

THE NATIONAL MUSEUM OF WALES

DEPARTMENT OF INDUSTRY

A DEPARTMENT of Industry was founded in the National Museum of Wales, Cardiff, in 1958, and its gallery was opened to the public last December.

The purpose of the Department is to illustrate not only the history and development of the older Welsh industries that were founded upon Welsh raw materials or upon techniques evolved or developed in Wales but also the application of science and research to the industries more recently introduced. In presenting an objective record of technical progress an attempt will also be made to show something of its impact upon human life.

The exhibits are displayed in fixed cases of shop-window type and in standard museum cases. For the present, there is a preponderance of those dealing with the iron and steel industry in Wales; in some exhibits it is looked at from the historical point of view alone, whereas in others the contrast between old and new methods is brought out by combining models of obsolete plant and photographs of modern processes.

The first of the iron-making exhibits contains a model of an anthracite blast-furnace used in the Gwendraeth Valley about 1850, and one of a blast furnace with a stove for heating the air before its injection into the furnace. The latter was associated with the successful attempts of John Budd in adding pre-heating chambers to some anthracite-burning furnaces at Ystalyfera in the Swansea Valley in 1844. Like other contemporary blast furnaces, those at Ystalyfera were constructed of massive masonry enclosing and supporting the fire-brick chambers in which the reactions took place. A further typical example of the construction adopted in South Wales before 1850 is depicted in a model of a blast furnace at the Pen-y-Darren Ironworks. Included in the model is a small pipe stove, consisting of nine semi-circular cast-iron pipes placed in parallel in a chamber heated by a coal fire, by which some of the blast was heated. Coupled with this model is one of a blowing engine used at the works for supplying air to blast furnaces. The type of blast furnace erected at Cardiff between 1888 and 1895 is represented by a half-section model. These furnaces were hand charged until 1927.

Obsolete steel-making plant is illustrated by a model of an open-hearth steel furnace of a type used in South Wales from 1890 until 1900, and included in the same exhibit is a sectional model of a Siemens' gas-producer, formerly the property of Sir C. W. Siemens, representing the modified type of gas-producer which he devised for use with the open hearth process perfected by him in 1867. In an exhibit on steel-making by the Bessemer process, there is a sectional model of a Bessemer converter of 1856.

In 1898 the works engineer at Dowlais Works designed and patented an ingot-stripping machine. Previously the cast-iron moulds had been stripped from steel ingots by hydraulic and steam cranes working alongside the sunken teeming pits. The new

stripping machine, hydraulically driven, made it possible for ingots to be cast on bogies and then taken to the soaking pits some distance from the steel-making plant. A model of this machine is on view, and there is also a model of the original engine used at the same works for driving the roughing rolls of the rail-mill.

The hand processes of making tinplates in works dismantled during recent years are illustrated in an exhibit containing tools, photographs and samples of plates in the various stages of rolling from the original tin bar to the finished pack of eights.

At one end of the gallery there is a small transport section showing models of nineteenth-century sailing ships, illustrating the transition from sail to steam, and of early twentieth century cargo steamers under Welsh ownership. There is a model of the first Garratt articulated locomotive built for use in Great Britain, which operated at the Hafod Copper Works, Swansea, and one of a Taff Vale Railway engine and tender of 1867. A working model of a high-pressure steam engine designed by Richard Trevithick is also included; it is of a type installed at iron-works at Pen-y-Darren, Hirwaun and Tredegar at the beginning of the nineteenth century. A small panel of photographs alongside this model illustrates parts of the remains of the tram-road from Merthyr to Abercynon along which the Trevithick locomotive travelled in 1804.

One of the fixed cases contains a model of a rotary cement kiln. This will be supplemented by an exhibit adjacent to it which will include specimens of the raw materials used in the making of cement, of the product at various stages of manufacture, and of photographs of quarries and parts of the plant involved. An exhibit of Welsh exposed-aggregate slabs is also planned. A collection of tools, photographs and drawings illustrates the preparation of roofing slates in North Wales, and there is an exhibit devoted to the history and development of the miner's safety lamp.

The rayon industry is represented in an exhibit illustrating the manufacture of rayon staple and box spinning textile yarn at a factory in North Wales. An exhibit dealing with the nylon industry is being planned, and it is hoped to have another featuring the nickel industry.

Some original machines—a beam engine for pumping water from pits, a water-balance pit-head gear used to raise coal, and a set of rolls and a shear-table from an old-type tinplate works—are installed in the grounds of the Museum.

The gallery as it now stands indicates the field which the Department of Industry is intended to cover. It will be added to as rapidly as circumstances permit; but full use of models and original objects now in reserve cannot be made, nor can the full illustration of the special industries of Wales be achieved, within the confines of the present gallery. Much of this work will have to await the hoped-for addition to the Museum of a west wing.