

LIGHTING

THE WAY

**BENZAMIN**  
REGD.



# LIGHTING THE WAY

## THE BENJAMIN ELECTRIC LTD.

*Established 1908*

BRANTWOOD ROAD, TOTTENHAM, LONDON, N.17

Telephone: Tottenham 5252 (5 lines)    Telegrams: "Benjalect,  
Southtot, London"

### BIRMINGHAM

5 Corporation Street, Birmingham, 2  
Telephone : Midland 5197

### LEEDS

49 Basinghall Street, Leeds, 1  
Telephone : Leeds 25579



THE BENJAMIN ELECTRIC LTD. Head Offices : Tottenham, London, N.17

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# Foreword

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SINCE its formation in 1908, The Benjamin Electric Ltd. has specialised in the production of Industrial Lighting Fittings of every description. Most of the achievements in any sphere of industrial activity, now taken for granted, would not have been possible without adequate illumination, whether it be increased productivity or better health and safety in the factories and workshops all over the world.

This brochure sets out briefly the history of the Company and shows something of the plant, research and technical facilities which are available. It is the complete organisation and such technical and engineering facilities as these, which the Company has built up during the past years, that have made the name " Benjamin " the hallmark of efficiency, quality and service in the science of Industrial Illumination.

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## EARLY DAYS

The Benjamin Electric Ltd., pioneers of scientific industrial lighting, was founded in the year 1908, following the establishment of associated Benjamin companies, first in the United States of America in 1901 and then later in Canada. These companies were formed in those early days to market, for the benefit of industry, some of the inventions of the late Mr. R. B. Benjamin, internationally known as a prolific inventor; his ideas in many forms have left their mark in the science of illumination to-day.

The aims of these companies have been well realised, as can be seen in their steady growth and world-wide development.

The original works and offices of The Benjamin Electric Ltd. were housed in Rosebery Avenue, London, but the ever-increasing demand for Benjamin products soon made a change to larger premises necessary, and in 1918 the Company moved to its present site in Tottenham. The original area of the building—less than a third of an acre—soon proved inadequate, and extensions have had to be made every few years to accommodate new equipment

and additional personnel. To-day, in an area covering several acres, the Benjamin Organisation operates in factories, offices and engineering laboratories particularly suited to the special needs of so scientific and so technical an industry.

## ACHIEVEMENT IN OTHER INDUSTRIES

In the 1920's The Benjamin Electric Ltd. manufactured electric horns, push buttons and the Boyce Motor Meter, which were then fitted as standard equipment on most British cars.

The radio industry too, was served by Benjamin, who manufactured the Clear-a-tone valveholder, and the Magnavox and Blue Spot loud speakers, and indeed the Company is still strongly associated with that industry in the radio component field.

The Company's main interest, however, has always been lighting fittings, and the increasing appreciation in industry of their quality and efficiency resulted in the gradual withdrawal from other fields, enabling it to concentrate on scientific industrial illumination.

## THE COMPANY IN WAR

During the war, like most factories, we suffered bomb damage, but fortunately our production was not impaired. In addition to our standard products, which were used extensively in armament and shadow factories, special fittings were also designed and manufactured for the Services and for most government establishments, including filling factories.

Fighters and bombers of most types were equipped with cockpit lighting, landing lights and identification and signalling lamps, and most of their night landings were made with the aid of Benjamin equipment.

The Admiralty was supplied with lighting fittings for ships, signalling lamps, special handlamps and luminous vitreous enamel for use in submarines. An interesting development was the Ryder non-electric searchlight, having a 36 in. diameter anodised aluminium reflector, and burning a magnesium flare as its illuminant. This was required in coastal areas where no electric power was available as a precautionary measure against invasion. Many special items of armament and ammunition equipment, so necessary to the modern army, were made for supply to the War Department.

## AHEAD WITH PROGRESS

The Company is still to-day working in close connection with the Services, being engaged on large contracts for special approach and runway lighting fittings

and ancillary equipment: being manufactured also are obstruction lights, flarepath units and other types of specialised aerodrome lighting equipment.

The manufacture of lighting fittings to-day has become an exacting and complicated engineering science, and the application of its products has more than ever to be scientifically planned. The Company's factories at Tottenham produce modern lighting fittings of highest quality for use with tungsten filament, electric discharge and fluorescent lamps.

The diversity of plant and machinery necessary for the manufacture of lighting equipment is surprising, so many operations and different industrial processes being involved. Some reflectors, for instance, require up to seventeen operations before achieving their final form, whilst the shape and size of these reflectors vary from the simple dome to others that have the most exact, yet intricate contours.

It is interesting to note that the famous Benjamin R.L.M. Reflector, invented by Mr. Benjamin, was the original, and still is, the recognised form of all standard dispersive reflectors, of which millions are now in use all over the world.

In the fluorescent field, Benjamin manufacture a complete range of modern "Flurolier" lighting fittings that possess all the proven advantages of "Crysteel" vitreous enamel.



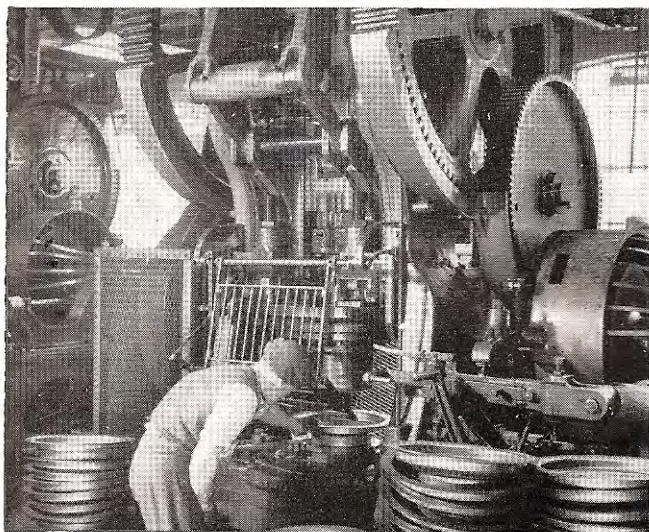


# Manufacturing Resources

A TOUR through the factories reveals the raw material store with its stocks of sheets of steel, brass, aluminium and copper, which are cut by guillotine machines to the correct size and shape required by the various shops. These "blanks" pass to the Press Shop, where lines of presses of all types and sizes form the flat sheet to the pattern of the lighting fitting.

In another section, sheet steel is formed into "Fluolier" fluorescent troughs. The works is equipped for these forming operations with large "brakebend" machines which can be set up with a multitude of different tools to carry out the intricate and accurate operations involved in the manufacture of the various fittings. There is a large Machine Shop and a well equipped Tool Room for the production of all the necessary punches, dies, jigs and assembly fixtures and other tools required.

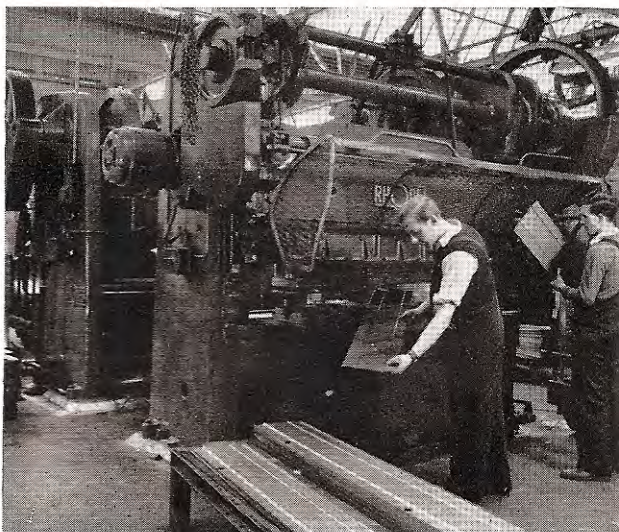
*Press Shop. One of the Large Brakebend Presses.*



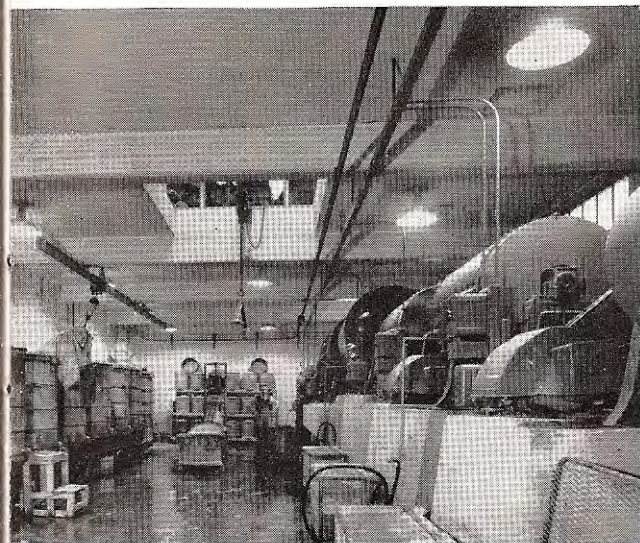
Probably, one of the most interesting processes seen on a visit is the "Crysteel" vitreous enamelling plant. The formula for the composition of this enamel has been developed, specially for reflectors, over many years of research and specialisation by Benjamin. Every operation in the production and application of "Crysteel" vitreous enamel is scientifically controlled to safeguard its outstanding optical characteristics and preserve, for all time, its inimitable quality. Other finishing processes are also carried out in the works, including plating of all kinds, aluminium anodising, cellulose spraying, stove enamelling and metal polishing.

The Benjamin Company are proud of the part they played in the commercial development of the anodic process in its early stages, for high quality aluminium reflectors.

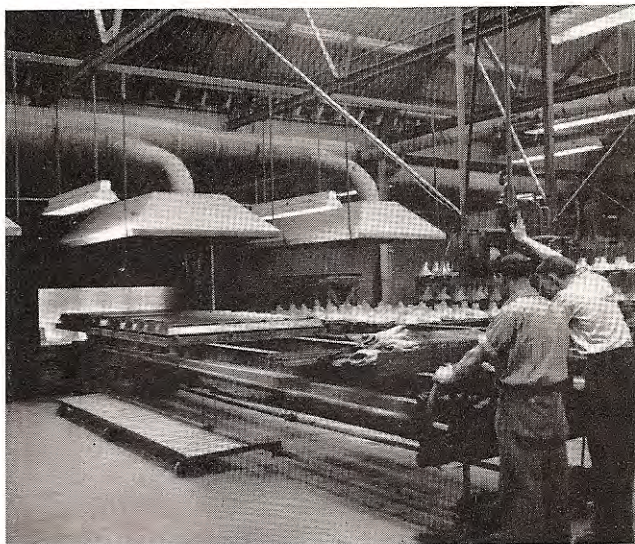
*Press Shop. One of the Series of Large Double-Action Deep Drawing Presses.*







*"Crysteel" Department. The Mill Room showing Mills and Storage Vats.*



*"Crysteel" Department. A Batch of Reflectors leaving one of the Box Muffle Vitreous Enamelling Furnaces.*

## THE SAAFLUX SYSTEM

THE Assembly Department is divided into two sections: lampholders and tungsten components, and the assembly and wiring of fluorescent fittings. The Benjamin "Saaflux" system of reflector construction has proved itself over many years, and today, "Saaflux" fittings are installed in factories throughout the world, forming the recognised standard of efficient design. This simple "cool-wiring" system is applied to most types of Benjamin tungsten and electric discharge reflectors.

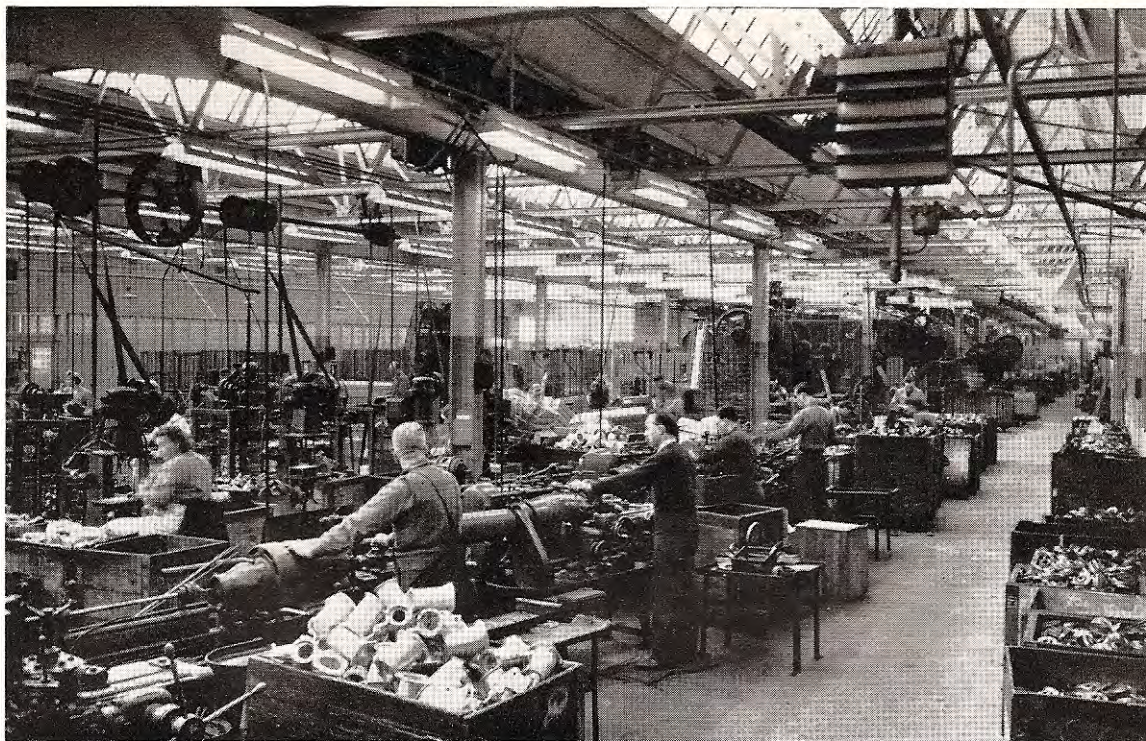
A large office block houses the Sales, Accounts, Costing and all other administrative departments.

## ILLUMINATING ENGINEERING SERVICE

THIS technical service offers the benefits of a vast fund of knowledge and experience in dealing with lighting problems in every branch of industry. World-wide contacts result in a library of recorded information about lighting in all its aspects.

The provision of such a service naturally requires accurate and up-to-date information provided on an organised basis from tests continually in progress in the Benjamin Research Laboratories and from investigations carried out in factories under actual working conditions. In this way, much information on the machines and processes used in various trades is collated, so that each can receive individual lighting investigation.





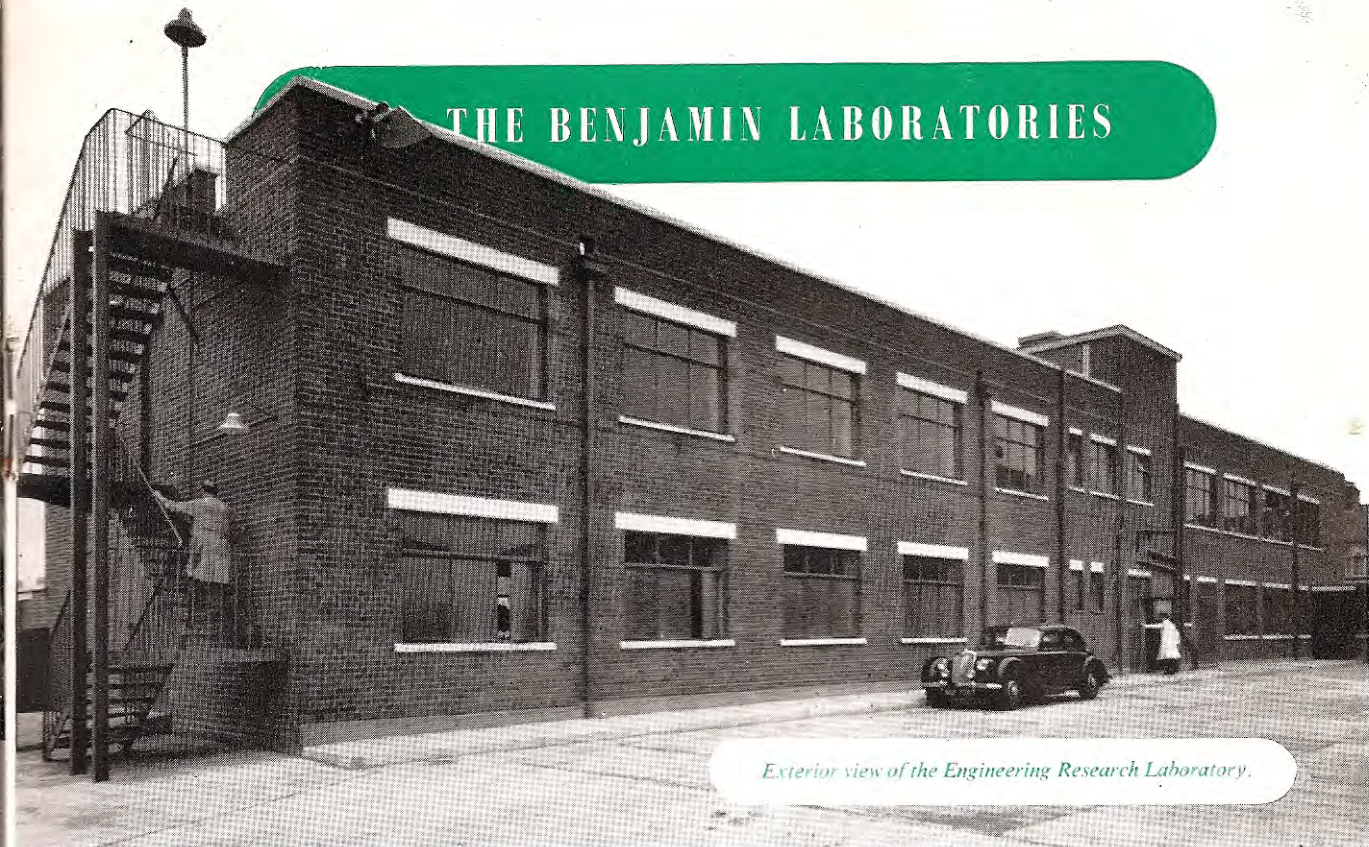
*Machine Shop (Above). Part of the Machine Shop with a line of Capstans in the foreground.*

*Tool Room (Below). Where all Tools and Jigs are designed and made.*





## THE BENJAMIN LABORATORIES



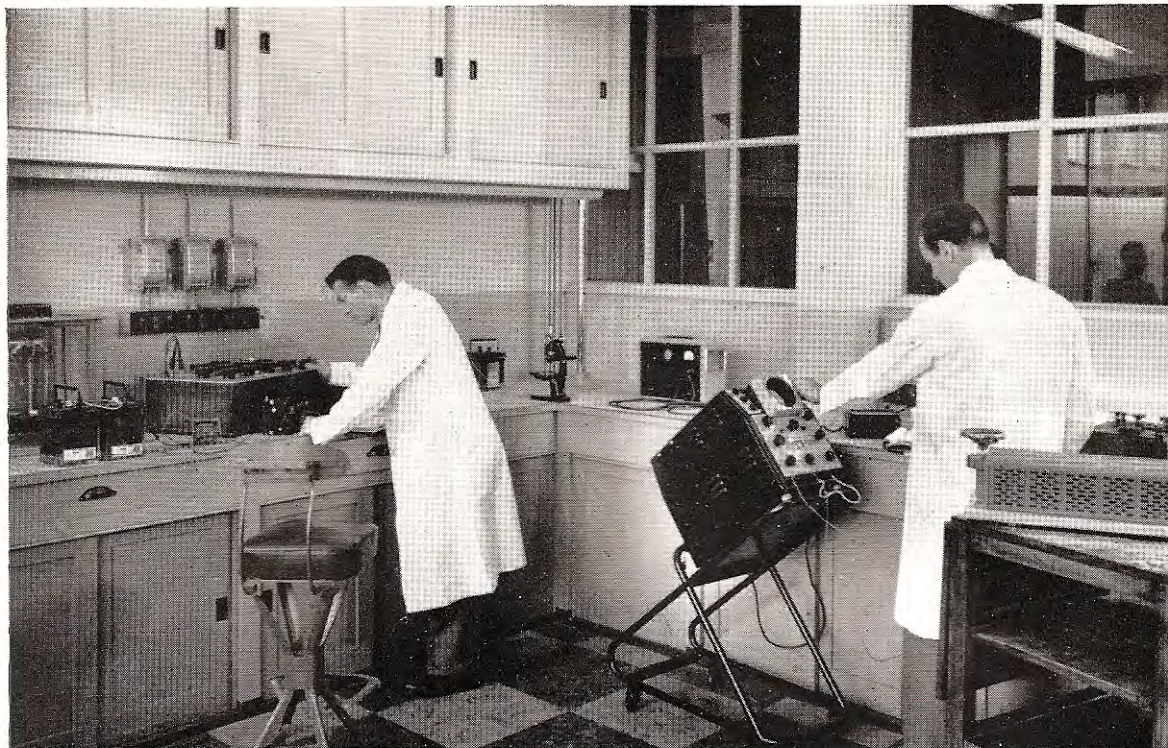
*Exterior view of the Engineering Research Laboratory.*

MANY years ago the Company installed and equipped one of the first commercial photometric and illumination laboratories. Due mainly to the change in the lighting art, the development of new light sources, and the need for greater facilities and more space, the Company decided to build a new engineering and research block, to house its design and laboratory staff.

The Company's Architects, Messrs. Charles M. Swannell, F.R.I.B.A., and K. F.

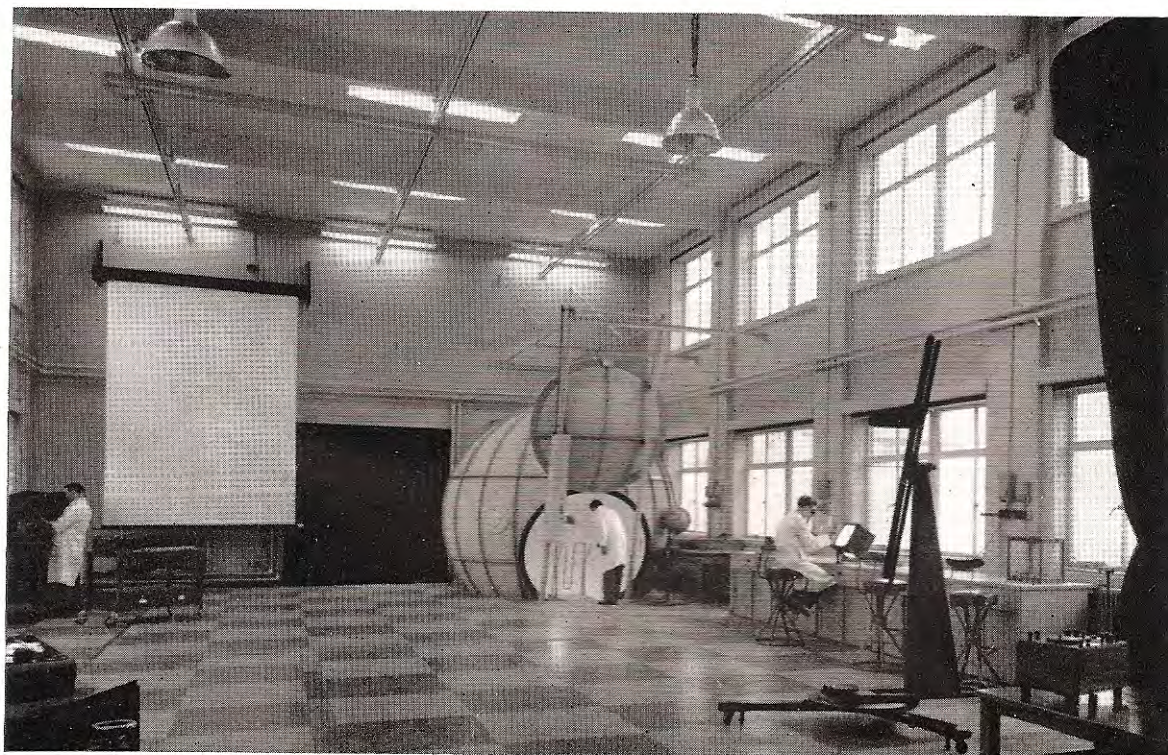
Templeman, A.R.I.B.A., worked in close co-operation with the Company's staff in the specialised plans required for the interior of so unusual a building. Many special pieces of apparatus have been installed and much of it has been designed and manufactured by the Company's engineering and works staff, to suit the special test conditions required for their products.



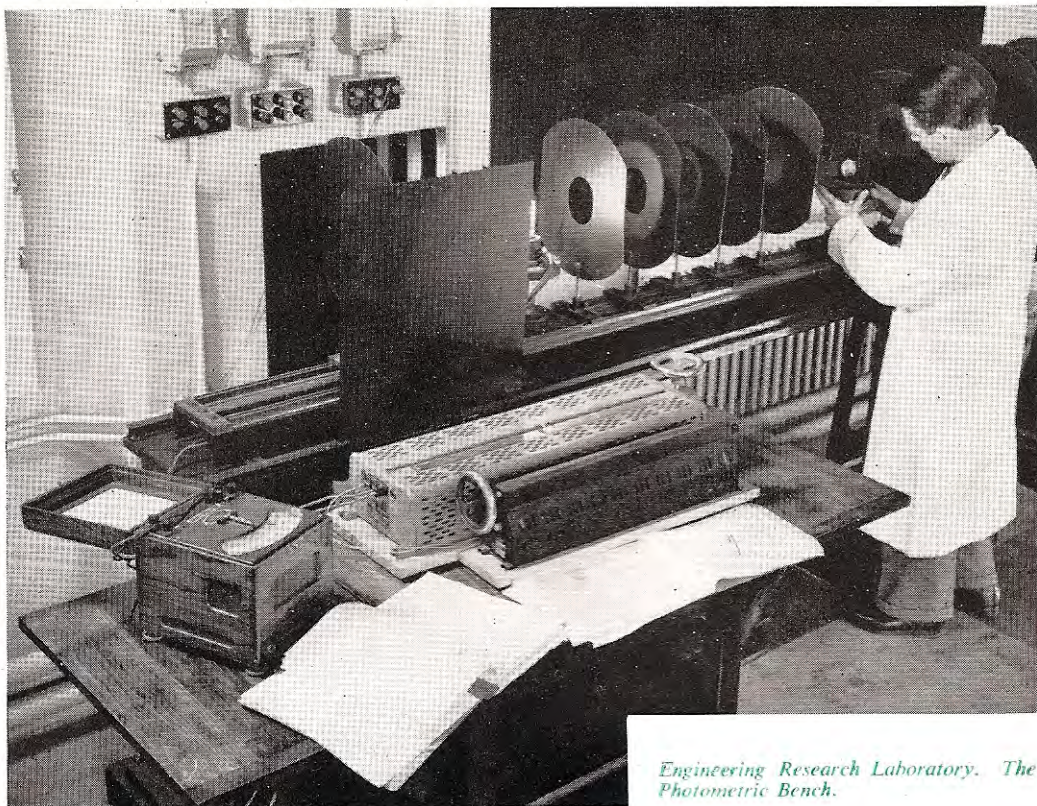


*Engineering Research Laboratory (Above). Instrument and Electrical Test Room.*

*Engineering Research Laboratory (Below). Main Laboratory showing various Test Equipment.*







*Engineering Research Laboratory. The Photometric Bench.*

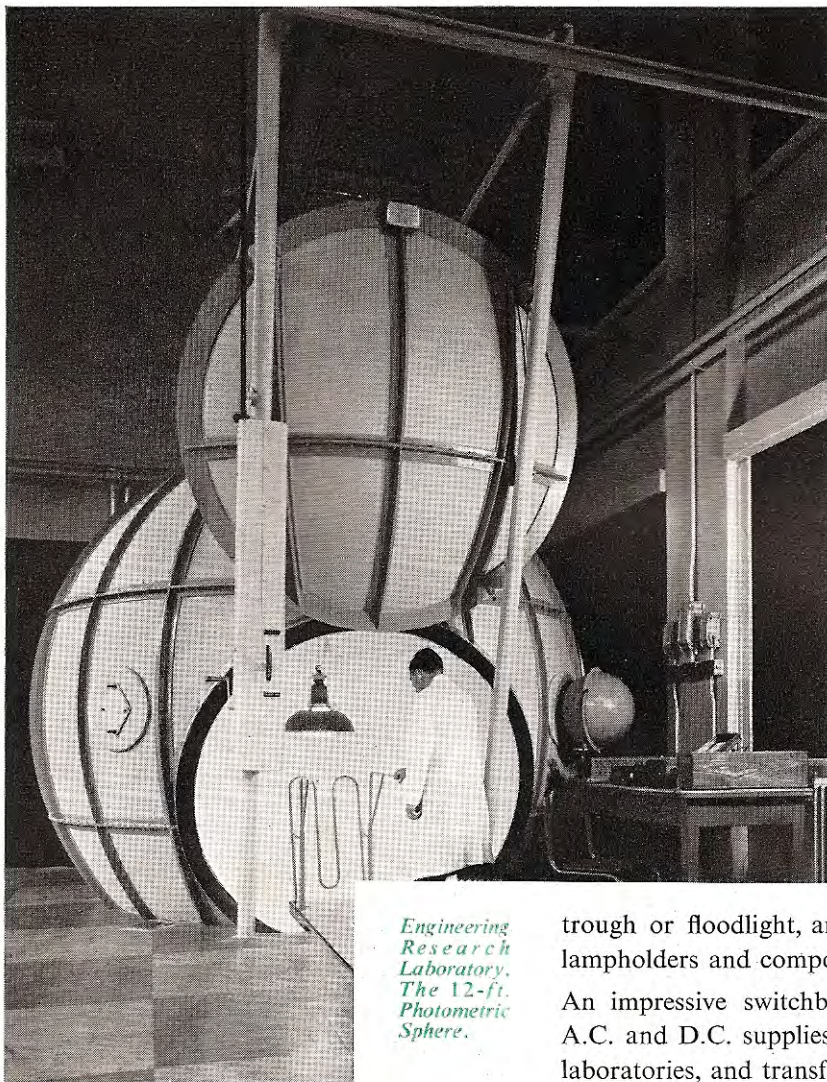
THIS new Benjamin Scientific Research Establishment was completed in 1952 and is now the most up-to-date and completely equipped laboratory of its kind.

Its primary function is to develop lighting fittings and lighting technique for industry. In addition to research and development work, a constant check is maintained by the laboratory staff on the optical and physical quality of the reflectors produced in the works. It is essential, therefore,

that it should be in a position to make all measurements in the physical, optical and mechanical fields, and to be able to assess the advantages and merits of the Company's development work.

This new building consists of Engineering, Administrative and Design offices, a prototype workshop and stores, the main laboratory area of 2,000 sq. ft. with a ceiling height of 22 ft., and sundry smaller laboratory test rooms of a specialised nature.





*Engineering  
Research  
Laboratory.  
The 12-ft.  
Photometric  
Sphere.*

The offices house all the technical files and data and a library of reference and text books.

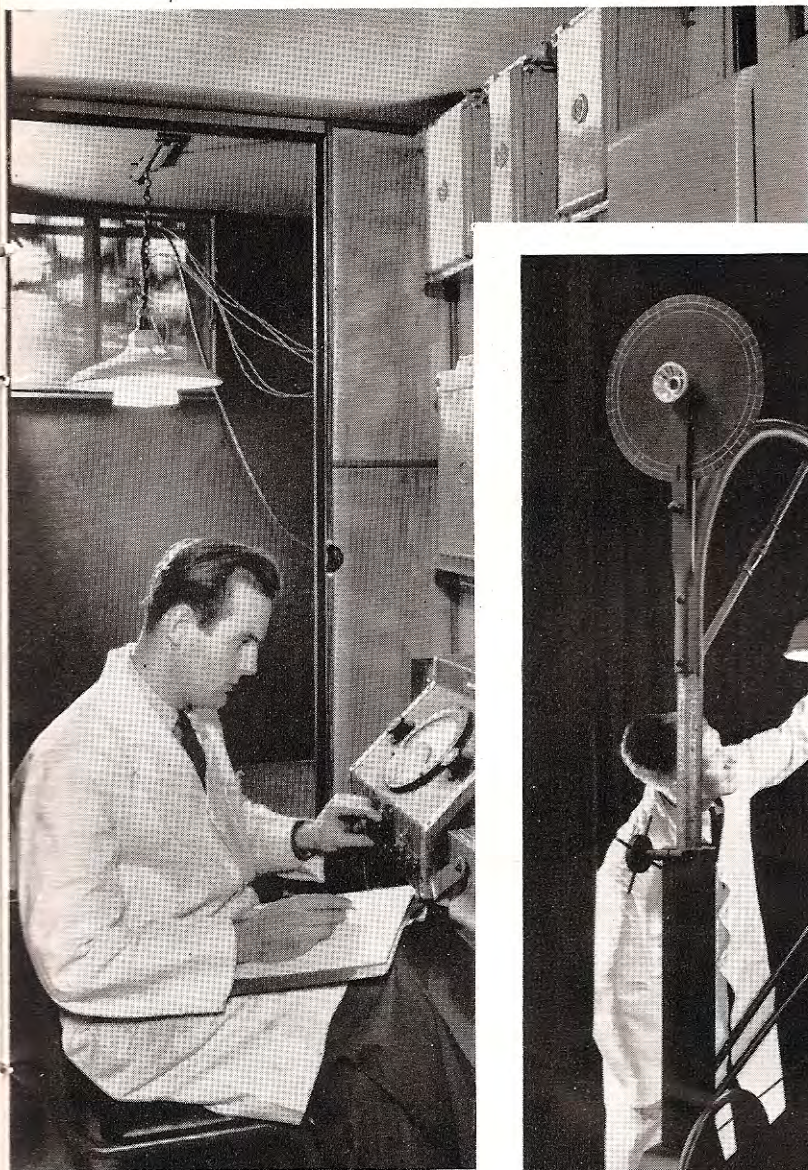
Samples of prototypes of new designs are made up in the workshop and are held ready to be tested in the laboratory for illumination and electrical characteristics. The range varies from the smallest local reflector to the largest tungsten fitting, fluorescent

trough or floodlight, and all their relevant lampholders and components.

An impressive switchboard provides both A.C. and D.C. supplies to all parts of the laboratories, and transformers give a range of voltages.

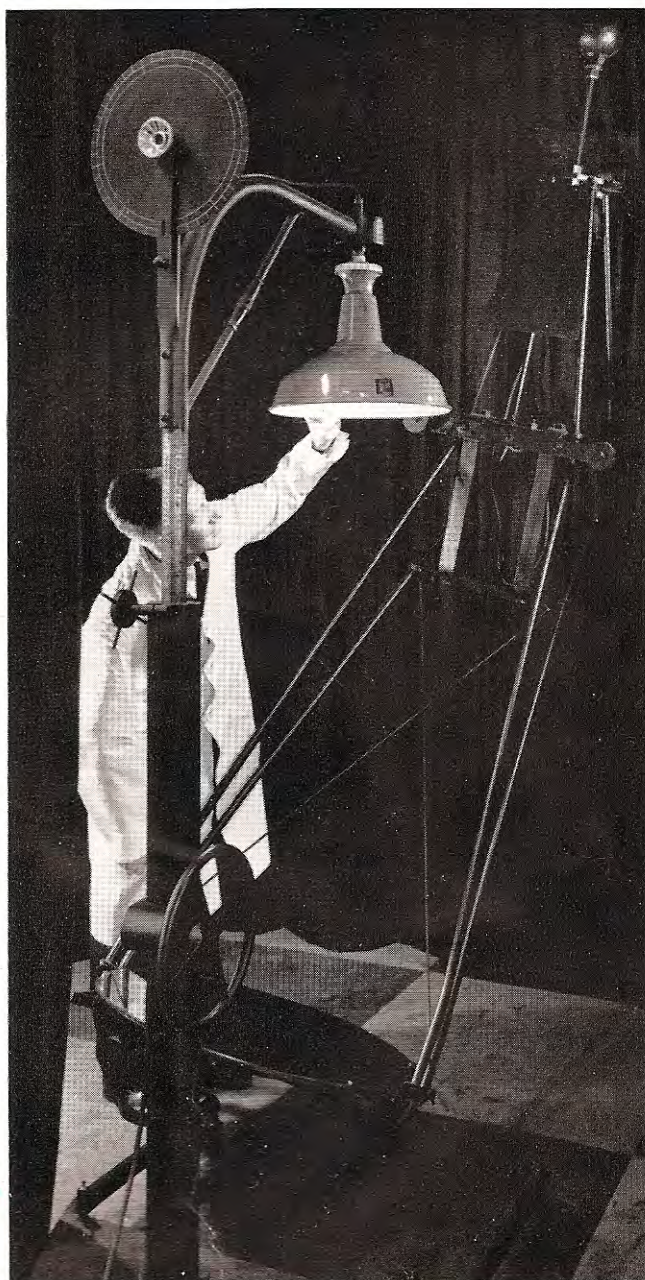
The main laboratory is equipped with photometers of various types for measuring light distributions and intensities, for the calibration of lamps and meters. Perhaps the most impressive piece of apparatus is the large Photometric Integrating Sphere, 12 ft. in diameter and weighing 2 tons, having a perfect white inner reflecting surface.





(Left).  
Engineering Research Labora-  
tory. The Temperature Test  
Chamber.

(Right).  
Engineering Research Labora-  
tory. The Polar Co-ordinate  
Photometer.





The laboratory floor is divided accurately into 3 ft. squares, and travelling gantries on the ceiling span the whole of this area, so that a number of test fittings can be suspended at any spacing and any mounting height, and their resulting illumination measured at any point.

In the smaller laboratory rooms more specialised tests are carried out. One is equipped for instrument tests and for testing the electrical characteristics of fittings; another, with a draughtproof cubicle, is for temperature tests on lamp caps and

incoming cables. In another heavily lagged test room any climatic condition can be simulated, from hot and wet to cold and dry, and from the heaviest tropical rains to the softest dew.

The foregoing is but a brief description. It indicates, however, some of the equipment and facilities in constant use in this Engineering Research Building and one appreciates more readily why the name Benjamin is so closely linked with all recognised standards of illumination.

## Always at Your Service

**For nearly 50 years The Benjamin Electric Ltd. has been** in the forefront of industrial lighting development and production and has introduced repeated improvements in methods, application, and lighting equipment. The accumulated knowledge and experience of the whole Benjamin organisation is always at your service.



## *Benjamin Overseas*

THE last few years have seen the rapid development of the overseas market, until to-day, Benjamin is the largest exporter of industrial lighting fittings in this country, particularly to the Eastern Hemisphere and throughout the Commonwealth.

The Export Department maintains constant contact with the Company's factory representatives, agents and distributors overseas. Through them, all Benjamin knowledge and facilities are at the disposal of many thousands of factories, enabling them to be equipped with the correct Benjamin reflectors, giving the right illumination for their own particular requirement.

## *Social Welfare*

THE Benjamin Electric Ltd. have always believed that a happy worker produces the best results, and with this in mind, the factory is provided with everything that makes for good working conditions. A large percentage of the employees have spent many years with the Company and, in fact, of those, many have spent the whole of their working career in its service.

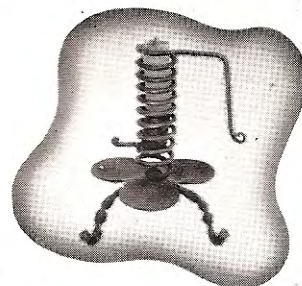
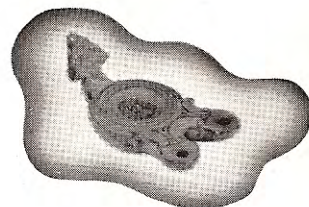
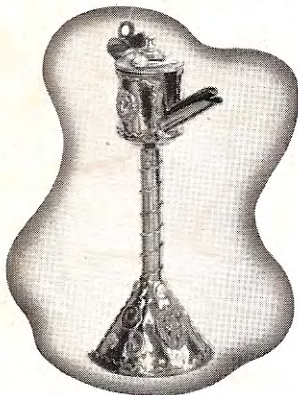
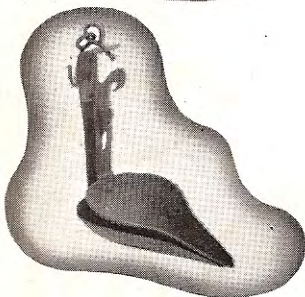
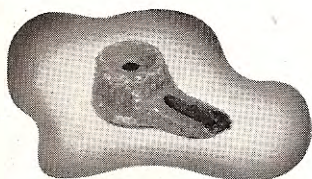
There is maintained a well-equipped Canteen and an active Social and Athletic Club, with premises at the works, providing full facilities for most indoor and outdoor recreations.



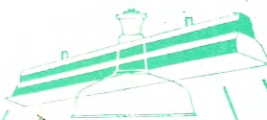
## *Ancient Lights*

### THE "GEORGE HERBERT" COLLECTION

One of the Company's treasured possessions is the famous "George Herbert" Collection of Ancient Lamps. The many primitive lighting devices from 600 B.C., through the intervening centuries, and even up to the beginning of the present one, make a striking contrast with modern equipment. Mr. George Herbert, for 36 years one of the Company's outside Sales Engineers, died in 1947.







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