



**ENFIELD to BRYNMAWR**





**DAREN DISGWYLFA**  
The Lone Shepherd,  
Llangattock Mountain,  
Brynmawr

The industrial history of South Wales has been one of great achievement and repeated failure. The achievements have comprised the successful development of the richest coalfield known in Britain and of an iron and steel industry of world significance.

In South Wales was rolled the first iron sheet ever to be so made (Pontypool about 1697); in South Wales Bessemer steel was first manufactured in Britain; South Wales supplied tinplates to the world long years before any other country had even begun to try to make

them. In the more westerly areas of the coalfield there work great refineries, whose fame is known wherever men talk of metals or of oil. South Wales has given birth to writers, poets, preachers, opera singers, industrialists, the Chartist Movement and many politicians.

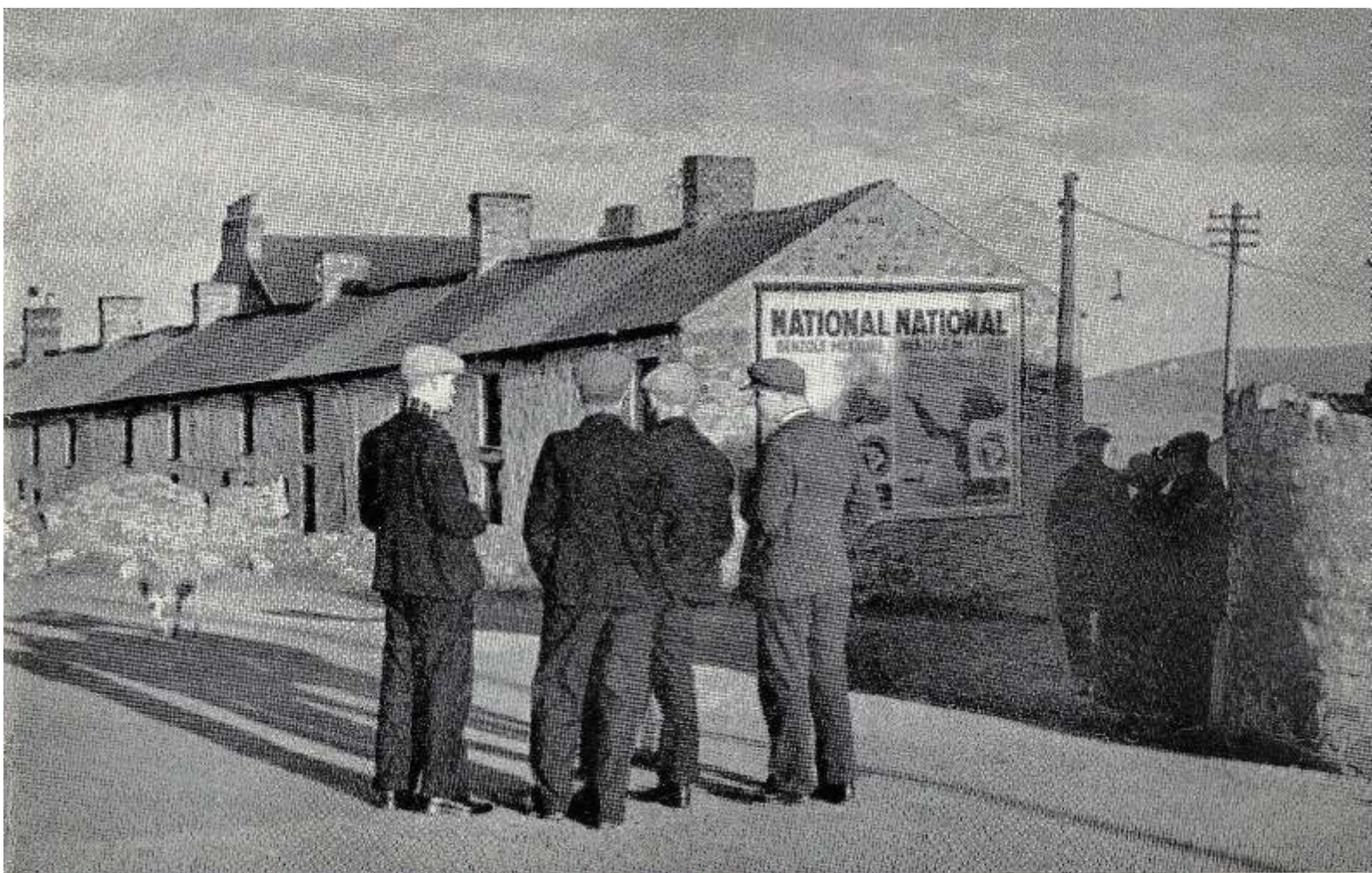
The chief cause of failure has been the fact that the ten or twelve valleys of the coalfield have depended too much on world markets for the sale of their main products—iron and steel, coal and coke. When markets have been lost, there has been no alternative work; the valley towns and villages have fallen into acute economic decay, the worst period beginning in the early nineteen-twenties and continuing until 1940. The rest of the country used to refer to South Wales, and to half a dozen other districts like it, as "Depressed," "Distressed," "Derelict," "Special," but now "Development" Areas.

The Second World War, the Barlow Report, and then the Distribution of Industry Act (1945), all brought new industrial activities to South Wales, some of them likely to grow and prosper, others perhaps too sensitive to economic stress to have much chance of survival. Several hundred new factories have been or are being built, to provide work for many thousands of people, men and women.

These new industries include steel strip, electrolytic tinplate, aluminium in many forms, engineering, clothing, toys, glass, biscuits, nylon spinning, and a whole host more. The largest single project sponsored by Wales & Monmouthshire Industrial Estates Ltd. (who act as Agents for the Board of Trade) is the new rubber factory recently built (1945-51) for Brynmawr Rubber Ltd., a wholly-owned subsidiary of Enfield Cables Ltd.

*Front Cover :*

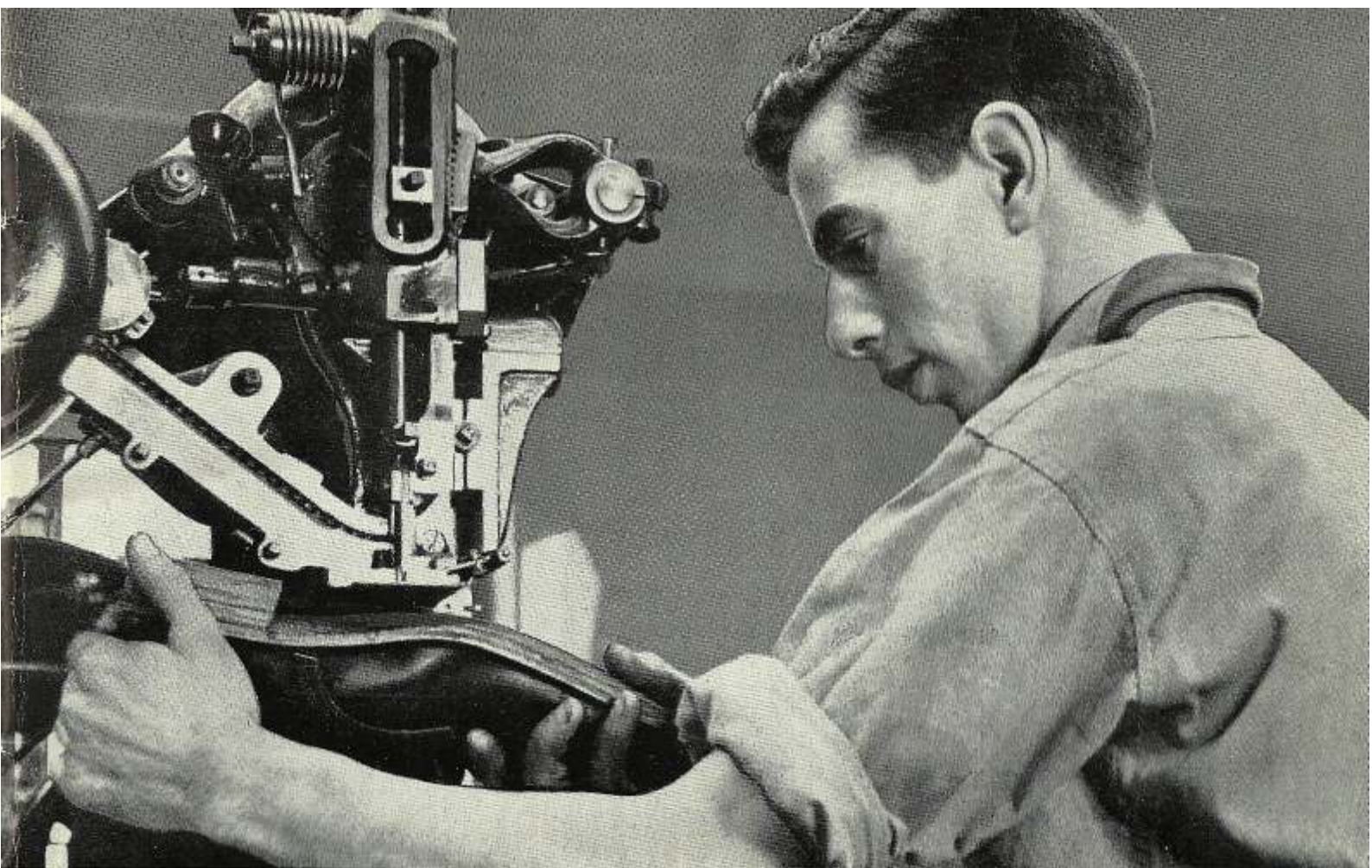
Derelict Pithead at Blaina, in the Western Valley of Monmouthshire, near Brynmawr



Until 1939, for 15 long years, able-bodied men stood at the street corners, in their thousands and their ten thousands, unwanted and with nothing to do, in every Valley of South Wales. They and their families grew old or grew up in idleness. The photograph was taken at Blaenavon. There were other centres whose outlook was equally black and hopeless, notably Blaina, Brynmawr, Dowlais, Merthyr, Rhymney and Senghenydd. In May 1934, no less than 62,847 men were unemployed in the eastern portion of the coalfield alone.



**The wonder of it is that these people kept their spirit, their cheerfulness, their sense of proportion, despite the hopelessness of their economic existence and despite housing conditions as bad as any anywhere in Britain. These terrace houses are still lived in and typical of the "whited sepulchres" of South Wales; they are probably a century old, and have no damp-course, no sanitation, no hot or cold water system, no road access and no gardens.**



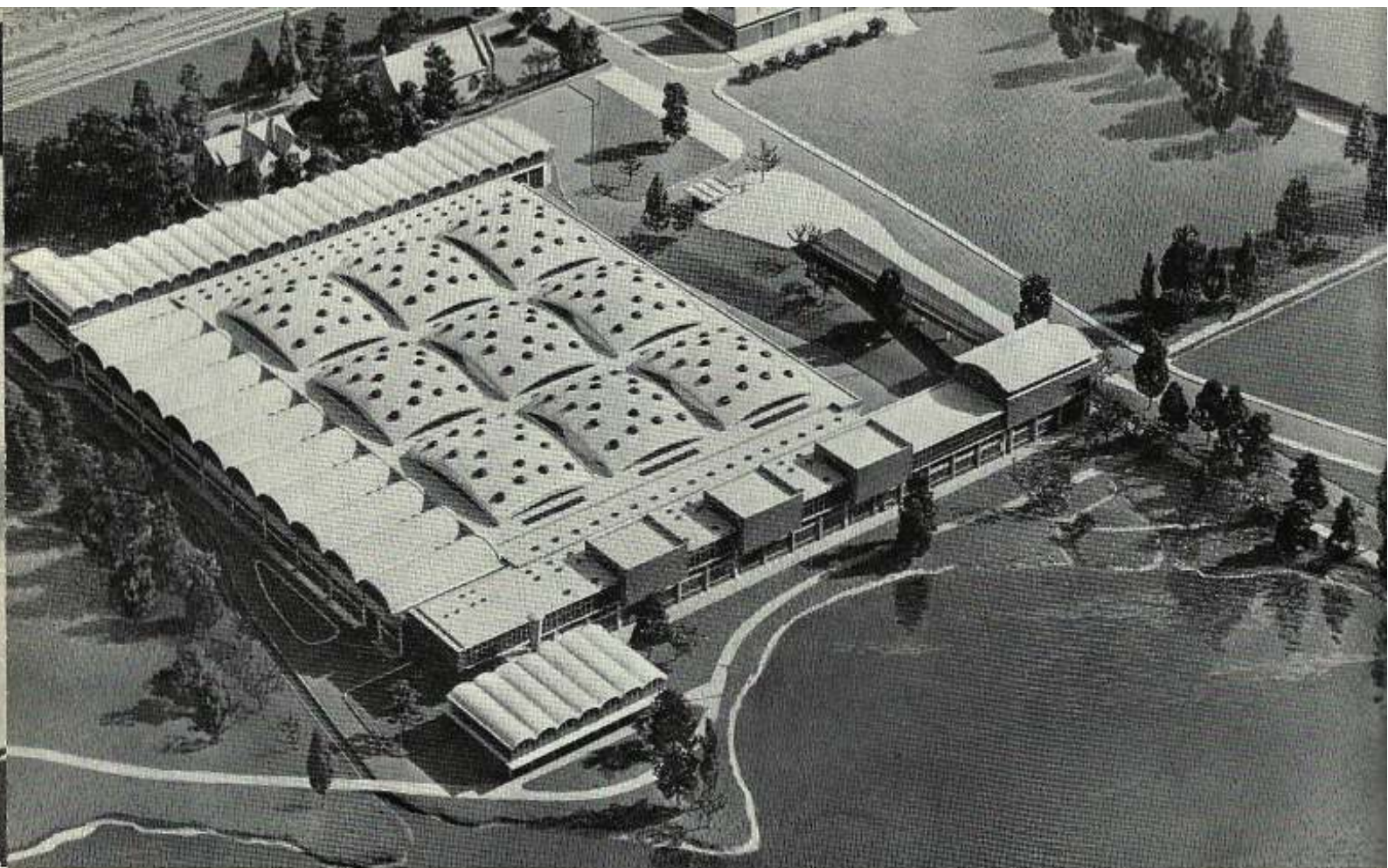
**Before the war very few new industries came to South Wales; there was a marked reluctance by Governments and people to face unpleasant facts. One of the first new manufactures to become established in Wales was Brynmawr Bootmakers Ltd., who in 1928 began to train able-bodied men in new skills and who have since the war moved into a larger factory at Brynmawr, built for them by Wales & Monmouthshire Industrial Estates Ltd.**



**About 150 years ago the great ironmaster Crawshay Bailey dammed the Ebbw Fach, a mountain stream that rose somewhere in the area where the town of Brynmawr now stands. By damming the stream he formed a pond, with a surface area of some 18 acres and a depth of up to 17 feet; this pond fed water to his ironworks at Nantyglo, long since derelict. The Waen Pond is surrounded by old colliery tips but has been partly dredged and will again become useful, supplying 1,000 gallons of cooling water a minute to the new rubber factory.**



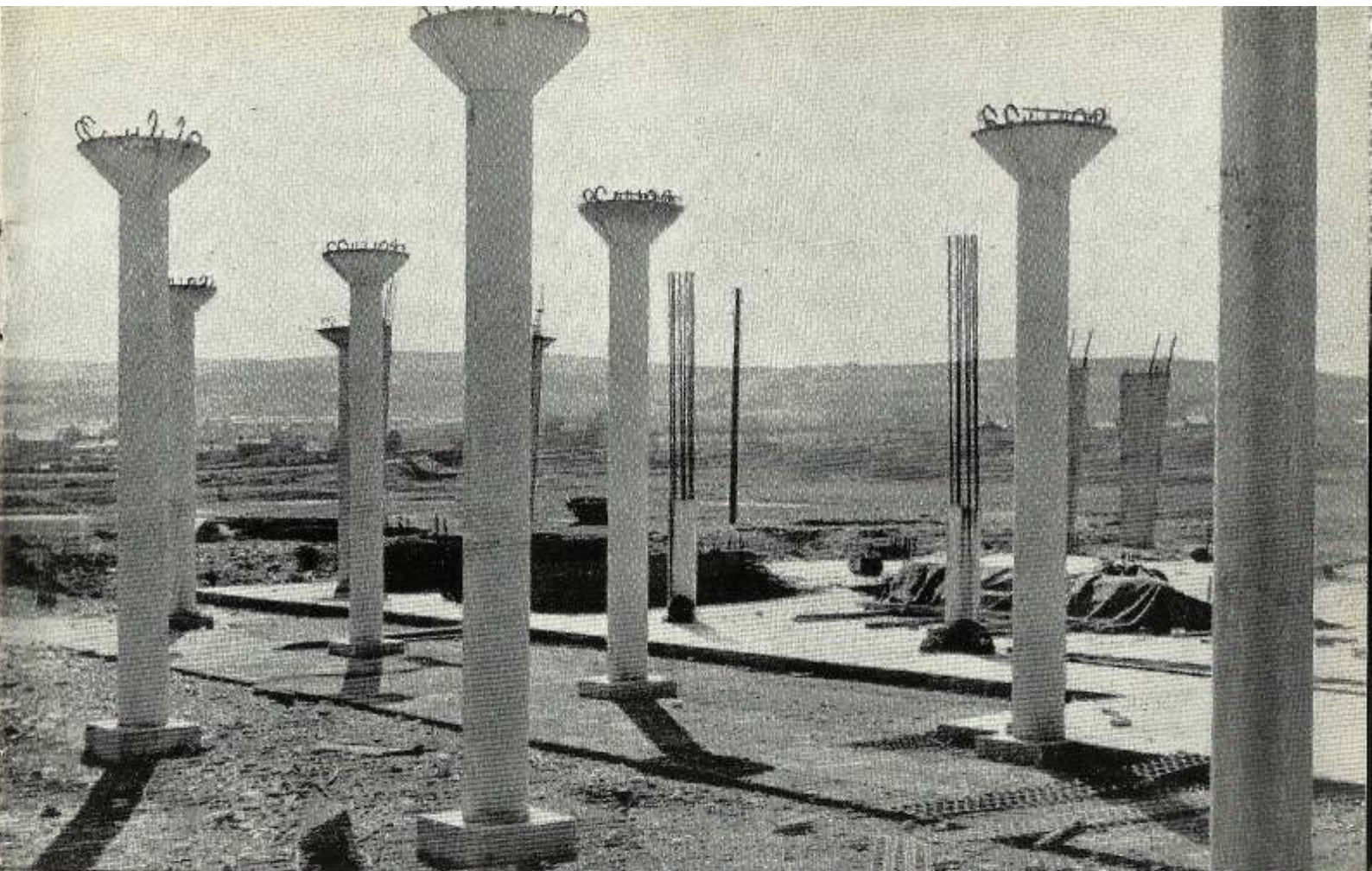
Brynmawr is a town of 6,000 or 7,000 inhabitants, at the head of the Western Valley of Monmouthshire, on the Breconshire border. Before the war more than 80% of the insured adult male population of the town was unemployed, for years on end. The town lies on the northern outcrop of the coalfield; it is no longer a colliery town, because its coal measures are virtually exhausted. The new rubber factory is seen rising to the left (south) of the township. The Waen Pond (drained during the building of the factory) lies to the left of it.



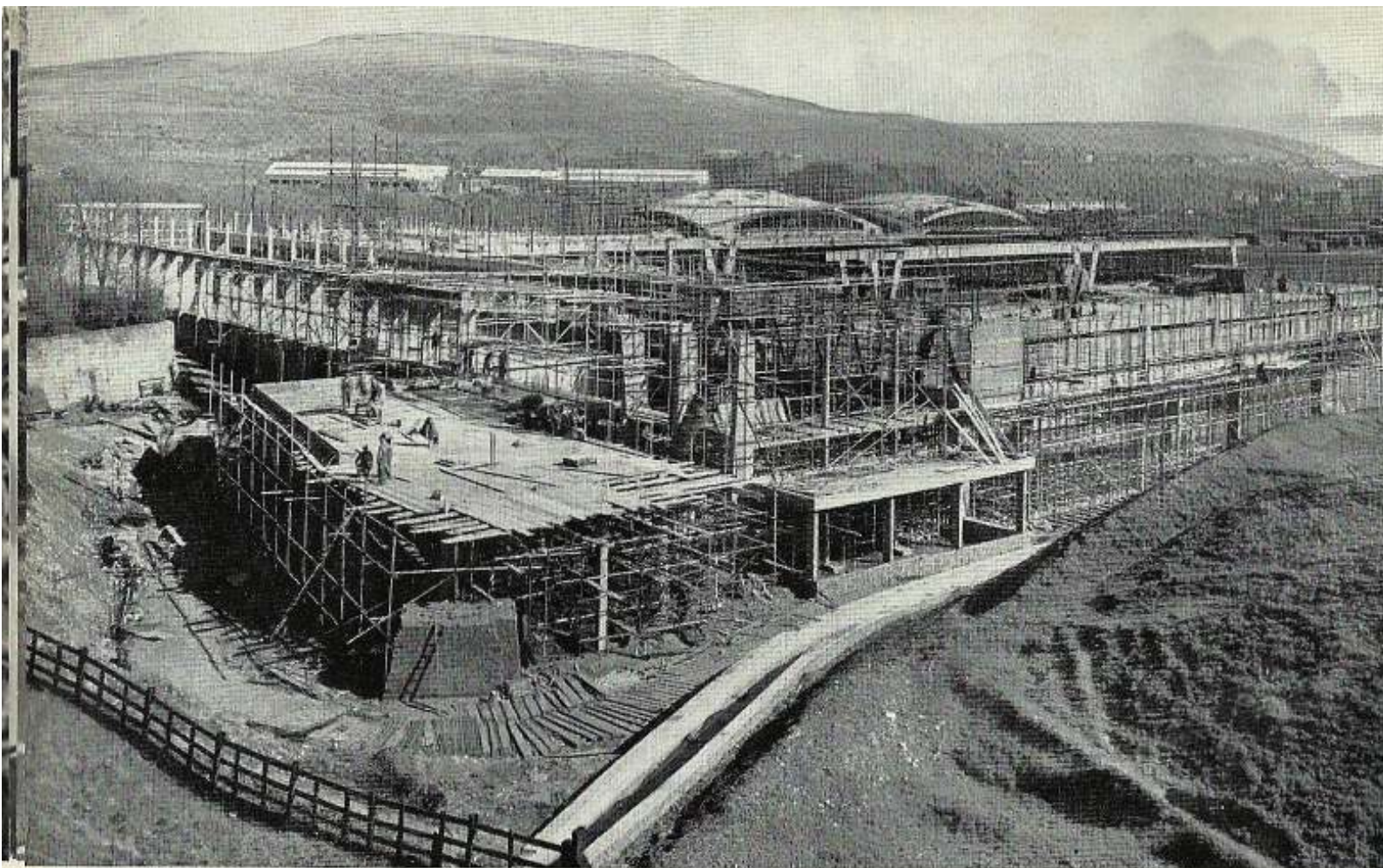
**A model of the Brynmawr Rubber Factory, as projected and as finally built, was displayed in the Power & Production Pavilion of the Festival of Britain, South Bank. It was chosen as one of the most interesting factories built in Britain since the War. With a floor space of more than 250,000 square feet, it has been built entirely of reinforced concrete, without the use of structural steel. The Waen Pond is seen in the foreground, and the boilerhouse in the centre at the back.**

**Architects : Enfield Cables Ltd. Architects' Department, and Architects' Co-operative Partnership, London.  
Structural Engineers : Ove Arup & Partners, London.**

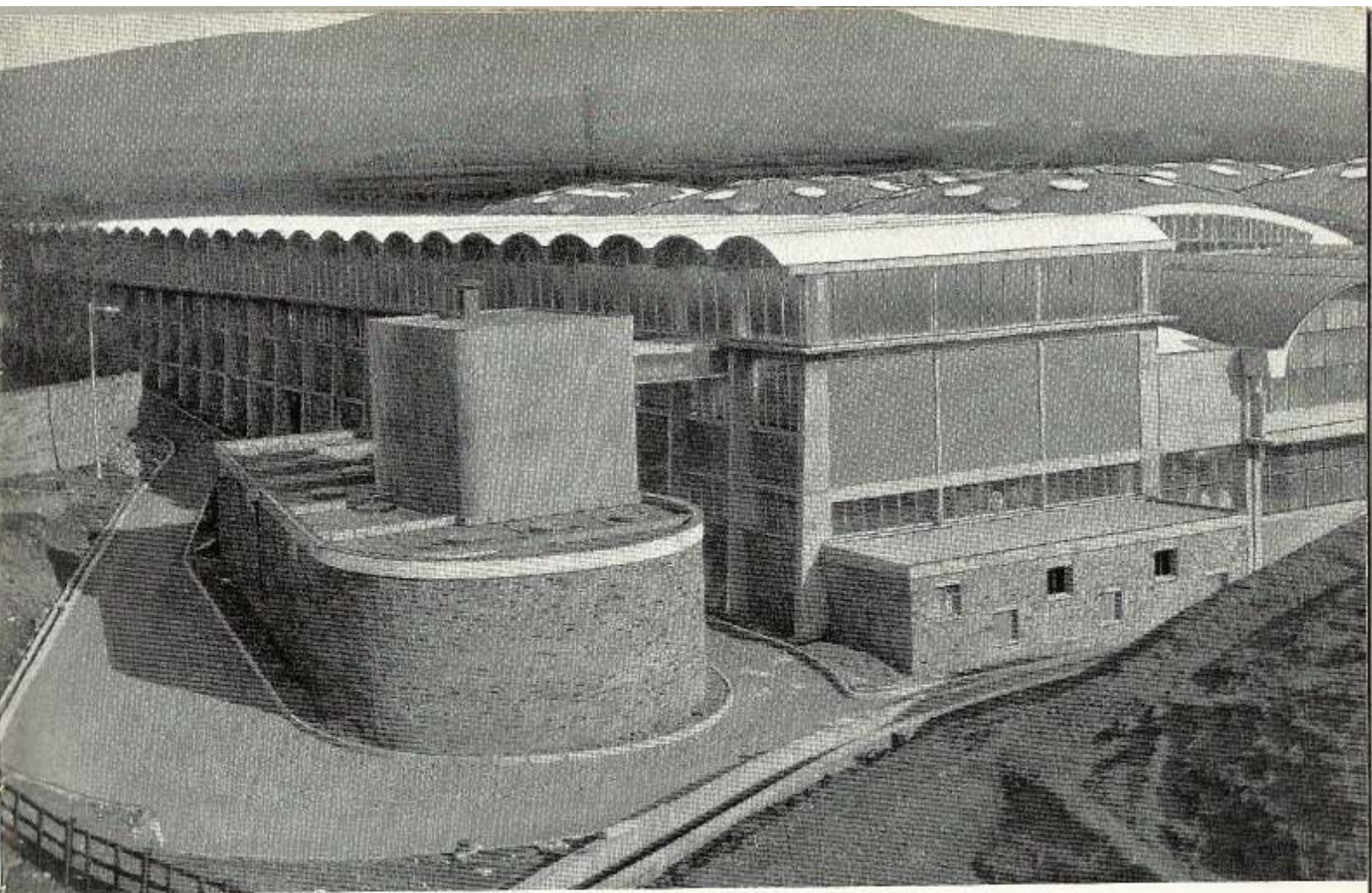




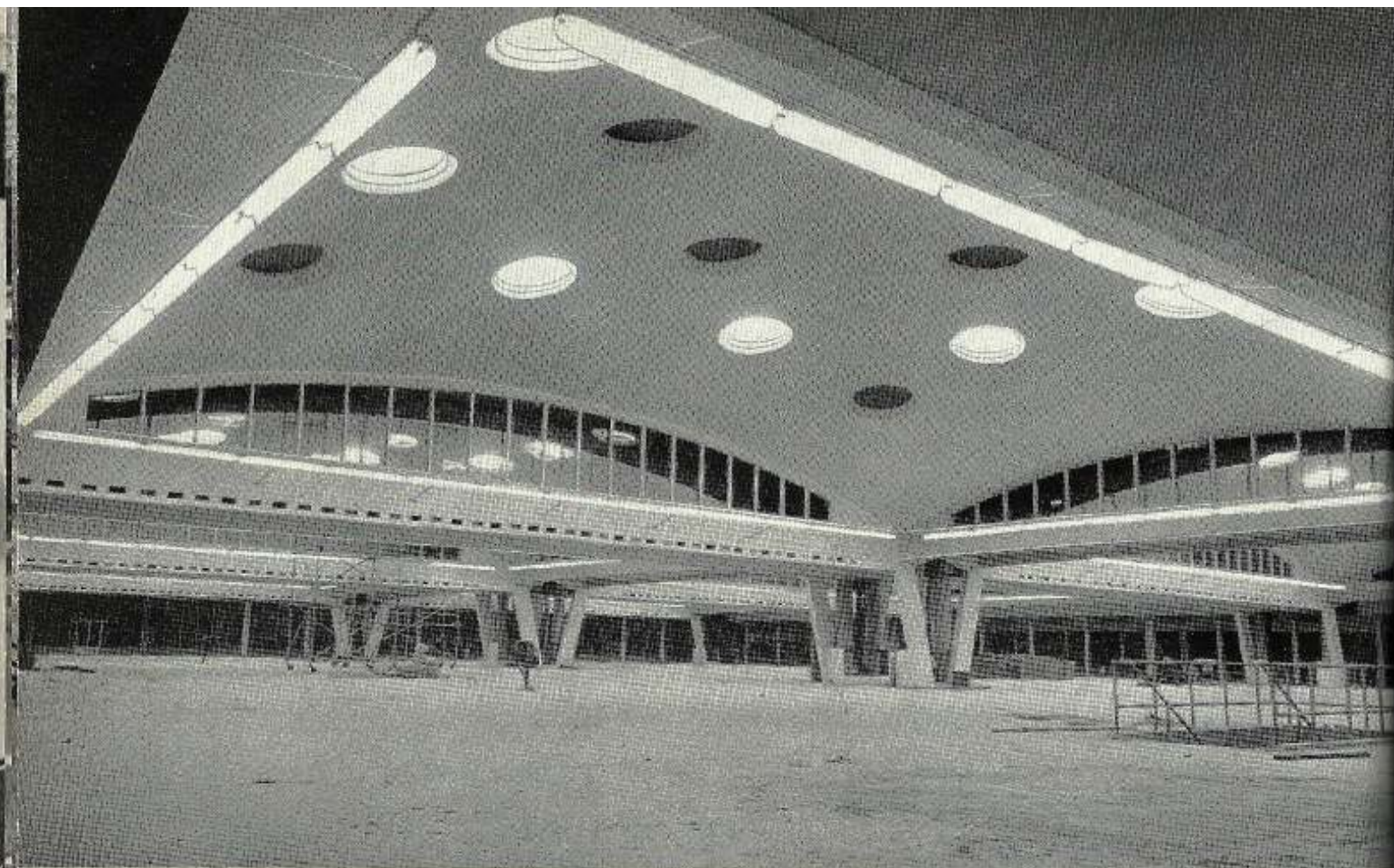
The site of the factory had had three seams of coal worked from under it during the 19th century (the Black Vein, the Yard, and the Old Coal, with possible workings in the Meadow Vein). The Cementation Co. Ltd. of Doncaster had therefore to pump some 500 tons of cement grout into these workings, in order that the erection of the factory with its heavy machinery could proceed on firm foundations. The photograph, taken in the spring of 1948, shows the erection of mushroom columns, supporting the Main Production Floor. General Contractors for Factory Substructure: Holland & Hannen and Cubitts Ltd., London.



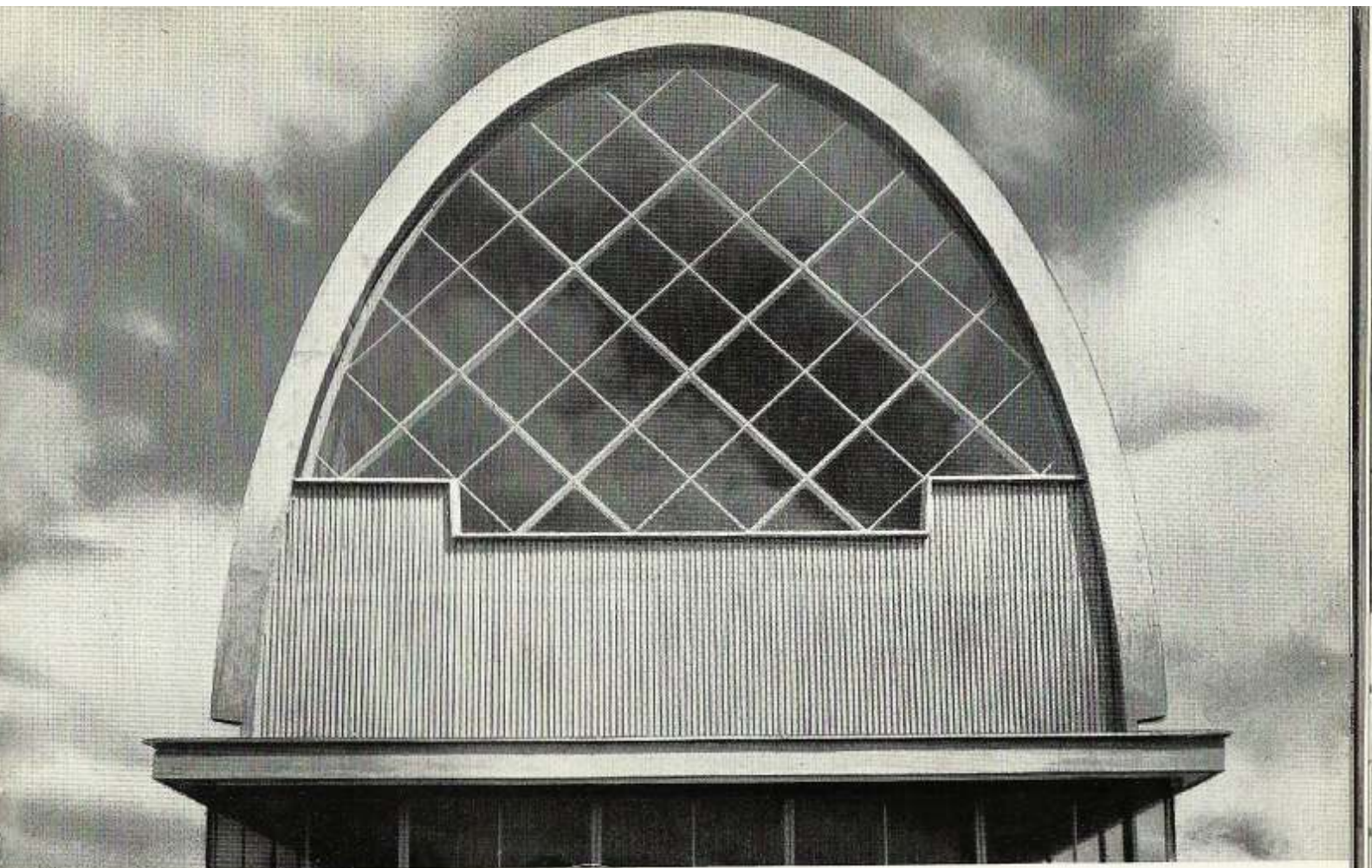
**A progress photograph taken in May 1949 shows the construction of the domed roof over the main production area and (in the foreground) of the Carbon Black Shop. Tubular aluminium scaffolding has been used extensively throughout the job, together with steel shuttering forms, to save timber. Where special timber shuttering has been necessary, it has been prefabricated in the contractor's works in Derby.  
General Contractors: Gee, Walker & Slater Ltd., London and Derby.**



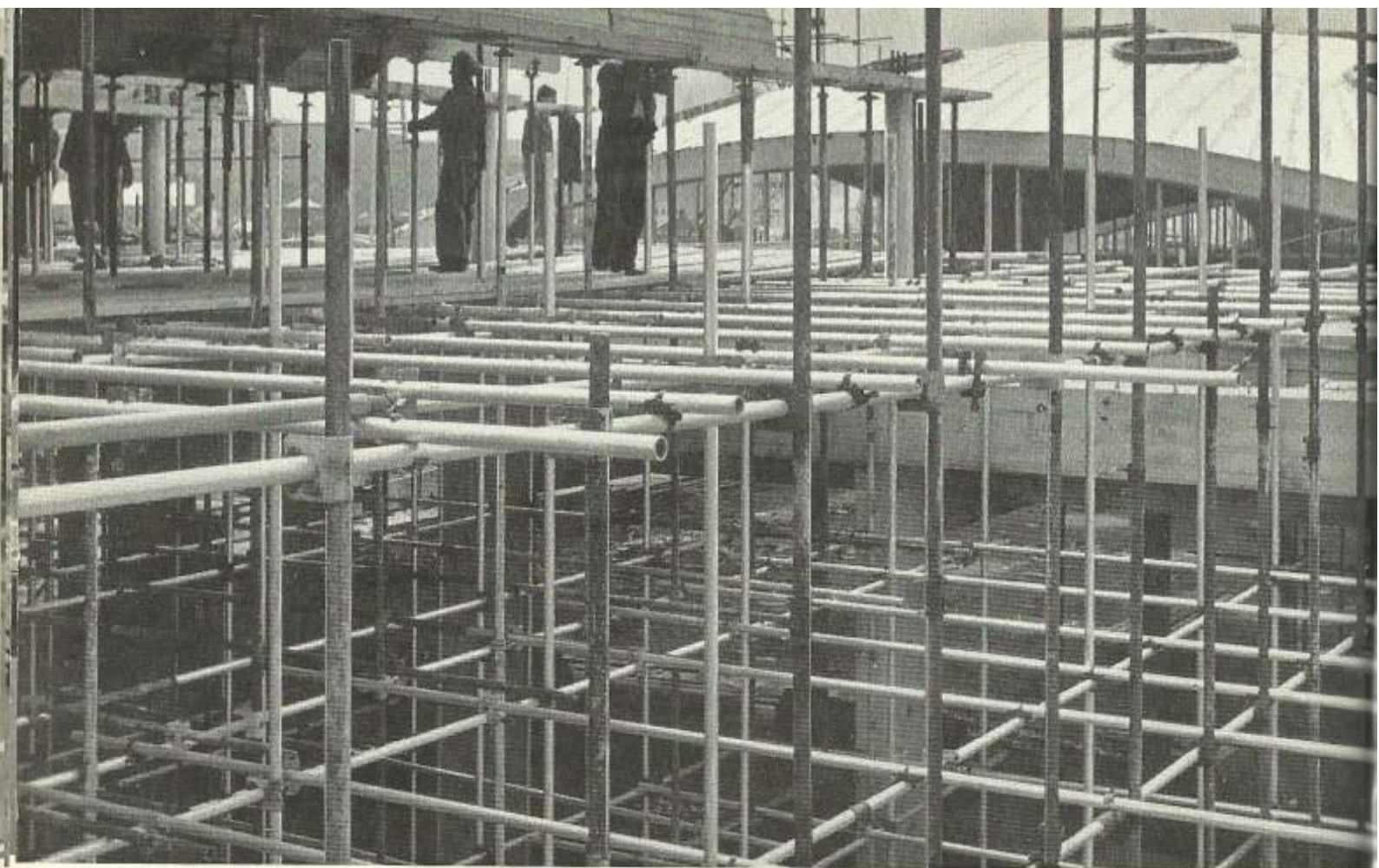
A picture taken in May 1951, two years later than that opposite, from the same position (the railway embankment at the north-west corner of the factory). The separate building in the foreground is the Carbon Black Store, where carbon black can be handled outside the main factory and fed direct into the Banbury Mixer by means of a Redler conveyor. The white barrel-vaulted roof immediately beyond is the Drug Room and beyond again are the nine shell concrete domes, each covered with black roofing felt, prior to finishing with white granite chippings, as the Drug Room.



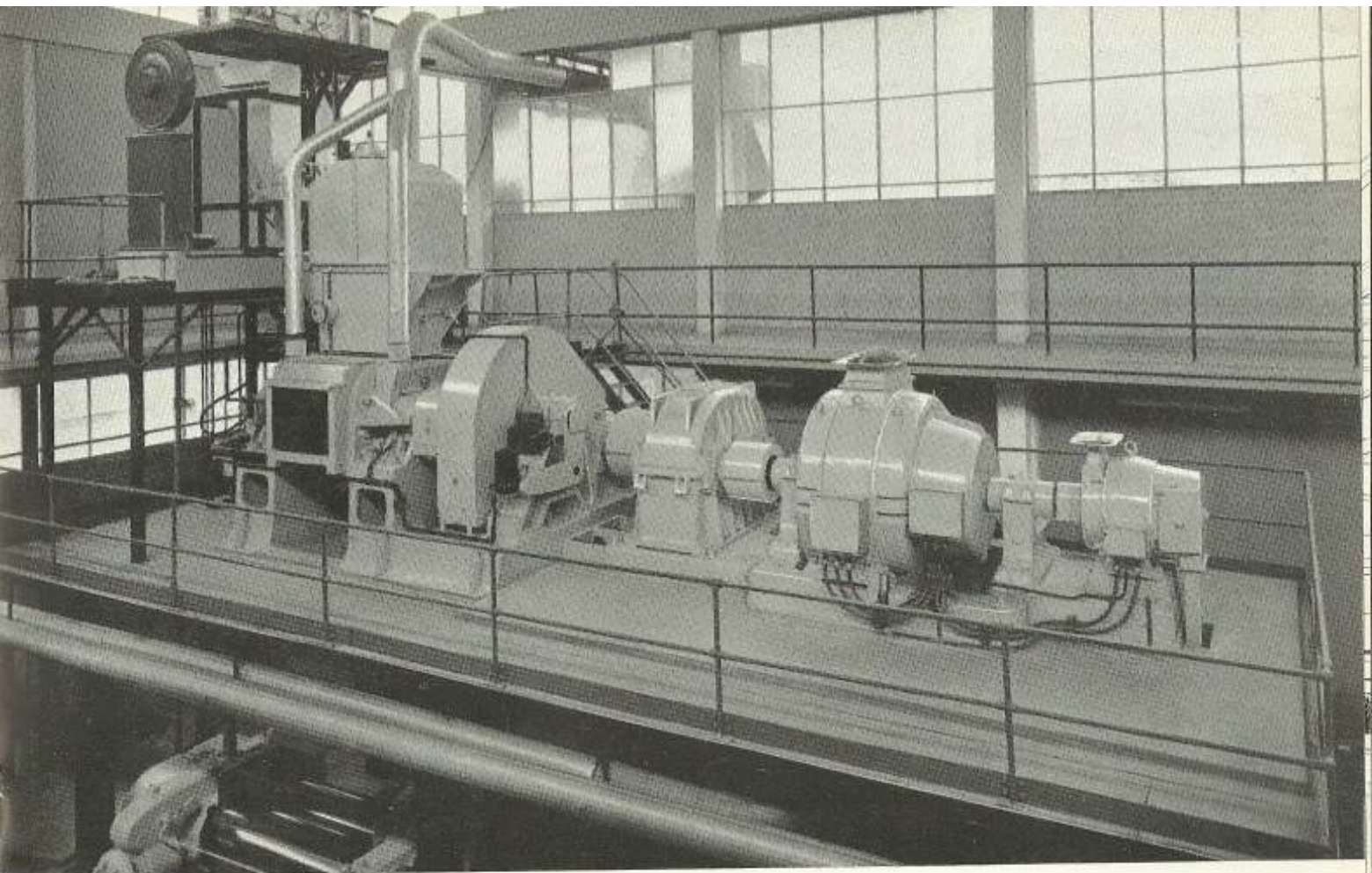
**The roof of the Main Production Area of the factory is formed by nine rectangular concrete shell domes, each 82' long by 63' 9" wide and supported at the four corners only, the largest of their kind ever built. The concrete is 3" thick and each shell curved in section in two directions; columns occur in only four places in the whole expanse of floor (77,000 square feet). The roof will support four times the weight of the heaviest known snowfall in Brynmawr. The Building Research Station at Garston has advised on the natural lighting. Fluorescent artificial lighting is fitted in the circular openings in each dome, with access for maintenance from outside.**



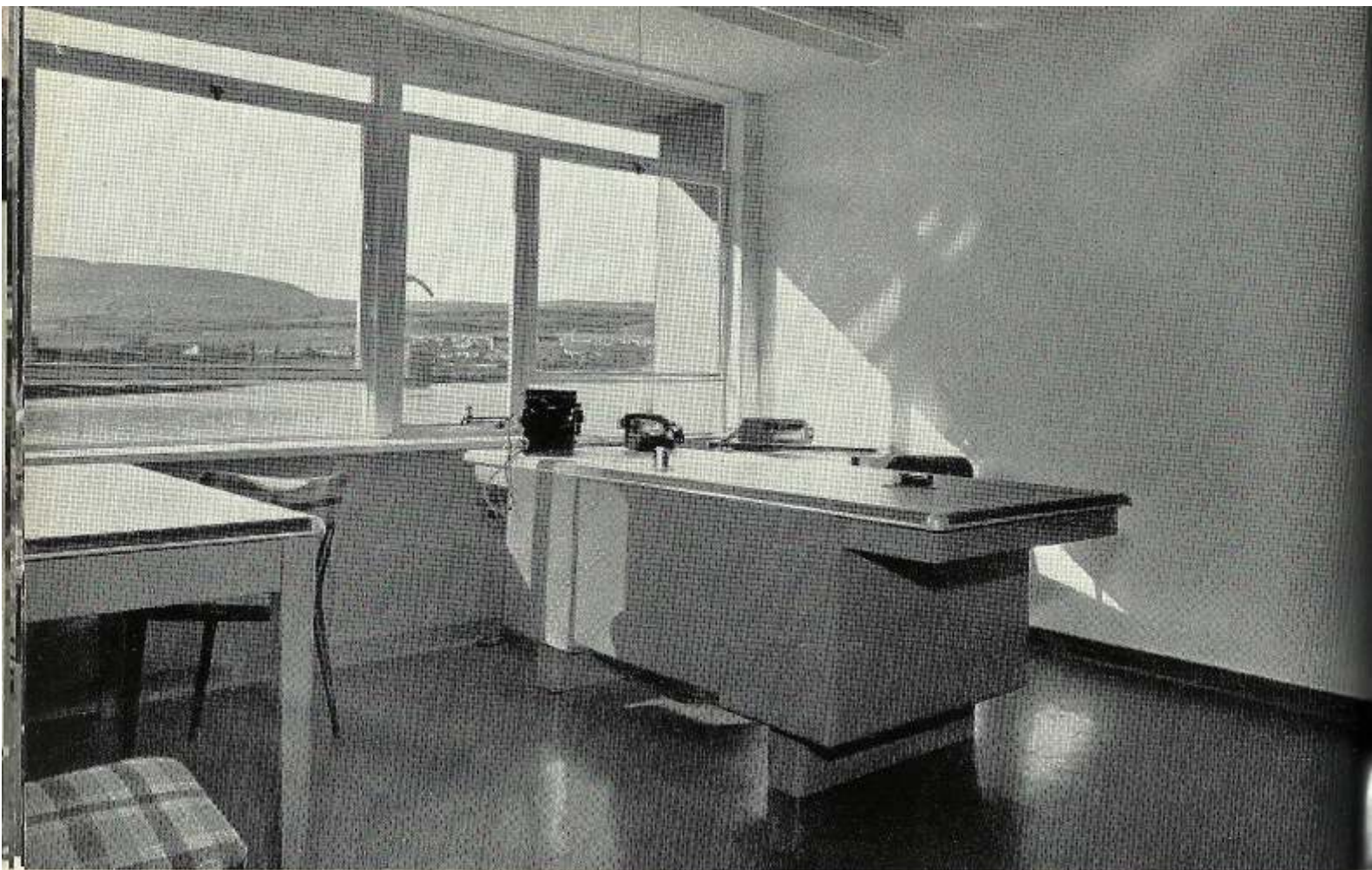
As there was no other access for rail-borne coal, bottom-opening trucks enter the boilerhouse at high level, protected from wind and snow by a parabolic concrete shell roof. The coal is then fed by gravity to Hodgkinson stokers. 4 Davey Paxman "Economic" Boilers are to be installed (three are already there), each with a steaming capacity of 6,580 lbs. per hour at a pressure of 150 lbs. per square inch. An underground corridor takes steam and other services under the road to the factory.  
General Contractors: Holland & Hannen and Cubitts Ltd., London.



The erection of scaffolding for the casting *in situ* of the concrete roofs was a long job, undertaken by the Contractors in progressive stages, so that as far as possible material could be used again and again. Aluminium tubes were used extensively for scaffolding. For the casting of the domes (right) standard steel shuttering was employed, for the barrel-vaulted roofs, such as the Drug Room (left), prefabricated wooden shutters. Shortage of experienced building labour was a serious problem in carrying out the whole job, a shortage directly attributable to the long years of unemployment in Brynmawr and district before the War.

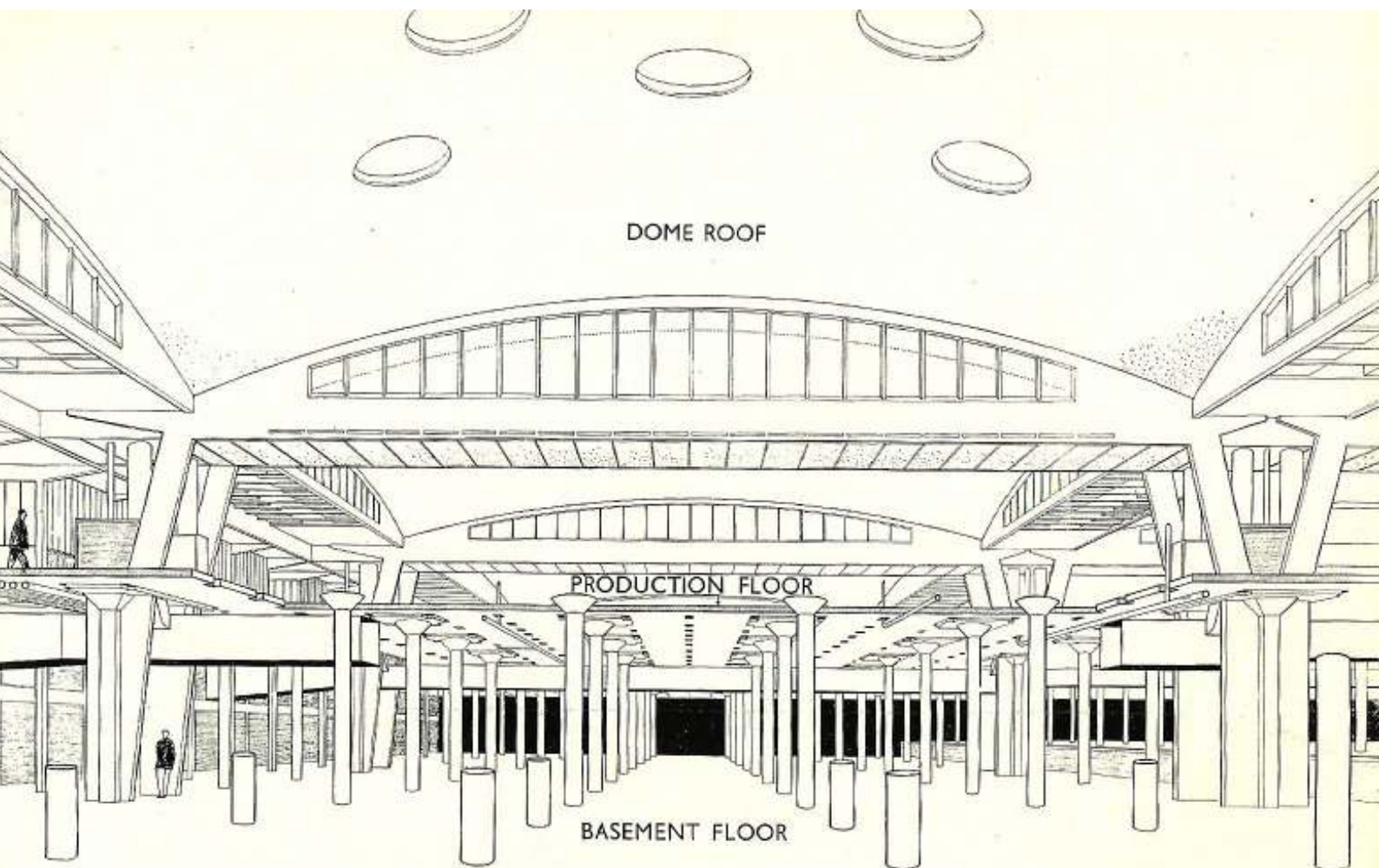


Erection of the first Banbury Mixer, a No. 9, in the north-west corner of the factory nears completion. The machine stands on its own stillage, with an 84" open mill immediately below it. Materials from the Drug Room will be fed to it by conveyor (not yet installed in this picture), whilst carbon black will be carried in by the enclosed Redler conveyor, visible in the picture, coming from the separate Carbon Black Store outside. Space has been allowed for a maximum of three Banbury Mixers, of varying sizes according to the work to be done. Fresh air from outside the factory is carried by ducts (below stillage) to all the large electric motors in the plant, to avoid contamination by dust.

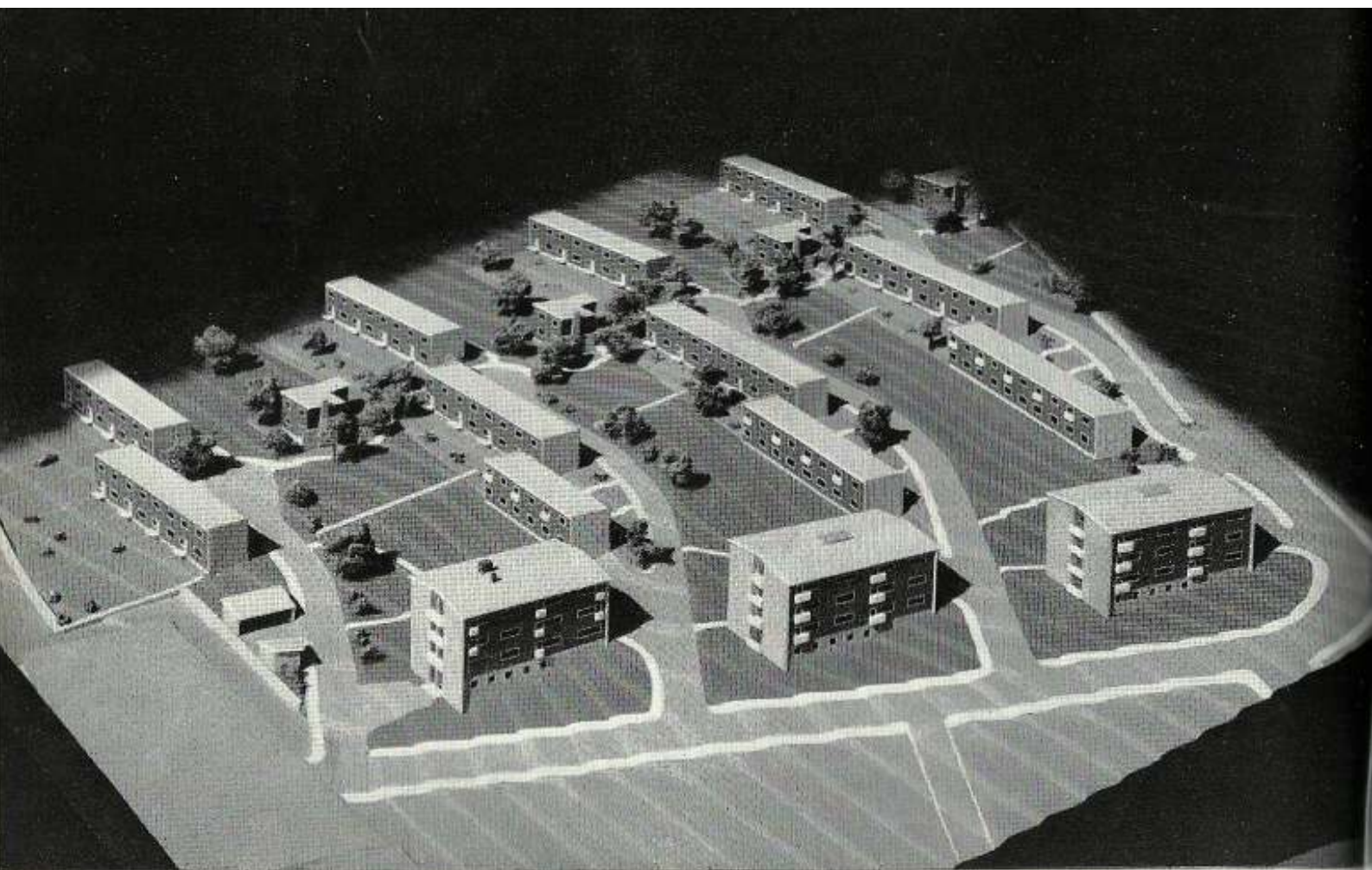


The Waen Pond is seen through the windows of one of the offices in the Brynmawr factory. The offices have been designed so that the wall partitions can be conveniently moved, if required, to give private offices of a variety of sizes and shapes. Each such office will have all services—fenestration, lighting, G.P.O. and internal telephone connections, power point, fire detector, staff call—readily available. The whole office block, which is on the south side of the factory, is heated by floor panel heating, no heating elements being visible.





A perspective section through the Main Production Area, showing the basement (used mainly for the storage of materials under cover), the mushroom columns supporting the Main Production Floor (with an overall loading of 300 lbs. per square foot), and the self-supporting concrete shell domes. All services in the factory will be suspended under the basement ceiling, coming up to the machines on the Production Floor through holes provided at regular intervals in the floor. Machinery can be fixed to the Production Floor by means of Croid-Cooper fixing, no holding-down bolts being necessary, and therefore no cutting up of the floor when new machines are fixed down.

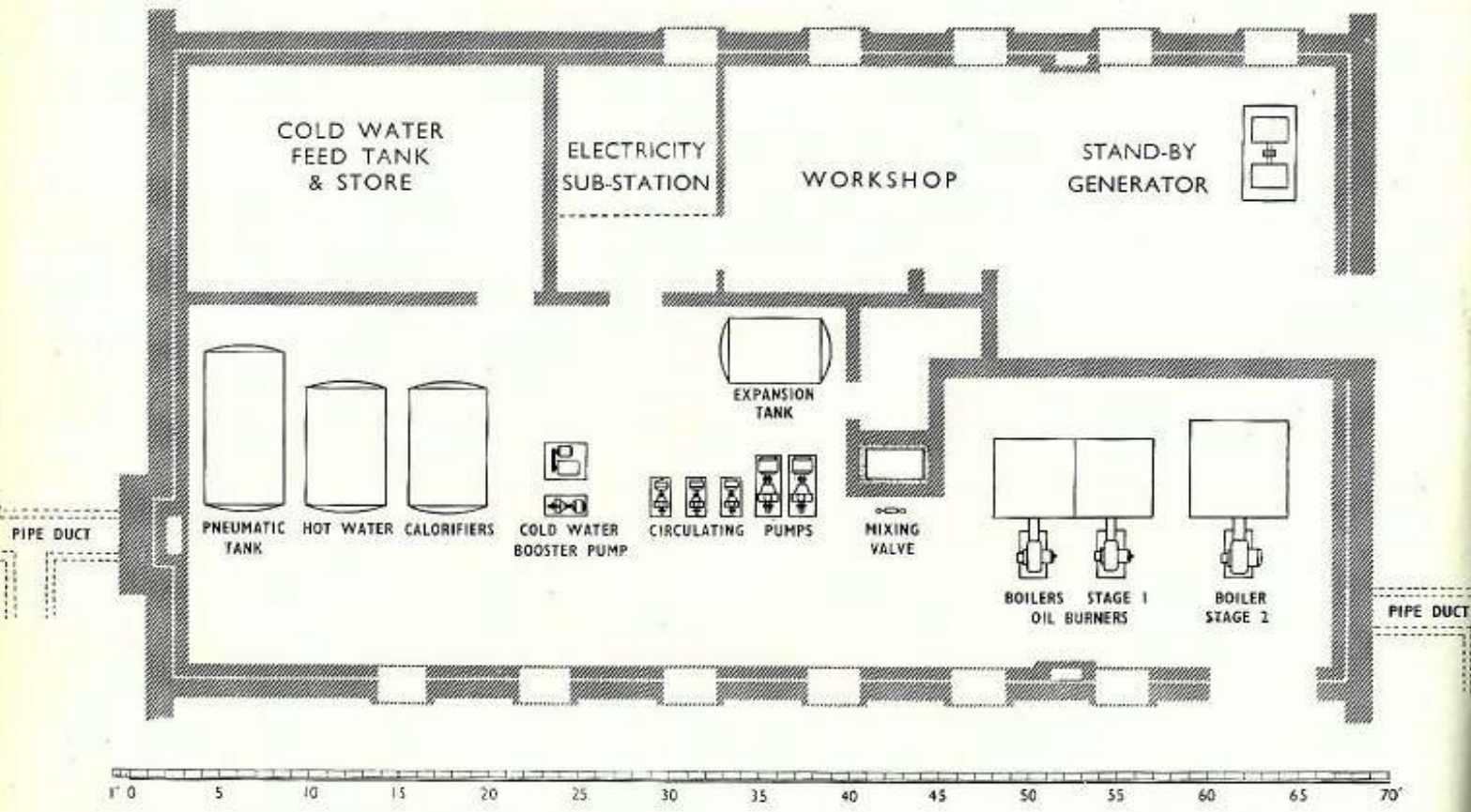


The Brynmawr & District Housing Society has been formed to provide good housing for key men coming to work in the new factory, and later on (it is hoped) better housing for the citizens of Brynmawr themselves. The Bryn Farm, a property of 22 acres in the north-western corner of the town, has been bought for the purpose ; the first stage of the scheme, shown in the model, is now partly finished. The site is 1350 feet above sea level.

Architects: Yorke, Rosenberg & Mardall, Chartered Architects, London.



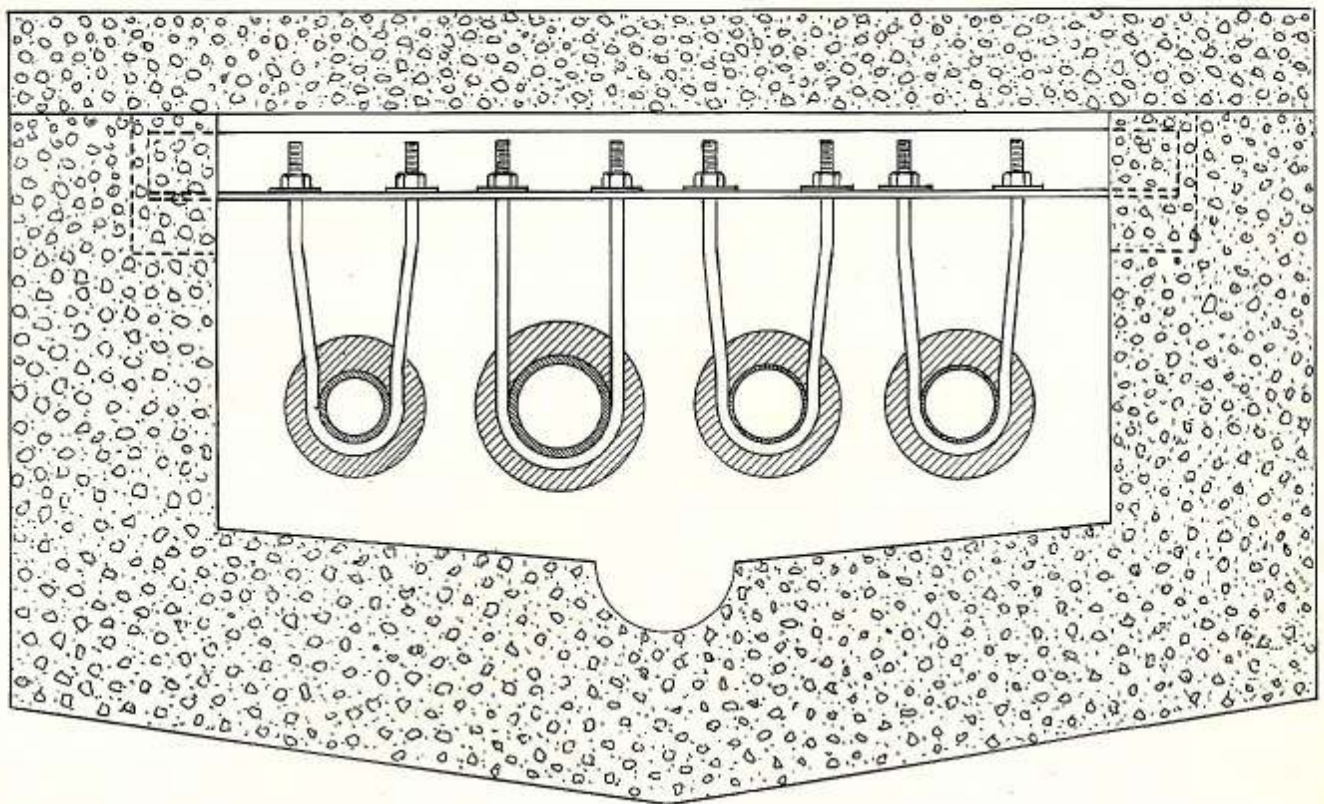
The interior of the living room in one of the houses on the Bryn Farm Estate, with a glimpse through to the kitchen (electric cooker and metal sink). The houses are provided by the Housing Society, complete with everything except furniture. Rubber flooring tiles from Brynmawr Rubber Ltd. are supplied and laid by the Society. Upstairs are three bedrooms and a bathroom, with W.C. Downstairs, in addition to the rooms shown, are a small hall and staircase, a "utility room" and a downstairs W.C.  
General Contractors : W. & A. Davies Ltd., Abersychan, Mon.  
Main Contractors for Site Works : Davies, Middleton & Davies Ltd., Cardiff.



The Brynmawr & District Housing Society has installed one of the first self-contained district heating schemes in the country, and the first in Wales. The boilerhouse, of which a plan is shown, is housed in the basement of the lowest block of flats, and is oil-fired. Stage 1 of the project, now complete, comprises 20 houses and 15 flats.

Consultant Heating Engineers: J. Varming & Partners, Copenhagen and Dublin.

Heating Contractors: G. N. Haden & Sons Ltd., London.



1" 0 5 10 15 20 25 30 35 40"

To save cost and to avoid heat losses to atmosphere, the pipes carrying the low pressure hot water of the district heating system run below the ground floor of the terrace houses, wherever possible. From one terrace to the next, however, they run in the concrete ducts here shown in section. The living-room of each house can be heated to a temperature of 68°F. when outside the temperature is 32°F. In summer hot water only is provided. Various experiments in metering and charging for heat and hot water are being tried out.

In addition to the Consultants and Contractors whose names have been mentioned in earlier pages of this booklet, the following have been responsible for special aspects of the various projects:

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| <b>Quantity Surveyors:</b>                       | Davis, Belfield & Everest, London. ( <i>Brynmawr, Bryn Farm, Cwmavon</i> )  |
| <b>Structural Engineers:</b>                     | Ove Arup & Partners, London.<br>( <i>Brynmawr, Bryn Farm Flats, Cwmavon Water Reservoir</i> )   |
| <b>Landscape Architect:</b>                      | G. P. Youngman, M.A., F.I.L.A., A.M.T.P.I., London.<br>( <i>Brynmawr, Bryn Farm, Forge Side, Cwmavon</i> )                              |
| <b>Electrical Consultants :</b>                  | Couzens & Brown, London. ( <i>Brynmawr</i> )  |
| <b>Heating and Ventilating<br/>Consultants :</b> | J. Varming & Partners, Copenhagen and Dublin.<br>( <i>Brynmawr, Bryn Farm</i> )   |
| <b>Hydraulic Consultants :</b>                   | A. P. I. Cotterell & Son, Chartered Civil Engineers, London.<br>( <i>Brynmawr</i> )   |
| <b>Electrical Installation :</b>                 | T. Clarke & Co. Ltd., London. ( <i>Brynmawr</i> )   |
| <b>Electrical Installation :</b>                 | Troughton & Young Ltd., London. ( <i>Brynmawr Boilerhouse, Bryn Farm</i> )  |
| <b>Electrical Installation :</b>                 | F. H. Wheeler & Co. Ltd., London. ( <i>Cwmavon</i> )  |
| <b>Heating Installation :</b>                    | Matthew Hall & Co. Ltd., London. ( <i>Brynmawr</i> )  |
| <b>Heating Installation :</b>                    | G N. Haden & Sons Ltd., London.<br>( <i>Bryn Farm, Brynmawr South Block Floors</i> )  |
| <b>Consulting Engineer :</b>                     | H. C. Young, M.I.Mech.E., A.M.I.E.E., F.I.R.I., Luton.<br>( <i>Layout of Rubber Plant at Brynmawr and of Ebonite Plant at Cwmavon</i> ) |