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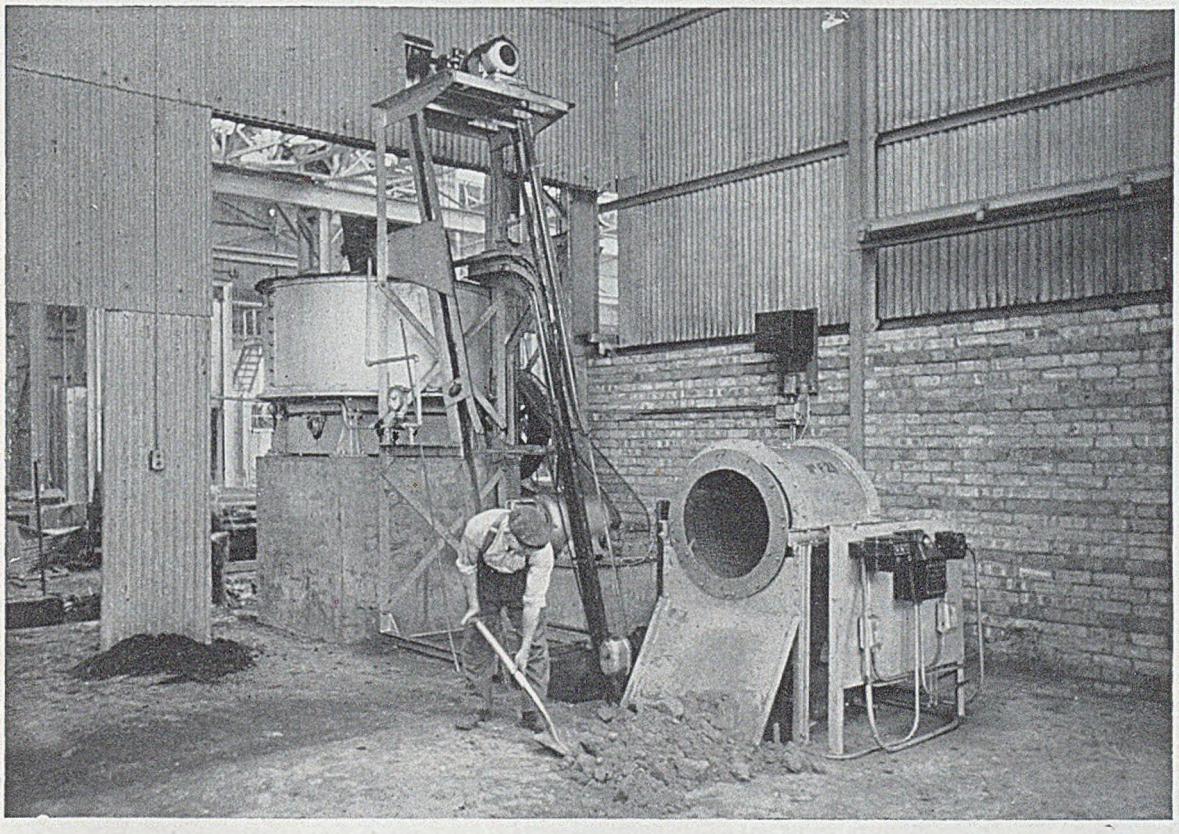

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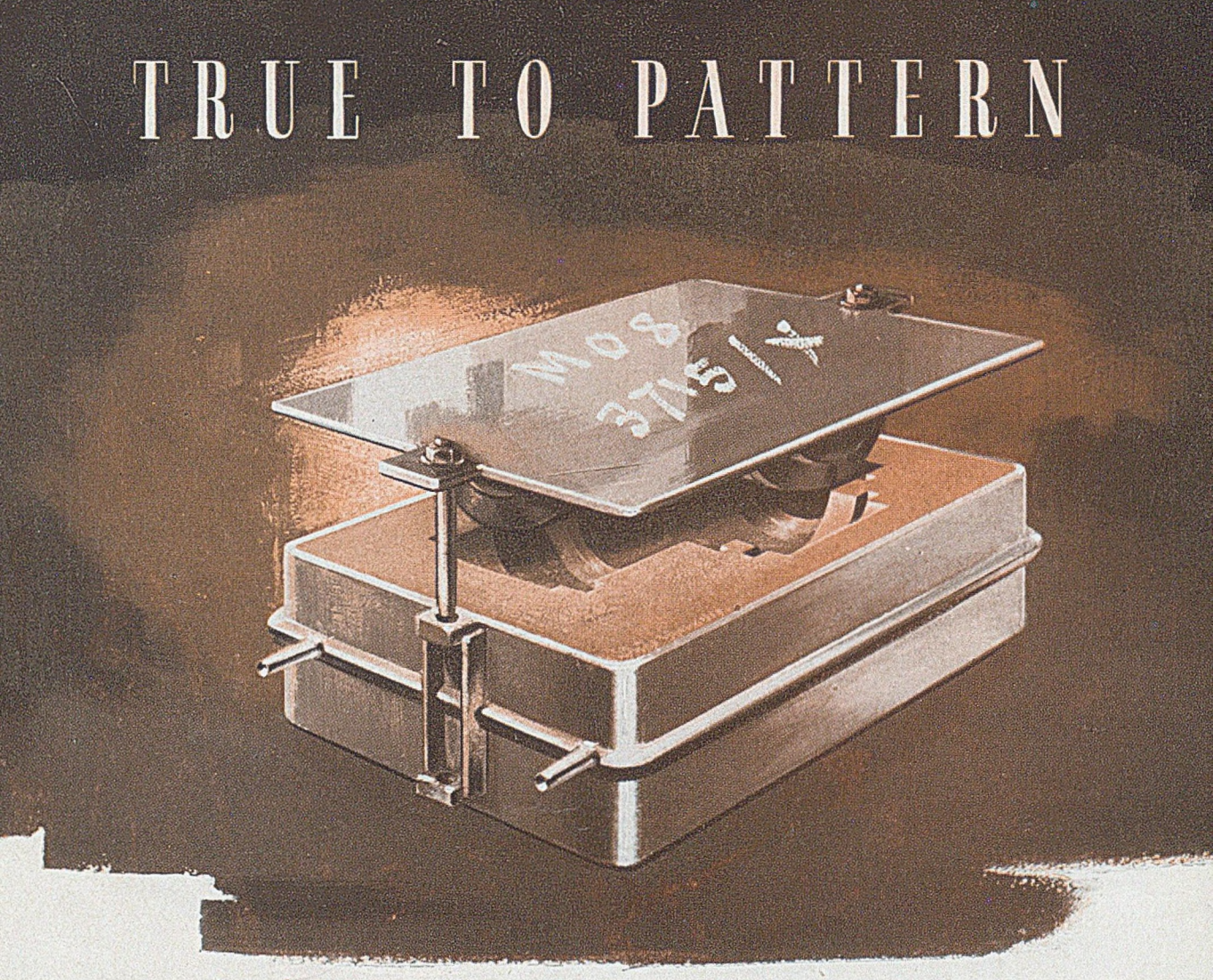

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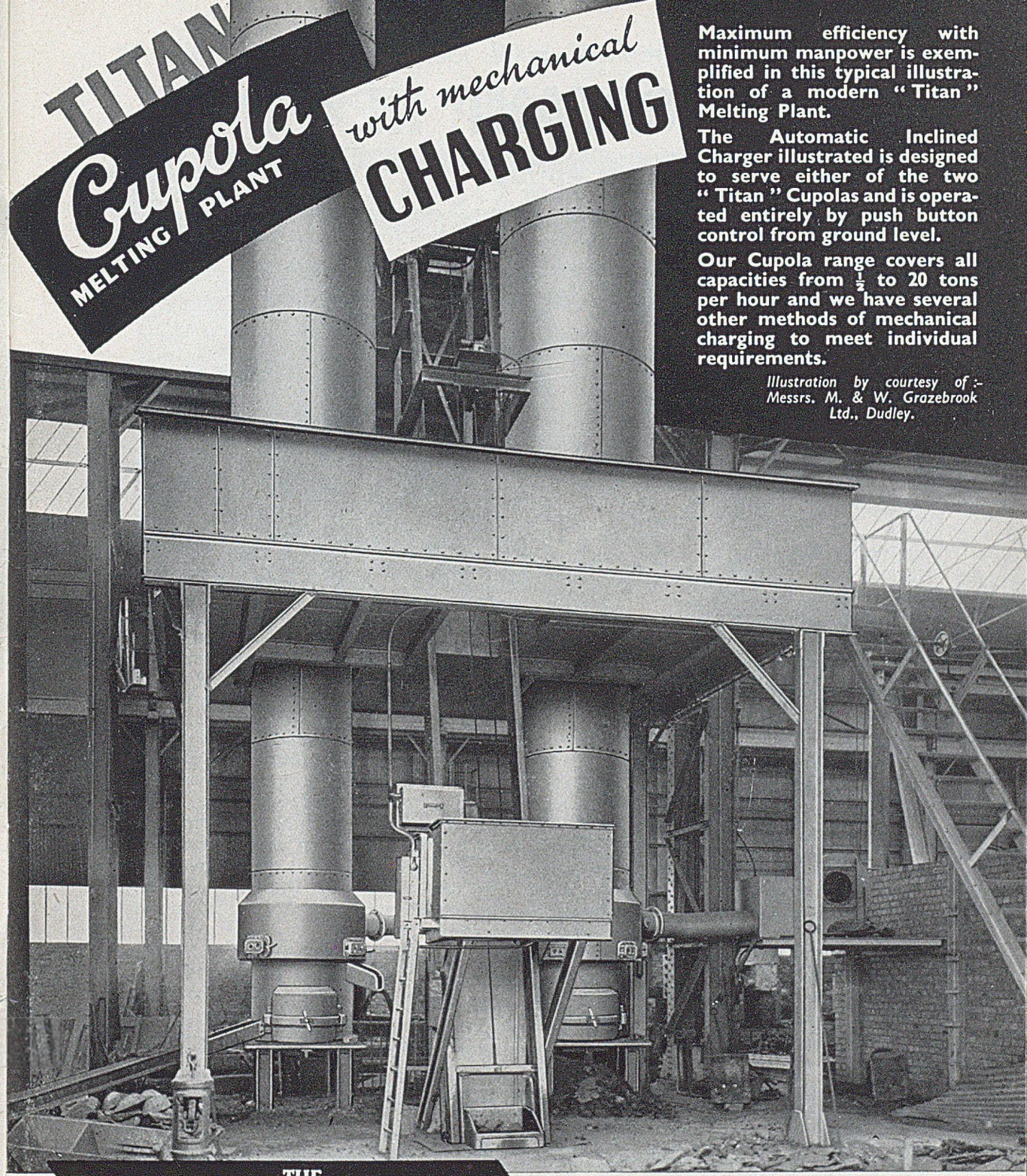

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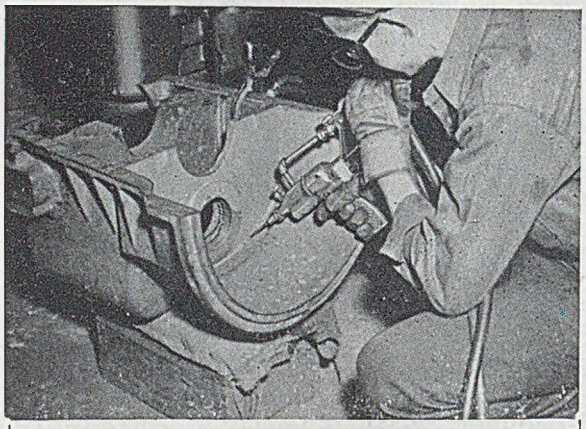

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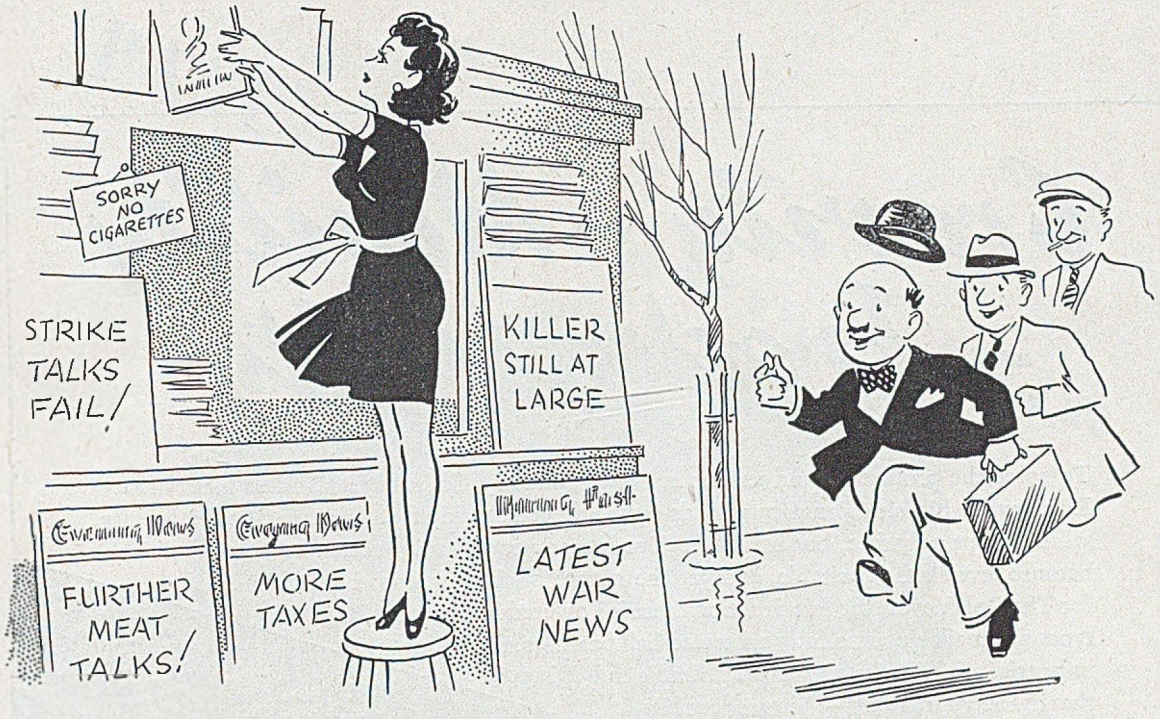

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49, Wellington Street, London, W.C.2. 'Phone: Temple Bar 3951 (Private Branch Exchange) Grams: "Zacatecas, Rand, London"

French Productivity Report

The Report of the team of French jobbing founders led by Mr. Chatelin has now been published by the *Syndicat Général des Fondeurs de France* from 2 Rue de Bassano, Paris 16. It follows much the same general pattern as those made by British founders with perhaps the difference that more stress is laid on the application of the information derived and less on the need for Governmental assistance for its implementation. The French Report is much longer than the one made by the Grey Ironfounders' team and has double the number of illustrations. The detailed method of presenting their findings has, however, been quite different. Though both teams visited about 20 foundries only three were common to both parties, which obviously makes the French Report of added interest. Despite this divergence, the main conclusions are:—

The French treatment is typified in their section eight, covering "handling." The plant used is detailed in a table spreading over two pages. Then follow the underlying principles of the organisation of handling, and this includes some of the gadgets described in the Grey Ironfounders' Report. This forms the bulk of the section. Next, some specific examples are given of good results obtained by the Americans, such as three men being sufficient to look after the raw materials yard and cupola charging for an output of 30 tons of good castings per day. Then comes the application of mechanical handling resulting in full mechanisation through synchronisation. Finally, a little lecture is given to the French foundries as to how they should apply the lessons. This, then, is the general scheme for dealing with each phase of foundry practice.

The conclusions the Report prints start off by pointing out the similarities between American and French jobbing foundries. The sands, raw materials, melting methods, handling problems types of production and average size are all pretty much of the same general order. Despite these factors, overall American production appears to be 2½ times greater than French. Whilst the Americans have greater resources available, they are no better off—if as well placed—in the supply of really skilled craftsmen. No one single factor can be pointed to as being the cardinal one for this high American production. Such matters as intelligent handling are outstanding, but social and even political wages play an important part. This latter is expounded a little but not in such forthright terms as the various home team reports. The special points picked out for recommendation are: metal mixers, snap flask moulding, the better servicing of the operatives, and finally the regrouping of manufacturing so as to create small units for making the same type of castings, associated with incentive payments. In other spheres the Report calls attention to the need for more support to be given to the intensive training of the working staff and for closer co-operation between designer, pattern-maker and foundryman. Very rightly, the Report draws attention to excellent facilities which already exist in France for the dissemination and exchange of technical information, co-operative research, testing, standardisation, rational costing, technical servicing and so forth. We congratulate Mr. Chatelin and his colleagues on having produced a thoroughly interesting report of their visit to the States.

British Standards Institution

Colour Identification of Pipe-lines
(*B.S.* 1710 : 1951)

During the past 20 years three British Standards have been published dealing with the identification of piping, and certain anomalies have arisen because of differing opinions as to whether the identification should be on the basis of the characteristics of the pipe content or the identification of the material carried. In order to remove these difficulties, and to co-ordinate requirements, this new work has been published (B.S. 1710:1951) and replaces B.S. 457, B.S. 617, and B.S. 3011, but it does not supersede the British Standards dealing with gas cylinders and medical-gas cylinders, nor does it affect the provisions of B.S. 158, which deals with the colour identification of switchgear bus-bars and connections and wire.

The standard provides primary identification colours which indicate the class of content in pipe-lines, these colours being applied along the length of the pipe or in broad rings, as desired. Detailed identification of the contents by narrow rings or letters and for certain special conditions is covered in the appendices. Consideration has shown that, since only a limited range of colours is suitable for use under all conditions without confusion being caused through fading or discoloration, any highly complex scheme for identification is unlikely to be really practicable and a simple code has been evolved. Coloured illustrations of the application of the code are included in the standard, copies of which may be obtained from the sales department at 24, Victoria Street, London, S.W.1, price 2s. 6d.

Latest Foundry Statistics

Despite shortages, the Monthly Statistical Bulletin issued by the British Iron and Steel Federation reports that on February 10, the average number of workpeople engaged in ironfounding was 149,952—an increase of 41 over January 6. The gain was made up of an increase of 59 males and a loss of 18 females. For the smaller industry of steelfounding the gain was more striking—from 18,608 to 18,682, but in this case the conditions were reversed for, of the 74 additional workpeople, 69 were females and only 5 males.

During February, the weekly average amount of metal melted for the production of steel castings was 2,010 tons, as against 1,940 tons in January and 1,790 in February, 1950. This is the highest average registered in the period 1945 to date. However, the deliveries of finished castings, expressed again as weekly averages, were 3,600 tons, the same as January and much of the same order as the earlier productions listed. The production of alloy steel castings, however, seems to be on the increase, and at 1,000 tons in February is the record amongst the figures—going back to 1938—shown.

Pig-iron Merchants' Association

At the annual general meeting of the Pig-iron Merchants' Association on April 26, Mr. F. Arnold Wilson, of William Jacks & Company, Limited, was elected chairman for the current year. Mr. Arnold Carr, of T. W. Ward, Limited, who was elected vice-chairman, was warmly thanked for his 14 years of office as chairman. Mr. James Sillavan, of Leigh & Sillavan, Limited, and Mr. R. S. Smeeth, of Thomas S. Smeeth, Limited, were re-elected to the Committee. Mr. S. Owen was appointed secretary in place of Mr. A. Dudley Evans, retired.

Notes from the Branches

London

The last fortnight has been a busy one for members of the London branch of the Institute of British Foundrymen. On April 18, a party of 32 visited the Park Royal brewery of Guinness Limited. This unusual *venue* for foundrymen at its minimum valuation provided an opportunity for inspection of many end-products of the industry and of the degree to which complete mechanisation of handling can be applied to a clearly-defined process. There were, of course, other interests. Then, on April 25, there was the annual general meeting of the branch, when the business section was followed by a talk on light-alloy foundry and billet-casting practice. A full report of this meeting will be published later. Finally, on Friday of last week there was an all-day visit, attended by between 20 and 30 members, to Suffolk Iron Foundry (1920) Limited of Stowmarket. This establishment, a full description of which appears elsewhere in this issue, is the home foundry of the branch's president, Mr. F. Tibbenham, who acted as host to the visitors. Luncheon was provided by the company in their new social club, and tea was served at the conclusion of the visit, when thanks for the very enjoyable programme were adequately expressed.

Festival Facilities for Overseas Guests

An international luxury club for the entertainment of overseas business executives and buyers visiting the Festival of Britain is to be opened near the South Bank Exhibition. The club house is being built on an island site at the Junction of Westminster Bridge Road and Lambeth Palace Road and will conform with the general design of the South Bank Exhibition. Among the many amenities it will provide for the business visitor are facilities for travel, accommodation, and entertainment booking, and the services of interpreters and stenographers.

The International Trade Club will open on the same date as the South Bank Exhibition (May 4), and will remain open all through the Festival of Britain period.

Bessemer Medal Presentation

The Iron and Steel Institute have awarded the Bessemer Medal for 1951 to Mr. Benjamin Fairless, president of the United States Steel Corporation, in recognition of his distinguished services to the iron and steel industry. As Mr. Fairless will be unable to attend the Institute's annual general meeting in London in May, Sir Charles Goodeve, O.B.E., D.Sc., F.R.S., director of the British Iron and Steel Research Association, who is leading the Anglo-American Iron and Steel Productivity Team which is shortly visiting the United States of America, will present the Medal to Mr. Fairless during the annual general meeting of the American Iron and Steel Institute in New York on May 24, 1951.

Ventilation. The Sturtevant Engineering Company, Limited, Southern House, Cannon Street, London, E.C.4, in publication number 3603, illustrate and describe a wide range of ventilation installations they have made. Amongst these are a cocktail lounge, several dealing with vitreous enamelling, melting plants, laboratories and various other industrial systems. Such a brochure does as it is intended to—whet the appetite for additional data.

British Industries Fair

Engineering and Hardware Section

LAST FRIDAY, members of the Press were the guests of the Board of Trade for a preview of the British Industries Fair, Engineering and Hardware Section, at Castle Bromwich, near Birmingham. No one could take exception to the transport facilities, general information services and hospitality placed at the disposal of the party, but for a preview the exhibits by and large were so unready as to make the visit a complete waste of time. Despite advance information to holders of stands that Friday was Press day, the majority of the exhibits were grotesquely incomplete, some were completed but left shrouded in hessian and unattended, and but few were all that they should be. In this last category, the writer is pleased to report many exhibitors whose stands are of interest to the foundry industry. The loss of advertising media for our goods at home and abroad which is represented by the fiasco of Press day must be colossal, and it is felt that unless more vehement protests such as this are made publicly, the occurrence will repeat itself in perpetuity.

The list of new products shown at the Fair for the first time is not a formidable one, though diversified. It ranges at Castle Bromwich from house-building plant (stand B.712), Building Plant Hire (On Site), Limited) to an electric midwife (D.713, O. 1236 and O. 1337), Wolsey Sheep Shearing Machine Company Limited). In our own industry, the list includes such manufactured items as a new cooker by Chatwins, Limited (B.624); new pneumatic equipment by Holman Brothers (O. 1104 and O. 1205); a small bulldozer by Ransomes, Sims & Jefferies (O. 1319); a universal excavator by Ruston-Bucyrus (O. 1204 and O. 1305); a new solid-fuel fire by Robert Taylor (B. 200); automatic grit-blasting and metal-spraying equipment by Metallisation, Limited (O.1246 and O. 1347) oil-fired rotary furnaces by Monometer Manufacturing Company Limited (D.731); cement spray-guns by Thomas Sadler, Sons & Company (D.161) and a portable compressor of Broom & Wade (O. 1100 and O. 1201). Particulars of several other new items are included elsewhere in this account. For the most part, however, the emphasis is again this year not on newness but on attention to improved detail, performance and finish. Of the grouped exhibits, those of the Gas Council (D. 538 and 639, and D. 641) are outstanding for the number of actual heavy industrial exhibits (as distinct from models) which are on show. Outdoors, the display is colourful to say the least, and these exhibits have the dignity conferred by size and strength. The " 600 " Group is well represented in this section. Competition in this arena would surely resemble a battle of the giants.

Around the Stands

It is of course impossible in this brief account to give particulars of all the foundry-industry stands (22 plant manufacturers, 10 foundry suppliers, 48 ferrous, and 32 non-ferrous foundries). For this sort of information, the reader is referred to the voluminous, comprehensive and well-subdivided catalogue. The writer, however, spent an agreeable period on Friday, browsing around the stands, mainly in B and D sections, and what follows includes some items of real interest which were encountered. All the exhibition was not covered, however, (there are 30 miles of indoor corridors) and apologies are therefore tendered in advance if these notes are incomplete or would seem to do less than justice to the pains so many foundry firms have obviously taken to present only the best that can be produced.

Stanton Ironworks Company, Limited (*B.* 717 *and* 626 *and O.* 1322)

This Company's exhibits are not dissimilar to those in previous years, but the display of two 27-in. dia., 18-ft. long spun-iron pipes flanking a doorway is quite impressive—perhaps more indicative of solid progress than, say, £20,000 doors to a government office. Chatting with the firm's representative revealed a tendency to use less-skilled foundrywork; for instance, to simplify production, a 12-in. high-pressure syphon is now made as an assembly of three castings instead of as one. The Company has now standardised on screwed-gland joints for pipes in the range 3 to 10-in. dia., and bolted glands for 12-in. dia. and upwards. So far, but little impact of nationalisation has been felt by the Company.

Newton Victor Limited (*C.* 709)

On this stand is a complete mobile jib-crane mounted, X-ray apparatus. Known as the " Raymax 250," the equipment is rated at 250 kvp. at 10 milliamps and can be run continuously off a normal 30-amp., 230 v. single-phase supply. The plant has a penetration up to 3 in. of steel; its cost is of the order of £4,000.

Electro-Chemical Engineering Company, Limited (C. 611)

The stand included general electro-plating plant and bright nickel plating, of interest to vitreous enamellers. (At this Company's stand it was revealed that by arrangement with several competitors, their associated Company (Electric Furnace Company, Limited) would not this year be exhibiting furnaces; this being in order to concentrate at the works on jobs against production orders. In contradistinction, on many other stands, machinery is shown which has already been sold and for which apparently the customer is prepared to wait for delivery until after the show.)

Incandescent Heat Company, Limited (*C.* 727 *and* 628) *and Incandescent Group* (*B.* 309 *and* 208)

By far the great majority of the items on these stands are of direct or indirect interest to the foundry industry, the larger plant being shown by means of

British Industries Fair

working models. In this category is included a "Metalectric", 4-ton capacity 3-phase, direct-arc melting furnace for steel (the maximum size being 30 tons). This incorporates a swivel roof and electrode gear, all hydraulically operated. A 25-ton furnace of this type has recently been sold to the R.D.M. Dockyard, Holland. Another model shown is of the swivel-hoist charging system for two cupolas as recently installed at the International Harvester foundry at Doncaster.

Follsain-Wycliffe Foundries Limited (*D.* 709)

An impressive array of heat- and abrasion-resisting and other specialised castings is featured on this stand, particularly for quarries, collieries and brickworks plant.

Hale & Hale (Tipton) Limited (*D.* 609 *and* 508)

A wide range of general engineering malleable (blackheart) castings is exhibited by this well-known concern. Enquiries revealed that the Company's "pearlitic" malleable is finding an increased market and that there is a general tendency towards producing bigger and heavier castings, at the expense—it is thought—of established applications for steel castings. No effect from competition with nodular cast iron can yet be assessed.

The Gas Council (*D.* 639 *and* 538)

As previously mentioned, life-size jobs are featured on these stands; among them being ladle-drying equipment and a large Dawson & Mason, bogie-type gas-fired annealing furnace. No fewer than 20 designs of gas burners are embodied in one exhibit; another shows a model of a roller-hearth conveyor furnace of the Lee-Wilson type, gas heated by radiant tubes.

Firth-Vickers Stainless Steels Limited (*D.* 419 *and* 318)

Centrifugal and other stainless steel castings are shown on this stand in great profusion. Sizes are up to about 4 ft. diameter and several cwt. in weight for those cast centrifugally. Separately there is a large number of designs of precision castings produced in "stainless" by the lost-wax process; this business is said to be expanding rapidly.

Crane Limited (*D.* 314)

So many models of valves in malleable, grey iron, gun-metal and steel are included in this exhibit that it is difficult to visualise or imagine sufficient applications to use them all—yet they must exist. Specialisation in this line is well emphasised on the stand.

Ley's Malleable Castings Company, Limited (*D.* 513 *and* 410)

Once again there is exhibited on this stand an enormous range of small and large malleable castings, many for the automobile industry. Pictorially of interest is a view of the annealing shop at the Company's Lincoln works where a battery of Lee-Wilson gas-fired furnaces is in use.

Morgan Crucible Company, Limited (*D.* 305 *and* 204)

Two new items are shown for the first time at this year's Fair. They are a super-duty melting crucible known as the Salamander "Suprex", said to have extra resistance to slag erosion and thermal shock, and a special-duty "M.R." refractory brick. Other well-established lines are also shown, including foundry furnaces and melting accessories.

Fordath Engineering Company, Limited (*D.* 146)

As would be expected from this foundry equipment and supplies concern, the stand features well-tried and proved core-oils and the like as well as core machines of the extrusion variety and heavy-duty mixing machines. Also on view are impressively-intricate finished assemblies, presumably of cores bonded with the Company's products.

English Steel Corporation Limited (*D.* 541 *and* 438)

On this stand the writer was interested in a 6-in. dia. forged-steel mould as used in the Stanton machines for centrifugal pipe spinning. Additionally, steel castings of substantial size are shown as part of a special exhibit of automatic railway and mine-car couplings—a continuously-working model demonstrating how they function.

Keith Blackman Limited (*D.* 755 *and* 654)

This firm, amongst a range of well-established items, is showing two new lines—a range of portable man-cooling and stand fans, 16-in. and 9-in. dia., and a filter plant for dealing with magnesium fettling-shop dust. The latter incorporates a pumpless water filter having a capacity of 1,100 cub. ft. per min., in which the air and dust are directed on to the water surface. Sludge removal is conveniently arranged.

Alfred Bullows & Sons, Limited (*D.* 743)

Again a feature on the stand of this firm is a water-wash type of paint or enamel spray booth shown continuously in operation; this year, however, a new mechanical scummer has been incorporated. Also included is a wide range of air-compressor plant, much of it suitable for foundries.

B.S.A. Cycles Limited (*D.* 602 *and O.* 1326)

Among a number of exhibits powered by this Company's motor-cycle engine is one with a hopper-type body of the self-tipping variety, which would seem to be well suited to the handling of foundry sand, cupola charges and the like.

Colt Ventilation Limited (*B.* 506)

Among several new industrial ventilators on this stand are a roof shutter-type ventilator, and a floor- and a wall-type inflow unit. A feature of the "Colt" system of ventilation is that it is built up of independent units and can be added to or extended by stages. Facilities are available at the stand for practical consultation on enquirers' problems.

Radiation Group Sales Limited (*B.* 501 *and* 400)

A comprehensive range of the Group's contributions to whole-house heating, solid-fuel domestic fires, ranges and baths is on view, including the new "Ramax" down-draught fire which is just coming into full production.

George Salter & Company, Limited (*A.* 407 *and* 306)

A truly remarkable collection of springs of all shapes and sizes is assembled on this stand. Naturally, much attention is devoted to domestic scales and the like; but on the industrial side the Company's crane weigher is shown. It is learnt that the range of this machine has recently been extended to a maximum of 120 tons (previously 100 tons) and that a 200-ton machine is envisaged.

In moving around, the writer endeavoured to find out how much the restrictions on the use of non-ferrous metals had hampered production or stimulated the use of substitute materials. Although many of the firms exhibiting must be hard hit by the curtailment of supplies, particularly in the non-ferrous sections, there was little evidence of this on the stands. It was therefore concluded that for show models little result is as yet apparent. Probably it is on delivery promises where the staffs on the stands will have to exercise circumspection. Of substitute materials, none was obvious, although for stainless steel it was admitted that research is being intensified among the lower nickel compositions and that uses for high-alloy metal will have to be reviewed.

Suffolk Iron Foundry

By A. R. Parkes

Even to the layman, the history of the birth, growth and progress of a considerable business, whether it be of engineering, shipbuilding, founding or any other, makes an interesting and in some cases, a romantic story. Such a story, relying in this instance for its motif *upon the genius, drive and initiative of the creator of the business, might be written about Suffolk Iron Foundry* (1920), *Limited, which, overcoming many obstacles, has established itself as a flourishing* 600-*employee concern in less than* 40 *years. In this account, however, written primarily for foundrymen, an attempt has been made to curb the writer's enthusiasm for a place where he was once himself employed, and, after a brief historical section, to confine it to matter-of-fact technology of the foundry as it stands to-day. Suffolk Iron Foundry* (1920), *Limited, has now been absorbed by H. Kaufmann, Limited, which firm was floated as a public company about nine months ago and controls a number of factories interested in the production of lawnmowers, wringers and other hardware.*

Historical

The full name of the Company—Suffolk Iron Foundry (1920), Limited—suggests somewhat erroneously that the foundry was established in the years following the first world war. Actually that is the period when the "Limited" was added, for the foundry originated in 1913. It really began when Mr. L. J. Tibbenham, M.I.MECH.E., took over the derelict assets of Woods & Company, founders, of Stowmarket, Suffolk (where he had been manager), borrowed tools, equipment and working capital and set up in business on his own account. Mr. L. J. Tibbenham is a past-president of the East Anglian section of the Institute of British Foundrymen and a past-president of the Institute of Welding. (His son, Mr. F. E. Tibbenham, is this session president of the London branch of the Institute of British Foundrymen.) Castings were originally made for local agricultural needs, engineering works in Ipswich (about 12 miles away), a growing electric-motor industry, and, last—but not least-interesting—for the newly-established art of welding cast iron in which Mr. Tibbenham was himself a pioneer. During the first world war, women were employed alongside men at moulding in the foundry and Mr. Tibbenham recalls how difficult it was to keep them out of harm's way when casting up, so fascinated were they by the molten metal.

A major step forward was made in 1920, when the new foundry was laid down, and won for its originator the prize of £50 offered by the FOUNDRY TRADE JOURNAL for the best foundry design of the time. It says much for the planning ability of Mr. Tibbenham that his original conception—that 100 ft. square foundry erected on piles sunk into a marsh—is the centrepiece of to-day's buildings covering

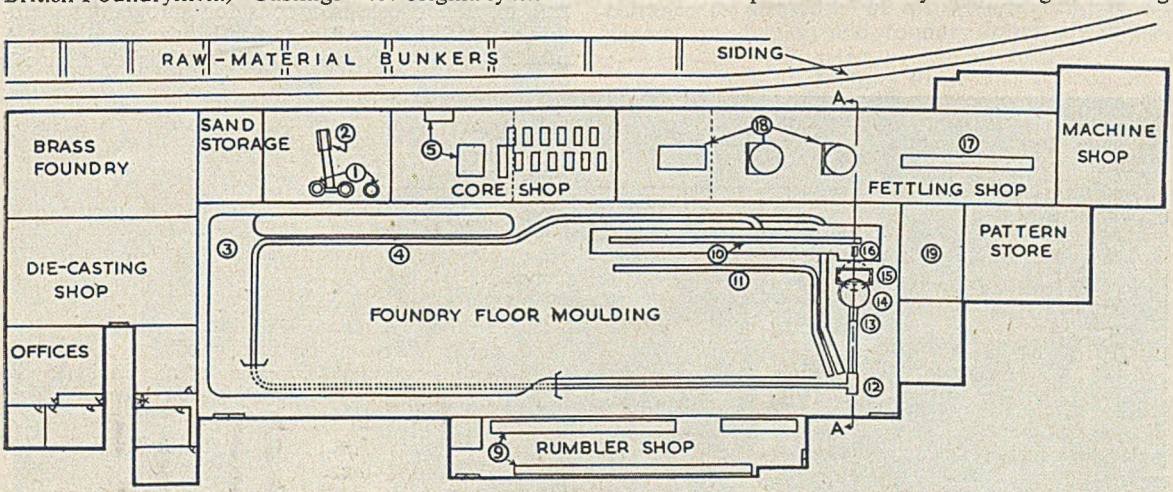

FIG. 1.—*Plan View of Suffolk Iron Foundry, showing the Main Disposition of Ancillary Sections and the Layout of Important Plant. Key to the numbered Items (see also Figs.* 8 *and* 10):—

1—Cupola furnaces.
2—Inclined cupola hoist.
3—Monorails.
4—Roller conveyor (broken line indicates underground portion).
5—Core ovens.
6—Raw sand elevator.
7—Sand drier and core-sand mixer.
8—Subsidiary mixers.
9—Rumbling barrels.
10—Moulding machines.
11—Return box conveyor.
12—Knock-out grid and hopper.
13—Used sand elevator.
14—25-ton sand hopper.
15—Smedley continuous sand mill.
16—Treated sand elevator and distributing belt.
17—Fettling-shop grinders.
18—Shot-blast plants.
19—Casting store.
20—Magnetic separator.
21—Sand belt conveyor from the knock-out.
22—Moulding machines.

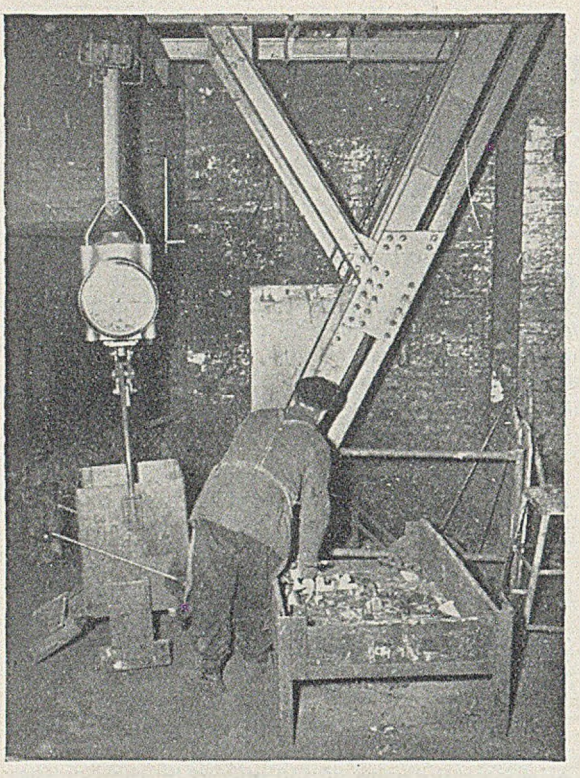

FIG. 2.—*Lower End of the Inclined Hoist Charging Machine for the Cupolas. The Separate Weigh-hopper is Suspended from a Monorail, the Suspension incorporating a Dial-type Spring Balance. Above the Head of the Operator, the Charge Skip is shown* en route *for the Cupola.*

about 8 acres, and employing some 600 people. The phrase "according to plan" has its rightful significance as applied to S.I.F. when it is realised that all the extensions necessitated by continuous growth and expansion over the last 30 years were visualised and allowed for in that original project.

Site and Product Development

The first buildings were erected somewhat hazardously on marshland between the main railway line (from which a siding was taken) and the River Gipping, the latter at this point not one of the country's most beautiful rivers. All of the works is on reclaimed marshland, the most recent extensions lying on the southern bank of the river, and connected to the main works by a reinforced-concrete bridge. The buildings now comprise a large mechanised iron foundry (a plan view of which is shown in Fig. 1), a die-casting shop, foundry auxiliary departments (fettling-, core- and pattern-shops); a large machine-shop; a woodworking shop and several large buildings devoted to finished product assembly, stores, etc. Nowadays, in addition to grey-iron castings for own use and for the open market, products include quantity-produced finished articles of domestic hardware, such as household scales, mangles, mincers and lawn mowers. Additionally, the range has been broadened in recent years to include mechanical and hydraulic jacks, agricultural implements and trailers. Castings range in weight from ozs. up to 2 or 3 cwt. Separate from the other productions, a considerable business has been built-up in materials for oxyacetylene welding. These cover the production and sale of welding rods, fluxes and equipment, developed from the original manufacture of silicon cast-iron rods for autogenous welding and "Sifbronze" rods for bronze welding. A nice balance in the foundry is established between

FIG. 3.—*View of the Cupola Spout and Casting Conveyor with Tapping and Pouring in Progress.*

production of castings for direct sale and those for home-finished lines.

Foundry Layout

As will be seen from the plan view (Fig. 1), foundry raw materials arriving mainly by rail are stored alongside the siding adjacent to the cupola house, pig-iron, scrap, coke, limestone, ganister and the like being thus accommodated. Moulding sand, arriving similarly, is stored at one end of the foundry; core-sand, on the other hand, is elevated directly to the core-sand preparation plant on the first floor. The foundry proper is now a rectangular building, with part-glazed roof, consisting of three parallel bays, the northernmost of these accommodating the melting plant in its centre and flanked on the west by a brass shop and on the east by the core-shop. The main foundry floor comprises the centre bay (40 ft. wide by 220 ft. long and 23 ft. to eaves) and the southern narrower bay, which, like that on the other side, is 30 ft. wide and 13 ft. to eaves. The centre bay is served by an overhead travelling crane of 7 tons capacity. The mechanised section has its moulding machines along the north-east side, with its mould track running around the perimeter of both the main bay and southern bay, and its knock-out and sand plant at the eastern end. The rest of the large bay and the southern bay is devoted to floor-bank moulding with additional moulding machines backing on to those of the fully-mechanised plant. At the western end of the iron foundry is the small aluminium gravity die-casting shop and at the other end is a pattern store, a casting store and, equally accessible, a large, well-equipped dressing-shop, all separately housed.

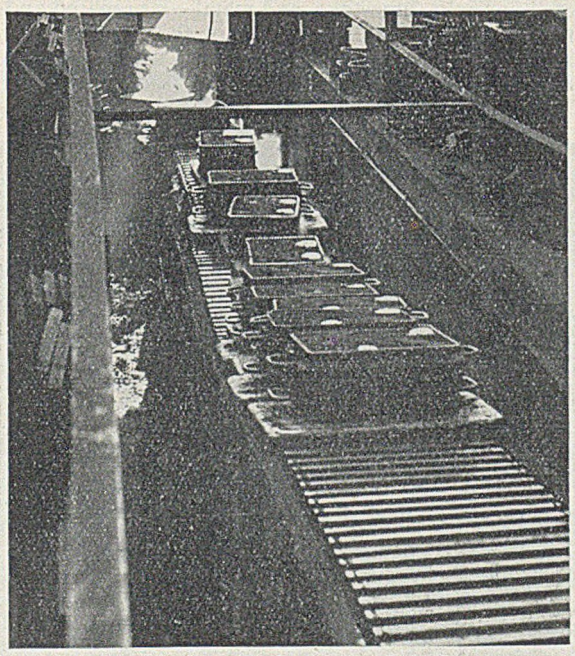

FIG. 4.—*Cast-up Moulds descending on the Motorised Slat-type Conveyor to the Tunnel beneath Part of the Foundry Floor.*

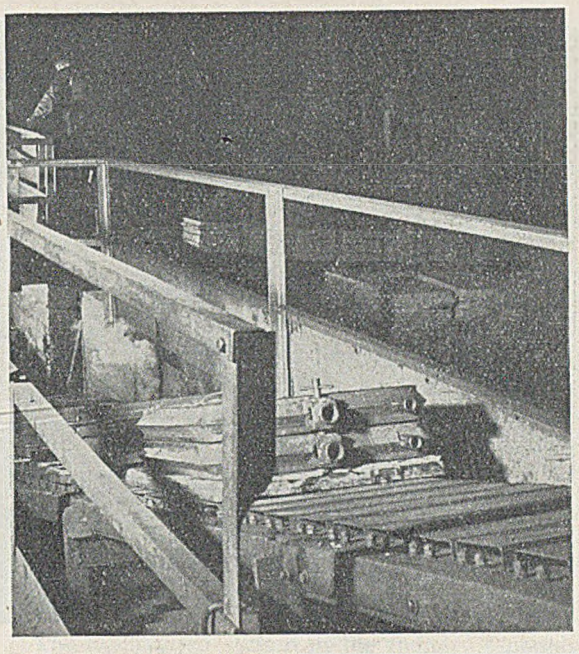

FIG. 5.—*Moulds emerging from the Tunnel, carried on a Different Type of Slat Conveyor, and joining a Roller Conveyor leading to the Knock-out.*

On soundly-established flow-production lines which typify the whole layout, machine shops form extension buildings in line with the dressing shops. Assembly shops, however, are now grouped severally according to product in other buildings more or less radially disposed to the main scheme. Near the road entrance to the works at the western end are the general, production and foundry foremen's offices.

Melting Plant

The ironfoundry melting plant comprises two cupolas, both used daily in turn, and one stand-by smaller cupola. In the 12-hour melting period, the two cupolas in use produce some 23 tons. The pig irons used include Ford's, Northants and Derbyshire together with some Staffordshire irons. Bought-in scrap is used, together with domestic material (about 40 per cent. of the charge) and some steel scrap. At present the firm's policy with raw materials is to accept practically any goods which are offered, relying on the skill of the technical staff to provide suitable blending. A typical composition for the general run of iron castings is TC 3.30, Si 2.70, Mn 0.60, P 0.70 and S 0.11 per cent., but for special purposes, *e.g.*, cylinder castings and castings of heavy section up to 1 in. thickness, which are required to be pressure tight, a lower Si 2.10 to 2.30 per cent.) or a low P (0.15 per cent.) iron is melted. Mainly Durham coke is used, but as most founders realise, there is no longer much choice as to brand and quality. It is found that it is possible to produce irons of high strength and impact values without the use of alloys except in very exceptional circumstances. Of course, special irons carrying

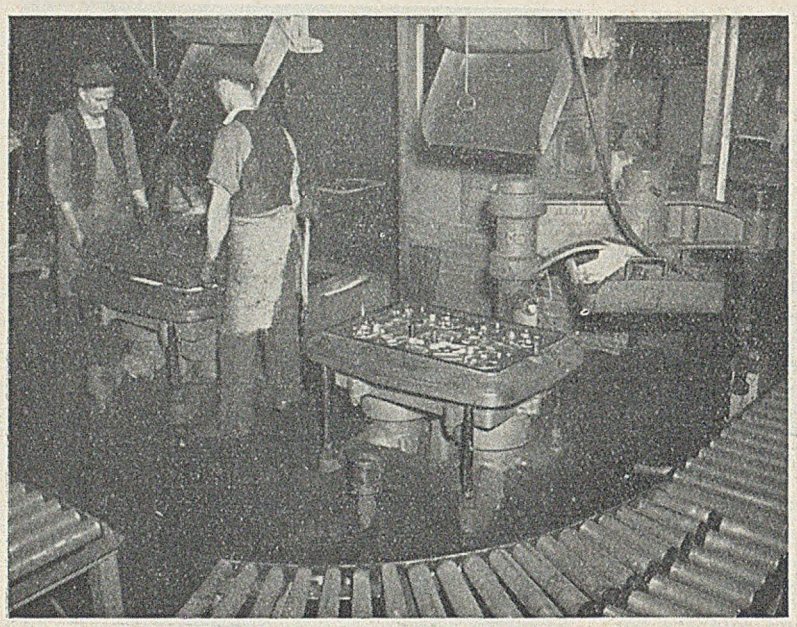

FIG. 6.—*One of the Pairs of B.I. Moulding Machines working in Tandem in the Mechanised System. In this instance the Machines are making Top- and Bottom-half Moulds for Lawn-mower Side Castings.*

high-silicon contents are required for making the cast-iron welding rods.

The cupolas in use are of the balanced-blast type lined with Scotch firebricks to 27 in. dia. and are fan blown, each being fitted with a blast-pressure meter with a dial instrument prominently displayed. A volume-control instrument is shortly to be installed. A very recent innovation (not shown in Fig. 3) is the adoption of continuous tapping at the cupolas. It is of the short outer-reservoir type with a self-acting syphon and slag run-off. This system has been found to work very satisfactorily, although the output is no more than a modest three tons per hour. Charging of the cupolas was, until quite recently, by barrow lift to the cupola platform, whence charges, made up and weighed on the platform, were thrown by hand into the furnaces. Now, an inclined hoist, shown in Fig. 2, has been fitted, serving either cupola at will by means of a bifurcated top chute and change-over gate. The charge is first weighed into a monorail-suspended hopper at ground level, a dial-type weighing machine being incorporated in the suspension. The complete 4 cwt. charge—coke, limestone, and metal—is prepared and then discharged by the release of the bottom door into the hoist skip (seen part-way up the incline in Fig. 2). The machine which was designed and built by Suffolk foundry is capable of delivering a

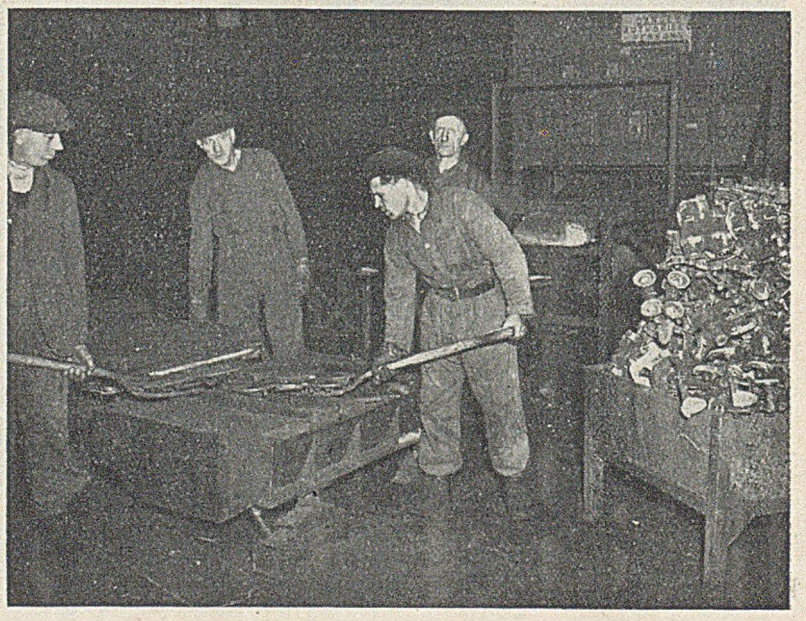

FIG. 7.—*View of the Vibratory Knock-out Machine; the Absence of Fumes is Remarkable. Note the Use of a Stillage for Collecting the Castings.*

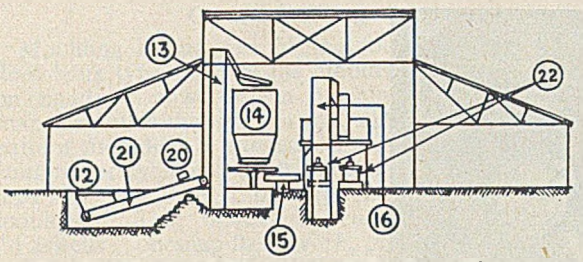

FIG. 8.—*Sectional Elevation of the Sand Plant for the Mechanised System (Section on A-A, Fig. 1). Key to the Numbered Sections is included beneath Fig. 1.*

charge every three min. Commendable convenience is derived from the delivery of stillages of scrap at ground level to the weigh station by means of lift trucks, this method of transport being universal throughout the factory. Both cupolas are patched daily, one at night-time, and the other during the morning. A proprietory patching material is used, the consumption of which, at 8 to 10 cwt. per day for a 23 ton output, seems quite heavy, but it should be remembered that very little time is available for proper drying of the patching. To take the impact of the charges, iron bricks are incorporated in the lining of the throats of the cupolas.

Metal Distribution

The collection of molten metal at the cupolas and its distribution both to the mechanised casting station and the rest of the foundry is by Jackman, 3-cwt. capacity, ladles, carried by Roper one-man hoists and supported from monorails as shown in Fig. 3. Only 2 or 3 yds. separate the cupola spouts

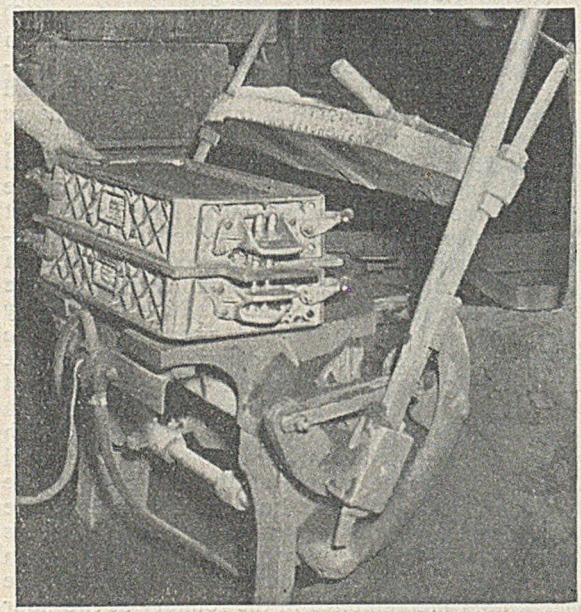

FIG. 9.—*Hines "Pop-off" Flask in Use on a Jackman "Farwell" Hand-squeeze Moulding Machine.*

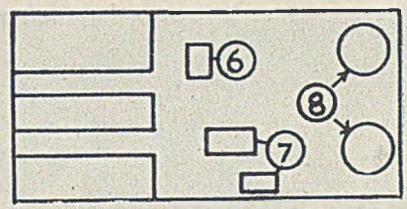

FIG. 10.—*Plan View of the First Floor above the Core-shop, showing the Disposition of the Elevating, Drying, and Mixing Plant, as well as the Cat-walks above the Hoppers which connect with the Core Benches. (Key to Numbered Items is included with the Caption to Fig. 1.)*

from the pouring conveyor of the mechanised section, thus no time or temperature is wasted. Metal for the floor-banked moulds is taken by monorail or is picked up at the cupola by the shop crane and distributed as required, the whole forming a very flexible arrangement. This part of the production is mainly poured from small hand ladles, replenished as required from the large ones.

Mechanised Section

The mechanised section of the foundry accounts for some 60 per cent. of the output by weight and 40 per cent. by number of castings, its relative position being as briefly described previously and as shown in Fig. 1. It comprises a battery of 12 machines, all arranged in pairs for tandem production, and each supplied from individual hoppers of the order of one ton capacity with unit sand conditioned in a continuous plant and transported by overhead belts, fitted with duplex ploughs. From the machines, a short assembly section of roller track for coreing-up and closing the moulds leads to the main pouring gravity roller conveyor, which passes in front of the cupolas and completes a circuit of the foundry at the knock-out. A novel feature is that to allow time for cooling and yet conserve foundry floor space, the cast-up moulds

FIG. 11.—*Close-up of a Core-sand Mixer (on the First Floor), showing the Special Barrow for delivering Mixed Sand to the Vertical Hoppers. In the Background is the Bucket Elevator for bringing New Sand from the Rail Siding.*

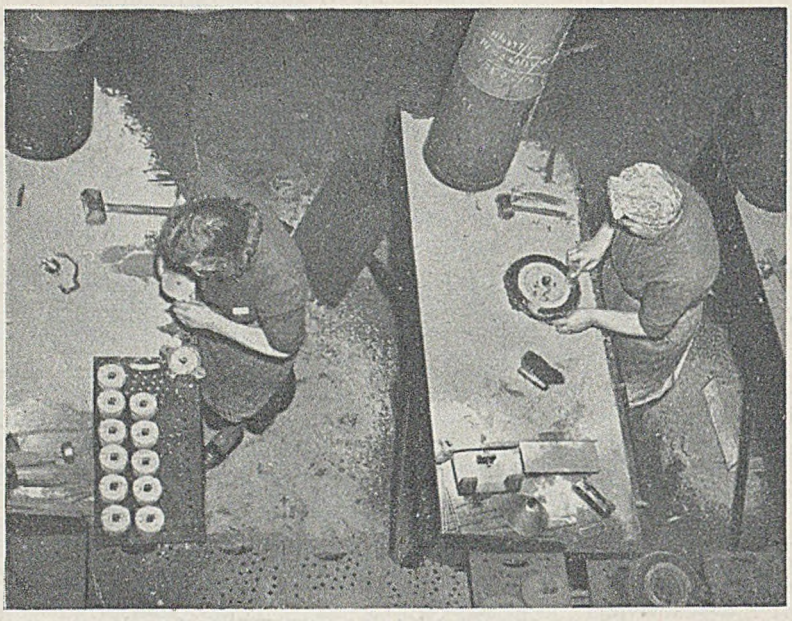

FIG. 12.—*Overhead View of two of the Individual Core-making Benches; one of the Core-sand Hoppers is included (top, centre).*

descend an incline of 30 deg. on a section of motorised slatted track to a tunnel beneath the second moulding bay (Fig. 4). Another inclined motorised conveyor, this time of a different type of slat conveyor, is used to bring the moulds back to a roller track 1 ft. or so above floor level at the other end of the narrow bay (Fig. 5). At this point is the knock-out, with the main sand-conditioning plant adjacent. The whole mechanised system was assembled and installed and much of it built or modified by the firm's own engineers.

Moulding Machines

The moulding machines on the mechanised section comprise (starting at the end furthest from the cupolas) a pair of British Insulated, squeeze-draw machines, taking boxes 32 by 20 in. working in tandem (Fig. 6). These make top and bottom halves of a mangle side-frame casting or as many as six lawn-mower sides arranged on a plate. Next there is a second pair of B.I. squeeze-draw machines, taking boxes 32 by 20 in. producing mower sides at the rate of 240 boxes per 9 hour shift with two men. (This output also applies to the first pair of machines mentioned above.) Also in the plant are three pairs of Macnab jolt-squeeze moulding machines taking boxes 17 by 12 in., 16 by 14 in. or 24 by 12 in. The output of these machines averages 40 moulds per hour per two men. This includes the coring up of the moulds by the machine operators. There is also one pair of Tabor-type squeeze machines working under the same conditions as the Macnab machines.

The end of the line of moulding machines is adjacent to the coreshop and trays of cores are brought to the assembly stations by means of an overhead monorail. The total mould conveyor circuit is 400 ft., only the decline and incline sections being powered, the speed of these being synchronised at 12 ft. per min. From the knock-out there is a length of gravity roller conveyor for the return of box parts to the machines.

Sand Plant

The knock-out is a G.E.C. vibrating-grid type, size 7 by 3 ft., fitted with a very efficient down-draught exhaust (Fig. 6). Here the castings are forked into stillages for transport to the dressing shops. Sand falling through the grid passes directly to the treatment plant. This is shown in simple sectional elevation in Fig. 8, and consists of:—An inclined belt (Part 21) from the knockout (12) to the boot of an elevator (13), passing *en route* an "Overband" magnetic separator (20). The elevator delivers to a 25-ton capacity vertical cylindrical storage hopper (14), with a rotary apron discharge to a continuous Smedley mill (15). (New sand is added at the knock-out.) Finally, the conditioned sand is again elevated by a bucket-type machine (16), to the distribution belt, 60 ft. long, running at right angles to the plant which serves the moulding-machine hoppers. Facing sand used in this section of the foundry is prepared in a mill adjacent to the cupolas and delivered to the machine stations by the overhead crane, normal properties for the unit sand are:—A.F.S. permeability 30 to 40, and green-compression strength 4 lb. per sq. in. at a moisture content of 5 per cent. Raw sands are a local yellow-sand and Erith loam, together with about 5 per cent. of coal dust. On-the-spot control of the sand plant as well as the operation of the ploughs to the machine hoppers is vested in one man, working from the catwalks above. He is provided with a clear view of the water-feed system to the mill. Sand properties as determined by the laboratory are exhibited in the foundry at two-hour intervals. About two to three tons of new sand and two bags each of coal dust and bond clay are fed weekly into the system at the knock-out.

Other Moulding

Moulding in the rest of the foundry is of the floor-bank type, most of the moulds being prepared on hand or power-driven machines (some using snap flasks), although a small amount of loose-pattern moulding is carried out for such items as compressor cylinders, electrical castings, and similar jobs. A few large frame-type castings are floor moulded. The machines comprise Jackman " Farwells " on snap-flask work, producing moulds at the rate of about 100 to 200 moulds per 9-hr. day. A typical box size is 16 by 10 in. There is also a complement of straight-squeeze Tabor-type machines producing up to 200 moulds per day in boxes from 17 by 12 in. and 24 by 12 in.

Facing sand is supplied to these machines from the batch-type mill at the north-western corner of the foundry, and the backing sand is conditioned overnight by " Royers," which pile it near the machines. Interesting, because it is probably one of very few in this country, is the application of a Hines " Pop-off " snap flask at one moulding station in this section, shown in Fig. 9 (it will be remembered that the " Pop-off " flasks were favourably commented on by the Grey Ironfounding Productivity Team). The model in use produces moulds size 16 by 10 by 5 in., and the usual taper jackets are fitted for pouring. Production at this station, from one of the Jackman " Farwell " hand-press machines (shortly to be replaced by a power-squeeze machine) is of the order of 18 to 20 boxes per hr.

Coreshop

A large majority of the moulds carry cores of some description, ranging from simple bolt-hole cores to complicated assemblies. Thus a prodigious number of cores is required daily, these being mainly produced by hand, utilising girl labour, although there is a Coleman core-blower available and two " Redford " cartridge machines are on order. The coreshop is housed in a separate section along the northern side of the main foundry bay, next to the cupola house. Two floors are used, core-sand mixing being carried out on the first floor, a plan view being shown in Fig. 10. Sand arriving by rail (usually Erith silica) is elevated by bucket elevator and stored at the first-floor level (Fig. 11). Here also are the sand drier (static type) and the batch mixers. Of considerable interest is the method of core-sand distribution. The mixers discharge into a wheelbarrow, in the body of which a round hole has been cut out and covered with a sliding plate (Fig. 11). Supplies at the individual core benches on the ground floor (Fig. 12) are obtained from vertical cylindrical hoppers in the form of sheet-metal chutes, about 12 in. dia., reaching from the first floor. These are replenished from the newly-mixed batches by means of the special barrow previously described—a method both simple and efficient. The open lower end of the hoppers are about 2 in. clear of the core-bench top and sand is scooped away as required. Another interesting feature is the provision of a false front edge to the core benches. By this means, spillage from the bench top is retained in a chute and is available for re-treatment instead of being trampled underfoot.

Core-sand mixes were conventionally of the linseed/dextrin or molasses variety, but of recent months increasing use has been made of a proprietory synthetic resin/molasses mixture for a core-sand which has a good bench life, produces but little fume and yet has a short baking cycle. A typical mix is as follows:—300 lb. silica sand, 7 lb. dextrin (proprietory brand), 1 lb. synthetic resin and from 2 to 4 per cent. moisture. A small amount of waste paraffin is incorporated to act as a parting medium.

Core drying is carried out in Ballard, vertical-type oil-fired continuous oven. This has 36 trays, size 4 ft. by 2 ft., spaced at intervals, and completing

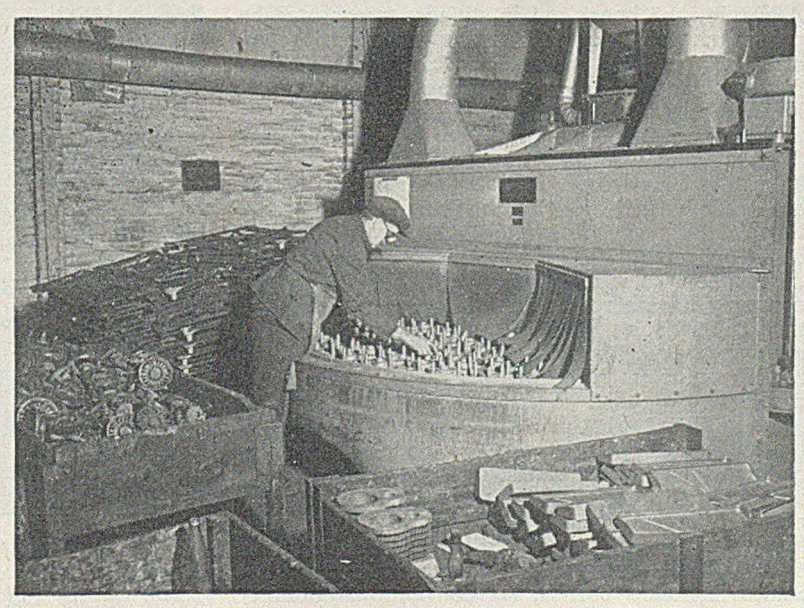

FIG. 13.—*Newly Installed Guttman " Whirlblaster " Shot-blast Plant. Note the Use of Stillages for holding both Raw and Treated Castings.*

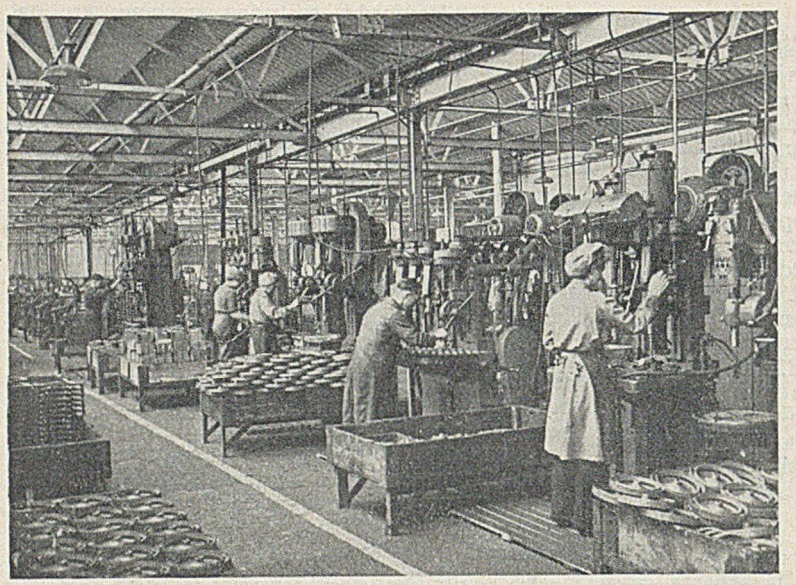

FIG. 14.—*General View of the Machine Shop, showing the Orderly Arrangement of Machines and the Clear Gangways.*

the loop at a set cycle of 70 min. A specially-commendable feature of this oven is said to result from the open loading area. This permits the loader or unloader to stand close-up to the plant—a position calculated to eliminate fatigue from the lifting and placing of core trays. Other core-shop equipment includes the usual sausage-type machines for cylindrical cores. Much use is made of core-drying shells for such mass-produced items as mincer-body and jack-body cores. But few of the cores are blacked. The storage of finished cores for small and medium jobs is in nesting wooden trays, much like those used for seed potatoes. These are lifted bodily for transport by the monorail to the moulding stations.

Fettling Shop

Leaving the knock-out in stillages transported by power-driven platform-lift trucks (shortly to be replaced by fork-lift trucks), the castings are taken from the foundry to the spacious dressing shop. Here, in contrast to the untidiness which is sometimes to be found at this stage, the rule at this foundry would seem to be "no castings on the floor" under any consideration. First the castings are shot-blasted in one of two rotary-table machines, or in a Spencer & Halstead 4-ft. dia. barrel machine. The most recently installed of the table machines is a Guttmann "Whirlblaster," the company having recently taken over the agency in this country for machines of this manufacture. It comprises a perforated segmental table 9 ft. dia., running at four min. per rev. on to which the castings are loaded (Fig. 13). This passes under a hood beneath which the load is cleaned by mechanically-impelled shot. Special features claimed are low power consumption (20 h.p. total), absence of excessive foundation work, and simplicity of operation. The used shot is air-suction hoisted, instead of being lifted by the more common bucket-type elevator. Other plant in this shop includes rumbling barrels, six conventional double-ended heavy-duty grinders and the usual array of miscellaneous small tools.

In continuous line with the dressing shop is the main machine shop, a view of which is shown in Fig. 14, castings and other work again being handled in and out of stillages. As is so often the case with firms machining and assembling their own castings, buffer sections are required between foundry and machine shop, and between machine shop and assembly. These are provided at this works in the form of a well-laid-out casting stores and a "part-finished" stores respectively.

Separately on the site are shops devoted to the

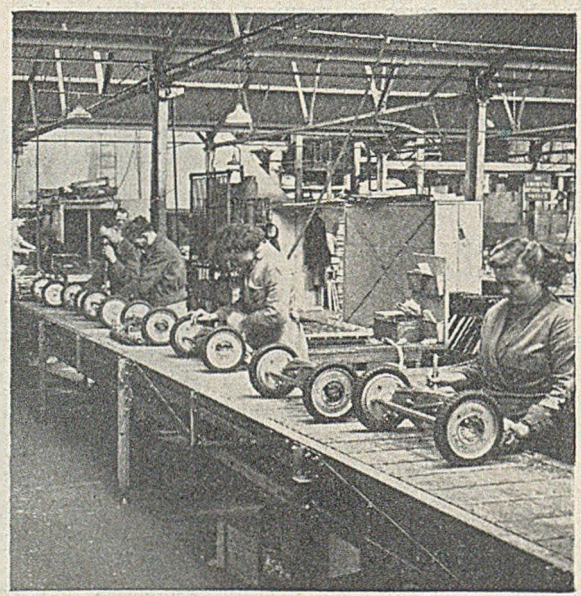

FIG. 15.—*Portion of One of the Lawnmower Assembly Lines; this Production is of Rubber-tyred Machines with Cast-iron Side Members.*

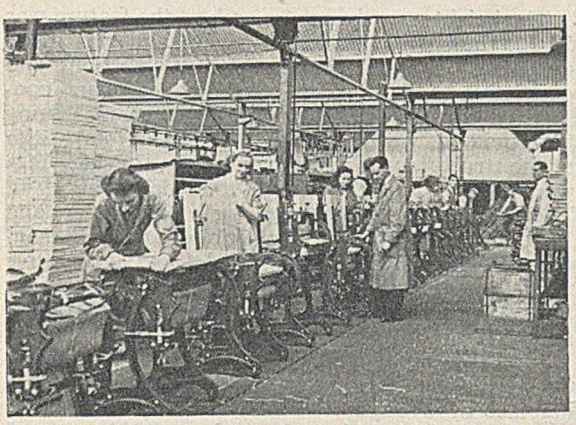

FIG. 16.—*One of the Mangle Assembly Lines; the Side Members of the Machines are Left- and Right-hand Castings.*

machining and tinning of cast-iron domestic mincing machines, the iron-plating method described in a recent issue of the Journal* being used. The assembly of lawn mowers (Fig. 15), mangle and wringer assembly (Fig. 16) and other assembly operations, as well as grouped packing and despatch sections, are handled in separate buildings. Most of the transport of finished goods is by the company's own fleet of vans, although a fair proportion of the raw castings is despatched by rail.

Patternshop

The company has a large, well-mechanised woodworking shop, which *inter alia* produces mangle and lawnmower rollers, mower handles, mangle table tops, and the like. A section of this shop is set aside for wood and metal production pattern-making. For repetition work, brass or aluminium patterns separately cast are assembled with suitable runners and risers on to pattern plates, the latter being mainly of cast iron. A typical half plate is that shown on the B.I. machine in Fig. 6. This produces in one mould no fewer than six mower sides as well as an assortment of small brackets.

At the western end of the iron foundry are an aluminium gravity die foundry and a brass foundry, the latter being used principally for pattern production. An interesting job regularly in production in the die-casting shop is the casting of lawnmower fluted rollers. These are made in a multi-part die in D.T.D. 424 alloy, the 6-in. parallel strip being arranged by splitting the outside of the die into four movable sections. The melting equipment, a 400-lb. capacity, Lees-Hall oil-fired tilting crucible furnace is used to feed a bale-out furnace of 150 lb. capacity. The production from the pair of dies amounts to 150 pieces per day.

Working Conditions

Of the total employees at the Suffolk works, about 120 work in the foundry itself or on associated processes, the tonnage output being of the order of 80 tons per week of fettled castings. For work of the size range undertaken, this represents a production of 90,000 pieces per week, involving the preparation of about 15,000 cores and the weekly employment of very many different patterns. Much of the labour is semi-skilled and for practically all operators incentive schemes of payment are available, even for such jobs as metal pouring, cupola charging, etc., all personnel being tied up with the machine-moulders' piecework output.

The system of inspection of castings is interesting, as it places the onus continually on each man to detect and eliminate scrap at its point of occurrence. Briefly the system is that a resident flaw inspector in the foundry examines the first casting of each job for defects, which are reported to the appropriate department, that is, either the foundry foreman or the metallurgist. In this way defective castings are located in a very short time, and unnecessary scrap is eliminated. Furthermore, each man in the fettling shop acts as an inspector, as it is so arranged that the fettlers are only paid for good castings passed through the fettling shop. This makes them rather particular about the quality of work which they fettle.

Working Conditions

With so much emphasis on high production and rapid changes of type of output, the foundry is not the showplace that some newer foundries represent. Nevertheless, careful attention to adequate lighting (tungsten filament), high roofs and local exhaust of fumes has produced a satisfactory level of working conditions. Toilet facilities have recently been improved, and increasing attention is being paid to good housekeeping. Shop heating is adequately provided throughout the works by tier-built

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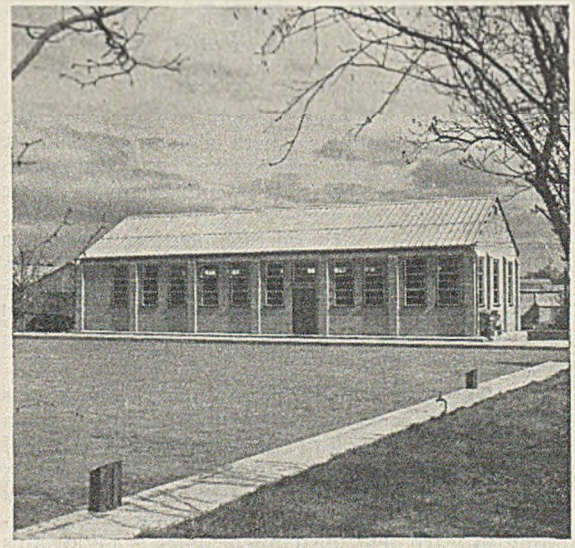


FIG. 17.—*Newly-erected Social Club for Suffolk Iron Foundry Employees; the Bowling Green is in the Foreground.*

* "Hot-dip Tinning of Cast Iron," by W. E. Hoare, B.Sc., FOUNDRY TRADE JOURNAL, November 23, 1950.

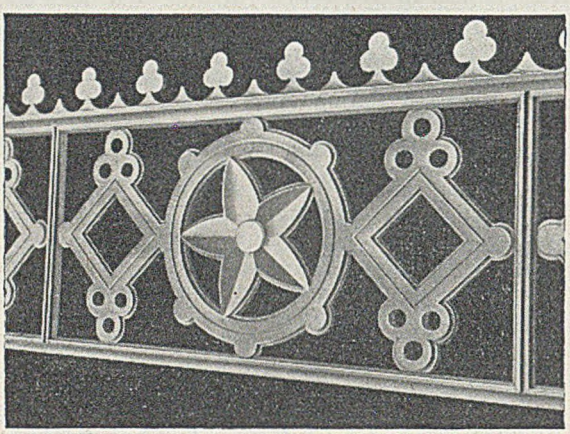
Architectural Castings in Magnesium Alloy

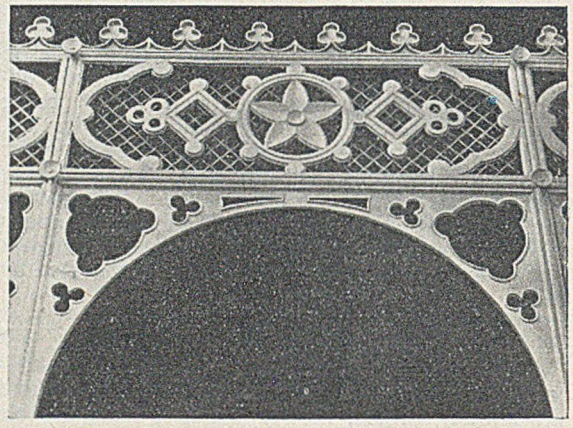
AT THE RECENTLY-HELD "Daily Mail" Ideal Home Exhibition at Olympia there was included in the Crystal Palace feature, assemblies made up from magnesium thin-gauge tubes and castings,* typical ones being shown in our illustrations. The castings were made by Essex Aero, Limited, to the order of J. Starkie Gardner, Limited. At short notice, using a fresh supply of moulding boxes, they produced 410 castings from 15 patterns weighing nearly 1½ tons. The castings made to DTD 59B were delivered in four weeks.

The height over the centre arch of the feature was 50 ft., the span of the arch 20 ft., and was made up of 17 panels forming the intersections and decorative tracery. The largest panels were constructed of three castings and, although measuring 6 ft. by 3 ft., weighed only 15 lb. The total width of the structure was more than 100 ft. The side wings were 27 ft. in height with a total depth of 35 ft. The clerestory to the wings was 20 ft. deep and 12 ft. high and consisted of a series of arches in magnesium alloy tubing, the panels and decorative tracery being composed of 11 castings. The whole feature was sprayed in white flat paint, the castings requiring no machining.

It is interesting to note that had the original Crystal Palace been constructed in magnesium alloy in place of wrought and cast iron, the amount of material used would have been about 1,300 tons and a saving of 3,200 tons would have been effected.

* It will be remembered that the original Crystal Palace of the 1851 Exhibition was constructed largely of ornamental cast-iron members. For details readers are referred to an article on pages 447 to 449 of last week's JOURNAL.





Two Views of the Cast Magnesium-alloy Panels used in the Construction of the 1951 Ideal Home Exhibition Model of the Crystal Palace.

Suffolk Iron Foundry

(*Continued from previous page.*)

slow-combustion stoves, which are one of the foundry's own products. There is already a separate canteen, but a new one, more commodious, is planned. One of the most recent amenities is the provision of a large social club for employees. This is shown in Fig. 17; accommodation includes a billiard room (two full-size tables having been presented by Mr. Tibbenham), a large hall where table tennis, darts and similar pastimes are available and a licensed bar. Outdoors there is a bowling green and hard tennis court.

The Suffolk Iron Foundry represents a continuous source of congenial and steady employment for a substantial proportion of the working population of this thriving market-town. In this country, strangely enough, it now seems the fashion to appraise a product by American standards; it is therefore interesting to learn that the United States is taking this firm's lawn mowers for her domestic market at the rate of 1,000 per week. Indeed the Suffolk workpeople have justifiable pride in the manner in which their trade-mark, the letters "S.I.F." in a diamond, is carried the world over on goods passing from their hands.

In conclusion, the phrases scattered throughout this article, such as "planning ability"; "nice balance"; "rail siding adjacent to the cupola house"; "only 2 or 3 yds. separate cupola spouts from the pouring conveyor"; "the end of the line of moulding machines is adjacent to the coreshop"; "a position calculated to eliminate fatigue"; "no castings on the floor"; "main machine shop in continuous line with the dressing shop" etc., will not have been overlooked by discerning foundrymen as providing the clue to the obviously successful production at Stowmarket. It is this elimination of unnecessary movement applied constructively over the years which provides the key to today's requirement of high productivity at low cost and at a reduced manual effort.

A FIRE BROKE OUT last Saturday at the premises of David Brown Tractors, Limited, Meltham, near Huddersfield, which involved a single-storey building used as a paint-spraying chamber and store.

Institute Elects New Members

At the Council Meeting held in Birmingham on April 21, 1951, the following were admitted to membership of the Institute of British Foundrymen in the grades indicated:—

As Subscribing-firm Members

Douglas Fraser & Sons, Limited, Arbroath, (representative: W. J. Mathews); Swinney Bros., Limited, Morpeth, (representative: N. Swinney); Tyne Metal Company, Limited, Hexham-on-Tyne, Northumberland, (representative: L. H. Rutherford).

As Members

J. G. Allen (Head Wrightson Steel Foundries, Limited, Thornaby-on-Tees); J. K. Arstall (Morley Bros. (Ironfounders) Limited, Hyde, Cheshire); J. Bailey (Cooke Bailey Limited, Hanley, Stoke-on-Trent; B. W. Baker (Enterprise Aluminium Foundry, Greenwich, London, S.E.10.); G. M. Bassett (Enterprise Aluminium Foundry, Greenwich, London, S.E.10.); Prof. P. S. Bhatnagar (Benares Hindu University, Benares, India); C. P. Birkin (*Iron and Steel*, London, S.W.1.); G. W. Brown (Douglas (Kingswood) Limited, Bristol); D. Cordingley (Vulcan Foundry Limited, Newton-le-Willows); L. E. Daniels (Ivers-Lee Engineering Limited, and Slough Foundries Limited, (Slough); H. P. Dennis (G. P. Dennis, Limited, Liverpool, 19); N. G. Edwards (Enfield Technical College, Middlesex); R. P. Evans (Enterprise Aluminium Foundry); A. E. French (Enterprise Aluminium Foundry); A. Hains (Wallwin Foundries Limited, Saltisford, Warwicks); L. C. Hartley (C. Whittaker & Company, Limited, Accrington, Lancs.); J. Heyworth (J. Booth Foundries Limited, Preston); A. E. Hook (Indian Naval Dockyard, Bombay, India); J. E. Jubb (Hadfields Limited, Sheffield); J. Kennedy (Clarke, Chapman & Company, Limited, Gateshead); Z. S. Kerr-Szotarski (New London Electron Works Company, Limited, East Ham, London, E.6.); Brigadier A. Levesley (Edgar Allen & Company, Limited, Sheffield); N. H. List (Northern Aluminium Company, Limited, Birmingham 21); K. F. Massey (B. & S. Massey Limited, Manchester 11); R. H. Mather (Ford Motor Company, Limited, Leamington Spa); W. J. Mathews (Douglas Fraser & Sons, Limited, Arbroath, Scotland); Mrs. M. C. Maybrey (H. J. Maybrey & Company, Limited, Beckenham); I. A. Menzies (The North British Steel Foundry Limited, Bathgate, Scotland); Q. C. McMillan (Clyde Alloy Steel Company, Limited, Glasgow); L. G. W. Palethorpe (Wild-Barfield Electric Furnaces Limited, Watford); A. Poulter (Fine Castings Limited, Bristol); L. A. Radley (Stead's Yard, Castleford); G. Reen (Enterprise Aluminium Foundry); J. Reen (Enterprise Aluminium Foundry); T. A. Richardson (Rowin Works, London, E.11.); E. S. Roberts (Coventry Malleable & Aluminium Limited, Coventry); K. Rosenberger (Arrow Smelters (Pty) Limited, Johannesburg, South Africa); L. H. Rutherford (The Tyne Metal Company, Limited, Hexham-on-Tyne, Northumberland); C. R. Schofield (Richardson & Tuer Company, Bolton, Lancs.); C. H. Southern (Brytallium Castings Limited, Bolton, Lancs); N. Swinney (Swinney Bros. Limited, Morpeth, Northumberland); H. H. Symons (H. B. Barnard & Sons, Limited, Tipton, Staffs); G. N. Taylor (Robert Taylor & Company, Limited, Larbert, Stirlingshire); H. A. Wainwright (Sterling Metals, Limited, Coventry).

Transfer from Associate Member to Member

L. L. Allard (John Haig & Sons, Huddersfield, Yorks.); H. K. M. Aspden (Royal Ordnance Factory, Chorley); C. E. Ball (Distington Engineering Company, Workington, Cumberland); W. C. Batham (E. W. Wynn Limited, Cannock, Staffs); A. Brady (Cochranes (Middlesbrough) Foundry Limited, Middlesbrough); V. W. Child (Crane Limited, Ipswich); A. M. Cook (William Cook & Sons, Limited, Sheffield 9); J. H. Dolphin (Bayliss Rolls Limited, Wolverhampton); H. B. Farmer (Rice & Company, Limited, Northampton); J. F. H. Goffart (John Cockerill S.A. Seraing, Belgium); G. T. Hampton (F. H. Lloyd & Company, Limited, Wednesbury); W. L. Hardy (Lake & Elliot Limited, Essex); J. Henderson (Gresham & Craven Limited, Salford); E. Holland (R. & A. Main, Limited, Edmonton, London); T. R. Langley (Babcock & Wilcox, Limited, Renfrew); F. A. Matthews (Coventry Malleable & Aluminium Limited, Coventry); D. McCaig (Ministry of Labour & National Service, Glasgow, C.3); D. S. McInnes (Joseph Gorman & Son, Glasgow); T. Newsham (Ajax Castings Company, Limited, Lancaster); A. Oldfield (B. Thornton Limited, Huddersfield); J. R. Richardson (Bellis & Morcom Limited, Birmingham 16); S. P. Russell (S. Russell & Sons, Limited, Leicester); E. Smith (Jackson Bros. (Milton) Limited, Stoke-on-Trent); G. O. Stanley (Cochranes (Middlesbrough) Foundry, Middlesbrough); R. Sutcliffe (The Fordath Engineering Company, Limited, West Bromwich); H. S. Ward (Crane Limited, Ipswich); J. F. Webster (Douglas Fraser & Sons, Limited, Arbroath); T. E. Wesson (Messenger & Company, Limited, Loughborough); A. J. Wilson (Ministry of Supply, Woolwich, London); K. H. Wright (British Rollmakers, Wolverhampton).

As Associate Members

M. W. Allen (Strachman & Henshaw, Limited, Bristol); T. R. Astill (Stanton Ironworks Company, Limited, Nr. Nottingham); T. Blackmore (J. W. Harrison, Limited, Wakefield); A. H. Booth (David Bridge & Company, Limited, Rochdale); E. H. Bridges (Davy United Roll Foundry, Middlesbrough); J. Brookes (Ashwell & Nesbit, Limited, Leicester); E. S. Bruce (The Bristol Foundry Company, Bristol, 1); J. R. Bryant (W. H. Allen, Sons & Company, Limited, Bedford); F. Campbell (Andrew Strang & Company, Limited, Hurlford); C. W. Carr (North West Pattern Company, Stockport); D. F. Cooper (F. S. Cooper Dolphin Foundry, Manchester); S. Croft (Alliance Foundry Company, Limited, Luton); E. Dicks (Thomas Platt & Sons, Limited, Widnes); J. Dickson (British Railways, Glasgow); J. J. Francis (L. Gardner & Son, Limited, Manchester); H. L. Ghosh (Indian Iron & Steel Company, Limited, Bengal, India); W. H. Hall (Hall Bros., Birmingham, 15); G. M. Hardie (Beeston Boiler Company, Limited, Beeston, Notts); J. W. Hewson (Anglo-Iranian Oil Company, South Iran); N. J. Horsman (East Rand Engineering Company, Limited, Transvaal, South Africa); A. W. Horton (Victor Moyle & Company, Middlesex); E. J. S. Hoyle (James Hoyle & Son, London); J. K. Hurst (British Railways, Horwich, Lancs); A. S. Jarvie (Argus Foundry, Limited, Thornliebank, Glasgow); A. Jowett (Hepworth & Grandage, Limited, Bradford); R. H. Kenyon (Ferranti, Limited, Hollinwood); W. L. King (High Duty Alloys, Limited, Slough); R. Lacey (Stanton Ironworks Company, Limited, Nr. Nottingham); W. W. Melville (Shanks Ironfounders, Arbroath); G. F. Muddiman (Deloro Stellite, Limited, Shirley, Birmingham);

Institute Elects New Members

H. W. Munns (The Alliance Foundry Company, Limited, Luton); N. J. Nicholson (Sir W. G. Armstrong Whitworth & Company (Ironfounders), Limited, Gateshead-on-Tyne); T. J. Oliver (E. W. Wynn Iron Founders, Limited, Cannock, Staffs); M. N. Patel (Tata Chemicals, Mithapur, India); F. Peel (Alfred Herbert, Limited, Coventry); F. Porter (H. Broadbent & Son, Ashton-under-Lyne); J. M. Prentice (British Railways, Glasgow); D. W. Provan (M. Cockburn & Company, Limited, Falkirk); A. Raynor (Stanton Ironworks Company, Limited, Nr. Nottingham); C. T. Sandford (W. & T. Avery, Limited, Birmingham, 40); D. Scott (The Morgan Crucible Company, Limited, London, S.W.11); J. W. Smith (Fowler & Holden, Limited, Grimsby); L. E. Stuffins (Dartmouth Auto Castings, Limited, Smethwick); H. Swindell (Stanton Ironworks Company, Limited, Nottingham); T. J. Tallett (British Piston Ring Company, Limited, Coventry); F. Wheeler (Caddy & Company, Daybrook, Notts).

Transferred from Associate to Associate Member:

R. A. Perry (John Williams & Sons, Limited, Cardiff); G. J. Sharpe (Brown & Green, Limited, Luton); H. E. White (Rice & Company, Limited, Northampton).

As Associates (over 21):

G. Beevers (John Stirk, Limited, Halifax); J. Brier (Hattersley's, Limited, Halifax); G. Brown (The Stanton Ironworks Company, Limited, Nr. Nottingham); M. Burfoot (Ruston & Hornsby, Limited, Lincoln); G. D. Cheesman (Dartmouth Auto Castings, Limited, Smethwick); A. H. Cox (John Dale, Limited, London Colney, Herts); W. D. Crowley (W. T. Crowley Sons, Limited, Slough, Bucks); T. H. Dawson (National Foundry College, Wolverhampton); F. Devereux (Head Wrightson & Company, Limited, Thornaby-on-Tees); C. M. Dunks (Bryan Donkin, Limited, Chesterfield); R. S. Edmunson (Head Wrightson & Company, Limited, Thornaby-on-Tees); A. T. Green (Guest Keen & Nettlefold, Limited, Cwmbran, Mon); D. J. Greenlees (Argus Foundry, Limited, Thornliebank, Glasgow); P. R. Gunn (National Foundry College, Wolverhampton); H. Jackson (British Railways, Manchester); F. Jones (Albion Iron Works, Leigh); K. Pycroft (Hopkinsons, Limited, Huddersfield); K. Saraswat (Birla Engineering College, Rajesthan, India); E. Saunders (Fozel Castings Company, Limited, Coventry).

As Associates (under 21):

C. J. Blackborow (John Wright & Company, Birmingham); B. J. Cave (British Piston Ring Company, Limited, Coventry); F. T. Davies (W. G. Ralphs & Son, Wednesfield); J. Fitt (John Wright & Company, Birmingham); W. J. Gammon (J. Williams & Sons, Cardiff); F. L. Garlick (Beeston Boiler Company, Limited, Beeston, Notts); B. G. Goodyer (Humber, Limited, Coventry); J. Gray (Shanks Ironfounders, Limited, Arbroath); E. A. Houghton (Midland Motor Cylinder, Smethwick); D. S. Howorth (S. S. Stotts, Haslingden); D. R. Millington (John Wright & Company, Birmingham); J. J. Morrison (John Wright & Company, Birmingham); W. Toulmin (Sir W. H. Bailey, Manchester); J. H. J. van Vuuren (East Rand Engineering Company, Limited, Transvaal, South Africa); J. F Wiggall (John Wright & Company, Limited, Birmingham).

PLANS are being made for the reintroduction of double day shifts at the Grantham works of Aveling-Barford, Limited, manufacturers of earth-moving equipment, etc., in order to cope with the number of orders on the company's books and to speed up production, which is stated to be lagging behind requirements.

Junior Sand-rammer

An exhibit which automatically will attract much attention at this year's British Industries Fair at Castle Bromwich is one staged by Foundry Equipment, Limited, on Stand D322. It consists of two "Sand-rammers"—the Minor and Junior. The latter is quite a new model, and is shown in our illustration (Fig. 1), from which it will be seen that it consists of two main assemblies. The first is the actual ramming unit, which is mounted on the base of a pedestal carrying the sand storage hopper. Two swinging arms are incorporated in the ramming assembly, the outer one, carrying the ramming head, is pivoted to the inner one—this in turn being pivoted to the pedestal. The 1,200-lb. capacity hopper is carried between two curved arms at their top and is fitted with a wire mesh to break up batches of sand as they are delivered. The sand leaves the hopper by an adjustable gate to control the flow of the sand. This is fed from a 15-in. wide conveyor belt, forming its base, operated by a chain drive from a geared motor on the front of the hopper. This belt feeds an 8-in. wide conveyor mounted over the inner arm and driven through Vee ropes by a separate motor on a small platform above. Then a third belt comes into action, this time 7 in. wide, which feeds the impeller head.

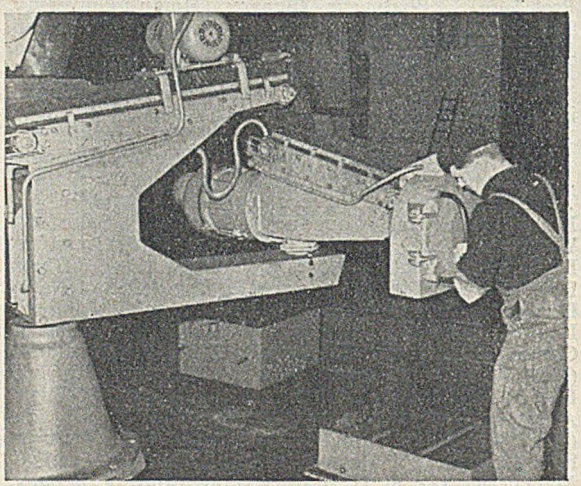


FIG. 1.—*Junior Sand-rammer in Use for Ramming a Half-mould.*

The impeller, with adjustable blades, is driven from a flange-mounted slip-ring motor by a horizontal shaft. This motor also drives the third belt through a gearbox and the whole assembly pivots on a shaft mounted on taper roller bearings on the end of the inner arm. The impeller head has a hinged cover, providing easy access to the interior for blade adjustment or replacement. It is manœuvred by two deep curved hand grips and control is by conveniently placed push-buttons. The output of this machine is of the order of 600 lb. of sand per min. This means that the hopper only carries sufficient sand for two minutes of ramming time, and for rapid working will need to be automatically fed. The machine has every appearance of performing a very useful function in modern foundry practice.

THE FETTLING SHOP of the National Gas and Oil Engine Company, Limited, of Ashton-under-Lyne won a shield for tidyness and cleanliness at the recently held Good Housekeeping Week.

Adherence of Porcelain Enamel*

by W. A. Deringer

Contrary to lay opinion, porcelain enamel is in reality quite strong and will not crack or chip from steel until the yield-point of the base metal is reached or exceeded. It fails only after a certain amount of strain, which has no relation to the strength of the metal.

A POPULAR BELIEF is that porcelain enamel is delicate and chips easily. That belief is false. To discredit it, enamellers have devised spectacular demonstrations like the striking of an enamelled surface with a mallet. Behind these ingenious exhibits are some facts which many enamellers have not been aware of. One of the most important properties of porcelain-enamelled steel is, of course, adherence or bond between the enamel layer and the steel. Although the development of this adherence is thought to be more chemical than physical in nature [1 to 6] only the physical aspects will be considered here. When a sample of enamelled steel has been deformed to chip off the enamel and show the enamel/steel interface, dark colour in the fractured area shows good adherence and is caused by fragments of fractured glass adhering tenaciously to the base metal. When the adherence is poor, the enamel separates from the base, leaving shiny, glass-free metal exposed.

To obtain good adherence, three things are necessary. First, the base metal must be chemically clean so that the enamel slip will readily wet the steel surface. Secondly, the groundcoat (the glass-coating next to the base metal) must contain an adherence-promoting oxide. The rôle of this adherence-promoting component has been the subject of much research and several theories explaining its functions have been proposed. [1 to 6] Suffice it to say for this discussion, this added material has some chemical or physico-chemical property which promotes the adherence to enamel to the base metal.

Rough Surface Needed

The third factor which contributes to the enamel-to-steel bond is the roughness of the steel surface. Other things being equal, enamel will develop better adherence on a rough surface than on a smooth surface.

When the adherence is quite poor the enamel may separate from the base metal without any deflection or deformation of the steel. At times the enamel may separate from the steel in large sheets, while at other times it may raise off in small areas called "splotches." These frequently break off and expose the metal below.[5]

It is obviously important therefore that the enamel shall have good adherence to the steel. It is also assumed in this investigation of the tensile properties of enamelled steel, that the total stress in the enamel layer is negligible because in all cases the enamel layer was not over 0.006 in. thick while the steel tensile bars were 0.10 to 0.25 in. thick. This investigation is based on data accumulated over a period of several years by the Author's firm where it was desirable from time to time to determine the yield point and tensile stress required to crack the glass or enamel coating on various ferrous materials. A summary of some of the results obtained is shown in Table I. The two lots of titanium-bearing enamelling iron composition differed from the two lots of regular enamel iron only in the titanium content. The titanium-bearing material, however, is a fully killed steel, while the enamelling iron is a rimmed steel. The Table also gives the results obtained when tensile specimens were made from 0.40 per cent. carbon steel, a 1.0 per cent. carbon steel drill rod, and a 2.00 per cent. Ni, 0.40 per cent. carbon steel. A number of these tensile specimens were given special cooling treatments after enamelling (see Table). These special treatments consisted of rapid cooling through part of the cooling cycle by quenching.

A special cooling quench to 875 deg. F. (470 deg. C.) was developed by the Company* to obtain the high strength in medium- and high-carbon steels which can be secured by quenching and at the same time control the thermal shock so as to eliminate cracking of the enamel. By quenching at 875 deg. F. the thermal shock takes place within the plastic-flow range of the glass and thus prevents damage to the glass layer.

Enamel doesn't Crack

In comparing the results obtained from pulling the tensile bars, it should be noted that the yield point of these steels varied from 11.5 to 41 tons per. sq. in. It is interesting to note that in spite of this wide variation in strength, the enamel did not crack until at or near the yield point of the steel. Furthermore, it was found in all of these tensile specimens—in spite of the broad range of strengths of steel covered in the investigation—that the strain in inches per inch was about the same for all specimens, and varied only from 0.002 to 0.003 in. per in.

At first glance, it would seem that it would be impossible for the glass to crack at the yield point in all cases and yet for all the specimens to show about the same amount of strain before cracking. To explain this apparent anomaly, the diagrammatic analysis in Fig. 1 should be considered.

The vertical line *XY* represents the strain at which cracking of the glass occurs for all steels. Consider stress/strain curve *B* (enamelling iron). As

* Abstracted from an article printed in the *Iron Age*, the author is director of ceramic research, A. O. Smith Corp., Milwaukee, U.S.A.

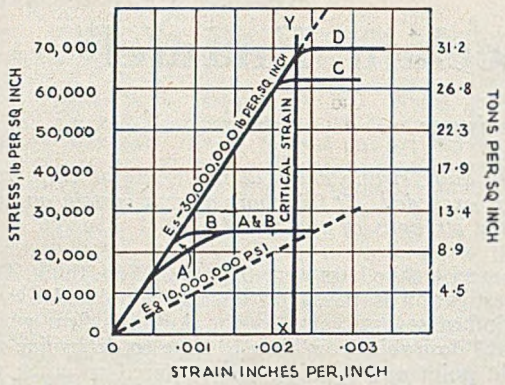


FIG. 1.—*Stress/strain Curves for several Enamelled steels show that the Enamel Coatings all failed at a Strain of approximately* 0.0023 *in. per in.—not necessarily at the Steel Yield Points.*

the tensile load is applied to this specimen it follows the line E_s to about 11.1 tons per sq. in. The yield point is then exceeded and of course the steel stretches considerably with very little increase in load. That is why the line *B* becomes horizontal at this stress. Although the specimen has yielded at 11.1 tons and at a strain of less than 0.001 in. per in., the glass does not crack at that point. It does not crack until the line *B* crosses *XY* or until a strain of 0.0023 in. per in. has been reached.

In practice, it is very difficult to arrest a specimen above the yield point and before the critical strain which causes cracking has been reached. This is why enamellers have come to believe that enamel fails in tension at the yield point of the steel.

Titanium Steel is Different

The stress/strain curve for titanium-bearing enamelling iron does not follow the line E_s because this material has no definite yield point. It is similar to enamelling iron, however, in respect to the strain required to cause cracking of the glass.

In a higher-strength steel (curve *D* in Fig. 1) the steel may yield and the glass may crack simultaneously; or the critical strain may be reached and the enamel may crack before the steel yields (see SAE-4640 steel in the Table). This means that regardless of the strength of the steel, the porcelain enamel on it will fail at a maximum tensile stress of about 31.3 tons per sq. in. for steel having a yield strength value of 31.3 tons per sq. in. or more.

The fact that porcelain enamel will not crack or chip from the steel until the yield point of the base metal has been reached or exceeded has been useful in demonstrating the utility of porcelain-enamelled products. It is this property which has made "Mirowal" practical.[8] This thin gauge enamelled sheeting can be rolled up like wall-paper because the base metal is so thin the sheeting can be given a lot of deformation without taking the steel through the yield point or deforming it permanently. A cantilever beam of enamelled steel was deflected time after time without damaging the glass layer. A 13-in. long beam was deflected 6 in. and released without any injury to the glass.

TABLE I.—*Stress/Strain Data for Porcelain-enamelled Specimens.*

Type of steel.	Stress, tons per sq. in. when coating cracked.	In. per in. strain when coating cracked.	Yield point, tons per sq. in.	Remarks.
Enamelling iron No. 1	11.8	0.0022	11.7	—
Enamelling iron No. 2	12.1	0.0020	13.5	—
Titanium-bearing enamelling iron	10.0	0.0025	—	—
Titanium-bearing enamelling iron	10.2	0.0030	—	—
SAE 1040	26.9	0.0025	27.7	Air cooled.
SAE 1040	28.1	0.0022	28.1	Water quenched from 315 deg. C.
SAE 1040	31.2	0.00245	31.2	Quenched from 875 deg. C. to 470 deg. C.
Drill rod	31.5	—	33.8	Contained 1.0 per cent. C.
SAE 4640	33.5	0.0025	41.3	2.00 per cent. Ni steel quenched in water from 315 deg. C.

REFERENCES

1 Karl Kautz, "Further Data on Enamel Adherence," *Jour. Amer. Ceram. Soc.*, 19 (4), 93-108, 1936.

2 E. E. Howe, "Observations on Adherence Phenomena of Sheet-Iron Ground Coats," *Better Enamelling*, 9 (9), 13-19, 1938; *Ceram. Abs.*, 19 (8), 183, 1940.

3 (*a*) G. H. Spencer-Strong and R. M. King, "Mechanics of Enamel Adherence: V. Study of Enamel/Metal Contact Zones by Chemical Methods," *Jour. Amer. Ceram. Soc.*, 15 (9), 480-83, 1932. (*b*) Karl Schwartzwalder and R. M. King, "Mechanics of Enamel Adherence; VI. Petrographic, Metallographic, and X-ray Study of Enamel/Metal Contact Zones," *ibid.*, pp. 483-86, 1932. (*c*) G. H. Spencer-Strong, J. O. Lord and R. M. King, "Mechanics of Enamel Adherence: VII. Further Studies of Enamel/Metal Contact Zones by Microscopic and Metallographic Methods," *ibid.*, pp. 486-90, 1932. (*d*) R. M. King, "Mechanics of Enamel Adherence: X. 'Iron-oxide Layer' in Sheet-steel Ground Coats," *ibid.*, 17 (7), 215-19, 1934.

4 H. F. Staley, "Electrolytic Reactions in Vitreous Enamels and Relation to Adherence of Enamels to Steel," *ibid.*, 17 (6), 163-67, 1934.

5 W. A. Derlnger, "Relation of Hydrogen to Adherence of Sheet-steel Enamels," *Jour. Amer. Cer. Soc.*, Vol. 26, No. 5, pp. 151-159, 1943.

6 J. H. Healy and A. I. Andrews, "Cobalt Reduction Theory of Sheet-iron Enamels," *Finish*, pp. 22-23, Dec., 1950.

7 U.S. Patent No. 1,919,136.

8 Dana Chase, "'Porcelain Wallpaper' Dramatises the Versatility and Flexibility of 'Porcelain on Steel,'" *Finish*, Vol. 5, No. 3, pp. 33-36 Mar., 1948.

I.V.E. Section Notes

Midland

At the annual meeting of the Midland section of the Institute of Vitreous Enamellers held on April 5 Mr. Williams took the chair and 38 members were present. After the minutes of the last annual meeting had been read, confirmed and signed the election of officers for the forthcoming section was held and the following were chosen (taking office on November 1, 1951):—

As *chairman*: Mr. Biddulph; as *vice-chairman*: Mr. Ball; as members of the *section committee*: Dr. Martin, Mr. Murdoch and Mr. Bayliss; as *hon. secretary*: Mr. Sleath (re-elected), and as *hon. lanternist*: Mr. Rodway (re-elected). It was agreed that their future meetings should be held at the Imperial Hotel, Birmingham. Mr. Billingham then gave a Paper on "De-enamelling" and subsequently Dr. Martin proposed a vote of thanks to the retiring chairman.

Southern

Last week, the Southern section of the Institute of Vitreous Enamellers held a very successful social evening, when upwards of 30 members and guests dined at the Comedy Restaurant and afterwards attended a revue at the Hippodrome Theatre.

Baldwins (Holdings) Liquidation Proposals

At an extraordinary general meeting of Baldwins (Holdings), Limited, to be held in London on May 11, the directors will recommend to stockholders that the company be wound up voluntarily.

It is proposed that £6,236,841 British Iron and Steel 3½ per cent. Guaranteed Stock, 1979-81, shall be distributed in specie to ordinary stockholders at the rate of 10s. in nominal amount for every 4s. ordinary stock unit held. After repaying the preference issues, the directors estimate that ordinary stockholders should receive (in addition to the 10s. of Steel Stock) about 2s. in cash, subject to appropriate amounts for dividends and interest on the preference stocks to date of repayment, and to realisation and expenses of liquidation.

Board's Decision

As a result of the vesting in the Iron and Steel Corporation on February 15 last of the company's holdings of ordinary stock of Richard Thomas & Baldwins, Limited, and 6 per cent. redeemable cumulative preference shares of Guest Keen Baldwins Iron & Steel Company, Limited, these holdings are now represented by £7,186,800 Steel Stock.

The board, after carefully considering a number of alternative courses, has come to the conclusion that now that the company will no longer have a direct interest in Richard Thomas & Baldwins or Guest Keen Baldwins Iron & Steel Company, the only recomendation it can properly make to the stockholders is that the company be wound up voluntarily.

The board estimates that at March 31 last the net assets of the company, excluding:—(1) £6,236,841 British Iron and Steel Stock proposed to be distributed to ordinary stockholders and (2) the holding of 10,277 shares of Rm.600 each in Mannesmannrohren-Werke, A.G., and other assets, which could not be readily realised to the best advantage, were as follow:—British Iron and Steel Stock at market value, £937,492; Guest Keen Baldwins Iron & Steel Company 5 per cent. income notes (including interest to date of repayment at par on September 30 next), £211,696; marketable securities at market value, £2,255,984; cash and sundry debtors (including final dividend declared payable on June 4 next on the former holding of ordinary stock of Richard Thomas & Baldwins, £278,000, making a total of £3,683,172—less: Creditors, including taxation and accrued dividends on preference stocks to March 31, 1951, £235,000, leaving £3,448,172.

The repayment in cash in liquidation of the 4½ per cent. preference stock at 21s. per unit and the "A" and "B" preference stocks at par will require £2,162,271.

Balance for Distribution

This will leave a balance for distribution, subject to appropriate amounts for dividends and interest on preference stocks to date of repayment and to realisations and expenses of liquidation, of £1,285,901, representing approximately 2s. per ordinary stock unit.

It is proposed to authorise the liquidator to retain at his discretion, but not later than June 30, 1953, without the sanction of an extraordinary resolution the holding in Mannesmannrohren-Werke, A.G., and any other assets which in his opinion it would be inexpedient to realise for the time being.

THE COMPENSATION VALUE of the 10 per cent. cumulative preference £1 shares of the Glamorgan Hematite Iron Ore Company, Limited, has been agreed at 25s. per share, and the ordinary £1 shares at 30s. per share.

Heat Extraction at Corners and Curved Surfaces in Sand Moulds

Mr. R. W. Ruddle, M.A., A.I.M., and Mr. R. A. Skinner, B.Sc., in a communication from the British Non-Ferrous Metals Research Association to the Institute of Metals on the above subject have drawn the following conclusion as the result of their research:—

(1) Experimental investigation of the temperature distribution at the corners (edges) of sand moulds has shown that a right-angled corner of a mould extracts heat from a casting considerably more rapidly than a plane mould wall. The heat extracted in a given time through the area bound by lines 3 cm. either side of a sharp corner is greater than that extracted by a plane mould wall by a factor which is independent of the temperature of the metal/mould interface, but is dependent on time and is reduced by radiusing the corner. The average values of the factor are tabulated for solidification times up to 2 hr.

(2) The rate at which a sand mould extracts heat from a right-angled re-entrant corner of a casting is a little less than that at which heat is removed by a plane mould face of equal area. In this case the corner is taken as comprising the area bounded by lines 14 cm. on either side of the apex.

(3) A cylindrical sand-mould surface extracts heat faster than a plane surface; the factors involved are tabulated for times up to 2 hr.

(4) The data obtained can be used to calculate the solidification times of castings of simple shape with fair accuracy. The way in which these calculations are carried out is illustrated in an example.

Shipbuilding Programmes Threatened

Criticism of the Government's decision to suspend the 40 per cent. total depreciation allowance as from April, 1952, has been forthcoming from shipping circles, where it is feared that it may have a detrimental effect on shipbuilding programmes.

Speaking at the annual luncheon of the Norwegian Chamber of Commerce in London on April 20, Sir Guy Ropner, immediate past-president of the Chamber of Shipping of the U.K., said that the encouragement to build had now gone, and he feared the result would be very serious. If there was another war we should go into it less well equipped with a merchant fleet than we had been on the last two occasions.

The previous day, Lord Runciman, vice-president, announcing that the Chancellor of the Exchequer is to be asked to receive a deputation from the shipping industry to discuss the industry's position, said that the suspension of the allowances would disturb, and indeed prevent, the completion of the building programme of the British mercantile marine as urged by the Government itself.

Contracts Open

The dates given are the latest on which tenders will be accepted. The addresses are those from which forms of tender may be obtained. Details of tenders with the reference E.P.D. or C.R.E. can be obtained from the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, London, S.W.1.

ATHENS, May 10—Electric welding machine, for the Ministry of Works Procurement Committee. Room 1095 (CRE (IB) 59051/51).

SLIGO, June 1—Supplying and laying 4,542 yds. of 8 in., 6 in., 5 in., and 4 in. cast-iron pipe, for the Town Council. Mr. N. O'Dwyer, consulting engineer, 6, Burlington Road, Dublin. (Deposit, £5 5s.)

Iron-ore Supply Prospects 1953

European countries, on the basis of present production and consumption plans, might face in 1953 an overall shortage of between 5,000,000 and 10,000,000 tons of iron ore needed to reach their target of 59,000,000 tons of pig-iron production during that year. This represents between 5 per cent. and 10 per cent. of the total requirements of the European countries (not counting the Soviet Union).

In arriving at this ore estimate the Iron Ore Working Group of the United Nations Economic Commission for Europe reviewed 1953 supply prospects of coke and scrap, the two other major raw materials in pig-iron production. Delegates, at a recent meeting, agreed that on present evidence coke was not likely to be a bottleneck in fulfilling pig-iron production plans for 1953.

The smaller ore deficit figure was arrived at through calculations based on an average scrap-ratio charge in blast furnaces equal to twice that of pre-war. However, delegates believed it very unlikely that this high post-war ratio of scrap consumption could be maintained. The higher deficit figure is based on the average pre-war ratio of scrap consumption to pig-iron production.

The experts, who had previously met in February, stated that the latest E.C.E. meeting had clarified considerably the probable supply position of raw materials for making pig-iron. They believed that this would assist in promoting all appropriate steps to meet the expected ore shortage.

Under present estimates the possible overall deficit in iron ore concerns principally low-phosphorus grades, according to the E.C.E. group. (It may be possible and necessary, in meeting certain of the requirements for these grades, to substitute high-phosphorus ores which might be more easily obtainable.)

First Quarter Iron-ore Imports

Imports of iron ore in March and the first three months of this year, with comparative figures for 1950, are shown below. There were no imports of manganiferous ore during the quarter. In the first three months of 1950, 10,900 tons of manganiferous ore were imported, against 3,000 tons in the first quarter of 1949.

Country of Origin.	Month ended March 31.		Three months ended March 31.	
	1950.	1951.	1950.	1951.
	Tons.	Tons.	Tons.	Tons.
Sierra Leone	73,025	39,050	222,071	118,440
Canada	—	—	5,525	—
Other Commonwealth countries and the Irish Republic ..	1,570	686	3,280	5,091
Sweden	310,679	235,448	838,296	699,802
Netherlands	1,944	550	2,709	3,200
France	26,604	36,757	84,369	105,660
Spain	91,058	62,186	205,353	201,169
Algeria	172,693	96,271	464,737	306,843
Tunis	41,430	52,334	115,643	108,374
Spanish ports in North Africa	44,200	23,900	120,820	93,540
Morocco	32,284	20,470	74,061	68,380
Other foreign countries	4,760	8,880	12,110	20,130
TOTAL ..	800,247	576,532	2,148,974	1,730,629

TRIBUTE TO MR. A. DUDLEY EVANS, who has resigned the secretaryship of the Birmingham Exchange because of ill-health and advancing age, was paid by the president, Mr. Claude A. Parson (Guest, Keen & Nettlefolds, Limited), at the annual meeting recently.

D. N. Turner's Retirement

When he retires from his position as chairman and from the board of the Staveley Coal & Iron Company, Limited, at the end of June, because of advancing age, Mr. D. N. Turner will have served the company for over 30 years. He will retire from the Staveley Iron & Chemical Company, Limited, at the same time.

Mr. Turner was educated at Sedbergh School and went on to qualify as a mining engineer. He spent a number of years in private practice in Nottingham and it was in 1920 that he joined the Staveley Coal & Iron Company, being appointed general manager of the company's collieries. Four years later he was elected to the board, and in 1926 he assumed the position of managing director. He has been chairman since 1941. The Staveley Iron & Chemical Company was formed in 1948, when Mr. Turner became chairman of that concern also.

His industrial associations have not been entirely with the Staveley companies, for he has also served as chairman and managing director of the Loddington Ironstone Company, Limited, and as a director of Doncaster Amalgamated Collieries Limited, and the Newstead Colliery Company, Limited. Mr. Turner has also been very active in the St. John Ambulance Brigade, his services being officially recognised last July when he was awarded the distinction of Officer (Brother) of St. John of Jerusalem. In 1917 he was appointed a Derbyshire county magistrate, and since 1937 Mr. Turner has been chairman of the Chesterfield county bench.

Generating Plant Orders

Orders for generating plant to the value of more than £21,500,000 have recently been placed by the British Electricity Authority. Of the 57 turbo-alternator sets of an aggregate capacity of about 2,500,000 kw. involved, 15 are to be built by the Metropolitan-Vickers Electrical Company, Limited, 13 by the General Electric Company, Limited, 11 by the English Electric Company, Limited, seven by the British Thomson-Houston, Company, Limited, six by C. A. Parsons & Company, Limited, and five by Richardsons, Westgarth & Company, Limited. Two 30,000 kw. condensing plants have been ordered from G. & J. Weir, Limited.

In a lecture delivered to the Royal Society of Arts at a joint meeting with the Institution of Electrical Engineers on April 18, Sir John Hacking, deputy chairman (operations), of the B.E.A. warned that demands for electricity would not be met in full until 1954 at the earliest; with bad weather, possibly not until after 1958. The time taken for the initial planning to the completion of a new station was now some five years, he said. Any forecast of the future position was largely governed by the accuracy of the estimates of the load to be met and by the weather which would be experienced.

IN AN EFFORT to break the deadlock over the redistribution of industry in Scotland, the Scottish Council (Development and Industry) has resolved on a significant shift of policy. In official circles it has been admitted that new factories cannot be established in old industrial areas without drawing labour away from existing industry. With this in mind, and an eye on the growth of industry and the state of the labour market in central Scotland, the council has decided to set up a panel of experts to consider the advantageous siting of new industry in other parts of the country.

Imports and Exports of Iron and Steel in March

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in March. Figures for the same month in 1950 are given for purposes of comparison and totals for the first three months of this year and of 1950 are also included.

Total Exports of Iron and Steel

Destination.	Month ended March 31.		Three months ended March 31.	
	1950.	1951.	1950.	1951.
	Tons.	Tons.	Tons.	Tons.
Channel Islands	774	671	2,311	1,979
Gibraltar	167	26	452	124
Malta and Gozo	377	130	1,362	642
Cyprus	689	172	2,054	1,226
Sierra Leone	253	174	1,008	629
Gold Coast	1,860	876	9,074	4,325
Nigeria	3,676	3,143	14,194	14,659
ion of South Africa	16,283	8,328	36,596	29,019
Northern Rhodesia	3,354	1,232	7,464	4,072
Southern Rhodesia	6,823	2,293	19,177	7,089
British East Africa	9,705	5,080	25,206	23,050
Mauritius	851	488	2,573	1,459
Bahrein, Kuwait, Qatar & Trucial Oman	606	893	1,825	2,401
India	7,188	5,523	20,228	24,503
Pakistan	7,277	11,146	15,697	22,858
Malaya	5,805	4,483	19,572	17,480
Ceylon	3,066	2,339	9,552	7,307
North Borneo	296	431	2,212	765
Hongkong	5,457	2,718	13,789	18,032
Australia	24,360	18,553	80,216	95,692
New Zealand	13,133	8,537	44,032	34,231
Canada	8,663	20,311	19,887	48,581
British West Indies	4,694	3,711	17,093	12,050
British Guiana	978	367	2,043	1,330
Anglo-Egyptian Sudan	2,076	733	4,824	2,277
Other Commonwealth	1,837	700	4,376	2,535
Irish Republic	9,609	8,280	21,695	22,248
Soviet Union	45	548	250	1,485
Finland	6,450	3,022	17,277	10,903
Sweden	7,038	7,388	21,186	23,704
Norway	8,195	5,068	18,742	16,141
Iceland	219	112	1,356	603
Denmark	15,876	6,084	40,284	24,621
Poland	259	155	502	375
Germany	31	118	131	346
Netherlands	9,664	8,773	20,733	22,331
Belgium	1,648	1,361	4,167	3,767
France	4,214	689	6,749	3,000
Switzerland	1,260	925	3,872	3,083
Portugal	1,743	2,453	4,359	4,813
Spain	1,386	444	2,987	891
Italy	843	2,309	2,212	3,900
Austria	65	30	203	136
Hungary	63	—	199	23
Yugoslavia	227	148	2,198	2,168
Greece	555	80	1,612	746
Turkey	424	268	2,916	837
Indonesia	915	443	4,112	1,658
Netherlands Antilles	1,075	209	3,117	844
Belgian Congo	131	184	381	478
Angola	284	79	1,040	650
Portuguese E. Africa	311	270	1,131	865
Canary Islands	248	202	645	329
Syria	146	78	219	475
Lebanon	1,041	1,931	2,623	3,097
Israel	1,517	2,521	4,756	6,758
Egypt	8,516	2,654	19,546	9,787
Morocco	16	16	214	1,238
Saudi Arabia	502	8	890	77
Iraq	8,282	1,944	14,382	6,630
Iran	9,891	9,838	33,872	21,801
Burma	858	1,279	2,612	3,616
Thailand	356	1,887	2,130	4,302
China	161	1,283	571	3,430
Philippine Islands	2,243	286	4,581	1,201
U.S.A.	1,626	20,963	3,079	54,202
Cuba	149	628	406	1,349
Colombia	961	1,067	1,569	2,500
Venezuela	1,859	1,811	10,157	6,970
Ecuador	394	107	907	238
Peru	1,350	820	2,563	2,625
Chile	1,071	1,267	3,494	2,915
Brazil	3,401	2,395	8,856	6,143
Uruguay	459	365	2,113	5,204
Argentina	5,152	3,224	19,148	12,926
Other foreign	1,396	1,229	5,614	5,103
TOTAL	255,882	211,591	705,175	692,027

Total Imports of Iron and Steel

From	M'th ended Mar. 31.		3 m'ths ended Mar. 31.	
	1950.	1951.	1950.	1951.
	Tons.	Tons.	Tons.	Tons.
India	8,084	—	22,939	1
Canada	3,584	3,622	9,842	11,883
Other Commonwealth and Irish Republic	116	144	602	349
Sweden	1,125	1,873	3,251	4,818
Norway	3,776	3,023	10,860	11,010
Germany	10,260	1,320	22,310	3,587
Netherlands	8,325	6,125	17,428	12,718
Belgium	12,599	8,462	23,147	28,363
Luxemburg	4,812	6,222	8,340	21,728
France	13,776	19,010	52,688	64,824
Austria	961	33	961	71
U.S.A.	8,598	3,837	20,070	10,426
Other foreign	446	65	1,833	484
TOTAL	77,362	54,636	194,271	170,262
Iron and steel scrap and waste, fit only for the recovery of metal	242,930	51,852	597,809	193,417

Exports of Iron and Steel by Products

Product.	M'th ended Mar. 31.		3 m'ths ended Mar. 31.	
	1950.	1951.	1950.	1951.
	Tons.	Tons.	Tons.	Tons.
Pig-iron	2,565	1,286	6,630	7,634
Ferro-alloys, etc.—				
Ferro-tungsten	76	36	264	193
Spiegeleisen, ferro-manganese	152	212	716	533
All other descriptions	70	121	511	352
Ingots, blooms, billets, and slabs	199	1,309	621	2,933
Iron bars and rods	480	921	1,342	2,313
Sheet and tinplate bars, wire rods	504	1,852	946	4,402
Bright steel bars	3,619	2,919	10,467	12,327
Alloy steel bars and rods	1,434	1,218	3,852	4,023
Other steel bars and rods	16,963	16,675	62,720	61,613
Angles, shapes, and sections	14,659	13,042	37,636	51,101
Castings and forgings	872	781	2,414	2,511
Girders, beams, joists, and pillars	5,825	2,788	14,338	10,313
Hoop and strip	9,812	7,059	21,368	18,241
Iron plate	78	265	715	513
Tinplate	23,462	18,551	60,123	64,383
Tinned sheets	374	211	746	687
Terneplates, decorated tinplates	23	169	83	370
Other steel plate (min. ⅛ in. thick)	30,081	24,738	72,541	72,214
Galvanised sheets	10,859	3,302	29,154	17,106
Black sheets	11,241	10,073	30,765	34,414
Other coated plate	1,085	511	2,965	2,080
Cast-iron pipes up to 6 in. dia.	6,316	5 579	18,375	16,029
Do., over 6 in. dia.	7,908	5,847	21,217	15,370
Wrought-iron tubes	32,999	30,037	89,330	86,393
Railway material	22,190	17,083	64,059	56,772
Wire	6,523	4,536	16,900	17,030
Cable and rope	3,398	2,375	8,961	7,271
Wire nails, etc.	1,491	2,685	4,203	7,144
Other nails, tacks, etc.	503	788	1,283	2,569
Rivets and washers	682	397	1,997	1,616
Wood screws	278	241	838	962
Bolts, nuts, and metal screws	2,950	2,125	8,066	6,758
Baths	1,041	1,053	3,464	3,288
Anchors, etc.	864	830	2,461	2,134
Chains, etc.	817	869	1,430	2,470
Springs	921	425	2,381	1,522
Hollow-ware	8,353	4,477	25,575	11,322
TOTAL, including other manufactures not listed above	255,882	211,591	705,175	692,027

Obituary

MR. W. J. S. MORRIS, late of Williams (Metals), Limited, Birmingham, died on April 16 at the age of 43.

MR. THOMAS BYNG MORRIS, for 51 years chairman of the Milbrook Engineering Company, Limited Swansea, died on April 23 at the age of 84.

MR. JAMES HENRY MORINAN, a partner in Nixon, Page & Company, consulting engineers, of Cardiff, who died recently, joined the company in 1917. He was 75.

MR. WILLIAM ALFRED BENNETT, for many years an engineer with Tangyes, Limited, pump manufacturers, etc., of Smethwick, and who later was in business as a technical and sales representative for engineering firms, has died at the age of 84.

MR. ANDREW CHALMERS, who more than 30 years ago founded Andrew Chalmers & Mitchell, brassfounders and finishers, of Glasgow, has died at the age of 78. He was well known in Clyde engineering and shipbuilding circles for more than 60 years.

MRS. EMILY ALICE ROSE, who, in 1930, succeeded her husband, the late Mr. Charles Edwin Rose, as chairman of Arthur Shaw & Company, Limited, lock manufacturers, etc., of Willenhall (Staffs), and the Shaw Foundry Company, also of Willenhall, died recently.

MR. PERCY ARCHIBALD JAMES, vice-chairman of the Wolverhampton Metal Company, Limited, and of James Bridge Copper Works, Limited, and a director of Joshua Bigwood & Son, Limited, engineers and ironfounders, of Wolverhampton, has died at the age of 71.

THE DEATH HAS OCCURRED at the age of 58 of Mr. Oswald H. Wass, chief sales representative of General Refractories, Limited, Sheffield. Mr. Wass, who was well known in the industry, was a member of the Iron and Steel Institute and also of the Institute of British Foundrymen.

MR. R. A. STRUTHERS, assistant chief engineer of the steam turbine engineering department of Metropolitan-Vickers Electrical Company, Limited, died recently. He joined the company in 1920 as a college apprentice, and on the completion of his apprenticeship was appointed to the staff of the mechanical engineering department. From 1930 to 1933, he was in Leningrad as turbine engineer with the Metropolitan-Vickers Electrical Export Company, Limited, and on his return from Russia became closely associated with the development of the steam turbine locomotive equipped by Metrovick for the L.N.W.R. Since the formation of the steam turbine engineering department, Mr. Struthers had been engaged in the design of large steam turbines on many important contracts for power stations both at home and oversea.

Wills

WOOD, JAMES, a director of Glover & Wood, Limited, ironfounders, of Leeds	£5,554
WALKER, H. C., founder, chairman, and managing director of Yorkshire Engineering Supplies, Limited, Wortley, Leeds	£26,654
BAYLEY, G. H., a director and general sales manager of Guest Keen & Nettlefolds (Midlands), Limited, a director of W. G. James, Limited, engine valve manufacturers, of London, N.W.1, and of the Yorkshire Rolling Mills, Limited, Bradford ...	£15,363

A PRIVATE LETTER received from Dr. James J. MacKenzie contains the following information:—"Anent the casting centipede shown on page 302, March 22 issue, we lost a 24-ft. pipe some years ago because a workman, who was warming his lunch in the mould, forgot it temporarily, and it was cast before he realised it. The bone of a pork chop was embedded in the wall of the pipe to such an extent that the casting had to be scrapped."

Aluminium Development Association

The Annual General Meeting of the Aluminium Development Association was held on April 20, 1951, when Mr. Austyn Reynolds, B.A., A.M.I.MECH.E., was elected president for the year 1951/2. Mr. Reynolds is a director of Tube Investments, Limited, and deputy chairman of T.I. Aluminium, Limited, and the associated Aluminium Companies. He has served on the A.D.A. Council for six years and was vice-president of the Association during 1950/1. The new vice-president is Mr. H. G. Herrington (High Duty Alloys, Limited). Mr. F. G. Woollard, M.B.E., M.I.MECH.E., was re-elected chairman of the executive committee.

Introducing the annual report of the Association on April 20, Mr. Edward Player, the retiring president said that particular attention had been directed during 1950 towards the long-term development of aluminium in the major engineering industries.

The year began under a cloud of uncertainty following the increased cost of aluminium as a result of devaluation in 1949, and ended in even more uncertainty owing to the increasingly difficult metal supply position. During the year, however, owing to the shortage of other non-ferrous metals coupled with their high cost, and the increasing difficulties of obtaining steel, the interest of metal users in aluminium increased substantially. Although in many cases inquiries at the outset were based on the assumed availability of aluminium, or its lower cost, this initial interest often led to a better realisation of the value of the inherent characteristics of aiuminium. This interest should be turned to good account by the industry when metal is again available for large-scale developments, he said.

Standardisation had again formed an important part of the association's work, and the year had seen the virtual completion of the new series of British Standards for aluminium for general engineering purposes, as well as several Standards for end-products.

Referring to the A.D.A. information services, Mr. Player said that 11 new publications were issued and a total of more than 177,000 copies were despatched to a mailing list of over 14,000.

Long Service Rewarded

During his 71 years as a brass and iron moulder, William Henry Chinn has rarely missed a day's work. On April 20, when he took the day off, it was for a very special reason, for he went to the Cardiff Docks headquarters of the Ministry of Supply to be presented with the British Empire Medal, which was awarded to him in the New Year Honours for his meritorious and long service. The Lord-lieutenant of Glamorgan, Col. Sir Gerald Bruce, presented the medal, together with a letter from the King, regretting that his Majesty was not able to make the investiture personally.

A native of Cornwall, Mr. Chinn started work in a Camborne foundry at the age of 14—his hours in those days were 6 a.m. to 6 p.m.—and although he retired once, he "couldn't stand messing about the house," and soon returned to work with J. Lassam & Company, Limited, at Cardiff.

A SELECTION OF EXHIBITS designed to underline the group's special interest in the manufacture of gear units, gear-cutting machines, and ancillary tools will be displayed by David Brown & Sons (Huddersfield), Limited, and associated companies at the Canadian International Trade Fair, which opens at Toronto on May 28.

News in Brief

NEWMAN INDUSTRIES, LIMITED, of Yate, Bristol, announce that they have now been appointed sole selling agents for the United Kingdom for Heid centre lathes and copying lathes.

NEXT MONTH will be one of the busiest launching periods for some time at Tyne shipyards. Ten vessels, totalling 46,000 tons, are expected to enter the water, making the total for the first five months of the year 101,000 tons gross.

DIRECTORS OF SUBSIDIARY COMPANIES in Canada and the United States were among several hundred members of the staff of Albright & Wilson, Limited, who attended a dinner in Birmingham on Friday to mark the centenary of phosphorus making at the company's works at Oldbury (Worcs).

CHESTERFIELD BOROUGH HEALTH COMMITTEE has recommended the East Midland division of the National Smoke Abatement Society to carry out research, in conjunction with the British Iron and Steel Federation, in connection with the reduction of air pollution by smoke from iron and steel plants.

SETTLEMENT of the company's tax liabilities for the war years has enabled recommendations of the special 5 per cent., tax free, bonus, says Sir Maurice Denny, chairman of William Denny & Bros., Limited, shipbuilders and engineers, of Dumbarton, writing in the 1950 report. Maintenance of the 10 per cent., less tax, ordinary dividend was recently recommended for 1950, plus the special bonus.

GLENFIELD & KENNEDY, LIMITED, hydraulic engineers and foundrymen, of Kilmarnock, has received the consent of the Treasury to the board's proposal to capitalise part of the company's reserves by the issue of 700,000 fully paid ordinary shares of £1 each to existing ordinary stockholders in the proportion of one new ordinary share for every £1 ordinary stock now held. This will necessitate increasing the authorised capital.

NEWTON CHAMBERS & COMPANY, LIMITED, of Sheffield, the well-known ironfounders and engineers, are also makers of Izal products. From this branch it is announced that a new product, "Zalpon," is to be marketed. It is a washing cream to be used with a dispenser in factories, public lavatories, and the like. More information is available from the London office, Grand Buildings, Trafalgar Square, London, W.C.2.

FEARS HAVE BEEN EXPRESSED by members of the Wearside District Advisory Committee of the Northern Regional Board for Industry that as the district would not be greatly concerned with the rearmament programme, steel allocation to the shipbuilding industry might be cut. A representative of the northern region of the Ministry of Supply is to be asked to attend the next meeting of the committee to explain the position to members.

SEVENTEEN EMPLOYEES of Smith's Dock Company, Limited, North Shields, with a total of 916 years' service, have been presented with gold badges by Sir Tristram Edwards, chairman and joint managing director. The employee with the longest service is Mr. Robert McVay, who has been with the company for 61 years. Silver badges have also been presented to 346 other employees whose services range from 25 to 49 years with the company.

AT THE PRESENTATION of the Dewar Trophy to the Rover Company, Limited, for its development of the gas-turbine car, Mr. S. B. Wilkes, the managing director, reaffirmed his belief that the gas turbine will replace the piston engine for motor-cars except those of small size. The Dewar Trophy was given to the Royal Automobile Club in 1904 and was presented annually —except during the 1914-18 war—until 1929, when it lapsed. The club intends again to present it annually.

Personal

MR. W. J. E. BLACK, of the English Electric Company, Limited, has been elected chairman of the Institution of Engineering Inspection which held its annual general meeting in Glasgow recently.

MR. WILLIAM HEPPELL, Tyne district organiser for the Amalgamated Engineering Union, has been reappointed secretary of the Tyne and Blyth Confederation of Shipbuilding and Engineering Unions.

MR. R. B. TEMPLETON retired from the position as chairman and managing director of Qualcast (Ealing Park), Limited, on April 30. Mr. C. D. Pollard becomes chairman and Mr. J. E. Stokes managing director from that date.

MR. A. A. ATKINS, assistant education officer to Middlesbrough Education Committee, has been appointed education officer to Samuel Fox & Company, Limited, steel manufacturers and rollers, of Stocksbridge, near Sheffield.

MR. W. FRENCH, of Darlington & Simpson Rolling Mills, Limited, and MR. R. W. BAILLIE, of the South Durham Steel & Iron Company, Limited, have been re-elected chairman and vice-chairman, respectively, of the Tees-side branch of the Institution of Works Managers.

MR. J. H. N. THOMPSON, joint managing director of John Thompson, Limited, boiler manufacturers, etc., of Wolverhampton, has been elected chairman of the Wolverhampton branch of the Institute of Welding. He is a member of the council of the British Welding Research Association.

MR. D. MAXWELL BUIST, export director of the British Electrical and Allied Manufacturers' Association, has been elected chairman of the council of the Institute of Export for the session 1951-52. MR. J. P. FORD, a director and general manager of Associated British Oil Engines (Export), Limited, has been elected vice-chairman.

MR. A. R. JENKINS, deputy managing director of Robert Jenkins & Company, Limited, engineers, etc., has been re-elected president of Rotherham and District Chamber of Commerce. He is also a director of Dyson, Jones & Company, Limited, iron and steel merchants, etc., of Middlesbrough, and the Rotherham Motor Company, Limited.

MR. VIVIAN J. CHALWIN, managing director of J. & H. McLaren, Limited, Diesel engine manufacturers, of Leeds, is leaving this country shortly to become head of a group of engineering companies in Australia, including Brush Electrical (Australia), Limited, and British Oil Engines (Australia), Limited. He is a member of the committee of the Leeds branch of the Engineering Employers' Association.

SIR ANDREW M'CANCE, deputy chairman and joint managing director of Colvilles, Limited, was elected president of the Institution of Engineers & Shipbuilders in Scotland at the annual general meeting in Glasgow recently. He succeeds Prof. G. Cook. Vice-presidents elected were: Mr. G. Johnston (Lobnitz & Company, Limited, Renfrew), and Mr. A. H. S. Lewis (John Lewis & Sons, Limited, Aberdeen).

LORD MCGOWAN, former chairman and now honorary president of Imperial Chemical Industries, Limited, was on April 19 made a freeman of Glasgow in recognition of his many services to his native city and to the nation. Speaking at the ceremony Lord McGowan urged that the city should not relax its efforts to get new light industries. He believed it was the duty of all local councils to encourage their creation by offering attractions, in rates or in other directions. He suggested it might be well to encourage American interests to erect factories in the area.

Raw Material Markets

Iron and Steel

Thus far, blast-furnace men have succeeded in keeping their plants in operation, but many of the furnaces are working below capacity owing to the scarcity of foreign ore. Operations in both the melting shops and the foundries are adversely affected. Carefully controlled distribution of available supplies may in some measure mitigate the difficulties, and foundrymen have hitherto succeeded in keeping their operations fairly well up to schedule. But further deficiencies in the supply of the usual range of pig-iron must have serious industrial repercussions.

Already substantial tonnages of iron are being imported to bridge the gap, but this is a costly expedient which can only be regarded as of a temporary character. Happily, a new furnace in Derbyshire is expected to be lighted up shortly, but the real remedy for the current shortage of pig-iron is the provision of ampler tonnages of coke, ore, and scrap.

Prices of Durham foundry coke and Welsh Navigation foundry coke were increased on April 23 by 2s. 6d. per ton and the price of Lancashire foundry coke by 1s. 3d. per ton. Hard furnace coke was increased last Monday by 3s. per ton in the London Counties Coke Association area and by 1s. 3d. per ton in the Midland Counties Coke Association area.

Re-rollers are between the devil and the deep sea. On the one hand, they are hampered by the shortage of steel semis; on the other hand, they are under constant pressure to increase their deliveries of re-rolled material. It is a conflict of irreconciliables. Operation of the mills is governed by the amount of material in hand, and distribution of the output is now subject to the new home restrictions and export allocations. There is a big unsatisfied demand for light sections and bars as well as sheets in the home and oversea markets.

Restriction of the volume of imports of finished steel products may make little difference. Throughout the whole of this year makers have been exercising voluntary restraints, and the scarcity of cargo space has been a further limiting factor. The opportunities in the oversea markets are greater than ever, but it is expected that more material will be diverted to home consumers, among whom shipbuilders, constructional, electrical, and marine engineers figure conspicuously. Output of sheets will be vastly increased later in the year when the new Margam mill is in commission, but the demand is insatiable. Plate mills are also heavily overloaded, and rail and section mills are only operating below capacity because of the reduced output of ingots.

Non-ferrous Metals

An announcement by the Ministry of Supply last Thursday gave a warning to consumers of lead that while their quota of metal in May would remain unchanged at 90 per cent. of the monthly average for 1950, it might not be possible to provide the full tonnage in the month in question. About 80 per cent. is envisaged for delivery by May 31, but any shortfall will be made good in June, and probably most users will be able to scrape through on the basis of this arrangement. But by this time the majority of consumers must be feeling the effects of the cut in supplies and they cannot have much, if any, margin to draw upon.

Great efforts are being made by fabricators in this country to keep their plants running and their workpeople employed. So far, one has not heard of any serious stoppage or hold-up, but whether the momentum so far maintained during the first half of this year can be carried into the second six months may be doubted. In certain directions the position must certainly be growing difficult, and there is anxious conjecture about the ability of the makers of fire-refined copper to carry on in face of the ever-growing scarcity of scrap.

The vexed question of whether secondary metal is being hoarded has yet to be settled. So far, no action has been taken by the Government to insist upon stock returns at regular intervals, and the licensing of scrap acquisition still lies in the future. It is believed, however, that this step has been decided upon, the delay in putting it into force being due to certain inevitable difficulties of administration which have to be solved.

The tin market has been relatively steady. The backwardation has narrowed, and it may well be that we shall see the disappearance altogether of the premium on the spot price.

London Metal Exchange official tin quotations were as follow:—

Cash—Thursday, £1,145 to £1,150; Friday, £1,140 to £1,145; Monday, £1,155 to £1,160; Tuesday, £1,170 to £1,180; Wednesday, £1,145 to £1,150.

Three Months—Thursday, £1,135 to £1,140; Friday, £1,130 to £1,135; Monday, £1,150 to £1,155; Tuesday, £1,165 to £1,170; Wednesday, £1,130 to £1,135.

The outlook for copper supplies during the rest of this year does not seem particularly good, for there has been talk of our not receiving from Canada the cut tonnage of 10,000 tons per quarter. Last year, it will be remembered, and, indeed, for some time past, copper was arriving from the Dominion at an annual rate of 60,000 tons. Shortage of coal in Rhodesia is still holding down copper output below the best and it almost seems as though production this year will be under the 1950 level.

Board Changes

PARKINSON & COWAN, LIMITED—Mr. Robert Connor has been elected a director.

IMPERIAL SMELTING CORPORATION, LIMITED—Dr. J. H. Schulman has been elected a director.

RIO TINTO COMPANY, LIMITED—Mr. A. T. Gough and Mr. Frank Byers have been appointed directors.

CLIMAX ROCK DRILL & ENGINEERING WORKS, LIMITED—Mr. A. S. Grant has been elected a director.

GUEST, KEEN & NETTLEFOLDS, LIMITED—Sir Henry Wilson Smith has been appointed a director.

LINLEY ENGINEERING COMPANY, LIMITED—Mr. Lionel Butler-Henderson has been co-opted to the board.

BURNTISLAND SHIPBUILDING COMPANY, LIMITED—Lord Rea and Mr. Reginald J. E. Dodds have been elected directors.

AVELING-BARFORD, LIMITED—Mr. W. M. T. Branson, home sales manager since 1946, has been appointed a local director.

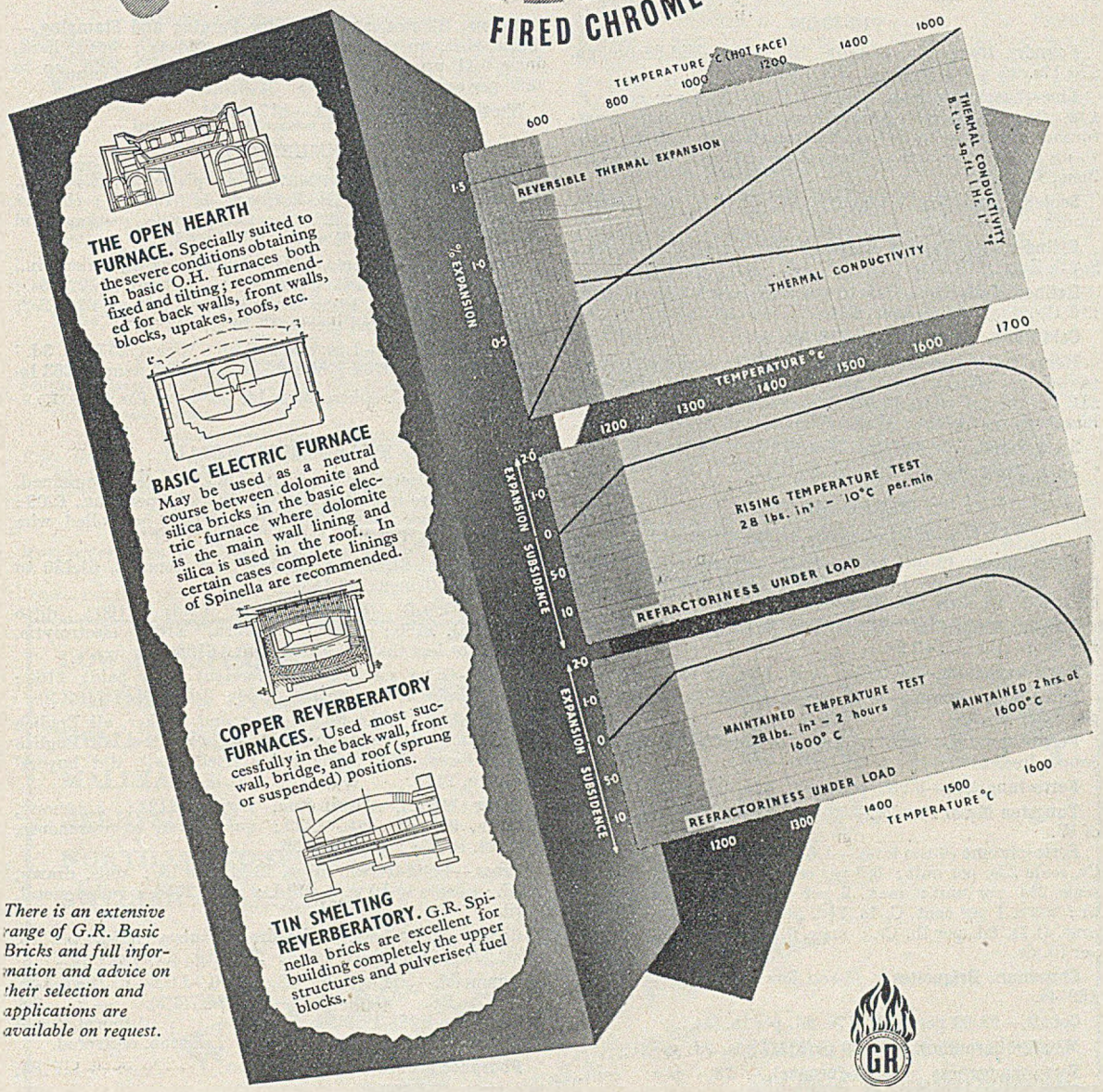
UNITED GAS INDUSTRIES, LIMITED—Lt.-Col. W. C. Smith has been appointed chairman in succession to the late Mr. S. E. Cash.

MARCO REFRIGERATORS, LIMITED—Mr. J. R. Fulford has relinquished his appointment as assistant managing director, but retains his seat on the board.

B. O. MORRIS, LIMITED—Mr. Harold H. Norcross has resigned from the board and Mr. Harold S. Royce and Mr. Maurice B. E. Masters have been appointed directors.

G.R. 'SPINELLA'

FIRED CHROME-MAGNESITE BRICK



There is an extensive range of G.R. Basic Bricks and full information and advice on their selection and applications are available on request.

G.R. SPINELLA BRICKS are manufactured from chrome ores and magnesite selected for chemical purity and special physical properties. The raw materials are crushed, graded and mixed to give a batch which, when hydraulically pressed under a load of 7½ tons per sq. inch, ensures a product with a consistent and uniformly low porosity. High temperature firing in specially designed kilns completes the formation of a high temperature bond and finished bricks that will carry heavy loads at high temperatures.

220

GENERAL REFRACTORIES LTD

GENEFAX HOUSE · SHEFFIELD 10

Telephone: SHEFFIELD 31113

Current Prices of Iron, Steel, and Non-ferrous Metals

(*Delivered, unless otherwise stated*)

May 2, 1951

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2:—Middlesbrough, £10 17s. 9d.; Birmingham, £10 13s.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, £12 9s., delivered Birmingham. Staffordshire blast-furnace low-phosphorus foundry iron (0.10 to 0.50 per cent. P, up to 3 per cent. Si)—North Zone, £12 16s. 6d.; South Zone, £12 19s.

Scotch Iron.—No. 3 foundry, £12 7s. 9d., d/d Grangemouth.

Cylinder and Refined Irons.—North Zone, £13 7s. 6d.; South Zone, £13 10s.

Refined Malleable.—P, 0.10 per cent. max.—North Zone, £13 17s. 6d.; South Zone, £14.

Cold Blast.—South Staffs, £16 10s. 6d.

Hematite.—Si up to 2½ per cent., S. & P. over 0.03 to 0.05 per cent.:—N.-E. Coast and N.-W. Coast of England, £12 7s. 6d.; Scotland, £12 14s.; Sheffield, £13 2s. 6d.; Birmingham, £13 9s.; Wales (Welsh iron), £12 7s. 6d.

Spiegeleisen.—20 per cent. Mn, £18 3s.

Basic Pig-iron.—£10 19s. all districts.

FERRO-ALLOYS

(*Per ton unless otherwise stated, delivered.*)

Ferro-silicon (6-ton lots).—40/55 per cent., £37 15s., basis 45% Si, scale 14s. per unit; 70/84 per cent., £52, basis 75% Si, scale 14s. 6d. per unit.

Silicon Briquettes. (5-ton lots and over).—2lb. Si. £44 2s.; 1lb. Si, £45 2s.

Ferro-vanadium.—50/60 per cent., 15s. per lb. of V.

Ferro-molybdenum.—65/75 per cent., carbon-free, 9s. 6d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., carbon-free, £167; ditto, copper free, £183.

Ferro-tungsten.—80/85 per cent., 31s. 6d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 33s. 6d. per lb. of W.

Ferro-chrome (6-ton lots).—4/6 per cent C, £66, basis 60% Cr, scale 22s. per unit; 6/8 per cent. C, £61, basis 60% Cr, scale 21s. per unit; max. 2 per cent. C, 1s. 6¾d. per lb. Cr; max. 1 per cent. C, 1s. 7¼d. per lb. Cr; max. 0.15 per cent. C 1s. 8d. per lb. Cr.; max. 0.10 per cent. C, 1s. 8¼d. per lb. Cr.

Chromium Briquettes. (5-ton lots and over).—1lb. Cr, £69 4s.

Cobalt.—98/99 per cent., 17s. 6d. per lb.

Metallic Chromium.—98/99 per cent., 5s. 9d. per lb.

Ferro-manganese (blast-furnace). — 78 per cent., £32 3s. 7d.

Manganese Briquettes. (5-ton lots and over).—2lb. Mn, £40 15s.

Metallic Manganese.—96/98 per cent., carbon/free, £215 per ton.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft, u.t., £17 4s.; tested, up to 0.25 per cent. C (100-ton lots), £17 9s.; hard (0.42 to 0.60 per cent. C), £19 4s.; silico-manganese, £24 6s. 6d.; free-cutting, £20 9s. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £22 11s. 6d.; case-hardening, £23 9s.; silico-manganese, £26 14s.

Billets, Blooms, and Slabs for Forging and Stamping.—Basic, soft, up to 0.25 per cent. C, £20 4s.; basic, hard, over 0.41 up to 0.60 per cent. C, £21 9s.; acid, up to 0.25 per cent. C, £23 9s.

Sheet and Tinplate Bars.—£17 6s. 6d.

FINISHED STEEL

Heavy Plates and Sections.—Ship plates (N.-E. Coast), £21 3s.; boiler plates (N.-E. Coast), £22 10s. 6d.; chequer plates (N.-E. Coast), £23 8s.; heavy joists, sections, and bars (angle basis), N.-E. Coast, £20 1s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., untested, £22 15s.; flats, 5 in. wide and under, £22 15s.; hoop and strip, £23 10s.; black sheets, 17/20 g., £29 13s.; galvanised corrugated sheets, 17/20 g., £43 6s.

Alloy Steel Bars.—1-in. dia. and up: Nickel, £37 19s. 3d.; nickel-chrome, £56 6s.; nickel-chrome-molybdenum, £63 1s.

Tinplates.—I.C. cokes, 20 × 14, per box, 42s. 7½d., f.o.t. makers' works.

NON-FERROUS METALS

Copper.—Electrolytic, £210; high-grade fire-refined, £209 10s.; fire-refined of not less than 99.7 per cent., £209; ditto, 99.2 per cent., £208 10s.; black hot-rolled wire rods, £219 12s. 6d.

Tin.—Cash, £1,145 to £1,150; three months, £1,130 to £1,135; settlement, £1,145.

Zinc.—G.O.B. (foreign) (duty paid), £160; ditto (domestic), £160; "Prime Western," £160; electrolytic, £164; not less than 99.99 per cent., £166.

Lead.—Good soft pig-lead (foreign) (duty paid), £160; ditto (Empire and domestic), £160; "English," £161 10s.

Zinc Sheets, etc.—Sheets, 10g. and thicker, all English destinations, £180; rolled zinc (boiler plates), all English destinations, £178; zinc oxide (Red Seal), d/d buyers' premises, £178.

Other Metals.—Aluminium, ingots, £124; antimony, English, 99 per cent., £390; quicksilver, ex warehouse, £73 10s. to £74; nickel, £406.

Brass.—Solid-drawn tubes, 21¾d. per lb.; rods, drawn, 29¼d.; sheets to 10 w.g., 26⅜d.; wire, 27½d.; rolled metal, 25⅛d.

Copper Tubes, etc.—Solid-drawn tubes, 23¼d. per lb. wire, 226s. 6d. per cwt. basis; 20 s.w.g., 254s. per cwt.

Gunmetal.—Ingots to BS. 1400—LG2—1 (85/5/5/5), — ; BS. 1400—LG3—1 (86/7/5/2), — ; BS. 1400—G1—1 (88/10/2), — ; Admiralty GM (88/10/2), virgin quality, — , per ton, delivered.

Phosphor/bronze Ingots.—P.Bl, — ; L.P.Bl, — per ton.

Phosphor Bronze.—Strip, 37d. per lb.; sheets to 10 w.g., 39⅛d.; wire, 40½d.; rods, 36¾d.; tubes, 42d.; chill cast bars: solids —, cored, —. (C. CLIFFORD & SON, LIMITED.)

Nickel Silver, etc.—Ingots for raising, 2s. 4¼d. per lb. (7%) to 3s. 3½d. (30%); rolled metal, 3 in. to 9 in. wide × .056, 2s. 10¼d. (7%) to 3s. 9½d. (30%); to 12 in. wide × .056, 2s. 10½d. to 3s. 9¾d.; to 25 in. wide × .056, 3s. 0½d. to 3s. 11¾d. Spoon and fork metal, unsheared, 2s. 7¼d. to 3s. 6½d. Wire, 10g., in coils, 3s. 4d. (10%) to 4s. 3¼d. (30%). Special quality turning rod, 10%, 3s. 3d.; 15%, 3s. 7¾d.; 18%, 4s. All prices are net.

Forthcoming Events

MAY 7

Incorporated Plant Engineers

London Branch:—Works visit to George Wimpey & Company, Limited, Mechanical Repair Depôt, Southall. Details from the Secretary.

MAY 8

Institution of Production Engineers

Birmingham Graduate Section:—"Fundamental Machining Problems associated with the Production of Gas-turbine Components," by P. Spear, B.ENG., 7 p.m., at the James Watt Memorial Institute, Great Charles Street, Birmingham.

Institute of Industrial Supervisors

Dudley and District Section:—"Some Impressions of American Production," by H. Davies, 7.30 p.m., at the Dudley and Staffordshire Technical College, Dudley.

Chemical Engineering Group

"Economic Reactor Design," by G. T. Meiklejohn and R. C. Snell, at Burlington House, Piccadilly, London.

MAY 9

Institute of Industrial Supervisors

West Bromwich Section:—"Industrial Relations," by T. Wylie, 7.45 p.m., at the Grammar School, West Bromwich.

MAY 10

Institution of Production Engineers

Southern Section:—"Planning for Production Incorporating Cost Control," by C. W. Higgins, 7 p.m., at the Polygon Hotel, Southampton.

Incorporated Plant Engineers

Kent Branch:—"The Theory and Practice of Corrosion," by Dr. Gyngel and Mr. L. C. J. Bayley, at 7 p.m., in the Lecture Theatre of the Maidstone Technical College.

MAY 11 to MAY 13

Institution of Works Managers.

Manchester Branch:—Conference at Southport (jointly with Merseyside branch). Details from the Secretary.

FOUNDRYMEN WISHING to hear the Paper "Synthetic Resins as Foundry Sand Binders," by P. G. Pentz, B.SC., at the British Plastics Convention to be held at Olympia, London, on June 6 to 16, should write for tickets to Mr. P. Morgan, convention manager, at Dorset House, Stamford Street, London, S.E.1.

PRINCESS ELIZABETH will visit the Ministry of Labour's exhibition on "Man-power: The Human Factor in Industry" on May 21. The exhibition, which is being held at the Safety, Health and Welfare Museum, Horseferry Road, Westminster, London, S.W.1, opens on May 18 and continues until September 29. It will be open from Monday to Saturday (10 a.m. to 6 p.m.), and admission will be free.

UNDER AN AGREEMENT effected out of court, £27,000 compensation has been paid to the dependents of the nine men who lost their lives in the disaster at the Consett Iron Company's works last July. This was revealed by Mr. J. Owen, secretary of the National Union of Blastfurnacemen, Ore Miners, Coke Workers and Kindred Trades, in his report to the half-yearly meeting of the Cleveland and Durham District Delegate Board at Redcar.

MR. E. WALKER ELLIOTT, a director of L. Sterne & Company, Limited, refrigerating machinery manufacturers, and the Haslam Foundry & Engineering Company, Limited, has been elected president of the Liverpool Engineering Society for the current session. He served his apprenticeship with William Gray & Company, Limited, shipbuilders, etc., of West Hartlepool, and after obtaining his first-class Board of Trade certificate, he joined the Port of London Authority. Mr. Elliott is also an associate member of the Institution of Mechanical Engineers.

CLASSIFIED ADVERTISEMENTS

PREPAID RATES : **Twenty words for 5s. (minimum charge) and 2d. per word thereafter. Box Numbers. 2s. extra (including postage of replies).**

Advertisements (accompanied by a remittance) and replies to Box Numbers should be addressed to the Advertisement Manager, Foundry Trade Journal, 49, Wellington Street, London, W.C.2. If received by first post Tuesday advertisements can normally be accommodated in the following Thursday's issue.

SITUATIONS WANTED

FOUNDRY FOREMAN, with 17 years' experience in die casting, requires position with progressive firm. Preferably in the South of England, but not essential.—Box 906, FOUNDRY TRADE JOURNAL.

ENERGETIC FOUNDRYMAN (32), with wide and varied experience, desires change. Mechanisation, cupola and sand control, machine-tool and general engineering castings to 8 tons. High duty irons. Skilled and unskilled labour control. —Box 926, FOUNDRY TRADE JOURNAL.

TWO keen and energetic young men seek responsible position with progressive firm of ironfounders, where their extensive theoretical knowledge and practical experience of ironfoundry technology can be best employed by themselves and employer. Details of experience, etc., forwarded upon request.—Box 932, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

PATTERNMAKERS REQUIRED.—MOYLE, KINGSTON-ON-THAMES.

JUNIOR METALLURGIST required for control work in Grey Iron Foundry of an expanding concern engaged in manufacturing agricultural machinery. State age, experience, and wage required.—Apply INTERNATIONAL HARVESTER CO., Doncaster.

FOUNDRY FOREMAN wanted for Foundry near Birmingham. Applicant must have had experience of castings up to 3 tons in weight, be a good organiser, and have the ability to get things done. This is a permanent and lucrative appointment for the right man.—Please send full details of age, experience, and salary required to Box 898, FOUNDRY TRADE JOURNAL.

TECHNICAL CLASS, GRADE II, for Ministry of Supply, needed at Royal Ordnance Factory, N.W. England. Qualifications :—British of British parentage; broad knowledge of metallurgy as applied to modern non-ferrous foundry and rolling mill; experience in operation of electric-induction melting furnaces and of rolling mills, both for hot and cold work, together with other operations associated with rolling and cleansing of non-ferrous and bi-metal strip is essential; experience in control of industrial staff in a large-scale organisation an advantage; Higher National Certificate desirable. Duties :—Responsibility for operation of electric-induction melting furnaces and rolling mills. Salary :—(at age of 30), £540-£645, not established, opportunities for establishment may arise.—Written applications, giving date of birth and education, full details of qualifications and experience of posts held (including dates), should be addressed to APPOINTMENTS OFFICER, Ministry of Labour and National Service, 1-6, Tavistock Square, W.C.1, quoting reference number K1.126, within 10 days of appearance of this advertisement. In no circumstances should original testimonials be forwarded. Only candidates selected for interview will be advised.

SITUATIONS VACANT—*Contd.*

SKILLED MOULDERS, PLATERS, TURNERS, BORERS, etc., required by Distington Engineering Co., Ltd., Workington, Cumberland.—For further details apply to the LABOUR MANAGER.

REPRESENTATIVE required for North-East Coast for Sale of Foundry Supplies, including Core Binders.—Write, stating age and experience, etc., to Box 886, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN.—Good practical Foundry Foreman wanted for iron foundry, West of Scotland; heavy engineering castings, 25 tons per week; house can be provided.—Applicants should give details of experience and state salary required to Box 916, FOUNDRY TRADE JOURNAL.

STEEL FOUNDRY FOREMAN for East Scotland. Green sand only. Experience of modern methods essential. Permanent job, good conditions. Pension fund.—Reply, stating experience and salary expected.—Box 930, FOUNDRY TRADE JOURNAL.

A STEEL FOUNDRY in Yorkshire is desirous of increasing its supervisory and technical staff. Personnel of a high standard of efficiency, coupled with initiative and a desire to progress are required for the supervision of a mechanised unit and also for a jobbing section. A good salary with housing accommodation will be provided for successful applicants. Write in the first instance, giving full details of experience to date, stating age and salary required.—Box 918, FOUNDRY TRADE JOURNAL.

A STEEL FOUNDRY, having a progressive and modern outlook, wishes to contact foundry personnel or metallurgical students having had either a technical or practical apprenticeship, who would be prepared to undergo a period of training which would result in the appointment to a position of foreman or higher level of authority should the applicant possess sufficient initiative and organising ability to warrant this. A good salary will be paid during the training period and housing accommodation found.—Box 920, FOUNDRY TRADE JOURNAL.

METALLURGICAL CHEMIST required to take charge of Works routine laboratory. Must have metallurgical and analytical experience in aluminium and non-ferrous alloys, cast iron and steel, as well as sundry materials connected with foundry work. To be responsible to Chief Metallurgist and capable of supervising small staff. Will also be required to assist in making-up metal mixtures for crucible and cupola charges. The post calls for a wide range of activities and requires a versatile and interested man with good qualifications. Salary according to age and experience, pension scheme.—Apply, with full particulars of training and positions held, to GENERAL MANAGER, John I. Thornycroft & Co., Ltd., Engineers and Shipbuilders, Woolston, Southampton.

SITUATIONS VACANT—*Contd.*

ASSISTANT MANAGER required for Metal Spun Pipe Plant and Pipe Specials Foundries. Practical experience in Metal Spun Pipe Production and labour control essential.—Applications, stating age, experience, and salary required, to Box 910, FOUNDRY TRADE JOURNAL.

FOREMAN required for tool room, Midland area; experienced gravity and pressure dies. This is an excellent opportunity for capable man, with a progressive firm.—Write, stating age, experience, and wages required, Box 902, FOUNDRY TRADE JOURNAL.

A MOULDER, with good experience of Automobile manifold castings, to run a small country Foundry in Norfolk. Able to do own cores and produce a good job. A good rate of pay and bonus. We do not require a highly technical manager, but someone who can and will work on the floor to produce manifolds to our mutual advantage. State experience.—Box 912, FOUNDRY TRADE JOURNAL.

METALLURGIST required for Iron Foundry in South Wales. Must be experienced in the production of High Duty Iron, Sand Control and Mechanised Foundry development. This is a progressive position and offers considerable scope to the person having the necessary ability.—Reply, giving details of experience, etc., to Box 876, FOUNDRY TRADE JOURNAL.

PATTERNMAKER first-class METAL FOREMAN required. Must be thoroughly accustomed to the construction of first-class metal pattern equipment as produced by this firm for the leading and largest automobile, aircraft and other trades. Only those used to working to dead-on limits, with highest possible class workmanship and highly polished mirror finish, also foundry experience. Must be absolutely a first-class estimator and essential able to check accurately, and accustomed to every type of measuring instrument.—Only those with this experience need apply to WRIGHT & PLATT, LTD., The World's Largest Engineering Master Patternmakers, Irving Street, Birmingham, stating age, full experience, and wage required.

FINANCIAL

LONDON Company, able to introduce considerable volume of work, wishes to acquire interest in Non-ferrous Foundry. Preferably in Southern England. Principals only, in strict confidence.—Box 900, FOUNDRY TRADE JOURNAL.

ENGINEERING OR ALLIED INDUSTRY.—Investment company, with substantial financial resources, desire to acquire an interest in (or would purchase outright) an Established Concern with good profit-earning record. Continuity of management and personnel essential. A sum involving £50/200,000 is envisaged.—Address Box 924, FOUNDRY TRADE JOURNAL.

FOUNDRY FOR SALE

SMALL Iron Foundry, close London, for Sale as going concern, or Buildings and Plant only. Modern buildings, with plenty of room for extensions. Very moderate price for quick sale.—Box 884, FOUNDRY TRADE JOURNAL.

BUSINESS FOR SALE

FOR SALE AS GOING CONCERN.—Ferrous and Non-ferrous General Jobbing Foundry, within 20 miles London. Well equipped with 2 Cupolas, 3 Brass Furnaces, ample yard space and room for expansion.—Further particulars available to principals from YEATMAN, MELBOURN & Co., Chartered Accountants, 68, Coleman Street, E.C.2.

PATENT

THE Proprietors of Patent No. 579,556, for "Protective covering for metal articles and method of applying," desire to secure commercial exploitation by licence in the United Kingdom.—Replies to HASELTINE, LAKE & Co., 28, Southampton Buildings, Chancery Lane, London, W.C.2.

MATERIALS WANTED

BAND SAW required, suitable for aluminium.—Box 904, FOUNDRY TRADE JOURNAL.

OFFERS C.I.F. Colombo, with delivery dates, are requested for :—
(*a*) Barbed Wire.
(*b*) Plain and Corrugated Galvanised Sheets.
(*c*) Galvanised Water Pipes, ½ to 2 in. diameter.
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(*e*) Reinforcing Bars.
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Prepared to purchase immediately fifty tons of each. Orders will be confirmed in London and paid for by letters of credit.

ANGLO-ASIAN CO., LTD.,
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Cables—Lodestar.

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PAN MILLS, 4 ft. and 5 ft. dia. underdriven, stationary pans, self-discharging new, for delivery from stock.—W. & A. A. BREALEY (MACHINERY), LTD., Ecclesfield, Sheffield.

TWIN MATCH PATTERN PLATES in Cast Iron or Aluminium made from customer's own patterns or to specification.—ROBERT R. SHAW, Falkirk Road, Larbert, Scotland. 'Phone 300.

MACHINERY WANTED

WANTED.—TWO 15- or 20-ton per hr. Cupolas, with or without charging gear, and with or without blowing machinery.—Box 914, FOUNDRY TRADE JOURNAL.

WANTED.—Portable Mould Dryer, for coke fuel; 440 volts, 50 cycles, 3-phase. State price and where seen.—Box 878, FOUNDRY TRADE JOURNAL.

MACHINERY WANTED—*Contd.*

WANTED.—500-lb. capacity Aluminium or Brass Oil-fired Semi-rotary Melting Furnace.—Box 896, FOUNDRY TRADE JOURNAL.

WANTED.—Gas or Electric Melting Furnace, suitable for non-ferrous foundry, capacity 30 lbs. Would be interested in indirect Carbon Arc Furnace similar capacity. Supply voltage is 440, 3-phase.—R. B. CHARLTON & Co., LTD., Manors Works, Newcastle-upon-Tyne.

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MELTING FURNACE, 3-phase, electric, 5-cwt. capacity. With 150 k.v.a. transformer, Crompton Parkinson switch, fully automatic control. The installation is in excellent order and at present working in London area. Further particulars will be forwarded on application.—Box 922, FOUNDRY TRADE JOURNAL.

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TYPE WT. 562AY SHOCKLESS SIMULTANEOUS JOLT SQUEEZE TURNOVER DRAW MOULDING MACHINE, for boxes 18 in. wide.

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TILGHMAN SHOTBLAST ROOM PLANT, having 6-ft. room, type SV2 Tilghman Shotblast Apparatus, Pressure Chamber, Paddle Blade Exhaust Fan, Air Receiver, etc.

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NEW MOTOR DRIVEN HEXAGONAL RUMBLING BARRELS, 36 in. long by 18 in. across flats, 1 ft. 2 in. plate; driven by 3 h.p. Motor and complete with Starter, 400/3/50.

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AIR COMPRESSORS.

1,000 C.F.M., TILGHMAN, low pressure set, type CE.3B, vert., twin cyl., single stage, water cooled, 12 lb. w.p., 320 r.p.m. Direct coupled 75-h.p. S/R Met.-Vick. motor, 415/3/50.

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300-c.f.m., ALLEY & McLELLAN, type 23B, vert., single crank, 2 stage, water cooled, fitted intercooler and unloader, 100 lb. w.p. Direct coupled Crompton 75-h.p. S/R motor, 415/3/50, 365 r.p.m.

300-c.f.m., BROWETT LINDLEY, maker's No. 279299, vert., 2 crank, 2 stage, water cooled, 100 lb. w.p. "V" belt driven from 75-h.p. E.E.C. S/R motor, 400-440/3/50, 1,460 r.p.m.

250-c.f.m., BROWETT LINDLEY, Monobloc type, vert., water cooled, 100 lb. w.p., 660 r.p.m., fitted internal intercooler and aftercooler. "V" belt driven from 60-h.p. Crompton S/R motor, 400/3/50, 1,460 r.p.m.

250-c.f.m., ALLEY & McLELLAN, Sentinel series 28A, vert., single cyl., water cooled, 100 lb. w.p., 360 r.p.m. Belt driven from 50-h.p. L.D.M. S/R motor, 440/3/50, 1,460 r.p.m.

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Two complete small CUPOLAS, 30 in. diam., £150 each, including Keith Blackman Fans, etc.

25 practically new BALE-OUT FURNACES, cheap.

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FOR SALE.—No. 1 Foundry Equipment Rotary Furnace, 1 ton capacity, fully equipped with fuel feeds, charging shovel, fans, motors, ducting, burners, etc., 1 spare shell, lifting chains and blocks, practically unused. In good working order. Inspection invited.—Apply Box 906, FOUNDRY TRADE JOURNAL.

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FOR SALE.—Battery of 5-Core Drying Cabinets, by Modern Furnaces & Stoves, Ltd. Complete with firebox, electric motor, fan, etc. Would sell cabinets separately.—Offers for quick sale to THE BROCKMOOR FOUNDRY CO., LTD., Brockmoor, Brierley Hill, Staffs.

MOULDING MACHINES. — Two Coleman No. 24A Davenport Type Machines. Jarr, Roll-over. Pattern draw 12 in.; 1,100 lbs. working capacity. Suitable for boxes up to 40 in. by 24 in. Price £350 each.—Box 288, FOUNDRY TRADE JOURNAL.

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Tel. No. Eagley 600/1/2

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MOULDING Boxes, 50 pairs, 18 in. by 12 in. by 3 in. by 4 in., Sterling, style "S.A."
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Both sizes in good condition, being little used.
Moulding Machine, Jackman, small size, hand operated.
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CASTINGS.—We can save your porous castings, ferrous or non-ferrous, by an approved impregnation Process; sample castings treated.—RECUPERO, LTD., Cannon Croft Works, Eastcote Road, Pinner, Middx. 'Phone Pinner 7529.

CAPACITY available for castings weighing from 1 lb. to 12 tons, including Quasi-Bessermised ingot moulds up to 10,000 tons per annum.—THE CROSS FOUNDRY & ENGINEERING CO., LTD., Gorseinon, near Swansea.

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NON-FERROUS FOUNDRY.—Capacity available for first-class quality Alum. Bronze, Gunmetal Castings, etc. Competitive prices, including aluminium sand and gravity die castings. Patternmaking if required.—F. BETHELL, Brass and Aluminium Founder, Lower Carrs, Stockport, Cheshire.

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THE Pattern Equipment Co. (Leicester), Ltd., has immediate capacity for all types of wood and metal patterns, equipment for mechanised foundries a speciality.—147, Mount Road, Leicester; Telephone: 23773.

NON-FERROUS FOUNDRY. Capacity available. First-class quality castings, in Aluminium-Bronze, Gunmetals, etc., at competitive prices, including patterns if required.—BEESTON LEE & CO., LTD., 33, Swindon Road, Stratton St. Margaret, Wilts.

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CAPACITY, substantial, available immediately, fully mechanised Foundry; high quality Grey Iron and Malleable Castings; boxes up to 28 in. by 16 in. by 5 in.; Patternmaking facilities if required.—E. J. WALLACE, 50, Wellington Street, Glasgow, C.2.

MISCELLANEOUS

WANTED.—Old Broken Fire Bricks.—Full details of quantity available and price to buyer, DAVID BROWN-JACKSON, LTD., Salford Works, Hampson Street, Manchester, 5.

REFRACTORY MATERIALS.—Moulding Sand, Ganister, Limestone, Core Gum; competitive prices quoted.—HENSALL SAND CO., LTD., Silver Street, Halifax.

PATTERNS in Wood or Metal; high finish and accuracy maintained; plate and multi-cored work a speciality.—HAYWOOD BROS., Littleborough, Lancs 8543.

STAFF TIME CHECKING AND JOB COSTING TIME RECORDERS; all makes for quick cash sale. Exceptional condition.—Write Box 455, SMITHS', 100, Fleet Street, E.C.4.

WE buy used or unserviceable Steel Files at good prices, in lots of 2 cwts. or more.

THOS. W. WARD, LTD.,
R.S. Department,
Albion Works, Sheffield.

MISCELLANEOUS—*Contd.*

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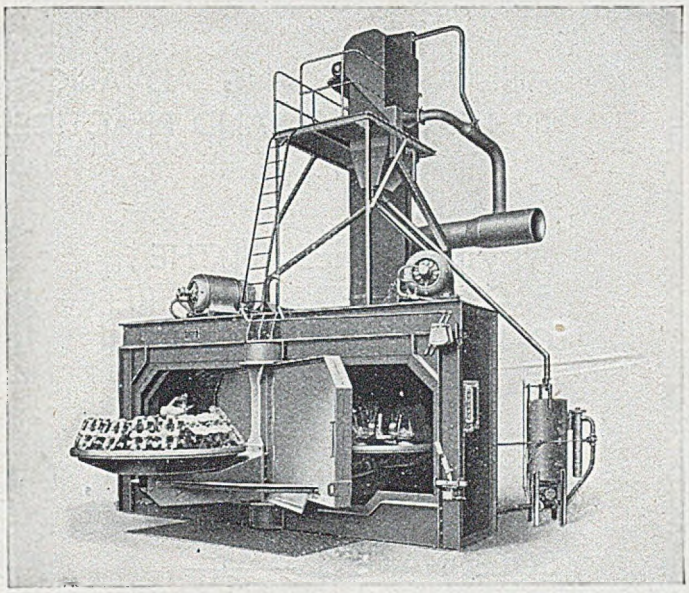

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