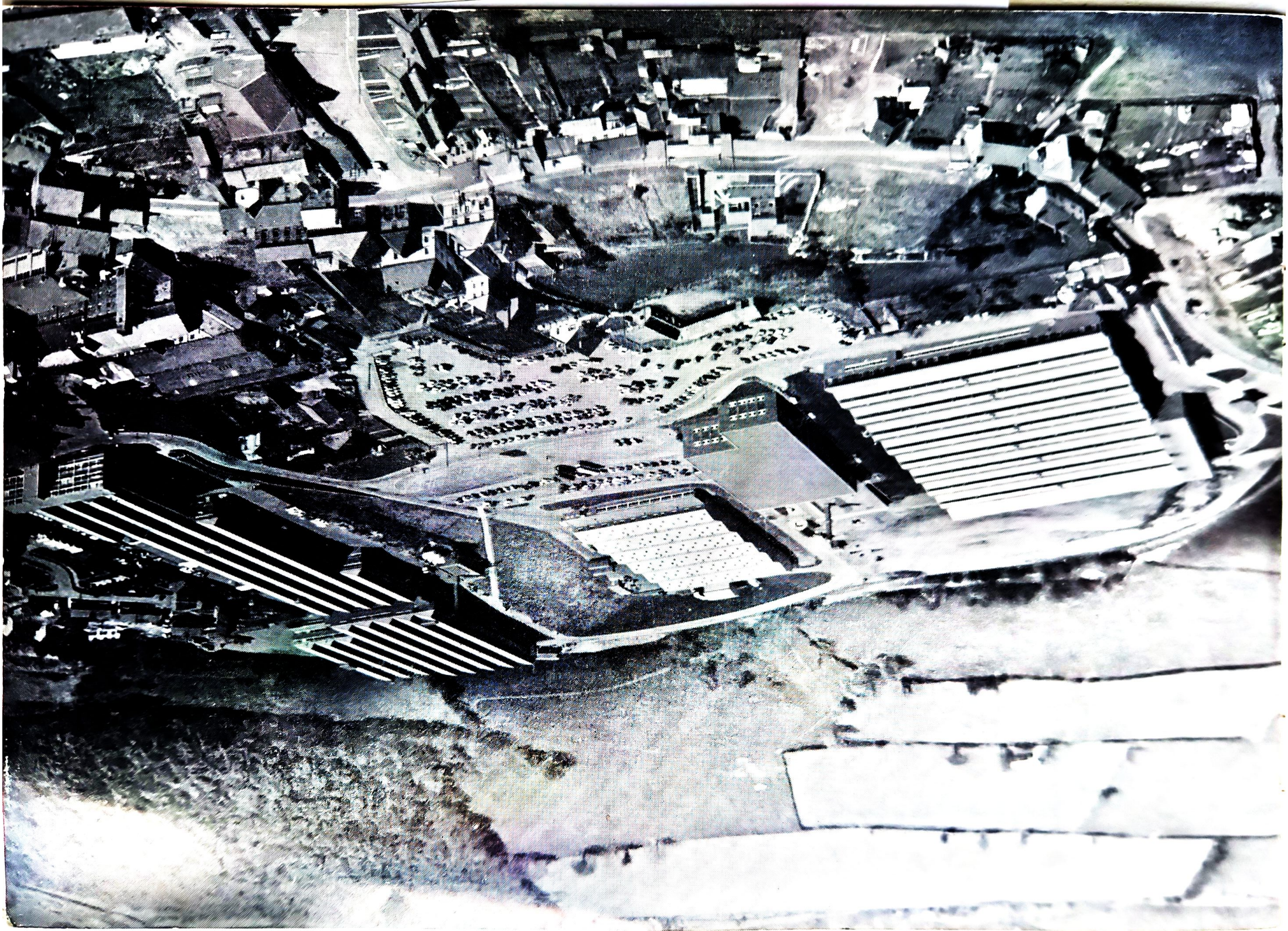
INTERNATIONAL
WAREHOUSE

DESIGN
ENGINEERING

ADMINISTRATION

3800 PRODUCTION

TRAINING SCHOOL



Rank Xerox today

Rank Xerox is today an expanding international company, with its own marketing organisation in 21 countries and distributors in many others. Rank Xerox Limited is a division of The Rank Organisation jointly owned with Xerox Corporation of Rochester, New York.

Fuji-Xerox of Tokyo (jointly owned by Rank Xerox and the Fuji Photo Film Company) covers the Japanese market and Rank Xerox operates throughout the rest of the world, except the Americas.

Since it was formed in 1956, Rank Xerox has expanded very rapidly to meet the copying and duplicating needs of business, industry and education around the world. It now has operating companies in all the West European markets and in Australia, New Zealand, South Africa and Kenya; and branches in Hong Kong, Singapore and Malaya.

The international headquarters of the company in London also houses the headquarters of the U.K. Division. About half of the total staff of 12,000 are overseas.

Machines for our markets are made at the Mitcheldean Plant—whereas consumables (the products used in the xerographic process itself—the toner powder, developer beads, selenium drums) are made at Elstree and Welwyn near London.

At Denham in Buckinghamshire, the main distribution and warehousing centre for the United Kingdom and the rest of the world ships machines and service supplies throughout the Rank Xerox operation by the most efficient method.

A consumables plant at Venray in Holland caters for the countries of the European Economic Community and is coupled with a second international warehouse and distribution unit.

As Rank Xerox moves further into the field of graphic communications, constant research into the organisation of the company ensures that it reaps the benefit of the most sophisticated techniques—in production and manufacture, marketing, administration and management.

Right: **Map of the world showing headquarters of Rank Xerox operating companies, and branches in:**

West Germany
France
Italy
Austria
Belgium
Holland
Switzerland
Spain
Portugal
Norway
Denmark
Sweden
Finland
South Africa
Kenya (jointly owned with Rotarex)
Australia
New Zealand
Singapore
Malaysia
Hong Kong
and Japan (jointly owned with Fuji Photo Film Co)

what is xerography?

Xerography—literally "dry-writing" is a process invented by an American patent attorney, Chester Carlson, who succeeded in making the first xerographic print late in 1938.

But how does this unique process, which is fundamental to all the machines made and marketed by Rank Xerox, work?

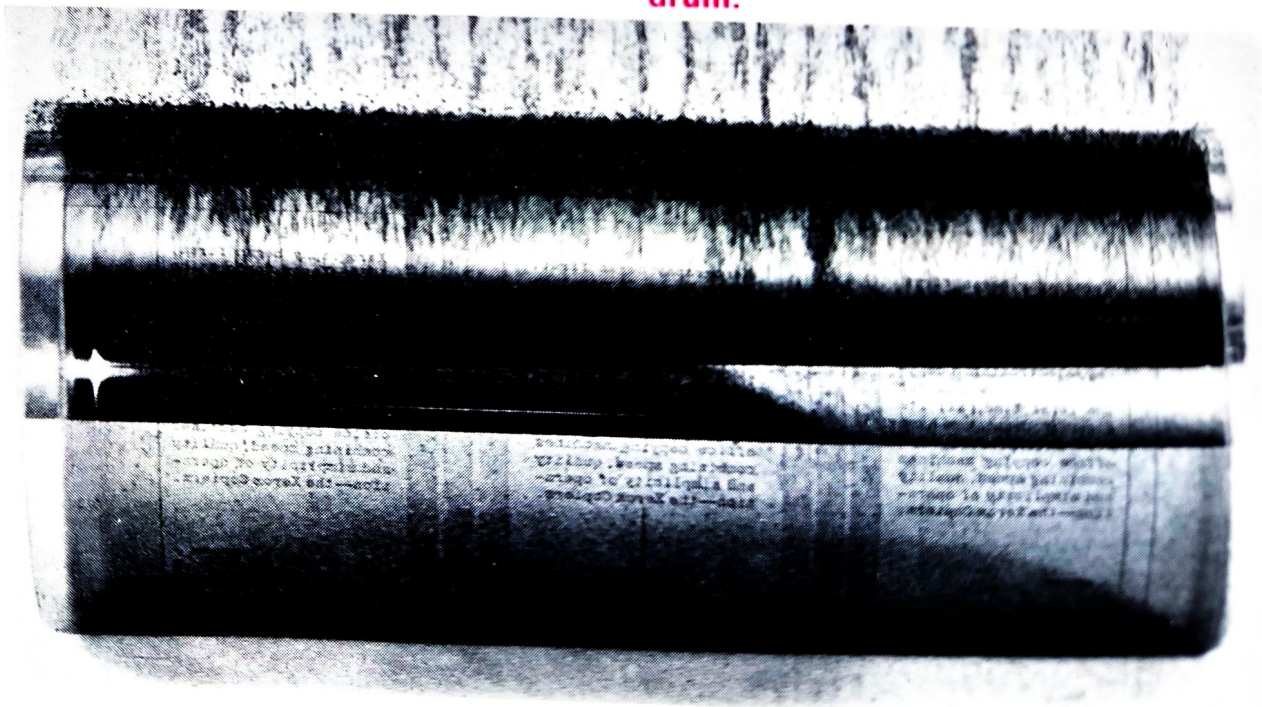
An image of the document to be copied is projected on to a light-sensitive surface, such as a selenium-coated drum. An electrostatic charge, placed earlier on the drum surface, disappears from the exposed areas. The charge is retained on the drum in the area which corresponds to the black or printed parts of the original document. Special toner powder, poured over the drum, clings to the charged parts of the drum.

Ordinary unsensitised paper is placed close to the drum and an electrical charge (opposite to that of the powder) beneath the paper attracts the powder from drum to paper.

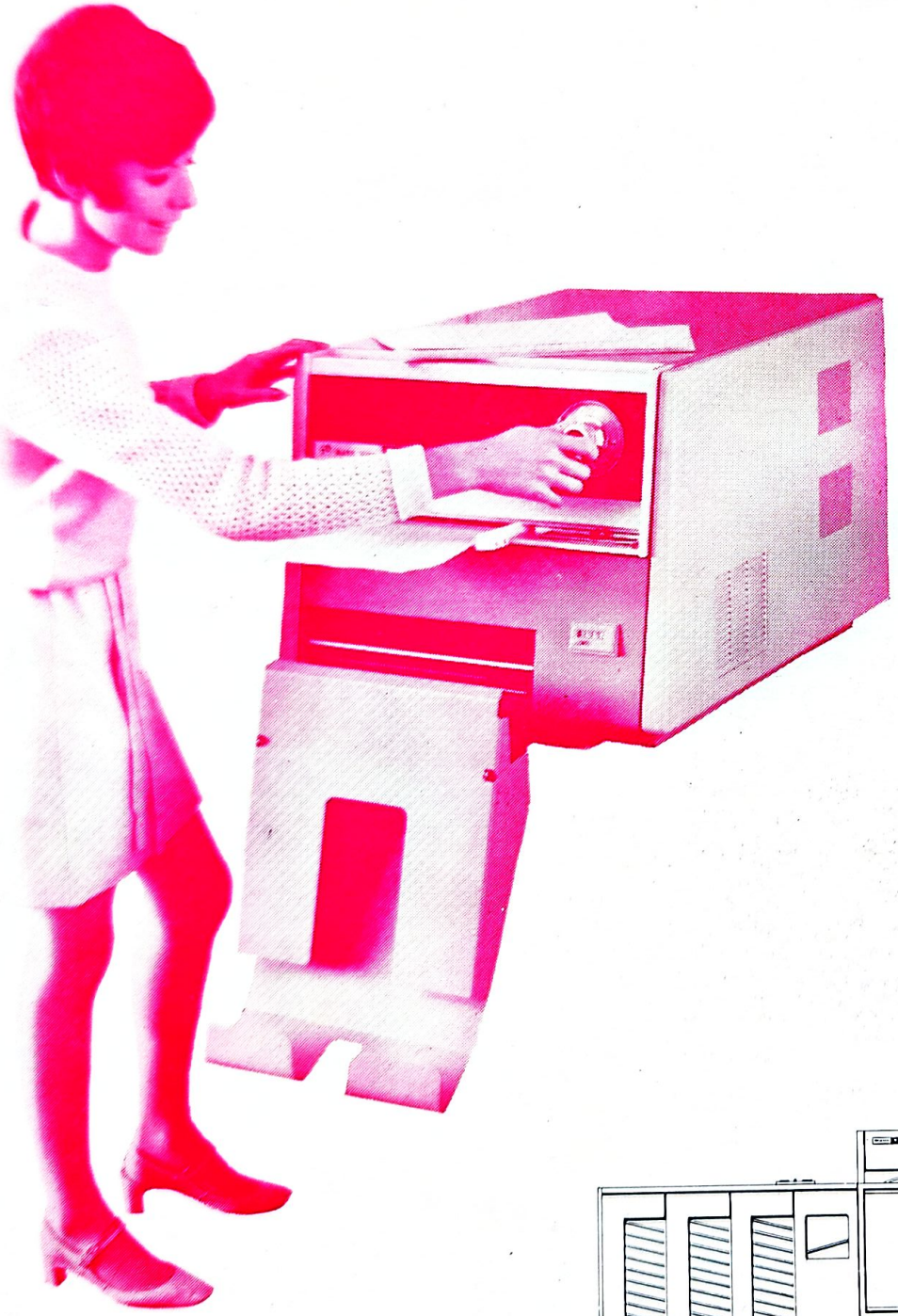
The powder image is then softened and fused into the paper, usually by heat, creating a permanent exact black-on-white copy of the original document.

Below: **The electrostatic principle.**

Below: **Toner falling on a selenium drum.**

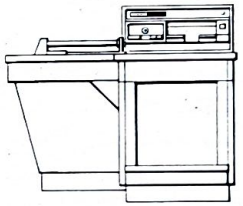


Rank Xerox products



660

420



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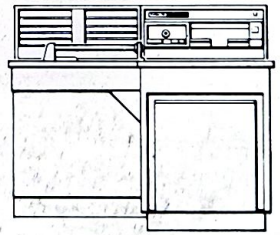
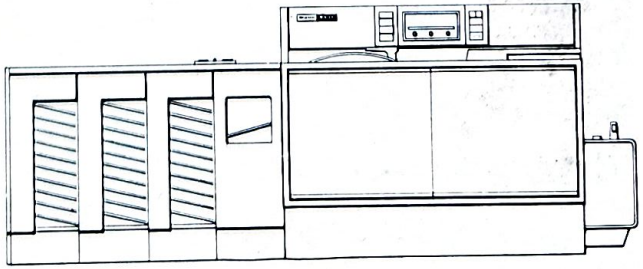


3600



Because different organisations have different communications needs and different amounts of reproduction work, Rank Xerox manufactures a comprehensive range of copiers and copier/duplicators to suit all requirements.

The 813 and 660 desk-top machines take single sheet originals.

Books or even three-dimensional objects can be reproduced on the console models, the 914, 420 and 720. As with all Rank Xerox machines the original is simply introduced to the machine, the number of prints required is dialled and the print button pressed —the rest is automatic.

60 perfect prints a minute are made by the latest Rank Xerox copier/ duplicator, the 3600. This machine finally breaks the barrier between copying and duplicating.

A sorter and collator can be linked to the 3600 to sort prints as fast as the machine can make them. Up to 50 documents of 150 pages each can be sorted automatically.

The Computer Forms Printer reproduces direct from computer printout reducing it to easily-handled collated pages ready for binding into booklets.

Mitcheldean today

So dramatic has been the success of Rank Xerox as a company that the manufacturing plant at Mitcheldean grows steadily year by year incorporating new facilities to keep Rank Xerox on the advance.

In 1960/61 an area of 30,000 sq. ft. was available for the manufacture and assembly of the 914. In 1962 this was extended to 88,000 sq. ft. and a further building, of 131,000 sq. ft., to house component manufacture and copier assembly, was constructed in 1963.

With recent expansion—including the 125,000 sq. ft. 3600 building—the plant now covers 646,000 sq. ft.

At present there are three main assembly departments for Rank Xerox product lines—the 3600, 720 and 660 copier/duplicator families.

In the 3600 production building, the work follows a deceptively simple pattern, the raw materials and components are brought in at one end and the completed 3600s emerge at the other. Not that this is so easy to follow on the factory floor because of the work of sub-assembly lines creates cross-currents of organised activity.

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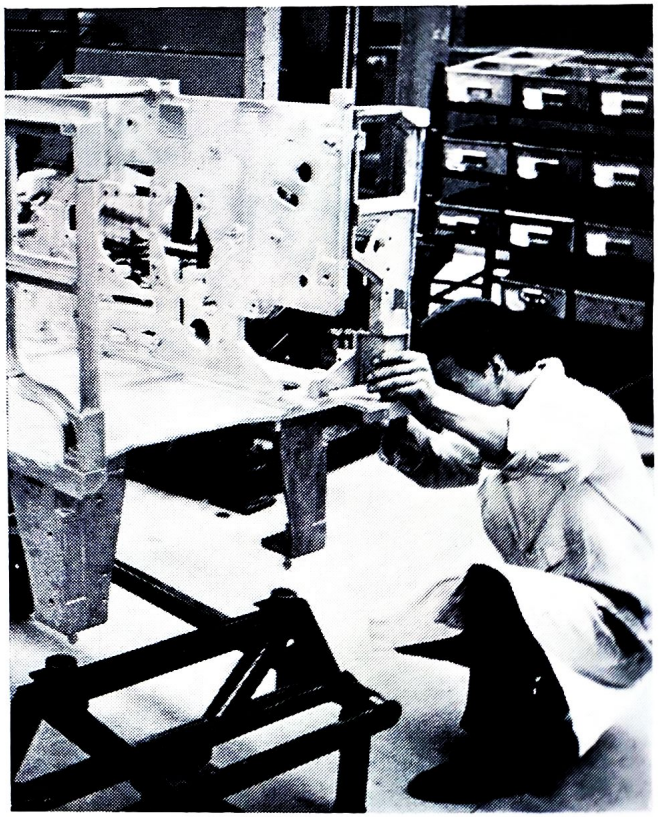


Right: **Rank Xerox 3600 copier/ duplicator production**

A machine such as the 3600, requiring great precision, as difficult and expensive to manufacture as a high-powered luxury car, demands special techniques in production. Wherever possible the job of assembling components needing precise adjustment is made simpler by the use of a master gauge, a type of matrix to ensure precision and uniformity. Other problems are solved by master machines capable of many simultaneous operations. Castings, for example, are worked on multi-spindle machines capable of drilling a number of holes of varying sizes at the same time.

The factory has one of the largest and most modern machine shops in the West of England; in fact, many of the machine tools installed are the first of their kind in Britain.

The recently completed major reconditioning centre is already playing an important part in ensuring that early machines continue to conform to the exacting Rank Xerox standards.

The standards room, a controlled environment equipped with highly sophisticated measuring equipment, ensures that all tools and jigs used in manufacture are consistently accurate to exacting limits.

As machines leave the production lines they go to the warehouse for eventual dispersal to other Rank Xerox centres.

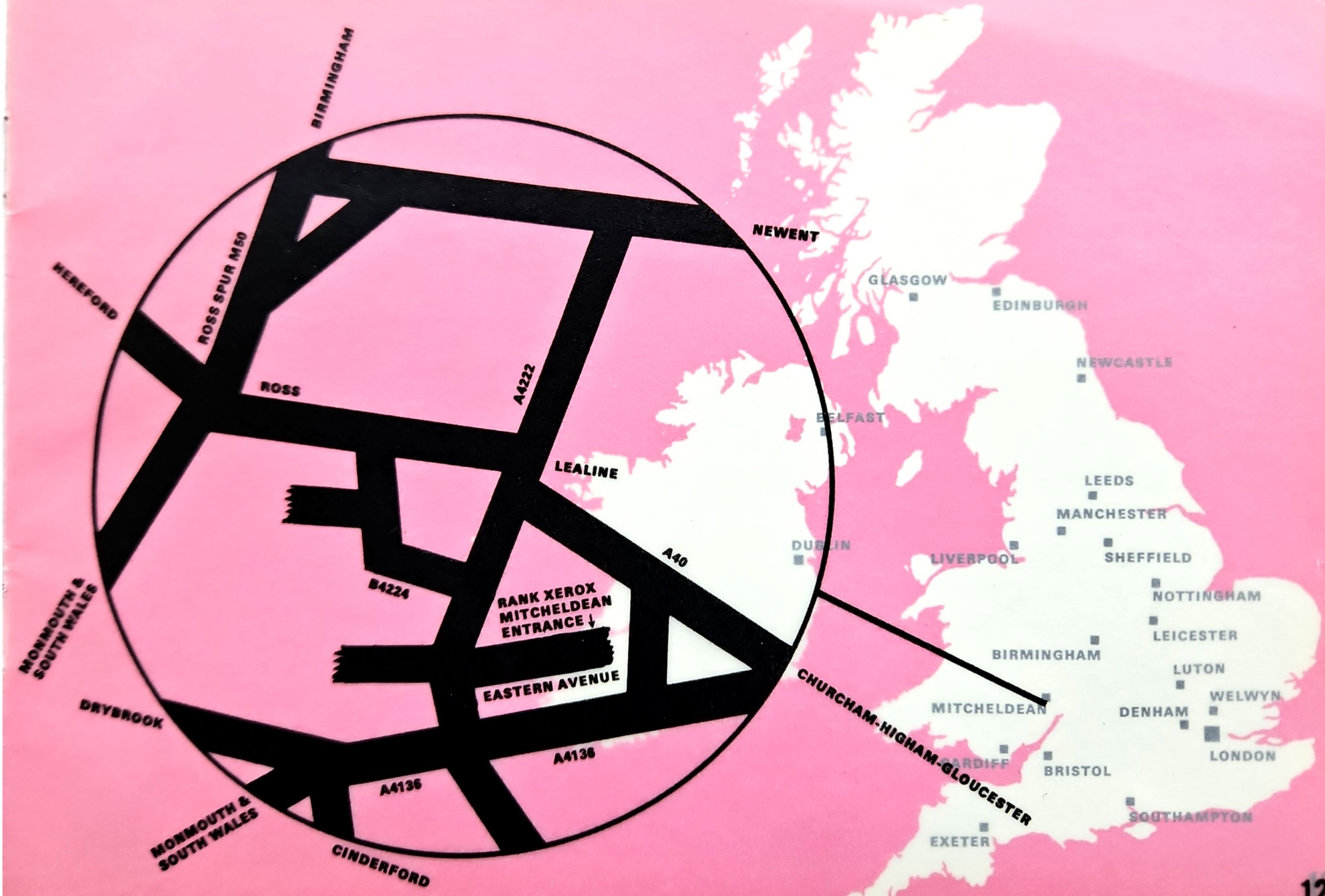
A design engineering block, production engineering department, laboratories, the apprentice training school and administrative buildings complete the picture of the plant. The social centre houses restaurants, canteens and a ballroom—one of the best in a West Country factory.

It is obvious that the Mitcheldean Plant, which grew out of a small photographic equipment manufacturing unit housed in an old brewery and is now one of the nerve-centres of a world-wide company, has brought more than just a breath of this technological age to rural England.

Right: **The Rank Xerox Mitcheldean Plant, Mitcheldean, Gloucestershire.**

Gloucester	**13 miles**
Ross	**6 miles**
Monmouth	**12 miles**

The map of Great Britain shows other Rank Xerox locations including branches of the U.K. Division.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NEWENT
HEREFORD
ROSS SPUR M50
ROSS
A4222
LEALINE
A40
B4224
RANK XEROX
MITCHELDEAN
ENTRANCE
EASTERN AVENUE
MONMOUTH &
SOUTH WALES
DRYBROOK
A4136
A4136
MONMOUTH &
SOUTH WALES
CINDERFORD
CHURCHAM-HIGHAM-GLOUCESTER
GLASGOW
EDINBURGH
NEWCASTLE
BELFAST
LEEDS
MANCHESTER
DUBLIN
LIVERPOOL
SHEFFIELD
NOTTINGHAM
LEICESTER
BIRMINGHAM
LUTON
WELWYN
MITCHELDEAN
DENHAM
LONDON
CARDIFF
BRISTOL
SOUTHAMPTON
EXETER

reliability

The basic design of Rank Xerox products originates with Xerox Corporation in the United States. However, much detailed design and re-design work has to be done at Mitcheldean to modify the product—that is, to make it suitable for European markets.

Extensive reliability testing on all critical items during the first design stages ensures maximum reliability in service. Component reliability and quality control are important factors in the production of machines.

With an ever-increasing number of machines in service, maintenance costs must be kept low and so reliability testing and quality control help to keep both manufacturer and customer satisfied.

Very stringent control of all components coming into the plant is an important step. When walking through the production floors one can readily see from the many quality control points at every stage of production the emphasis placed on the complete reliability of the finished product.

It is just this emphasis, from the specifications of a drilled hole to the life of a small electric light bulb, coupled with effective preventive maintenance when with a customer, that has kept and will keep Rank Xerox copiers and copier/duplicators and the service they provide to industry, commerce, government and education in the forefront of the march of graphic communications across the globe.

Top far right and below: **Performance tests being carried out on components in the reliability engineering laboratories.**

Top right: **Final quality control checks being made at the end of the 3600 production line.**

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