FOUNDRY TRADE JOURNAL

EST. 1902

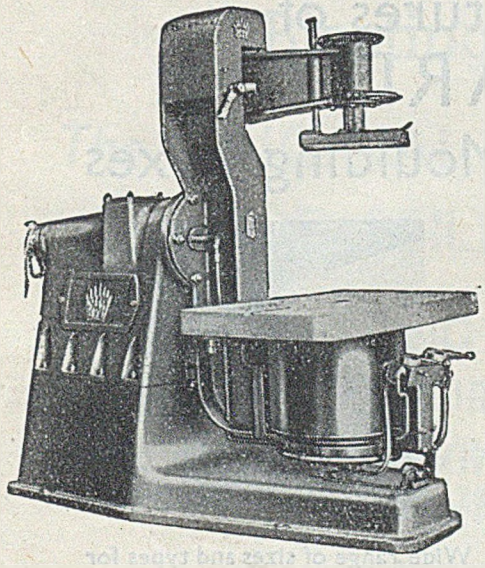
WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

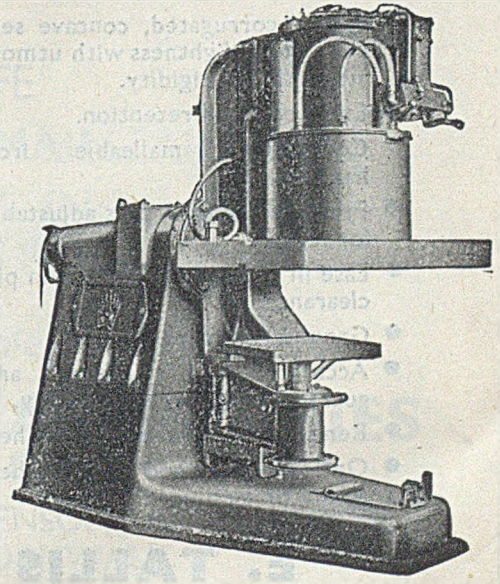
VOL. 84. No. 1642 FEBRUARY 19, 1948

Registered at the G.P.O. as a Newspaper. Offices : 49, Wellington Street, Strand, London, WC.2.

[Single Copy, 6d. By Post, 8d. Annual Subscription, Home and Overseas, 21/- (Prepaid)

FAVERSHAM KENT





BRITISH MOULDING MACHINE CO. LTD.

Photographs by permission of Imperial Foundry Co. Leamington Spa (Props : Ford Motor Co. Ltd.).

Oil sand mixtures contribute many different features to mould and core production, and each of those features is variously assessed by Foundrymen according to conditions prevailing and properties desired.

Sand mixtures for Steel are different to those employed for Iron or Non-Ferrous metals, and within each category there is frequent variation. There are however certain properties in oil sands necessary for all purposes, and chief amongst these is permeability.

In complex types of castings where cores interlock, the binders employed must be clean and efficient to ensure strong adhesion between the adjacent sand grains with a minimum bond film enveloping each grain.

The photographs reproduced on this page are good examples showing cored work where success depends on high permeability and unrestricted exit to residual gases during casting.

INDEX TO ADVERTISERS

C

FOUNDRY TRADE JOURNAL
Established 1901
WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

The FOUNDRY TRADE JOURNAL is the Official Organ of the following :—

THE INSTITUTE OF BRITISH FOUNDRYMEN

PRESIDENT 1947-48 : **Percy H. Wilson, O.B.E.,** Stanton Ironworks Company, Limited, Stanton, near Nottingham.

Secretary : **T. Makemson, M.B.E.,** Saint John Street Chambers, Deansgate, Manchester, 3. 'Phone and 'Grams : Blackfriars 6178.

BRANCHES :

Birmingham, Coventry and West Midlands : A. J. Shore, 16, Goodrest Avenue, Quinton. *Bristol and West of England* : A. Hares, 648, Stapleton Road, Bristol, 5. *E. Midlands* : H. Haydon, 230, Harrington Street, Derby. *Lancs.* : H. Buckley, 61, Woodgrove Road, Burnley. *London* : F. Arnold Wilson, Wm. Jacks & Co., Ltd., Winchester House, Old Broad Street, London, E.C.2. *Middlesbrough* : F. Shepherd, Head, Wrightson & Co., Ltd., Teesdale Iron Works, Thornaby-on-Tees. *Newcastle-upon-Tyne* : C. Lashly, M.C., Sir W. G. Armstrong Whitworth & Co. (Ironfounders), Ltd., Close Works, Gateshead. *Scottish* : J. Bell, 60, St. Enoch Square, Glasgow. *Sheffield* : T. R. Walker, M.A., English Steel Corporation, Ltd., Sheffield. *Wales and Monmouth* : A. S. Wall, 14, Palace Avenue, Llandaff, Cardiff. *West Riding of Yorkshire* : H. W. Griffiths, 46, Peckover Drive, Thornbury, Bradford. *South Africa* : Secretaries, S.A.F.E.M.A., Barclays Bank Buildings, Cr. Commissioner and Harrison Street, Johannesburg.

SECTIONS

Burnley : F. Lord, 123, Blackburn Road, Clayton-le-Moors, Accrington, Lancs. *Cape Town* : R. W. Lyall, 2, Devonshore Court, Fish-Hoek, Cape Province. *East Anglia*: A. N. Sumner, 516, Norwich Road, Ipswich. *Falkirk* : T. R. Goodwin, "Viewfield," Falkirk Road, Bonnybridg. *Lincoln* : E. R. Walker, Ph.D., The Technical College, Lincoln. *Slough* : E. Raybould, High Duty Alloys, Limited, Slough, Bucks.

BRITISH STEEL FOUNDERS' ASSOCIATION

Chairman : **F. A. Martin,** Samuel Osborn & Co. Limited, Clyde Steel Works, Sheffield, 3. *Secretaries* : **Peat, Marwick, Mitchell & Company,** 301, Glossop Road, Sheffield, 10. 'Phone and 'Grams : Broomhill 63031.

ASSOCIATION OF BRONZE AND BRASS FOUNDERS

President : **F. G. Burrell,** Shipham & Co., Hull. *Secretaries* : **Heathcote & Colman,** 25, Bennetts Hill, Birmingham, 2. 'Phone : Midland 2901 ; 'Grams : "Clarify," Birmingham.

FOUNDRY TRADES' EQUIPMENT AND SUPPLIES ASSOCIATION

President : **W. Rawlinson,** J. W. Jackman & Co., Ltd., Blackfriars Road, Manchester. *Secretaries* : **Peat, Marwick, Mitchell & Company,** 94/98, Petty France, London, S.W.1. 'Phone : Abbey 1829 ; 'Grams : "Crusades, Sowest," London.

THE INSTITUTE OF VITREOUS ENAMELLERS

President : **R. J. Rogers,** The Parkinson Stove Company, Limited, Stechford, Birmingham, 9. *Chairman* : **C. P. Stone,** Ferramic Industries Limited, Welwyn Garden City, Herts. *Hon. Sec.* : **W. Thomas, F.R.I.C.,** Ebury Chambers, 74, High Street, Rickmansworth, Herts. 'Phone : Rickmansworth 3524.

COUNCIL OF IRONFOUNDRY ASSOCIATIONS

Chairman : **FitzHerbert Wright,** c/o Aveling-Barford, Limited, Invicta Works, Grantham. *Secretary*: **T. E. Parkinson,** Derbyshire House, Belgrove Street, King's Cross, London, W.C.1. 'Phone : Terminus 7218.

Participating Associations : British Cast Iron Research Association (affiliated) ; Institute of British Foundrymen (affiliated) ; and the following :—

Automobile Ironfounders' Association.—Secretaries : Heathcote and Coleman, 25, Bennetts Hill, Birmingham, 2. 'Phone : Mdland 2901 ; 'Grams : "Clarify," Birmingham.

British Ironfounders' Association and British Bath Manufacturers' Association.—Director and secretary : J. Galbraith Sneddon, C.A., 145, St. Vincent Street, Glasgow, C.2. 'Phone : Central 2891 ; 'Grams : "Groundwork," Glasgow.

British Grit Association : Secretary : J. Campbell MacGregor, 10, Bank Street, Airdrie, Lanarkshire.

British Malleable Tube Fittings Association.—Secretary : F. B. Ridgwell, 196, Shaftesbury Avenue, London, W.C.2. 'Phone : Temple Bar 3261 ; 'Grams : "Brimatufla," London.

Cast Iron Chair Association.—Secretary : G. D. Cunningham, The Anderston Foundry Co., Ltd., Port Clarence, Middlesbrough. 'Phone : Middlesbrough 57255 ; 'Grams : "Afco," Middlesbrough.

Cast Iron Axlebox Association and National Ingot Mould Association.—Secretaries : Peat, Marwick, Mitchell & Company, 301, Glossop Road, Sheffield. 'Phone and 'Grams : Broomhill 63031.

Cast Iron, Heating, Boiler and Radiator Manufacturers' Association.—Secretary : Stanley Henderson, 69, Cannon Street, E.C.4. London, 'Phone : City 4444.

Cast Iron Pipe Association.—Secretary : T. Clark, Derbyshire House, Belgrove Street, Kings Cross, London, W.C.1. 'Phone : Terminus 7218.

Cast Iron Segment Association.—Secretary : H. A. D. Acland, 5, Victoria Street, London, S.W.1. 'Phone : Abbey 3194.

Flushing Cistern Makers' Association.—Secretary : G. H. Taylor, 267/8, Castle Street, Dudley, Worcs. 'Phone : Dudley 3185.

Greensand Pipe Founders' Association.—Secretaries : McClure Naismith Brodie & Company, 77, St. Vincent Street, Glasgow, C.2. 'Phone : Central 9476 ; 'Grams : "Lycidas," Glasgow.

National Association of Malleable Ironfounders.—Secretary : Miss L. Verity, Chamber of Commerce Offices, Tudor House, Bridge Street, Walsall. 'Phone : Walsall 5671.

IRONFOUNDERS' NATIONAL CONFEDERATION

Chairman : **D. Graham Bisset,** Enfield Foundry Co., Ltd., Waltham Cross. *Director* : **R. Forbes Baird,** 117, Church Lane, Handsworth Wood, Birmingham, 20. 'Phone : Northern 0343 & 0037 ; 'Grams : "Irocast," Birmingham.

LOCAL BRANCH ASSOCIATIONS :

East and West Ridings : Secretary : O. Gibson, Oliver Gibson & Sons, Ltd., Leeds. 'Phone : Leeds 21226. *London and Home Counties* : Secretary : A. J. L. Wallace, 2, Caxton Street, London, S.W.1. 'Phone : Abbey 2231. *North Midland* : Secretary : H. J. Pepper, Glow-Worm Boilers, Ltd., Milford, nr. Derby. 'Phone : Belper 22. *North Western* : Secretary : E. Morris, F. Morris & Sons, Ltd., Whaley Bridge. 'Phone : Whaley Bridge 98. *Scottish* : Secretary : G. U. Dobbie, James Dobbie & Co., Banknock, by Bonnybridge. 'Phone : Banknock 225.

NATIONAL IRONFOUNDING EMPLOYERS' FEDERATION

President : **S. H. Russell, S. Sussell & Sons, Ltd.,** Bath Lane, Leicester. *Secretaries* : **Mann, Judd & Co.,** 8, Fredericks Place, Old Jewry, London, E.C.2. 'Phone : METropolitan 8613 ; 'Grams : "Manjudca Phone," London.

LOCAL ASSOCIATIONS :

Cardiff and District Founders' Association.—Secretary : F. R. Phillips. 69-72, Exchange Buildings, Docks, Cardiff. 'Phone : Cardiff 636.

Leeds and District Ironfounders' Association.—Secretary : F. Bowling, John Bowling & Co., Ltd., Cyclops Foundry, Kirksall Road, Leeds, 3. 'Phone : Leeds 25183.

Leicester and District Ironfounders' Employers' Association.—Secretary : C. S. Bishop, 8, New Street, Leicester. 'Phone : Leicester 58842.

Liverpool and District Ironfounders' Association.—Secretary : J. S. Hassal, 15, Victoria Street, Liverpool. 'Phone : Central 0114.

Manchester and District Ironfounders' Employers' Association.—Secretaries : Webb & Hall, 90, Deansgate, Manchester. 'Phone : Blackfriars 8367 ; 'Grams : "Sound," Manchester.

Midland Ironfounders' Association.—Secretary : R. Forbes Baird, 117, Church Lane, Handsworth Wood, Birmingham, 20. 'Phone : Northern 0343 & 0037 ; 'Grams : "Jacelace," Birmingham.

Monmouthshire Founders' Association.—Secretary : E. Kenneth Gould, Tredegar Foundry, Newport, Mon. 'Phone : Newport 4275 ; Grams : "Rogerwinch," Newport.

North of England Ironfounders' Association.—Secretaries : Mann, Judd, Gordon & Co., 61, Westgate Road, Newcastle-upon-Tyne. 'Phone : Newcastle 20836 ; 'Grams : "Mannca," Newcastle.

North Staffordshire Ironfounders' Association.—Secretary : R. Pepper, 4, St. Anthony's Drive, Westlands, Newcastle, Staffs. 'Phone : Stoke-on-Trent 7303.

Scottish Ironfounders' Association.—Secretaries: Mann, Judd, Gordon & Co., 142, St. Vincent Street, Glasgow, C.2. 'Phone : Central 8563 ; 'Grams : "Mannca," Glasgow.

Sheffield and District Ironfounders' Association.—Secretary : T. Goddard Mander, 59, Clarkehouse Road, Sheffield, 10. 'Phone : Sheffield 60047 ; 'Grams : "Emplofedra," Sheffield.

South of England Ironfounders' Association.—Secretaries : Mann Judd & Co., 8, Fredericks Place, Old Jewry, London, E.C.2. 'Phone : METropolitan 8613. 'Grams : "Manjudca Phone," London.

Welsh Engineers and Founders' Association.—Secretary : J. D. D. Davis, 1, St. James Gardens, Swansea. 'Phone : Swansea 4466 ; 'Grams : "Iron," Swansea.

West of England Ironfounders' Association.—Secretary : R. Forbes Baird, 117, Church Lane, Handsworth Wood, Birmingham 20. 'Phone : Northern 0343 & 0037 ; 'Grams : "Jacelace," Birmingham.

West Riding Ironfounders' Association.—Secretary : C. D. Buckle, 13, Cheapside, Bradford. 'Phone : Bradford 5346.

BRITISH CAST IRON RESEARCH ASSOCIATION

Alvechurch, Birmingham. 'Phone and 'Grams : Redditch 716.

Scottish Laboratories.—Foundry Technical Institute, Meek's Road, Falkirk. (Phone 332.)

FOUNDRY TRADE JOURNAL
Established 1902
WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

Vol. 84 Thursday, February 19, 1948 No. 1642

49, Wellington Street, London, W.C.2
'Grams: "Zacatecas, Rand, London"
'Phone: Temple Bar 3951 (Private Branch Exchange)
PUBLISHED WEEKLY: 21s. per annum (Home and Overseas)

We've Something Extra to Sell

Few people have given more prolonged thought and detailed attention to the attraction of the best type of youth to the foundry industry than ourselves. The best argument we could find was a quotation from a leading American foundryman who asserted that the reason he had associated himself with the foundry industry was because therein he felt that he would meet a minimum of cerebral competition. Now the Council of Ironfoundry Associations has announced its intention to implement the Report of the Recruitment, Training and Propaganda Committee, or, more specifically, paragraphs 37 to 59. These deal with the establishment of group training centres and, as soon as these are in being, we deem that they will provide the foundry industry with a selling point of the most telling character in the campaign for eligible neophytes. Until other industries follow suit, the foundry will be in a splendid position to convince parents that a novel, enlightened and progressive training is to be given.

We have referred to a leader we wrote on February 7, exactly 24 years ago, entitled "Recruiting Foundry Apprentices," and the sole important difference between our ideas at that time and the new C.F.A. Report is the notion of "group" training. It is obvious that we were worried then about the narrowness of the training potentialities afforded by some sections of the industry, for we wrote: "Foundries in which the character of the work is such that it affords very little variety of work, as in a railway chair foundry, should pay their quota to have moulders trained in a more suitable establishment because, after all, they require fully skilled foremen and charge hands if a process or means of production is effected." The scheme divulged by the Report is known to be practical and productive of good results, because something very similar is now being operated by the Meehanite interests.

The sole requirements for the proper implementation of the scheme, which is detailed elsewhere in this issue, are: (1) A nucleus of 50 apprentices in a group; (2) a bay in a modern foundry suitably located, preferably in a country area; (3) the hiring of a high-grade apprentice master, and (4) the exhibition of good will and enterprise by foundry owners—that is, by not merely acquiescing to an approach, but by originating training centres themselves. We were also gratified to read, when dealing with propaganda, that Cinderella should be finally dissociated from the foundry, because here was another reiteration of an edict we essayed to promulgate some twenty-five years ago. Moreover, we were successful until 1937, when the then President of the Institute of British Foundrymen resurrected the fairy story to illustrate some point in his inaugural address. Propaganda must come from the people within the industry—and, parenthetically, the Meehanite-trained boys are now foundry enthusiasts—for externally the man-in-the-street just believes that the foundry and iron and steel industries are synonymous, and has no fixed notions other than that hot and heavy work are the characteristic features. The scheme is designed by the C.F.A. for associated firms, but there is no reason why the steel, non-ferrous and light-alloy groups should not "steal" the scheme, lock, stock and barrel.

Contents

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

FEBRUARY 23.

The Junior Institution of Engineers

Sheffield and District Section :—"Design and Construction of Iron and Steel Works," by R. C. D. Fell, at the Metallurgical Club, West Street, Sheffield, at 7.30 p.m.

FEBRUARY 25.

Institute of British Foundrymen.

London Branch :—"The Specification and Testing of Cast Iron," by A. B. Everest, Ph.D., F.I.M., at the Waldorf Hotel, Aldwych, London, W.C.2, at 7.30 p.m.

Birmingham and West Midlands Branch :—"The Flowability of Moulding Sand, with special reference to the Shatter Test," by E. L. Graham, at the James Watt Memorial Institute, Great Charles Street, Birmingham, at 7.15 p.m.

North Western Fuel Luncheon Club.

"The Right Relationships in Industry," by Sir Frederick J. West, G.B.E., J.P., at the Engineers' Club, Albert Square, Manchester, at 12 noon for 12.45 p.m.

Institute of Welding.

Twenty-fifth Anniversary Luncheon, at the Connaught Rooms, Great Queen Street, London, W.C.1, at 12.30 for 1 p.m.

FEBRUARY 26.

Royal Statistical Society—Industrial Applications Section.

Sheffield Group :—"Graphical Methods for the Demonstration of Simple Statistical Relations," by Miss B. Pickersgill, at the Royal Victoria Hotel, Sheffield, at 6.30 p.m.

FEBRUARY 27.

Institute of British Foundrymen.

Falkirk Section :—Film Display, followed by Annual Business Meeting, at the Temperance Café Smokeroom, Lint Riggs, Falkirk, at 7 p.m.

Institution of Production Engineers.

Yorkshire Graduate Section :—"Principles and Practice of Metallurgical Testing and Research," by J. W. Poole, at the Meeting Rooms, Association of British Engineers, Keighley, at 2.30 p.m.

Institution of Mechanical Engineers.

Informal Meeting: Discussion on "The Future of Fuel and Power," introduced by F. Rogers, D.Eng., M.A., M.Sc., at Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m.

Institute of British Foundrymen.

Wales and Monmouth Branch :—"Foundry Technique." Display of Instructional Film Strips, at the Engineers' Institute, Cardiff, at 6.30 p.m.

East Midlands Branch :—"Roller Conveyor and its Application in the Foundry," by J. Gardom, at Leicester College, at 6 p.m.

Bradford Technical College Appointment

Dr. E. W. Fell, Dr.-Ing. (Aachen), M.Sc. (B'ham), has been appointed Senior Assistant in Metallurgy at the Bradford Technical College. Dr. Fell was educated at Haileybury, Birmingham University, Aachen and Cambridge, and has many years of varied experience in the practice of metallurgy. Courses at the Bradford Technical College being arranged, or under consideration by Dr. Fell, are designed to meet the needs of students wishing to take metallurgy, which includes courses leading up to the external examinations of the London University and of City and Guilds of London Institute, for National Certificates in Metallurgy and for the several examinations of the Institution of Metallurgists.

Latest Foundry Statistics

The January issue of the Monthly Statistical Bulletin of the British Iron and Steel Federation reports that the employment position in iron foundries was as is set out in the following table:—

	Week ending Nov. 8, 1947	Week ending Oct. 4, 1947.	Week ending Nov. 9, 1946.
Total	141,168	139,965	129,057
Males	131,829	130,829	119,975
Women	9,287	9,136	9,082

	Year's gains.	Oct., 1947, gains.
Total	12,111	1,203
Males	11,906	1,052
Women	205	151

The average delivery of steel castings during December, 1947, at 3,300 tons, showed an increase of 400 tons over 1946. The weekly average over the year was 3,000 tons, or 156.000 tons per annum in 1947 as compared with 2,900 tons, or 150,000 tons per annum. The figures indicate an increased demand for alloy steel castings. To make castings in November, 1947, 8,000 tons of steel were melted each week.

Cast and Extruded Aluminium Gutters, Pipes and Accessories

A new British Standard issued for the purpose of securing that cast and extruded aluminium rain-water goods should be compatible with those manufactured to other British Standards and to secure the use of suitable alloys, provides a complete range of rain-water goods of three different alloys for casting and a further alloy for extrusions. Gutters are of two types, half-round and O.G., a range of sizes being provided for each type. There is also a comprehensive range of fittings and accessories for each type. Rain-water pipes are cylindrical with spigot and socket joints, and have an effective length of 6 ft. The sizes comprise 2½ in., 3 in. and 4 in. diameter, and there is a comprehensive range of fittings.

The specification, No. 1430:1947, deals with quality of materials, workmanship, dimensions, etc., and includes line drawings of all articles dealt with. Copies of this Standard can be obtained from the offices of the Institution, 24, Victoria Street, London, S.W.1, at a cost of 2s. 6d., post free.

A recent visitor to our office was Mr. Robert Ballantine, who for many years was the manager of the Fulwood Foundry in Scotland. Now he holds a similar position with Musgrave & Company, Limited, St. Ann's Works. Belfast. He is enthusiastic about his new connections, where he has steadily and largely increased the output of grey-iron castings. He has quite a large number of apprentices to father, and is now anxious to put Ulster on the foundry map. In this he will get the fullest co-operation from this office.

The Interrelation of the Engineering and Metallurgical Industries*

★

A Survey of Complementary Developments

★

Sir Arthur P.M. Fleming, C.B.E., D.Eng., M.Sc., F.C.G.I., F.Inst.P., M.I.E.E., M.I.Mech.E.

Introduction

Engineering and metallurgy have much in common. The metallurgist has sought all the metalliferous ores treasured in the earth, has refined, melted, forged and shaped them for the manifold uses of man—the engineer has sought the primary sources of energy, and devised engines and machines whereby the energy developed from these primary sources can be used for man's benefit. In so doing the engineer has employed practically all the products of the metallurgist. The two industries are complementary and mutually interdependent in the sense that the metallurgist enables the engineer to make progress in the development of his plant and machinery and in his turn the engineer demands improved qualities of metals and in many cases provides the machinery whereby these qualities can be attained.

In the early days of the industrial revolution, with the coming of iron ships and railways, the engineer employed the materials available such as cast iron, wrought iron and steel, much as he used timber and masonry, carefully studying their physical properties and adapting his designs accordingly. He was not in a position to suggest or define improvements, but in time, processes, particularly in steel making, changed so as to effect economy in time and cost and improvement in quality.

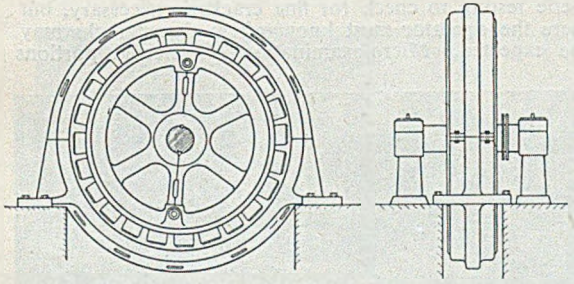


FIG. 1.—OUTLINE OF EARLY TYPE OF LARGE SLOW-SPEED ENGINE-DRIVEN ALTERNATOR.

The development of mechanical power, particularly through the invention of the steam and other forms of engines, and the subsequent development of machine tools and plant for every kind of industry, increased enormously the demand for metallurgical products, and with this came corresponding further improvement in quality.

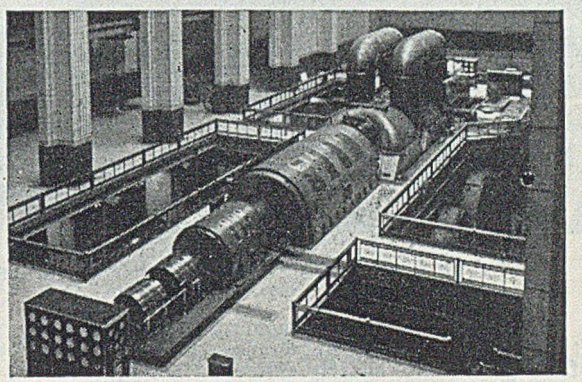


FIG. 2.—LARGE MODERN TURBO-ALTERNATOR SET INSTALLED IN BATTERSEA POWER STATION.

The birth and growth of the electrical industry brought about entirely new metallurgical demands, especially for materials of a magnetic and electrically conducting character, and later for the rarer metals for the construction of thermionic devices and for electrical illumination.

Steam Turbine

The introduction of the steam turbine in the later years of the last century brought about a profound change in the development of power, and far-reaching changes in the design of prime movers and electric generators imposed new problems on the metallurgist. Fig 1 shows in outline a representative example of the slow-speed engine-driven generator of pre-turbine days. Its speed would be about 72 r.p.m., whilst the overall diameter of the frame might extend up to about 30 ft. Metallurgically it comprised a cast iron frame which housed an annular ring of thin magnetic sheet steel laminations forming the magnetic circuit of the stator of the generator. The rotating portion consisted of a spider mounted on the shaft, carrying a steel ring to which the field poles were bolted. The construction of this type of generator at that time did not call for qualities of materials which were not easily within the reach of the metallurgist's art.

* A lecture given to the Institute of British Foundrymen on the occasion of a ceremony honouring its Secretary, Mr. T. Makemson, M.B.E.

Engineering and Metallurgy

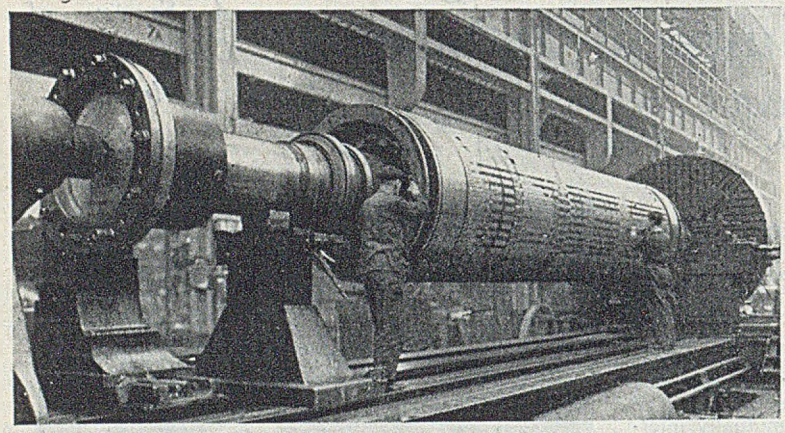


FIG. 3.—ROTOR FOR A MODERN TURBO-ALTERNATOR.

Fig. 2 shows a modern high speed turbine plant. It will be seen that the appearance and general design of the generator is entirely different. The operational speed is 1,500 r.p.m., and whereas the generator shown in Fig. 1 was for 5,000 h.p., this unit is for 140,000 h.p.

Rotor Development

The introduction of this high speed machinery effected enormous economy in space and volume of material, but it also involved changes in composition and treatment of the metals used. Fig. 3 shows a modern alternator rotor which consists of a barrel-shaped forging slotted to receive the field windings. To secure the requisite properties the rotor is made of medium carbon steel which may be alloyed with small amounts of such metals as nickel, chromium, molybdenum and vanadium, thus yielding a product which, while possessing the requisite magnetic qualities, has, after suitable heat treatment, adequate mechanical properties. A higher degree of alloying might yield higher physical properties than are generally used, but it is necessary to guard against the risk of internal rupture or high internal stresses which would accompany the drastic heat treatments given to parts in high alloy steels to obtain the highest test figures.

It is in a product of this kind that the co-operation of the metallurgist and the engineer is essential. It will be readily appreciated that with the concentration of a great amount of power in one unit, failure in the structure, as for instance, the bursting of the rotor, might not only involve serious loss of life and damage to local property, but also the cutting off of power from a whole community. Reliability is, therefore, a matter of supreme importance, and to ensure this, it is the practice of the large electrical engineering manufacturers to study every defect that could occur and to test for these at every stage of manufacture from the pouring of the ingot to the completion of the machine.

Some important types of defect which may occur are: segregation of various kinds, piping, hair cracks or internal ruptures produced during forging, and possibly also internal stresses resulting from unsatisfactory heat treatment. Those responsible for ensuring the soundness of the metal must be fully familiar with the different processes of manufacture. Mechanical and chemical tests are necessary to ensure that the best possible material is employed. Sulphur prints are taken of certain areas of the rough machined forging to reveal segregations of non-metallic inclusions—magnetic testing to check for fine cracks is necessary, but here the operator must know where these cracks may be expected. Micro-examination of selected portions

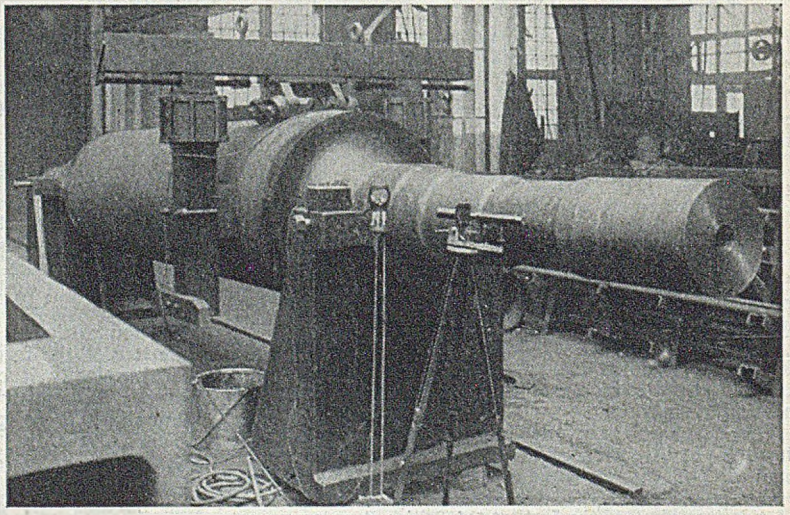


FIG. 4.—MAGNETIC TESTING OF LARGE ROTOR FORGING.

may be made to determine the crystal structure, and test pieces be used to determine physical properties.

Testing Methods

In large sections, such as turbo rotors, X-ray examination is of no value, although it is of importance in determining the quality of light alloy castings, as for instance, those used in aircraft.

Supersonic testing may be employed up to thicknesses of several feet, as against a maximum of a few inches with modern X-ray equipment. The method is at the moment not fully developed but is unquestionably a useful tool. It consists in directing a beam of very high frequency sound, far above audible frequency, through the metal to be examined; echoes are reflected from the opposite surface of the part and from any defect within the part and analysis of these echoes in a suitable receiver indicates the presence and approximate position of such defect. The method may be modified to meet special requirements, as for instance, by altering the angle of application of the beam so as to locate faults lying in planes unfavourably situated for normal transmission.

Fluorescent testing has also been employed whereby fluorescent fluid is used to impregnate the surface of the metal and penetrate fine cracks. When the surface is cleaned and dried and exposed to ultra-violet light the cracks are revealed by fluorescence of the fluid which has penetrated them.

Fig. 4 shows an early set up for the magnetic testing of a large rotor by the method devised by the Metropolitan-Vickers Company. A hole has been trepanned through the length of the forging which can be optically examined by a suitable periscope. All the surfaces to be examined are treated with a magnetic fluid comprising a light oil having fine iron dust suspended in it, and under an intense magnetic field the presence of cracks is revealed by the particles of iron dust collecting on the surface of the crack. Fig. 5 shows a pinion tested in this way on which the grinding cracks are clearly visible. This method of magnetic testing has become world-wide and in the war period was of particular value in testing aero-engine components.

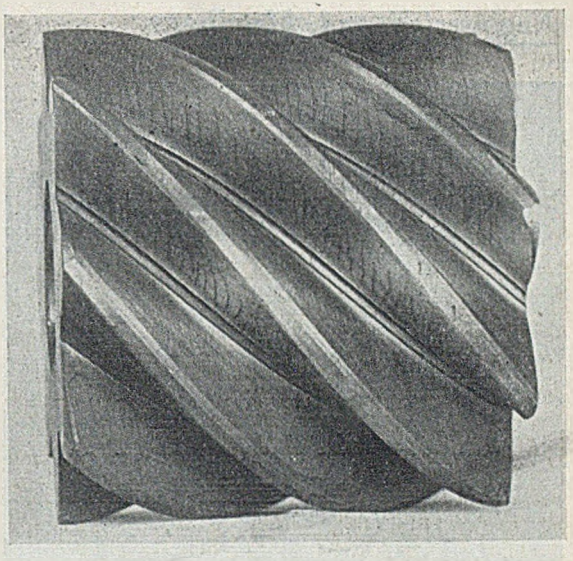


FIG. 5.—GRINDING CRACKS IN HELICAL PINION SHOWN UP BY THE MAGNETIC PARTICLE METHOD OF FLAW DETECTION.

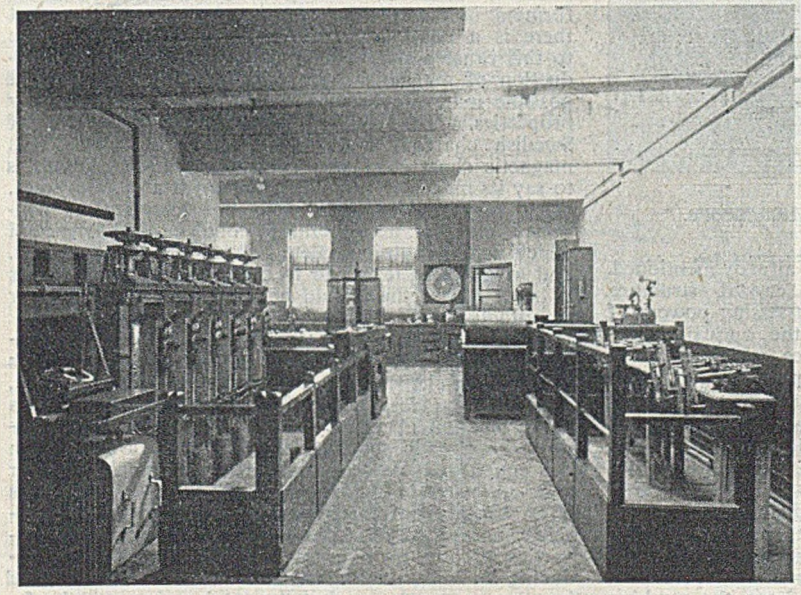


FIG. 6.—HIGH TEMPERATURE "CREEP" TESTING EQUIPMENT.

The steels employed in modern prime movers which are subject to high temperatures and stresses are liable to a slow deformation which is known as "creep." The study of this phenomena involves the examination over very long periods of test pieces of various compositions under temperature and stress conditions which will accelerate creep. Fig. 6 shows the original creep testing equipment set up in the Research Laboratories of the Metropolitan Vickers Company, by Dr. R. W. Bailey, a world authority on this subject.

D

Engineering and Metallurgy

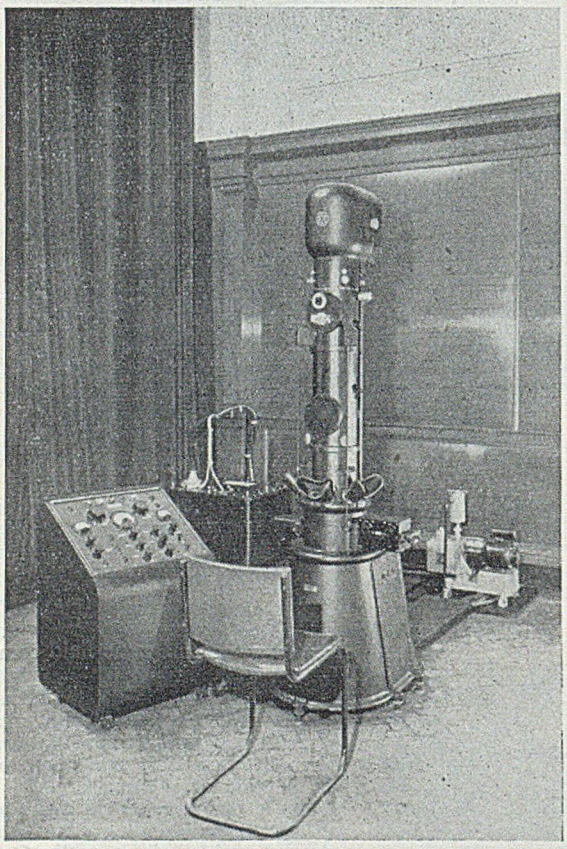


FIG. 7.—50 KV. ELECTRON MICROSCOPE.

Apart from the methods of testing already mentioned, X-rays are used for study of crystal structure. The electron microscope, Fig. 7, possessing powers of magnification many times that of the optical microscope, provides a new testing device which is being applied to metallurgical and other problems and may become a valuable research instrument.

Fig. 8 shows the trend in prime mover design to effect improvement in thermal efficiency, and shows that the use of higher steam temperatures and pressures has brought about gradual improvement in overall efficiency up to the war period. Advance in the thermal efficiency of prime movers thus becomes largely a metallurgical problem of providing materials whish will stand these elevated temperatures and pressures. This trend in design not only concerns the working parts of the turbines, but also the boiler drums for which forgings from the solid are taking the place of riveted structures. The same kind of problem occurs in connection with many vessels used in chemical engineering.

Jet Engine Problems

The development of the gas turbine and the jet engine has presented many difficult metallurgical problems. The jet engine as used for aircraft, in common with aircraft engines generally, requires to have only a relatively short life of a few hundred working hours in comparison with the steam turbine which may be more or less in continuous operation for, say, fifteen years.

The high temperatures involved in the jet engine, and to a lesser extent in the gas turbine, have called for special alloys, some of which may be of a non-ferrous character An outstanding example is the nickel alloy containing chromium, titanium and aluminium known as "Nimonic" that is largely used for the turbine blades of a jet engine, which operate at red heat. Alloys have also been used which are unforgeable, and have to be cast to final shape, with only a small finishing allowance.

Magnetic materials are vital to the engineer, and a brief history of their development may be of interest. Their most important form is as thin laminations. They are employed extensively in the manufacture of transformers, generators and motors. Quite frequently there are as many as four voltage transformations between generation of electricity and its actual utilisation. With each transformation there is a definite energy loss in the magnetic circuit of the transformer amounting usually to about 1 per cent. of the power handled. It is estimated from the number of transformers in continuous operation in this country that there is a continuous loss of some 360,000 kw. due to this cause alone. Hence the importance of the production of magnetic sheet material having the lowest possible magnetic loss consistent with other necessary properties. The earliest laminations were made of Swedish charcoal iron, then came mild steel. This magnetic sheet steel was subject to "ageing," that is to say its magnetic loss increased up to a certain point, often very rapidly, and since this loss became converted into heat, a temperature could easily be reached which would cause complete failure of the transformer, and long ageing tests had to be made on consignments of steel before they could be used by the transformer manufacturer.

An improvement in the quality of magnetic laminations brought about by the introduction of silicon as an alloying element not only cured the ageing effect, but was also responsible for considerable economies being effected in transformer manufacture. The improved magnetic material entailed smaller cores with consequent reduction in other materials, notably copper and oil, used in the transformer construction. This is an example of an important outcome of development, namely, if it is possible so to improve the properties of any member of a mechanism, thereby reducing its bulk, contingent economies are also effected in other materials, so that the total saving may be far greater than that in the particular member concerned.

The search for improved qualities of steel is leading metallurgists to develop cold working processes that bring about a crystal orientation which is tending further to improve the magnetic qualities. In recent years considerable improvement has been effected in the quality of permanent magnets which find such extensive use in many forms of electrical instruments.

Non-corrodible Steels

It is estimated that no less than 30 million tons of iron and steel are lost annually by rusting and other forms of corrosion. Non-corrodible steel has been achieved by alloying with chromium producing what is known as stainless steels, which, used originally for cutlery, have now found extensive application in engineering. Effective means of minimising this loss by corrosion is by applying protective coatings, usually deposited electrolytically, of such metals as nickel, chromium, cadmium, etc.

Electric Furnaces

An outstanding development in the melting of metals during the last quarter of a century has been the increasing use of electric furnaces. This has been a major contribution on the part of the electrical engineer to the progress of metallurgy.

There are three types of electric furnace—arc, induction and resistance. These are shown diagrammatically in Fig. 9. The arc and induction furnace have been of great importance in the melting of alloy steels where freedom from contamination is essential. The resistance furnace has been more generally used for heat treatment purposes.

Arc Welding

A very notable development in the constructional side of mechanical engineering during the past quarter of a century has been the enormous expansion in the art of electric welding. Nearly a century ago the physicist Joule drew attention to the possibility of melting metals electrically, envisaged the use of the metallic arc, and said in many instances the process might supersede soldering. The rapid development in the last few decades of electric arc welding for fabrication purposes has rather encroached on the foundryman's field of activity. This, however, may not prove untimely in view of the difficulty of obtaining adequate foundry personnel. Moreover, this welding development puts out a challenge which may be met by the production in the foundry of much lighter castings of adequate physical strength. Fig. 10 shows diagrammatically examples of some types of operations dealt with by electric welding.

Fig. 11 is an example of a fabricated electric motor frame shown in comparison with a frame of cast iron. The great advantage of welded fabrication, as readily seen in this example, is the diminution of weight without impairing the strength of the product.

Aeronautical engineering has called for light

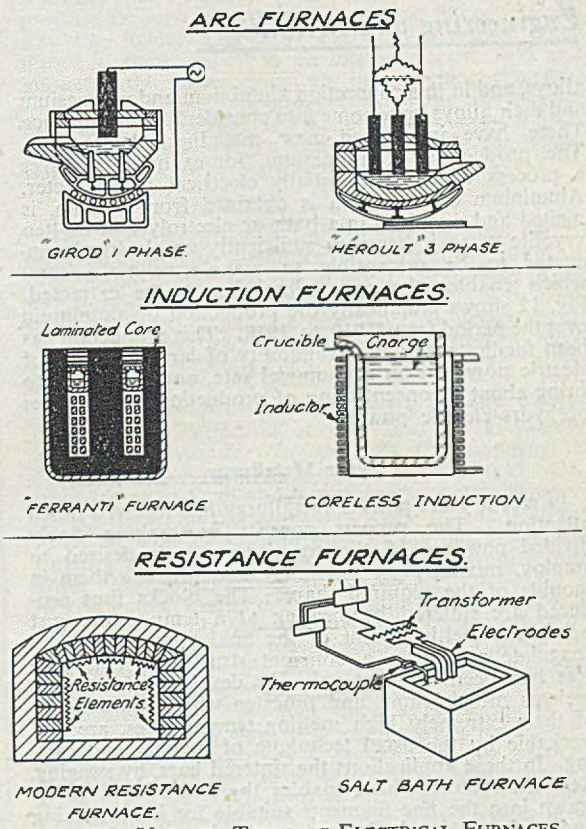


FIG. 9.—VARIOUS TYPES OF ELECTRICAL FURNACES.

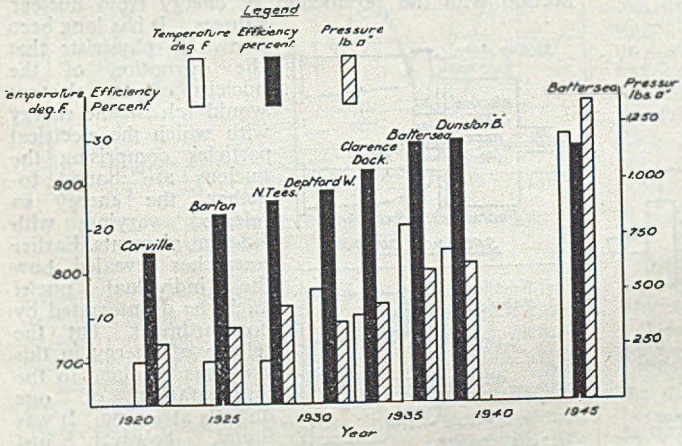


FIG. 8.—DIAGRAM SHOWING STEAM CONDITIONS AND THERMAL EFFICIENCIES OF VARIOUS POWER STATIONS.

Engineering and Metallurgy

alloys, and in this connection aluminium and magnesium and their alloys have come into considerable prominence. These have introduced new metallurgical processes. The production of aluminium, for example, involves a process which is essentially electrical in character. Aluminium oxide, which is obtained from bauxite, is melted and dissolved in a bath or electrolyte of molten cryolite when it becomes sufficiently an electrical conductor to be susceptible to an electrolytic process which enables the pure aluminium to be extracted. Fig. 12 shows graphically the production of aluminium over the period from 1910 to 1938. This production has been facilitated by the availability of large amounts of electric power at an economical rate, and this tends to bring about a concentration of production near sources of hydro-electric power.

Powder Metallurgy

In recent years powder metallurgy has received much attention. The process consists in making finely divided powders of the constituents it is desired to employ, mixing these intimately and pressing them in moulds of the required shape. The blocks thus produced are sintered by heating at a temperature just below the melting point of the final alloy when they coagulate and form a coherent structure. This process has been of great value in developing materials such as molybdenum and tungsten which, on account of their extremely high melting temperatures, are not workable by the usual technique of melting and casting. In these applications the sintered bars, by swaging, yield a structure which enables the swaged rod to be drawn into the fine filaments suitable for lamp making and various thermionic uses, or, in the case of molybdenum, to be rolled into sheet for various electrical uses.

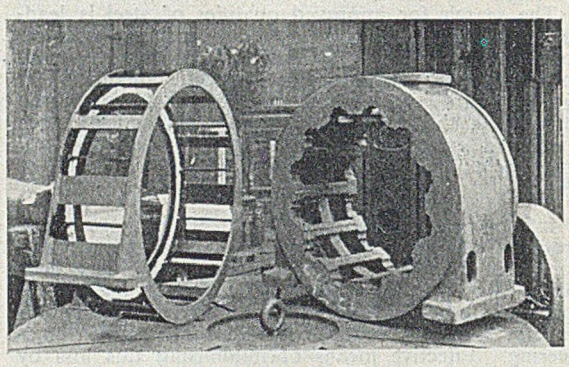


FIG. 11.—COMPARISON OF CAST AND FABRICATED CONSTRUCTION OF ELECTRIC MOTOR FRAME.

A most important development in this type of metallurgy has been the production of the cemented carbides, of hard metals, used so extensively for tool tips, largely taking the place of the earlier forms of tool steel. These products, on account of their great density, were also used in the war for armour-piercing projectiles. Such products have very many applications including their use for porous bearings which can be readily lubricated, and also for certain filter processes. They also offer a means of producing on a mass production scale smaller components, which are cheap because after sintering they need no machining or finishing operation.

Atomic Research

It would perhaps be remiss to omit, from this review of engineering and metallurgical co-operation, reference to the metallurgical processes involved in the treatment of uranium which has come into prominence in connection with the production of energy from nuclear sources. It has long been known to physicists that the disruption of the nucleus of an element would release the energy with which the electrical particles comprising the nucleus are bound together, the energy so released varying with different elements. Earlier researches revealed how the individual nuclei might be disintegrated by bombardment, but the release of energy in this way was confined to the disintegration of one nucleus at a time. It was found, however, just shortly before the war, that when the nucleus of the uranium atom was

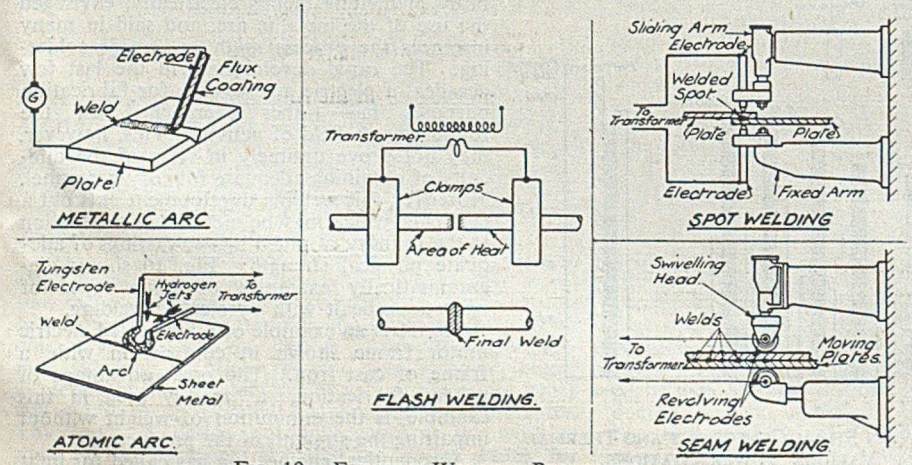


FIG. 10.—ELECTRIC WELDING PROCESSES.

disrupted certain of the particles released were themselves able to cause disintegration of the nuclei of adjacent atoms, thus by this chain reaction there was a simultaneous release of almost all the latent energy contained in the mass of the uranium concerned. This was the fundamental principle of the atomic bomb. The metallurgical process involved differs from that with which the metallurgist is normally

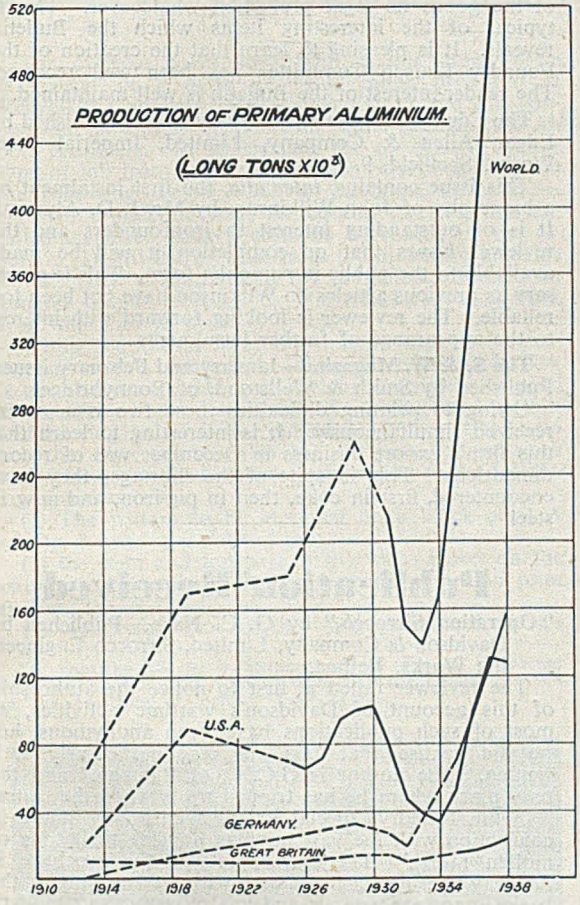


FIG. 12.—GRAPH SHOWING THE EXPANSION OF ALUMINIUM PRODUCTION.

acquainted since it necessitated the separation from uranium of one of its isotopes. Isotopes of an element possess the same chemical properties as the element itself, but differ in atomic weight. The atomic weight of uranium is 238 and 7/10ths of 1 per cent. represents an isotope of atomic weight 235. It is this relatively small proportion of the lighter isotope which takes part in the chain reaction. To extract this isotope the uranium is converted into a gaseous form—uranium hexa-fluoride—which is diffused at a low pressure through extremely fine ceramic filters. In this way the lighter isotope is partially separated. The filtrate is then ionised in an intense electric field and subsequently passed into an intense magnetic field which deflects the ions into circular paths, the heavier ions, due to their greater kinetic energy, taking a path of slightly larger radius and in this way the lighter isotope, 235, can be separated out.

Application to Metallurgy

The preparation of uranium isotopes may not be of great interest to metallurgists in general, but on the other hand it may become of great importance to the metallurgical research scientists since radio active isotopes produced during the liberation of nuclear energy may be used as tracer elements in investigating phase equilibria in metals and conditions near crystal boundaries.

The progress of an industry to-day depends increasingly on the collection of new scientific knowledge, and its effective use. In the case of metallurgy the development of research associations such as the Cast Iron, Iron and Steel and Non-Ferrous Metals Research Associations, the metallurgical work of the National Research laboratories and the laboratories at the universities as well as that of the large manufacturing firms, all contribute continually to the pool of new scientific knowledge. It would be impossible in the time available to catalogue the contributions which have been made by these research laboratories, but they have been notable and of far-reaching importance.

An increasing number of chairs of metallurgy are being created in the universities; at least ten of the larger universities and technical colleges have metallurgical professorships, and facilities for the part-time study of metallurgy are to be found in very many colleges. The establishment of the National Certificate Courses in Metallurgy is a further step forward in the training of young men who are engaged in industry.

Similar developments have taken place in the various branches of the engineering industry, and in all stages of development these industries act and react on each other. A great factor in their mutual progress has been the interchange of the knowledge of producer and user, a co-operative effort which is of fundamental importance in the future progress of both industries.

Book Review

Bentley's Machine Shop Companion. Published by the Bentley Publishing Company, 31, King Street West, Manchester, 3. Price 2s. 6d. net.

This new edition has been thoroughly revised and considerably enlarged. Its usefulness has long been recognised, for it covers very adequately the needs of the machine-shop foreman and his chargehands. The booklet now runs to 181 pages and is clearly illustrated by numerous line drawings. As prices go to-day, it is very good value for money.

Notes from the Branches

Wales and Monmouth

On January 31, at the Engineers' Institute, Cardiff, Mr. G. L. Harbach, of the East Midlands Branch, presented a Paper entitled "The Development of Foundry Sand Control." In his opening remarks, Mr. W. H. Thomas, Branch-President, welcomed Mr. Harbach on his renewing his acquaintance with South Wales and assured him of an attentive hearing. Mr. Harbach's address was fully illustrated with a series of slides, and at the end of an hour's lecture the meeting continued with a discussion that lasted another hour. All the questions put to the lecturer were answered satisfactorily.

Proposing a vote of thanks, Mr. E. J. Kelly said he had followed the lecture with great interest and the discussion indicated that many others were equally attentive. Speaking as a steelfoundry man, he looked upon sand control as an essential factor in their practice. He thanked Mr. Harbach for a very interesting and enlightened address which, he felt sure, was appreciated by all those present. Mr. T. E. Rowlands seconded. Mr. Harbach thanked the members for their reception of his Paper. He assured them that the interest shown amply repaid him for his effort.

New Catalogues

Automatic Gas Control. The front cover of a booklet received from the Automatic Gas Control Company, 18, Rupert Street, London, W.1, states that it "shows how your firm can reduce cost and consumption of gas by at least 20 per cent. while getting more and better distributed heat." The reviewer is not enamoured with this type of statement as, obviously, in industry conditions vary so greatly that whilst the statement may be—and is probably—true of the average, there must be cases where the figures would not apply. However, the booklet describes and illustrates a control device which has every appearance of introducing worth-while economies into concerns using large quantities of town's gas. The booklet is nicely presented and is available to our readers on writing to Rupert Street.

High Vacuum Equipment. Edwards & Company (London), Limited, of Kangley Bridge Road, Lower Sydenham, London, S.E.26, have just issued a catalogue dealing with the various apparatus used in this field. So far as the reviewer is aware, vacuum pumping is not being used much in foundry laboratories, but many are now looking into its potentialities for difficult filtering jobs. Such people should secure a copy of this eight-page pamphlet; it covers a not too well-known field.

Mobile Cranes. George Cohen, Sons & Company, Limited, of Wood Lane, Shepherd's Bush, London, W.12, have used a folder for detailing the potentialities of the Jones "Super 22" mobile crane. Good use has been made of two-colour printing and illustration. The general introduction and the technical details are clearly presented. The crane dealt with lifts 2 tons; it is Diesel powered, and exceptionally mobile.

House Organs

The Bulletin of the Association of Bronze and Brass Founders, No. 11, Nov./Dec., 1947.

A *résumé* of a Council meeting of the Association gives the following item of general interest. It seems that when one endorses a railway delivery man's sheet with the words "Not Examined," it gives the recipient of the goods no legal protection whatsoever. This is typical of the interesting items which the Bulletin reveals. It is pleasing to learn that the creation of the Foundry Liaison Committee has been well received. The reader-interest of the Bulletin is well maintained.

The Edgar Allen News, February issue. Published by Edgar Allen & Company, Limited, Imperial Steel Works, Sheffield, 9.

This issue contains, *inter alia,* the first instalment of a biography of John Wilkinson, by Mr. J. D. Alyward. It is of outstanding interest to ironfounders and the reviewer hopes that on completion it will be made available to the public in pamphlet form. This is necessary as previous articles on Wilkinson have not been too reliable. The reviewer is looking forward with interest to the appearance of further instalments.

The S. & W. Magazine—January and February issues. Published by Smith & Wellstood, of Bonnybridge.

Owing to printing difficulties these two issues were received simultaneously. It is interesting to learn that this firm's export business in December was of record dimensions. This in spite of the shortages they have encountered, first in coke, then in pig-iron, and now in steel.

Publication Received

"Operation Sirrocco," by G. C. Nash. Published by Davidson & Company, Limited, Sirrocco Engineering Works, Belfast.

The reviewer failed at first to notice the authorship of this account of Davidson's wartime activities, as most of such publications have been anonymous, but he did realise that this one was particularly well written. The author is G.C.N., of "Punch," and the only place where he has tripped up is where he states: "In the foundry, special arrangements were made in connection with the vast cupolas housing their tons of molten metal." The clever part of the brochure is the way the reader is taught without realising it the basic importance of air and gas movement in modern engineering and indeed in life itself. The use of navy blue, khaki and Air Force blue on the cover was a happy thought and one which has resulted in the production of a really attractive colour scheme. Perhaps because of the interval between the end of the war and the publication, there has been no singling out of individuals for special commendation. This shows wisdom, as such action often leads to jealousies and other troubles in the more prosaic days of peace. There is much to be said for reserving eulogies to the retirement ceremonies. After all, it is the whole organisation which has received through G.N.C.'s facile pen the commendations so well merited.

Conversion of Cylinder Cover from Floor to Machine Moulding*

By O. Smith (Reavell & Company, Limited, Ipswich)

The cylinder cover dealt with in this short article is typical of a quite extensive range produced at Reavell & Company. As seen in Figs. 1 and 2 it consists in its simple elements of water jackets and air port chambers. In considering the conversion of this type of job from a floor to a machine-produced mould the following factors have to be borne in mind:— (1) Will production costs be reduced?; (2) will the entailed increased pattern costs be warranted by the results?; (3) will the product from the moulding machine be a better casting?; and (4) the effect, if any, on general output, entailed by the transference of work from the floor to the core bench.

Whilst the author is of the opinion that if the production rate be increased, an actual reduction in cost is not always essential, it is obviously more to the good if both these objects are obtained. Giving heed to this, and bearing in mind the old adage "That those who pay the piper should also call the tune," discussions took place with the foundry staff leading to the following decisions:—

(1) The pattern to be mounted on a block print A of Fig. 3 to form a flat-top job;

(2) the stem and top part of the water jacket on the pattern to be enclosed in another block core and print B, Fig. 3;

(3) the bottom part of the water jacket and the air port chamber cores, to be fixed in block core A before lowering into mould; and

(4) the top part of the water jacket to be a "touch" fit on the bottom part.

*A contribution to a Symposium on Special Patterns, organised by the East Anglian Section of the London Branch of the Institute of British Foundrymen.

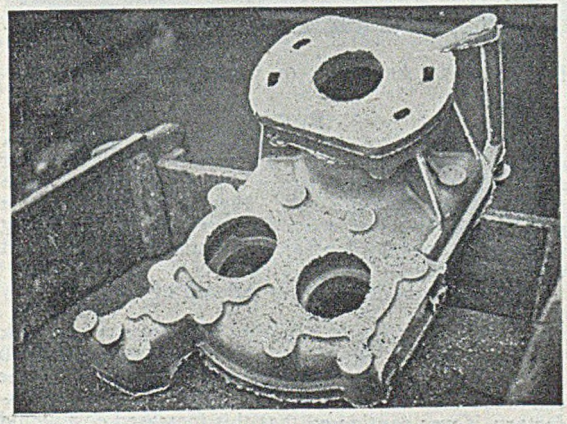


FIG. 1.—CYLINDER COVER—TOP VIEW.

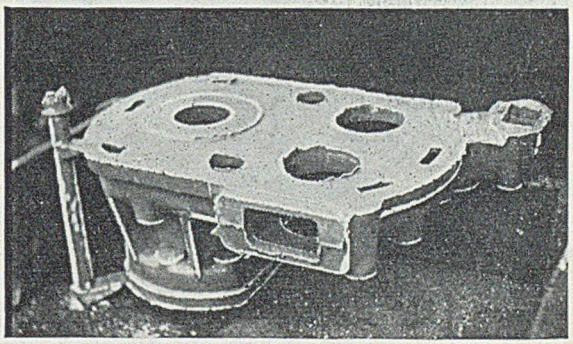


FIG. 2.—CYLINDER COVER—UNDERSIDE.

The stock of machine moulding boxes were of standard depths, and one chosen for this job was 16 in. deep overall with inside stays 2½ in. deep, thus limiting its effective use to 13½ in. As, however, the pattern with machining allowance would be $10\frac{3}{16}$ in., $\frac{5}{8}$ in. was allowed for print on the top water jacket and 2 in. adjudged a fair thickness for print A, leaving thus about $\frac{5}{8}$ in. of sand between the deepest part of the pattern and the stays of the box.

Pattern Making

The pattern was produced as follows:—

Block print A: A simple frame half-lapped together and left 2 to 2½ in. wider all round than the actual cover. A matter of ¼ in. taper was provided for the draw. On this was built one section of the pattern and the block coreprint B, but as, however, the actual cover shape was half carried in core B and must when cast be truly in line and match where jointed, the two shaped sections were built up and joined together by two dovetails before setting out or cutting commenced. After finishing, the two sections being separated, the plain section was mounted on print A, and print B was boxed up and fixed on the end of it, this print having ¼ in. taper on all four sides. A further improvement could be made if desired by mitreing the corners of the box work of print B and letting the top board in, obviating thus any tendencies for differences in grain to cause dragging when drawing the pattern. The pattern was completed

Conversion of Cylinder Cover

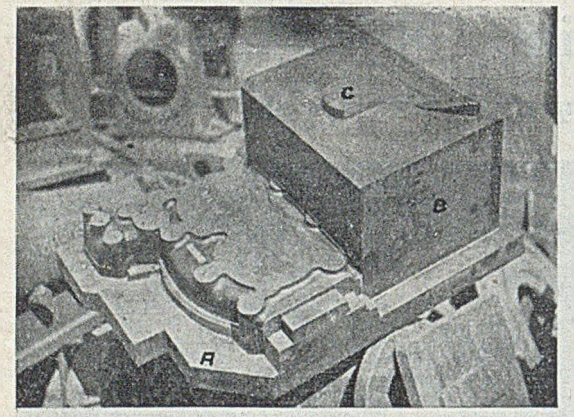


FIG. 3.—PATTERN EQUIPMENT FOR CYLINDER COVER SHOWING CORE PRINTS.

by adding a print C, Fig. 3, to position and support the top part of the water jacket core.

Core Boxes and Coring

The core boxes were produced as follows:—The core boxes were framed up, with good corner blocks to keep them square and true. The bottoms were battened up and in the case of block core B the bottom plate was dowelled to its frame.

Coring up.—Core C, the top part of the water jacket is positioned first when coring up the mould. It should be noted when referring to the top and bottom of cover, that these are reversed when the mould is made and what is actually the top of the cover, becomes the bottom for coring up. Core C, Fig. 4, therefore, is fitted into its locating print on the bottom of the mould, followed by core B containing the other section of pattern shape split at an appropriate point for coremaking. The main part of the water jacket core and the air port chamber cores are assembled, and fitted and gummed into their respective prints provided in block core A before leaving the corebench, Fig. 5. These cores must fit accurately, as when the complete unit is lowered into the mould the whole weight of the cores is pulling on the small gummed section in the prints. It will be noted that prints are not provided on the top face of the air port chambers, the unit core making a "touch" fit here on the mould and on core C.

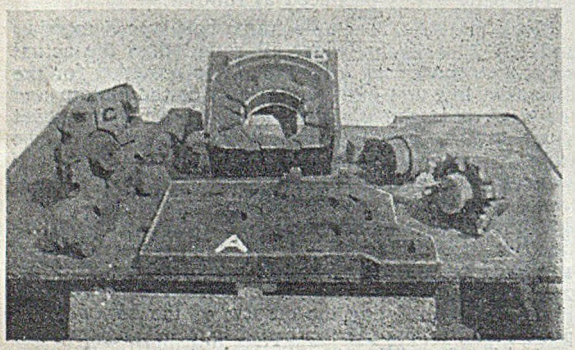


FIG. 4.—INDIVIDUAL CORES USED FOR CYLINDER COVER.

Venting

All the cores were automatically vented by rods provided in the core boxes to provide exit through the prints in Core A. The circular vent holes may be seen in the cores shown in Fig. 4. The job being a "flat top" it was decided to dispense with a top part by substituting a cast-iron grid clamped to the box part, the grid to stand ¼ in. clear of the surface of the core and wedges to be inserted at strategic points to pin down the whole. (Fig. 6).

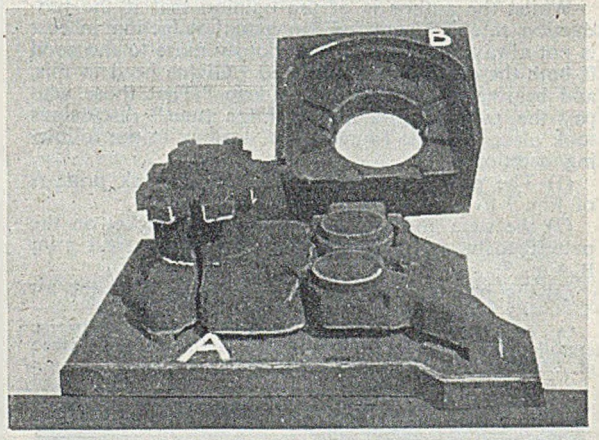


FIG. 5.—PART ASSEMBLY OF CYLINDER COVER CORES.

Running

A ⅞ in. diameter runner was taken through cores A and B, ingates coming on the face at the bottom of the mould and in the flange, a riser being taken off the flange on the opposite side. Figs. 1 and 2 show the runner still in position on the casting. Re-surveying the factors examined prior to commencing the job it was found that:—

(1) Cost of production was reduced by approximately 33⅓ per cent.;

(2) existing standard foundry equipment was used;

(3) the cost of pattern equipment was increased 70 per cent. on the floor moulding pattern cost, but as the estimated and actual saving on each casting was satisfactory, it was considered that this increased cost would be absorbed on the first batch of orders;

(4) a better standardised product was obtained from the machine, this greater uniformity being a direct help to the machine shop when setting up for machining;

(5) the transference of the major portion of the work from the floor to the corebench necessitated adjustments in a previously rather fully employed core shop;

(6) a small but important saving was produced by having ample prints for core-setting and positioning which dispensed with the necessity for using a jig.

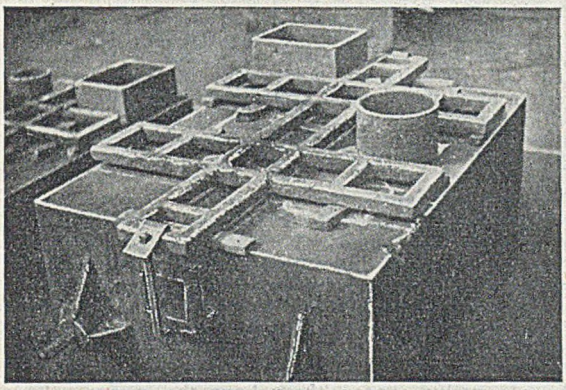


FIG. 6.—CAST IRON GRID AND WEDGES USED TO HOLD DOWN CORES AFTER ASSEMBLY IN THE MOULD.

Ordinary yellow pine was used for the major portions of both pattern and core boxes, but the facing on the pattern and the prints, etc., in the core boxes were made in mahogany. The cylinder cover was cast in cylinder iron to Grade 1 B.S.S. 786 (1938) for high duty iron castings and had an actual weight of 1¼ cwts.

In conclusion the author wishes to record his thanks to the management of Reavell & Company, Limited, for permission to use the subject material and to the foundry and laboratory staff for their assistance.

Cooking Stoves

The question in the House of Commons last week as to the need for ascertaining housewives' views on the set-up of solid-fuel-fired cookers by means of 392 questions and 137 answers, at the cost of £400 to the taxpayers, well illustrates the futility of some modern planning. The mere postulation of such a large number of questions on any subject of this kind yields, by and large, the answers without worrying people to fill in the details. If it is almost axiomatic that a properly posed question virtually supplies the answer, then surely 392 should render further investigation unnecessary.

A PAIR OF push-button-operated Stone-Wallwork moulding machines are reported as giving 80 to 100 moulds per hour in the foundry of R. A. Lister & Company, Limited, of Dursley.

Institute Elects New Members

At a meeting of the Council held at the Waldorf Hotel, Aldwych, London, W.C.2, on January 17, 1948, the following were elected to the various grades of membership of the Institute of British Foundrymen.

FIRST LIST

As Subscribing Firm Members

Bradley & Craven, Limited, engineers, Wakefield (representative, E. S. Craven); Safanco, P.O. Box 5698, Johannesburg, South Africa (representative, H. Pillian, B.Sc.(Eng); Swansea Foundry & Engineering, Limited, Lower Forest Works, Morriston, Swansea (representative, S. Rees); Smith Patterson & Company, Limited, Pioneer Foundry, Blaydon (representative, R. Redpath).

As Members

J. M. Coatsworth, managing director, Wear Winch Foundry Company, Sunderland; H. S. Fowler, managing director, Fowler & Holden (Grimsby), Limited; A. E. Glover, managing director, Glover & Wood, Limited; S. D. Hutchison, director, Erifo, Limited, Dartford, Kent; J. G. Kennedy, foundry inspector, Russell Newbery & Company, Limited, London; A. M. Lees, foreman, brass foundry, Jamalpur, E.I.R.; C. R. Purley, managing director, Longford Engineering Company, Limited, Bognor Regis; F. Rodriguez, general manager, Parlanti's Art Foundry, Limited, London; H. Scott, director and manager, Henry Edie & Company, Limited, Barking, Essex; A. C. Snow, consulting engineer, Barnstaple; G. Summerfield, foundry manager, United Africa Company, Limited, Dar-es-Salaam, East Africa; G. Taylor, director, Devonish & Williams, Limited, London; S. Taylor, manager, Northern Patternmaking Company, Limited, Gateshead; J. B. Turnbull, assistant foundry manager, Harland & Wolff, Limited, Glasgow; L. L. Turner, managing director, L. & L. L. Turner (Pty.), Limited, Johannesburg.

J. S. Morehead,* foundry manager, The Bergius Company, Limited, Glasgow; L. Lawson,* foundry manager, Walter MacFarlane, Limited, Glasgow.

As Associate Members

W. F. Adam, pattern maker, North British Steel Foundry, Bathgate; G. A. Adams, estimating engineer, Royal Ordnance Factory, Nottingham; M. Aitken, foundry foreman, H. Downs & Sons, Huddersfield; A. Allanson, managing director, Neptune Engineering & Foundry Company, Port Elizabeth, South Africa; C. Anderson, mechanised foundry foreman, Harrison & Company, Lincoln; W. Anderson, assistant foreman, Scott's Shipbuilding & Engineering Company, Limited, Greenock; W. Annan, foreman moulder, D. King & Sons, Limited; S. W. Ball, assistant pattern shop manager, Croft's (Engineers), Limited, Bradford; J. Batchelor, foreman iron moulder, R. Taylor & Sons; J. R. Bicker, foreman moulder, Hong Kong & Whampoa Dock Company, Limited; R. Brown, assistant chemist, Mirrlees Watson Company, Limited, Glasgow.

(To be continued.)

*Transferred from Associate Members.
†Transferred from Associate.

The Establishment of Group Training Centres

The following excellent scheme is extracted from a Report by the Recruitment, Training and Propaganda Committee of the Council of Ironfoundry Associations.

General Organisation

Location

The centres should be established geographically in foundry areas and each attached to a first-class foundry making a variety of products.

Situation

Each centre should be situated in the foundry itself, but adequately screened off from main production bays.

Accommodation

Accommodation should be provided for no more than twelve pupils at a time.

Production Facilities

Full facilities should be provided, including all equipment, to enable pupils to produce a variety of castings, some of them of comparatively large size and intricacy. It is probably not necessary that sand mixing, melting and fettling plant be provided in the centre, as the pupil can gain first-hand experience of the operation of this plant in the main works.

Lecture Room

A suitable lecture room should be provided equipped if possible with epidiascope and film-strip projector.

Amenities

Pupils should use existing canteen and washing facilities on the premises, which should be of a high order. Too much segregation is not to be encouraged. In order to promote cleanliness, suitable overalls should be provided and lockers for clothes and personal property.

Badge

A badge should be designed and worn on the overalls whether the pupil is at the centre or not.

Medical Service

A medical officer should be appointed to supervise the health and well-being of pupils passing through each centre.

Living Accommodation

Great care should be exercised in the selection of accommodation for pupils, and local help should be sought in this respect. Preferably pupils should be housed in pairs.

Physical Training

The pupils should be encouraged to take healthy exercise to join in all organised sports activities, to take a course of P.T. at least twice a week, and if opportunity offers to take occasional sharp walks in the surrounding countryside.

Visits to the Works

Every possible opportunity should be taken of enabling pupils to visit other suitable foundries in the vicinity.

Diplomas and Prizes

It is recommended that a diploma be given to each pupil who satisfactorily completes the course and it may be advisable to make other awards either annually or monthly.

Working Conditions

The centre being based on principles embodying good amenities and working conditions, it is essential that all participating firms shall be able to offer certain basic standards of amenities in line with modern requirements. To return a pupil to conditions in his own foundry of a substantially lower standard than the centre would ruin the good work of the scheme.

Periods of Training

All pupils should serve an inaugural period of twelve months in the foundry in which they are engaged. It is recommended that during this period the potential pupil should become indentured as an apprentice. Early in his second year the pupil should attend the centre for a period of one month and then should return to his own foundry for eight months. In all he will make four attendances at the centre for a period of three years, equally spaced throughout the period. This will leave him free to spend the final period of his apprenticeship at his own foundry as a full-time craftsman.

Curriculum of Training Course

It is not proposed at this stage to lay down any detailed curriculum, but it is recommended that there shall be a series of daily half-hour lectures based on foundry technique, such as are being produced on the film strips of the C.F.A. There should be two half-hour breaks for P.T. weekly, and a daily inquest on the previous day's work. Pupils in turn should spend one or two days in the sand mixing, melting, fettling and inspection departments.

As far as is practicable, pupils should be engaged in the production of work which would normally be too difficult for them, rather than routine jobs which they readily master and the continued production of which tends to build up a false idea of economic production.

The hours of work should be identical with those of the foundry to which they are attached and there should be no special privileges, such as leaving early to enable them to wash and change their clothing.

Having regard to the requirements of the new Education Act whereby attendance will be compulsory at County Colleges for one day per week up to the age of sixteen, it is recommended that the vocational experience gained in the County Colleges be implemented in the final courses at the foundry training centres.

Supervision of Training

The Committee fully realises the success or failure of the scheme depends almost entirely upon the quality and suitability of the instructors.

(*a*) It is vital that the instructor shall be a man of high principles and character, capable of leadership. (*b*) He should not only be a practical moulder but be capable of imparting his knowledge, using the best principles of the Training Within Industry method. (*c*) He should have a thorough grasp of the various subjects involved. (*d*) He should be prepared to undertake the supervision of the pupil's general welfare in off-duty periods.

Recruitment of such men for instructional purposes *is not a hopeless matter.* It is possible that men interested in various youth movements, Toc H, or other social activities will provide a likely source of recruitment.

It is essential to the success of the scheme that all foundries participating shall provide a competent executive in their own works who will have full knowledge of the *type* of training given at the centre. He should have sufficient authority to see that the pupil is enabled to utilise the knowledge gained at the centre, in the form in which the instruction was given. This ensures continuity in the instruction and development along the lines desired.

Administration and Finance

Whilst it is realised that certain foundries employing fully mechanised processes are not as interested as jobbing ironfounders in the production of craftsmen, yet it is in the general interest of the industry that an adequate number of skilled moulders shall be available. Moreover, it is not reasonable to expect foundries participating in a group scheme to bear the whole cost of the training of craftsmen as there is no guarantee that such foundries will command the ultimate services of the craftsman so trained. It is therefore recommended that the Joint Iron Council shall make a substantial contribution to the cost of initiating and maintaining the Group Training Centres and that the remainder of the expense be borne by the individual foundries sending pupils to the centres.

Accurate costs are not available, but it is estimated that capital costs up to £500 will be incurred in the establishment of each centre, and in addition to the wages paid to the pupil the running costs will be in the region of £16 to £20 per pupil per month.

(*Continued from next column.*)

foundry industry will one day react against these restrictive patents and a means of avoiding them will be sought. Herr Croning has, moreover, placed restrictions on the process in England also.

Finally, it is a personal view that the Croning process is a sound idea which can be further developed into a very advantageous process for the mass production of precision castings. The high gas porosity of the moulds and cores is the secret of this process. It is also a personal view that a synthetic moulding sand bonded with sodium-bentonite (*Natriumbentonite*) would be very similar to the "C" material in this respect.

The "C" Process

When we published an article on this subject, we asked Prof. Piwowarsky for his views on the subject, and what follows is a translation of his report..*

The "C" process is without doubt a sound and progressive idea, which, with further development, will give positive practical success. At present the process is barely out of the initial development stage and cannot be said to be in widespread commercial use. Although Herr Croning received considerable assistance from the Government during the war, since then it has lagged seriously behind the promised expectations. Already in June, 1944, the process had been established successfully at a number of places, particularly for the production of cores. For example, the firm of Haller Werke A.G. in Hamburg-Altona were producing the cores for 8-cm. hand grenades (Hand grenade 31) by the Croning process, and had reached a capacity of 6,000 components per day. The advantages claimed included marked savings in labour, ancillary materials and particularly in expensive core binders. Later the process was applied to operations on turnover plates. At present it is considered primarily as being suitable for the production of special shapes of not too great a cross-section.

The "C" process gives wonderfully solid and accurately finished castings which in most cases do not require any further surface machining. The fine surface finish is improved with good casting practice. However, for large castings the process cannot be yet said to be practicable or economical. A good deal of development work will be necessary before the "C" process becomes generally applicable to all branches of the foundry industry. One disadvantage is the high cost of phenolic resin, and also the unpleasant smell which this material gives out and the high gas content of "C" cores during casting. Special metal shapes have recently necessitated the introduction of the process, particularly for the mass-production of small castings. The removal of the mould from the mould plate presents a difficulty, and Herr Croning has developed a mould plate dressing which overcomes this, but the composition of this material has been kept a secret.

The basic Croning patent is a combination patent, since the principle of "throwing" the mould after the onset of solidification is already known in the fine pottery processes (the Schlicker process). Therefore, Croning can only cover the application of this technique to the production of foundry mould. For example, I have myself for the past 20 to 25 years in the Aachen Foundry Institute, used this process of "throwing" fine ceramic material for the production of refractory crucibles from plaster of Paris.

Herr Croning has extensively covered all the major features of his process and has thus hindered the development of this subject owing to the questions of licences. It is therefore possible that the German

(*Continued at foot of previous column.*)

*See our issue of December 4, 1947.

Correspondence

[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]

METALLIC ABRASIVES

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—I wish to congratulate Dr. Hurst on his Paper published in your JOURNAL of January 22, and Mr. F. W. Neville's letter in the JOURNAL of February 5, showing a very practical method of testing the qualities of metallic abrasives. I feel sure that these excellent contributions will lead to improved methods of manufacture and a superior product.

It is now 44 years since the writer commenced the manufacture of angular grit, and became the first manufacturer in Great Britain. The manufacture of round chilled shot was first made in this country about 1890. Previous to this, chilled shot was imported from U.S.A. and sold at 40s. per 100 lbs.

The German manufacturers, Backhaus Langenzeiper, Leipzig, began the crushing of chilled shot about 1899 and took out a patent for the same, calling it "Patent Diamond Steel," and this material was imported and largely used in the sawing of stone in England.

About 1898, in the United States of America, metallic abrasives were made from the scrap of wood-cutting steel saws and such like material, by the Pittsburgh Crushed Steel Company. This firm had been manufacturing an excellent abrasive. The steel was hardened and then crushed by means of stamps. The cost, however, was more than twice that of angular grit and the difficulty of securing sufficient suitable scrap in this country induced the original makers to manufacture the angular grit by the simple method of crushing the tailings and unshapely chilled shot by rollers.

As an interesting fact, I may mention that for years I used chilled iron rolls. These rolls used to last three weeks. When I changed from chilled iron to manganese steel rolls, they lasted five to six months. The cost of these rolls was perhaps four times that of chilled iron, but, of course, greatly reduced the cost of manufacture of angular or cornered grit.

This leads me on to what I would like to suggest to Dr. Hurst, and that is to change the composition of angular grit and round shot from chilled cast iron to a composition of steel with manganese or tungsten or other elements, so that this metallic abrasive would be so improved that one could feel that as real progress had been made in the character of this good and most useful abrasive as was made round about 1890, when silicon carbide was introduced as a substitute for emery.

The foundry industry would welcome such, and I feel sure that metallurgists can show how this could be made.—Yours, etc.,

WM. MCGREGOR.

74, York Street, Glasgow, C.2.
February 9, 1948.

[We sincerely thank Mr. McGregor for such an interesting contribution to the early history and future prospects of metallic abrasives.—EDITOR.]

CONSTRICTED NECK FEEDER HEADS

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—I have been experimenting for some time now with the application to steel castings of the narrow-neck feeder, as described in the "American Foundryman," May, 1946, under the heading "Pressure Feeding Iron Castings," by W. J. Bradley. I have achieved some remarkable results, especially with the gravity feeding head method, Fig. 1 (*a*), and have also had some successful results with the atmospheric blind head method (*b*) and (*c*).

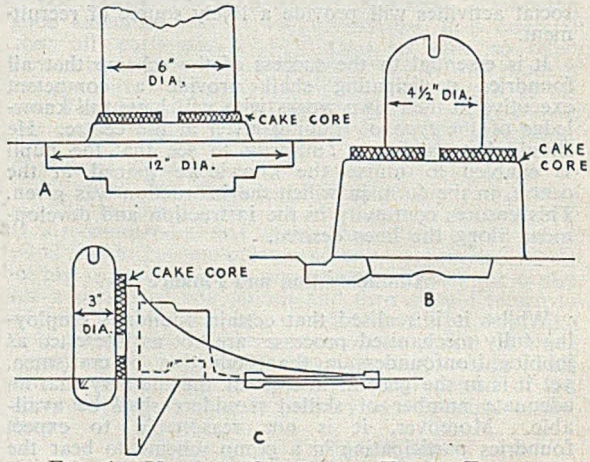


FIG. 1.—USE OF CORES ON THREE TYPES OF RISERS: (*a*) GRAVITY RISER, (*b*) BLIND TOP RISER, (*c*) BLIND SIDE RISER.

I would be interested to know if any of your readers are experimenting with this type of feeder, and if this method is used on production castings, as I would like to exchange notes on the subect. The sketches show three recent examples, the feeders being knocked off by a sharp blow with a hammer, and the only fettling required was the snagging of the portion of the neck left on the the casting.—Yours, etc.,

S. R. BRIDGER.

19, Buckwoods Road,
Braintree, Essex.

A.S.A.D.A.—the Anglo South African Development Association, of 55, Pall Mall, London, S.W.1, has been formed to aid United Kingdom manufacturers in starting up branches in the Dominion of South Africa.

THE NORTHAMPTON POLYTECHNIC, St. John Street, London, E.C.1, announce the inauguration of a special course of lectures on the Newer Engineering Materials. The first lecture is to be held at 7 p.m. on March 3, and then others follow at weekly intervals until April 28. The subjects covered are Powder Metallurgy, Developments in Lubricants, Glass (two lectures by Dr. J. H. Partridge), Plastics (two lectures), and Silicones. The fee for the whole course is 10s. 6d.

Richard Crittall Appointments

Mr. A. E. Hinds to be Managing Director

The Richard Crittall group of companies announces that Mr. A. E. Hinds, joint managing director, has been appointed managing director. Mr. J. L. Musgrave is retiring, at his own request, from the joint managing directorship, but will continue to serve as chairman. Two joint assistant managing directorships have been created to assist the managing director in the general administration of the group—Mr. C. J. Hyde-Trutch to control sales and technical administration and Mr. W. A. McPhail to control financial, secretarial and general administration.

To facilitate general development and administration of the parent company, two general managers have been appointed, Mr. R. G. B. Crittall in control of the Southern area and Mr. J. P. Hamill for the Northern area. Other new appointments made by the parent company include that of Mr. V. C. Hardy as director in charge of exports, Mr. G. F. Wattears as sales director, Southern area, Mr. W. R. Cox as director and chief design engineer, Mr. F. Carter as director in charge of outside contracts, Southern area, and Mr. H. O. S. Bridcutt as a director.

Mr. F. Try has been appointed manager of the contract and planning department, with Mr. A. F. Ewens as deputy manager, Mr. G. E. Stone as secretary of the parent company and all companies in the group, Mr. A. E. Powley as treasurer, Mr. R. E. Smith as deputy secretary, and Mr. R. L. Allison as chief acountant of the Southern area. Mr. J. C. Longley is now manager of the Birmingham office, while Mr. J. R. Wingfield has been appointed personal assistant to the managing director.

The following are among appointments made by companies in the Richard Crittall group:—

Channel Conduits, Limited, Dulrae Manufacturing Company, Limited, Dulrae Patents, Limited, Heather Filters, Limited:—Mr. H. O. S. Bridcutt has resigned from the directorship and general managership of these companies (directorship only in the case of Dulrae Patents) and is succeeded by Mr. E. T. Shopland.

Crittall Kitchen Equipment Company, Limited:—Mr. J. Bodger has been appointed joint managing director with Mr. A. E. Hinds.

Grierson, Limited:—Mr. R. D. Patterson has been appointed a director.

Magnetic Valve Company:—Mr. G. W. Munton has been appointed a director and general manager in succession to Mr. E. T. Shopland.

Air Ducts, Limited:—Mr. C. J. Hyde-Trutch has been appointed a director and vice-chairman. Mr. F. Try has retired from the managing directorship, but will continue to serve on the board. The appointment made vacant by Mr. Try's resignation will be filled by Mr. W. W. MacArthur. Other directors appointed are Mr. G. Gibbson, Mr. L. R. Surtees and Mr. R. W. Freakley.

Richard Crittall (Industrial Plant & Equipment), Limited:—Mr. C. J. Hyde-Trutch has been appointed vice-chairman in succession to Mr. A. E. Hinds. Mr. W. W. MacArthur and Mr. R. W. Freakley have been appointed directors.

Richard Crittall Research & Development, Limited:—Mr. W. R. Cox has been appointed a director and vice-chairman.

Richard Crittall Mechanisations, Limited:—Mr. A. E. Hinds has resigned from the vice-chairmanship, but continues as a managing director. Mr. C. J. Hyde-Trutch has been appointed a director and vice-chairman. Mr. W. H. Reid and Mr. F. C. Cooper have been appointed joint assistant managing directors and Mr. R. W. Freakley a director.

Production of Light Iron Castings in Scotland

Expansion of Mechanical Moulding

Reviewing the progress of the Scottish light-castings industry in 1947, a correspondent points out that, in common with other industries, manufacturers have experienced shortages of materials and labour. The year was notable for the introduction of mechanical moulding plants. But, in spite of the wide installation of such plant, production is still below the pre-war level. Our correspondent attributes this to three factors—shortage of labour, considerable outworn plant, and shortage of pig-iron.

What affects Falkirk, the centre of the industry in Scotland, affects other parts, though not to the same extent. Outworn plant is a legacy of the war years, when replacement was not possible. Plant was used to capacity and keyed up to a pitch of production never thought possible before the war. During the war the industry lost many skilled moulders to other industries, and, having settled in other trades, they are not coming back. It is estimated that in the Falkirk region alone there is a shortage of over 500 moulders. One suggestion put forward to improve the labour situation is the establishment of training schools for moulders and foundry workers generally. Mechanisation will never fully oust the skilled moulder.

It is only in recent years that mechanical moulding plants have seriously competed with the craftsman moulder, though in Scotland moulding machines were first introduced nearly 40 years ago. Mechanical equipment may be faster and cheaper, but it has a limited scope and the skilled moulder will always be needed for the finer work.

The shortage of pig-iron has been accentuated by the interruption of blast-furnace operations due to lack of fuel and to the fact that many have been worked out through operating at high pressure and without adequate repairs.

ZINC PRODUCTION by the Electrolytic Zinc Company of Australasia, Limited, in the 12 months to June 30, 1947, totalled 70,314 tons, 10,144 tons less than in the previous year, and about 15,000 tons below the present capacity of the plant. Output was restricted owing to shortage of shipping.

News in Brief

THE NAME OF Marple Metal Products, Limited, Marple, Ches, has been changed to Keeseal, Limited.

J. W. COLPITTS & COMPANY, LIMITED, marine engineers, of Blyth, Northumberland, has celebrated its 50th anniversary.

SCOTT & SONS, Bowling, has received a contract from the Tasmanian Government for a coasting motorship of 550 tons gross.

PRODUCTION AT THE Ayr works of James Dickie & Company (Drop Forgings), Limited, of a new type of hay turner is expected to reach a peak this year of 3,000 machines.

THE BUSINESS OF W. B. Cowan & Company, iron and steel merchants, etc., of 163, Hope Street, Glasgow, has been sold to Fisher, Baxter & Company, 140, West George Street, Glasgow.

CONSETT IRON COMPANY, LIMITED, has acquired all the shares of the New Jarrow Steel Company, Limited, Consett, Co. Durham, and plans are being considered for developing the company.

GENERAL MEETINGS OF MEMBERS of the Institution of Factory Managers and the Institution of Works Managers have agreed in principle to the proposed merger, and it has been decided to amalgamate as from July 1 next.

JACK OLDING & COMPANY, LIMITED, manufacturers of agricultural tractors, earth-moving equipment, etc., of Hatfield, Herts, have established a workshop at Lostock, Bolton, where they will eventually employ some 200 workpeople.

MR. DENIS REBBECK, a director of Harland & Wolff, Limited, has revealed that the annual accident rate in his firm's Belfast yard, where about 2,300 men are employed, is 4.5 per 1,000. He said that this rate was much lower than on the Clyde.

THE FULLERS' EARTH UNION, LIMITED, through its Scottish agents, J. B. Macdermott, Limited, 40, West Nile Street, Glasgow, having secured suitable storage premises, can now give immediate delivery of most grades of "Fulbond" to foundries in Scotland.

INQUIRIES FOR WORK worth £12,500,000 to be carried out have been made through the North-East Engineering Bureau in the last three years. It is stated that more than £7,000,000 worth has had to be turned away because of work in hand and material shortages.

TWENTY-TWO EMPLOYEES of George Cohen, Sons & Company, Limited, and associated companies, have been presented with awards commemorating 25 years' service. Since this custom was introduced, 147 such presentations have been made. Over 100 employees of the group have more than 25 years' service.

TEES IMPORTS IN 1947 amounted to the record total of 2,727,793 tons, iron-ore shipments largely accounting for an increase of nearly 400,000 tons as compared with 1946. On the other hand, exports for 1947 only reached a total of 947,868 tons, compared with 1,105,370 tons in the previous year and 1,833,286 tons in 1938.

IN VIEW OF the increasing responsibilities of the Director of the British Industries Fair (Mr. R. E. J. Moore), the Export Promotion Department of the Board of Trade has appointed Mr. W. H. Young, who has been associated with the organisation of the B.I.F. in London since 1922, to be Deputy Director of the Fair.

MR. GERALD WYNNE, of Maltby, near Rotherham, has been paid £6,000 and given an agreement for 25 per cent. of the profits by a Wolverhampton engineering firm for his newly-patented motor-cycle Diesel engine. The invention is also to be used for eight-cylinder engines for motor cars and probably for aeroplane engines.

PRESENTATIONS HAVE BEEN MADE to 269 employees of Evered & Company, Limited, brassfounders, metal rollers, etc., of Smethwick, Birmingham, who have, between them, 8,027 years' service with the company. Each has been employed by the company for 15 years or more. Thirty of them have had upwards of 50 years' service.

DON MIGUEL A RIVA Y ABREU, the Cuban Minister in London, and General M. Ydigoras Fuentes, the Guatemalan Minister, accompanied by Mr. F. B. A. Rundle, of the Foreign Office, visited the works of the Hunslet Engine Company, Limited, Leeds, on February 3. They inspected steam and Diesel-locomotive orders going through for Latin-American countries.

THE SCHEME OF DEVELOPMENT of Sheffield University will be started next month. The ultimate cost will be in the region of £6,200,000. Accommodation will be provided for 3,000 full-time students. A new chemistry block will be accorded priority in the building programme. At the moment four departments, including that of metallurgy, are handicapped by the bottleneck of existing accommodation.

A CONTRACT FROM Stora Kopparbergs Bergslags Aktiebolag (Domnarfvets Jernverk) for the supply of rolling-mill plant for the production of medium structural sections for its steelworks at Domnarvet has been obtained by the Brightside Foundry & Engineering Company, Limited, Sheffield. The consulting engineers are the International Construction Company, Limited, Kingsway, London, W.C.2.

WORK FOR ABOUT 50 men is expected to be found as a result of plans for the reopening of Swalesdale (Yorks) lead mines. The chief promoter of the plan is Mr. Thomas Shevels, of New Brancepeth, Co. Durham, a 73-year-old mining engineer. For 15 years he was chief engineer at New Brancepeth Colliery, where the output of barytes at one time equalled 50 per cent. of the total output for the United Kingdom.

THE ENGLISH ELECTRIC COMPANY, LIMITED, has secured a £2,000,000 contract to electrify 85 kilometres of main line of the Estrada de Ferro Santos a Jundiai, formerly Sao Paulo Railway of Brazil. The order includes the supply of rolling stock, including 15 locomotives of 3,000 h.p. each, the largest ever produced in the United Kingdom, and sub-stations and other power supply plant. The overhead transmission equip-

ment will be supplied by British Insulated Callenders Cables, Limited.

CONFIRMING THE REPORT, published in our last issue, that the recovery of secondary aluminium ingot from crashed aircraft scrap, which has been carried on since 1943 under the management of Morris Motors, Limited, at No. 2 Metal and Produce Recovery Depot, Eaglescliffe, Co. Durham, is to cease, the Ministry of Supply states that aircraft scrap recovery has progressed so far that there is no longer enough scrap to keep the depot in operation. It is expected that the salvage and disposal of other aircraft material now lying at the depot will continue for some months more, but the recovery operations will stop at the end of March or the beginning of April.

THE BRITISH INDIA STEAM NAVIGATION COMPANY, LIMITED, London, has placed orders for five vessels, two with Swan, Hunter & Wigham Richardson, Limited, Wallsend, and two, as reported earlier, with William Denny & Bros., Limited, Dumbarton. The other vessel will be built by Henry Robb, Limited, Leith. Swan, Hunter's order is for two cargo liners of the "C" class (of 7,000 tons gross, and 10,000 tons d.w.). The vessels to be built by William Denny & Bros. will be oil-burning steamers of the Ormara type (5,500 tons gross and 9,200 tons d.w.), having a cargo capacity of 490,000 cub. ft. Henry Robb, Limited, has been commissioned to build a motorship of 2,000 tons d.w.

THE CALEDON SHIPBUILDING & ENGINEERING COMPANY, LIMITED, Dundee, has received an order for a passenger and cargo vessel of about 4,000 tons gross for the Moss Hutchison Line, Limited, Liverpool. The vessel will be about 360 ft. in length. The propelling machinery will consist of Doxford oil engines to be supplied by R. & W. Hawthorn, Leslie & Company, Limited, Hebburn-on-Tyne. The engines will be installed by the Caledon Company at Dundee. The Caledon Company has also secured orders for two motor tankers from Scandinavian owners. Each will be of about 13,500 tons d.w. Doxford oil engines will be built for these vessels by Vickers-Armstrongs, Limited, and these will also be installed at Dundee.

Scottish Lime and Limestone Association

Mr. R. H. Bathgate (W. T. Bathgate, Limited, Gorebridge) was elected chairman for 1948 of the Scottish Lime and Limestone Association at the recent annual general meeting. Mr. William Black (Charlestown Lime Company, Limited, Fife) was elected vice-chairman, and the following appointments were made to the Executive Council:—Mr. E. M. Cleland (Bairds & Scottish Steel, Limited, Glasgow); Mr. J. N. Farrer (Dockra Lime Company, Limited, Beith, Ayrshire); Mr. A. C. Gordon (Northern Agricultural & Lime Company, Limited, Aberdeen); Mr. D. A. McPhail (Keir & Cawdor, Limited, Glasgow); Mr. J. Mitchell (R. Mitchell & Sons, Limited, Girvan, Ayrshire); and Mr. F. W. Moffat (Caldronlea Lime Quarries, Annan, Dumfriesshire).

Mr. T. C. Garden (T. C. Garden & Company) 25, Rutland Square, Edinburgh, is hon. secretary of the Association.

Contracts Open

Any date given is the latest on which tenders will be accepted. The address is that from which forms of tender may be obtained.

Chesterton, March 22—Contract No. 1, construction of approx. 16,240 yds. of 9-in. and 6-in. dia. stoneware pipe sewers, and approx. 3,250 yds. of 9-in. and 7-in. dia. iron pumping mains; contract No. 2, construction of approx. 24,360 yds. of 12-in., 9-in. and 6-in. dia. stoneware pipe sewers, and approx. 7,160 yds. of 10-in., 8-in., 6-in. and 5-in. dia. iron pumping mains, etc., for the Rural District Council. Willcox, Raikes & Marshall, engineers, 33, Great Charles Street, Birmingham. (Fee £10 10s., returnable.)

Macclesfield, March 3—Iron castings, etc., for the Corporation. Mr. J. H. Dossett, borough engineer, Town Hall, Macclesfield.

Mansfield, March 2—Castings, for the Town Council. Mr. E. T. Crowe, borough engineer and surveyor, Carr Bank, Mansfield.

Middlesbrough, February 24—Supply of spun-iron concrete-lined pipes, cast-iron specials, and cast-iron surface boxes, etc., for the Tees Valley Water Board. Mr. T. S. R. Winter, engineer and general manager, Water Board Offices, Corporation Road, Middlesbrough.

Slough, February 25—Cast-iron manhole covers and frames, and gulley grates and frames, for the Borough Council. Mr. E. G. Thorp, borough engineer, Town Hall, Slough.

Tynemouth, February 28—Cast-iron work, iron pipes and fittings, shovels, bolts and nuts, etc., for the Borough Council. The Borough Surveyor, 19-20, Howard Street, North Shields.

Engineers' Wage Claim

The Confederation of Shipbuilding and Engineering Unions last week decided to go forward with a wage claim involving a weekly increase of at least 13s. for some 3,000,000 workers in 37 unions. After the meeting of the General Executive of the Confederation, Mr. Gavin Martin, secretary, said that in making the claims they had considered the views on wages expressed in the White Paper on Personal Incomes. They had also had in mind that it was two years since any increment had been given to engineering workers who from 1940 onwards had given good service to the nation by constantly increasing production.

Malayan Tin Expansion

A report from Kuala Lumpur states that Government tin officials are confident that the 1948 estimated yield of $20 million from the tin duty will be substantially exceeded. Tin statistics for 1947 show that in December output was treble that of January. The industry's progress is attributed to improvements in supplies of machinery and fuel, and to the Government's assistance through loans. In December there were 56 dredges operating, compared with 20 in January, and 74 in September, 1941.

Gazette

FALKLAND ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. F. D. Norwood, Regis House, King William Street, London, E.C.4, is the liquidator.

WHITE LODGE AERONAUTICAL ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. A. E. Attwood, Queen Street Chambers, 90, Queen Street, Cheapside, London, E.C.4, is the liquidator.

SMITHFIELD ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. S. Foreman, 32-34, Great Portland Street, London, W.1, and Mr. L. J. B. Fairburn, 3A, Crown Parade, London, N.14, are the joint liquidators.

THE PARTNERSHIP BETWEEN Leonard Craven, Rowland Barker, and Leslie Pearson, carrying on business as repetition machinists, oxy-acetylene welders, and maintenance engineers at Beck Lane, Batley, Yorks, under the style of Ronard Engineering Company, has been dissolved. Debts will be received and paid by L. Craven and R. Barker, who continue.

THE PARTNERSHIP BETWEEN Edmund Fritchaf Struckman and Percival Seddon Wilkinson, carrying on business as general engineers at 167, Oakhill Road, East Putney, London, S.W.15, under the style of Electrolor Electric Company, has been dissolved. Debts will be received and paid by E. F. Struckman and P. S. Wilkinson. The business will be carried on in the future by P. S. Wilkinson.

G.K.N. to Acquire Brymbo Steel Company

It is announced that arrangements have been made for the transfer of the works and properties of the Brymbo Steel Company, Limited, Brymbo, near Wrexham, to Guest, Keen & Nettlefolds, Limited, as from Sunday last. A new company, Wrexham Steel Works, Limited, has been formed to continue to operate the works at Brymbo under the same local management as at present.

The Brymbo Steel Company, Limited, has specialised in the production of sheet bars, which companies in the G.K.N. organisation roll into electrical steel sheets. It is intended that later the name of the Wrexham company shall be changed to resemble that of the Brymbo concern.

FOREMEN IN THE works of Tube Investments, Limited, are being given the opportunity of taking special courses to aid them in their task of production organisation. The scheme was started at the beginning of 1947, and its success has resulted in a considerable extension for the present year. The training courses are planned to make available to foremen up-to-date information about his industry, its production processes and management methods, and the company's short- and long-term policies. The courses are of a fortnight's duration and are held in the company's time. When possible, the courses conclude with a week-end at Ashridge College.

Small Increase in Shipbuilding Steel Allocation

Chancellor on the Government's Aim

Addressing a meeting of the Scottish Board for Industry at Edinburgh recently, Sir Stafford Cripps, Chancellor of the Exchequer, announced that in a further review of available steel supplies and of other essential needs for the second quarter of the year a further small increase in the steel allocation for the shipbuilding industry had been made. The allocation for that quarter would thus be appreciably above last year's allocation rate, though still somewhat below the actual supplies obtained then.

He said that the British shipbuilding industry was one of the nation's greatest economic assets, from the point of view both of defence and of our overseas balance of payments. It would continue to be a primary aim of the Government's policy and planning to ensure that this great industry continued to thrive, and that as steady a level of activity as possible was maintained. But this must be on the basis of sticking to the steel allocations and not going outside them.

After the meeting the Chancellor said: "We are reorganising the whole of the allocation scheme as from the beginning of April and we hope that as a result allocations and deliveries will correspond this year. Allocations are slightly increased over last year, but they will depend on the importance of the work a firm is carrying out."

January Iron and Steel Output

Steel Production Rate Record

Steel production in January reached a new record rate. Production was at an annual rate of 14,589,000 tons, compared with 12,646,000 tons a year in December and 12,470,000 tons in January, 1947. The previous highest month's production was in October of last year, when an annual rate of 14,316,000 tons was attained. The best previous January figure was a rate of 12,927,000 tons in 1943.

Pig-iron also showed an increase last month to an annual rate of 8,726,000 tons, compared with 8,561,000 tons in December and 7,806,000 tons a year ago.

Latest output figures compare as follow with earlier returns:—

	Pig-iron.		Steel ingots and castings.	
	Weekly average.	Annual rate.	Weekly average.	Annual rate.
	Tons.	Tons.	Tons.	Tons.
1948—January ..	167,800	8,726,000	280,600	14,589,000
1947—January ..	150,100	7,806,000	239,800	12,470,000
November ..	165,900	8,617,000	272,600	14,174,000
December ..	164,600	8,561,000	243,200	12,646,000
4th quarter ..	163,600	8,505,000	263,100	13,679,000
1946—November ..	153,900	8,002,000	263,800	13,715,000
December ..	153,200	7,966,000	236,300	12,289,000
4th quarter ..	154,400	8,029,000	251,700	13,088,000

Personal

MR. W. A. COATES and MR. W. SYMES have been appointed to the board of Metropolitan-Vickers Electrical Company, Limited.

DR. ROBERT CHARLES GOODING WILLIAMS has been appointed chief engineer of Philips Electrical, Limited, to advise the managing director on all technical matters.

MR. HUGH R. NEILSON and MR. IAIN M. STEWART have been appointed directors of Glenfield & Kennedy, Limited, hydraulic engineers and founders, of Kilmarnock.

MR. MUNGO CAMPBELL, a director of the Northern Mercantile & Investment Corporation, Limited, is the only nominee for the presidency of the North East Coast Institution of Engineers and Shipbuilders.

MR. GAVIN FINLAYSON, who recently returned to this country from West Africa, has joined the staff of John Broadfoot & Sons Limited, engineers and brassfounders, of Whiteinch, Glasgow, as one of its departmental managers.

MR. W. L. BOON has been appointed managing director (fuel utilisation) of Powell Duffryn Technical Services, Limited. MR. D. G. HEMMANT and MR. R. L. LECHMERE-OERTEL have been appointed managing directors (mining) of the company.

MR. G. H. FLETCHER, chief engineer and manager of the Attercliffe Common Works, Sheffield, of Metropolitan-Vickers Electrical Company, Limited, has been appointed to the board of the Metropolitan-Vickers Electrical Export Company, Limited.

MR. JOSEPH WALTON, assistant managing director of Thos. W. Ward, Limited, Sheffield, has been appointed chairman and managing director of the Darlington Railway Plant & Foundry Company, Limited. MR. PHILIP T. WARD has been appointed a director.

MR. J. P. D. COLEMAN, who joined the company in 1919 and who, since 1933, has been works director, has retired from the board of Wild-Barfield Electric Furnaces, Limited, and also from that of its associated company, G. W. B. Electric Furnaces, Limited.

MR. F. H. MAIDEN, of Metropolitan-Vickers Electrical Company, Limited, has been appointed manager of the turbine contracts department of the Brush Electrical Engineering Company, Limited, Loughborough. He succeeds MR. H. ROBERTS, who has retired because of ill-health.

MR. A. H. BECKE, a director and secretary of J. Readhead & Sons, Limited, South Shields, has been nominated for election as an ordinary member of the Council of the North East Coast Institution of Engineers and Shipbuilders. There are two vacancies on the Council, and others nominated are MR. J. W. ELLIOTT, vice-chairman of Swan, Hunter & Wigham Richardson, Limited, Wallsend, and MR. BRIAN E. COMMON, a director of Common Bros., shipowners, of Newcastle-upon-Tyne.

SIR VALENTINE GEORGE CRITTALL, on whom a barony was conferred in the New Year Honours List, will take the title of Baron Braintree, of Braintree in the County of Essex. He is chairman and managing director of the Crittall Manufacturing Company, Limited, chairman of Crittall-Hope Metal Windows (South Africa), Limited, of which he is also a member of the London committee, and a director of Darlington & Simpson Rolling Mills, Limited, and the Darlington Rolling Mills Company, Limited.

MR. J. R. TOMLINSON has been appointed agent in charge of the Cleveland ironstone mines of Dorman, Long & Company, Limited. Joining the company's service in 1928, Mr. Tomlinson has been manager of the Lumpsey mine since 1932. MR. W. I. E. HICKMAN has been appointed agent in charge of the company's limestone quarries and Burley ironstone quarry, and Eston mine. These changes follow the death of Mr. Harry Palmer, agent in charge of the company's ironstone mines and quarries for many years.

Wills

MEDLICOTT, HENRY, for many years sole proprietor of Baker's Foundry, Smethwick £34,673

TRUELOVE, EDWARD, of E. Truelove & Son, Limited, agricultural engineers, of Rugby £10,583

COLLINSON, HARRY, chief draughtsman to Stewart & Craig, Limited, engineers and shiprepairers, of Hull £6,004

WOOLCOCK, W. J. U., of Welwyn Garden City, president of the Society of Chemical Industry, 1924-26 ... ... £8,077

KNOWLES, B. T. R., a former managing director of John Knowles (Wednesbury), Limited, tube manufacturers £35,670

KENNEDY, R. S., a director of the Railway & General Engineering Company, Limited, Nottingham £20,991

HOWELL, F. J., late of J. Stone & Company, Limited, engineers, founders, etc., of Deptford, London, S.E.14 ... ... £982

BOLTON, CAPT. E. A., chairman and joint managing director of Bolton's Superheater & Pipe Works, Limited, Stockport £12,700

FRANK, A. S. C., late managing director of Pattern Makers (Engineering) Company, Limited, Willesden, London, N.W.10 ... ... £3,439

LUCKMAN, J. F., a director of Latch & Batchelor, Limited, manufacturers of wire and wire ropes, of Hay Mills, near Birmingham £48,144

THORNTON, R. W., former chairman of the Glacier Metal Company, Limited, Alperton, Middx, and Crabtree Electrical Industries, Limited, Walsall £56,118

WORLEY, S. R., a director of Handley Page, Limited, aeronautical engineers, of London, N.W.2, chairman of Filani (Nigeria) Tin Mining Company, Limited £95,080

CHURCHMAN, SIR WILLIAM A., the tobacco magnate, and a director of Mann, Egerton & Company, Limited, electrical and motor-car engineers, of Norwich £1,102,719

TURNER, MAJOR R. H., chairman and managing director of G. R. Turner, Limited, manufacturers of mining machinery, railway rolling stock, etc., of Langley Mills, Notts £41,424

MCKECHNIE, SIR WILLIAM W., chairman of Bertrams, Limited, general engineers and ironfounders, of Edinburgh, and a director of James Bertram & Son, Limited, paper-mill engineers, of Edinburgh £14,743

STEPHENSON, LT.-COL. SIR HENRY K., Bt., Master Cutler in 1919, Liberal M.P. for the Park Division of Sheffield 1918-23, chairman of Stephenson, Blake & Company, Limited, type founders, of Sheffield, and Thomas Turton & Sons, Limited, steelmakers, etc., of Sheffield, and a director of Sheepbridge Coal & Iron Company, Limited, Yorkshire Amalgamated Collieries, Limited, and other companies £183,463

Company News

(Figures for previous year in brackets.)

Aerialite—Interim dividend of 62½% (50%).

Dowty Equipment—Interim dividend of 10% (6%), tax free.

Wombwell Foundry & Engineering Company—Interim dividend of 6% (same).

Anti-Attrition Metal Company—First and final dividend of 10% on increased capital (7½%).

George Cohen Sons & Company—Interim dividend of 8%. The company was made public in March, 1947.

Tweedales & Smalley (1920)—Final dividend of 12% (12½%), making 17% for eight months (17½% for 12 months).

Henry Meadows—Consideration of the preference dividend, due on March 1, has been deferred until the accounts for the full year to August 31, 1948, are available.

D. Napier & Son—Trading profit to December 27, 1947, after tax, £150,579 (£146,931 for 15 months); to directors' fees, £750 (£938); depreciation, £102,430 (£43,579); net profit, £47,399 (£102,414); dividend of 7½% (same); forward, £249,178 (£244,685).

Springs—Trading profit to October 31, 1947, £9,437 (£2,885); to tax, £3,400; directors' fees, £600 (same); depreciation, £1,089 (£863); 1½ years' preference dividend, £1,215; written off preliminary expenses, £1,700; machinery replacement, £1,500; forward, £186 (£253).

Mulliners (Holdings)—Net profit, before taxation, for the year to December 21, 1947, £17,210 (£45,267); to taxation, £8,766 (£21,511); ordinary dividend of 20% (same); non-cumulative distribution of 4%, plus additional participation of 3¾% on the preferred ordinary, making 13¾% (same); forward, £2,602 (£17,876).

Weyburn Engineering Company—Trading profit for the year ended October 31, 1947, after E.P.T., £48,607 (£39,775, including £9,000 E.P.T. recovery); depreciation, fees, etc., £11,201 (£11,552); net profit, £37,406 (£28,223); to tax, £21,646 (£14,800); dividend of 30% (30% and bonus of 5%); reserve, £3,000 (nil); forward, £2,651 (£1,771).

Leyland Motors—Net profit for the year ended September 30, 1947, £291,181 (£378,159); to reserve for future redundancy and decline in value of stock and work-in-progress, less £369,796 transferred from provisions made in previous years, £230,204 (nil); general reserve, nil (£200,000); dividend of 3s. (same); forward, £233,842 (£322,977).

British Lead Mills—Trading profit to October 31, 1947, after management remuneration, directors' fees and depreciation, £48,174 (£44,332); to tax, £25,518 (£20,993); final dividend of 20% (17½%), making 32½% (30%); general reserve, £5,000 (£2,500); deferred repairs reserve, £1,000 (same); contingencies reserve, nil (£5,000); forward, £13,694 (£10,444).

Electrolytic Zinc Company of Australasia—Gross profit to June 30, 1947, after costs and charges, amortisation, depreciation, etc., £1,236,843 (£765,635); net profit, £627,093 (£381,537); to dividends, £535,000 (£330,000); appropriation for new plant and development, West Coast mines, £15,217 (£14,146); general reserve, £85,000 (nil); forward, £216,985 (£215,109).

Clyde Crane & Booth—Net trading profit for the year ended November 30, 1947, £53,269 (£56,620); dividend from subsidiary company, £7,007 net (£1,965); interest, £528 (£337); to directors' fees, £1,550 (£1,433); taxation, £15,269 (£25,410); net profit, £43,985 (£32,080); to cost of redemption of shares, £1,571 (£1,488); dividend of 25% (20%); to taxation reserve, £6,500 (£2,000); general reserve, £4,000 (£5,500); pensions reserve, £4,000 (nil); forward, £13,412 (£12,686).

D. Sebel & Company—Trading profit to September 30, 1947, £97,544 (£75,878); net profit of subsidiary, £13,697 (£4,682); to depreciation, £9,661 (£3,381); directors' remuneration, £10,833 (£12,088); mortgage interest, £2,291 (nil); audit, £525 (£300) legal, etc., charges, £290 (£712); fees and expenses, £83 (nil); net profit, £87,558 (£64,079); to excess profits tax, £25,000; income-tax, £4,500; future income-tax, £29,000 (against total tax of £49,313); dividend of 33¼%, £22,000 (nil); forward, £29,900 (£22,842). The company was made public in July, 1947.

English Electric Company—Trading profit for 1947, after providing for taxation, £681,504 (£567,363); and net dividend from D. Napier & Son, £22,523 (£22,523); net dividend from Marconi's Wireless Telegraph Company, less interest paid to Cable & Wireless (Holding), £79,644 (£59,990); to debenture interest, £40,930 £42,101); directors' and trustees' fees, £6,244 (£5,000); depreciation, £245,135 (£110,000); net profit, £491,362 (£492,775); preference dividend of 6½%, £73,830 (same); preference dividend of 3½%, £56,250 (£9,375); final ordinary dividend of 6% (same), making 10% (same), £353,873 (£306,690); general reserve, nil (£100,000); forward, £131,082 (£123,673).

Glasgow Power-plant Contracts

Glasgow Corporation has placed contracts for equipment for its new generating station at Braehead. Ash and dust-handling plant is to be installed by Babcock & Wilcox, Limited, at a cost of £120,196, the supply and installation of central evaporating plant will be carried out by Aiton & Company, Limited, Derby, at a cost of £7,987, while circulating water pumps and pump-house equipment will be supplied by Drysdale & Company, Limited, Glasgow, the value of the contract being £69,532.

Babcock & Wilcox, Limited, is also to instal a water-tube boiler at Dawsholm Gasworks for Glasgow Corporation at a cost of £49,340, while James Bennie & Sons, Limited, Glasgow, branch of the Scottish Machine Tool Corporation, Limited, is to instal at the same works a combined shearing and punching machine at a cost of £1,175.

Raw Material Markets

Iron and Steel

There are now a round hundred blast furnaces in operation, which is probably the maximum number which can be kept going on the coke supplies available. Nevertheless, the output of pig-iron is still insufficient to satisfy the requirements of the foundries, and more furnaces will be lighted as soon as fuel is available. It is not merely a matter of mining more coking coal. There are many coke ovens in need of repair or renewal, and in this respect progress must necessarily be unhurried. Meanwhile, the dearth of both pig-iron and scrap afflicts the whole of the foundries in varying degrees. High-phosphorus iron is in most urgent demand, but allocations of low-phosphorus, refined and hematite irons also fully absorb the output.

There is not the slightest indication of any abatement in the call for sheets both for home consumption and for export. Production is on a rising scale, but expansion would be much more pronounced if sheet bars were more abundant. Good tonnages of slabs are coming forward, but for the rolling of light-gauge sheets more sheet bars are required. Similarly the re-rollers are maintaining constant pressure for small billets for the rolling of light bars and sections.

There are still a few weeks more in which steelmakers are at liberty to honour the old "M" form authorisations and large clearances of plates, joists, channels and sections will help consumers, whose requirements after March 31 may receive scant attention.

It is noticeable that the direct exports of finished steel products are not increasing, but it is clearly understood that more material will be diverted to manufacturers engaged in the export trade. Even the home railways are not getting all the material they require, but the collieries enjoy special priority and they are indenting for very heavy tonnages.

Non-ferrous Metals

In these days of the application of a bulk-purchasing system to the non-ferrous industry it is not easy to keep a tab on the trend of sentiment, for it is unfortunately no longer a question of what London thinks that governs the prices we in the United Kingdom pay for our metals. In happier days we were not the vassals of New York in this matter of determining values, but the Government has taken charge of this responsibility, as of so many others, and the task of provisioning our country with non-ferrous metals, formerly in the hands of traders equipped with a lifetime of knowledge and experience, is now discharged by a small body of hard-working civil servants. So the events of the past week or so, fraught as they are with such dire possibilities, left no mark upon the values of the virgin metals, which continued to be quoted at the fixed official rates.

This, however, was not the case with scrap, which, although sold by the Ministry of Supply at fixed prices, at least so far as what they have for sale is concerned, fluctuates in no inconsiderable manner from time to time. For some weeks up to the end of January the tendency was all one way, *viz.*, upwards, and the rise was sadly overdone on the plea of scarcity, which was always more apparent than real. The slump in many of the United States commodity markets and the persistent weakness of Wall Street, however, was too much for the misplaced optimism of those who held out for inflated values, and last week saw instances of sales being made at prices which only a short time ago would have been deemed ridiculous. It is an old market saying that a bull movement always looks strongest at the top, and the truth of this adage has been proved on the present occasion.

Just how far the decline in scrap will go remains to be seen but consumers have had a bad fright, and since, presumably, the fabricators will be obliged to cut their selling prices in line with the Government's request, it is hardly likely that they will be in any mood to be generous in the matter of scrap metal purchases. This attitude will in turn be reflected in the bids made by the merchants and dealers when material is offered by the Government departments, shipbreakers, contractors, etc., and it is more than likely we shall now see the pendulum of scrap metal prices swinging once more in the direction of much lower values.

It is early days to say much about the trend of new metal values, but the pointers are certainly not upwards in spite of the recent advance of 1½ cents in zinc in the United States. Indirectly this was brought about by the stockpiling tactics of the Government in America, and since it is now understood to have a large tonnage of zinc in stock it may be presumed that its support will be withdrawn for a time.

Acquisition of Constructional Steelwork

New and second-hand constructional steelwork, such as roof trusses, stanchions and compound girders, was released from acquisition control, under the Control of Iron and Steel (No. 62) Order, 1948, which came into operation on January 28. In the case of new constructional steelwork, the Ministry of Supply points out, the change is largely a technical one, as the structural engineer will still require an authorisation from his customer to acquire the controlled plain steel needed for fabricating into constructional steelwork (or to replace material taken from his stock for that purpose), and to authorise him to use the plain steel. The procedure for obtaining the authorisation has not been altered in any way.

Since the introduction of the new Order, constructional steelwork may be acquired without regard to the period stated on the authorisation. This authorisation now relates only to the delivery period in which structural engineers may acquire the steel for authorised purposes, or to replace material taken from their stocks.

Current Prices of Iron, Steel and Non-ferrous Metals

(Delivered, unless otherwise stated)

February 18, 1948

PIG-IRON

Foundry Iron.—CLEVELAND No. 3: Middlesbrough, £9 13s. 9d.; Birmingham, £9 12s. 3d.; Falkirk, £9 16s. 6d.; Glasgow, £9 19s. 6d.; Manchester, £9 15s. 3d. DERBYSHIRE No. 3: Birmingham, £9 12s. 3d.; Manchester, £9 15s. 3d.; Sheffield, £9 9s. 9d. NORTHANTS No. 3: Birmingham, £9 9s. 9d.; Manchester, £9 13s. 9d. STAFFS No. 3: Birmingham, £9 12s. 3d.; Manchester, £9 15s. 3d. LINCOLNSHIRE No. 3: Sheffield, £9 9s. 9d.; Birmingham, £9 12s. 3d. (*No. 1 foundry 5s. above No. 3. No. 4 forge* 1s. 6d. *below No. 3 for foundries*, 3s. *below for ironworks.*)

Hematite.—Si up to 3 per cent., S & P over 0.03 to 0.05 per cent.: N.-E. Coast and N.-W. Coast of England, £9 19s.; Scotland, £10 5s. 6d.; Sheffield, £10 11s. 6d.; Birmingham, £10 17s. 6d.; Wales (Welsh iron), £9 19s.; East Coast hematite No. 3, delivered Birmingham station, £10 16s. 6d.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, £9 19s. 6d., delivered Birmingham.

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

Cylinder and Refined Irons.—North Zone, £11 9s. 6d.; South Zone, £11 12s.

Refined Malleable.—North Zone, £11 19s. 6d.; South Zone, £12 2s.

Cold Blast.—South Staffs, £15 2s. 3d.

(NOTE.—*Prices of hematite pig-iron, and of foundry and forge iron with a phosphoric content of not less than 0.75 per cent., are subject to a rebate of 5s. per ton.*)

FERRO-ALLOYS

(Per ton unless otherwise stated, basis 2-ton lots, d/d Sheffield works.)

Ferro-silicon (5-ton lots).—20/30 per cent., £21; 40/55 per cent., £25 15s.; 70/85 per cent., £36; briquettes, £29 5s. per ton.

Ferro-vanadium.—35/50 per cent., 15s. per lb. of V.

Ferro-molybdenum.—70/75 per cent., carbon-free, 5s. 8d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., carbon-free, 1s. 3½d. lb.

Ferro-tungsten.—80/85 per cent., 9s. 10d. lb.

Tungsten Metal Powder.—98/99 per cent., 10s. 10d. lb.

Ferro-chrome.—4/8 per cent. C, £53 10s.; max. 2 per cent. C, 1s. 2½d. lb.; max. 1 per cent. C, 1s. 3d. lb.; max. 0.5 per cent. C, 1s. 3½d. lb.

Cobalt.—98/99 per cent., 10s. lb.

Metallic Chromium.—96/98 per cent., 5s. lb.

Ferro-manganese.—78/98 per cent., £21 3s.

Metallic Manganese.—94/96 per cent., carb.-free, 1s. 9d. lb.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms and Slabs.—BASIC: Soft, u.t., 100-ton lots, £13 17s. 6d.; tested up to 0.25 per cent. C, £14 2s. 6d.; hard (0.42 to 0.60 per cent. C), £15 10s.; silico-manganese, £20 2s. 6d.; free-cutting, £16 12s. 6d. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £18 2s. 6d.; case-hardening, £19; silico-manganese, £20 2s. 6d.

Billets, Blooms and Slabs for Forging and Stamping.—Basic, soft, up to 0.25 per cent. C, £15 15s.; basic, hard, 0.42 to 0.60 per cent. C, £16 7s. 6d.; acid, up to 0.25 per cent. C, £19.

Sheet and Tinplate Bars.—£13 7s. 6d.

FINISHED STEEL

[*A rebate of 15s. per ton for steel bars, sections, plates, joists and hoops is obtainable in the home trade under certain conditions.*]

Plates and Sections.—Plates, ship (N.-E. Coast), £18 8s.; boiler plates (N.-E. Coast), £19 5s. 6d.; chequer plates (N.-E. Coast), £19 18s.; angles, over 4 un. in., £17 13s.; tees, over 4 un. in., £18 13s.; joists, 3 in. × 3 in. and up, £17 13s.

Bars, Sheets, etc.—Rounds and squares, 3 in. to 5½ in., £18 13s. (d/d Midlands); rounds, under 3 in. to ⅝ in. (untested), £20 5s.; flats, over 5 in. wide, £18 3s.; flats, 5 in. wide and under, £20 5s.; rails, heavy, f.o.t., £16 13s., hoops, £21; black sheets, 17/20 g. (4-ton lots), £25 1s.

Tinplates.—I.C. cokes, 20 × 14, per box, 37s. 0½d., f.o.t. makers' works.

NON-FERROUS METALS

Copper.—Electrolytic, £132; high-grade fire-refined, £131 10s.; fire-refined of not less than 99.7 per cent., £131; ditto, 99.2 per cent., £130 10s.; black hot-rolled wire rods, £138.

Tin.—99 to under 99.75 per cent., £519; 99.75 to under 99.9 per cent., £522 10s.; min. 99.9 per cent., £527.

Zinc.—G.O.B. (foreign) (duty paid), £75; ditto (domestic), £75; "Prime Western," £75; refined and electrolytic, £75 15s.; not less than 99.99 per cent., £77 5s.

Lead.—Good soft pig-lead (foreign) (duty paid), £90; ditto (Empire and domestic), £90; "English," £91 10s.

Zinc Sheets, etc.—Sheets, 10g. and thicker, ex works, £87; rolled zinc (boiler plates), ex works, £85; zinc oxide (Red Seal), d/d buyers' premises, £73.

Other Metals.—Aluminium, ingots, £82 10s.; antimony, English, 99 per cent., £180; quicksilver, ex warehouse, £16; nickel, £195.

Brass.—Solid-drawn tubes, 21¾d. per lb.; brazed tubes, 25d.; rods, drawn, 18¾d.; rods, extruded or rolled, 15⅞d.; sheets to 10 w.g., 17⅞d.; wire, 18⅜d.; rolled metal, 16⅜d.; yellow metal rods, 16⅛d.

Copper Tubes, etc.—Solid-drawn tubes, 22d. per lb.; wire, 149s. 6d. per cwt. basis; 20 s.w.g., 178s. 6d. per cwt.

Gun Metal.—Ingots to B.S.S. 897 (85/5/5/5), £105 to £115; B.S.S. 1023 (86/7/5/2), £115 to £124; Admiralty, B.S.S. 382 (88/10/2), £159 to £180, per ton, ex works.

Phosphor-bronze Ingots.—2B8, £165 to £185; B.S.S. 1060, £126 to £138 per ton.

Phosphor Bronze.—Strip, 24½d. per lb.; sheets to 10 w.g., 26½d.; wire, 26⅜d.; rods, 25½d.; tubes, 29⅜d.; chill cast bars: solids, 2s. 2¾d., cored, 2s. 3¾d.; 10 per cent. phos. cop., £165 10s.; 15 per cent. phos. cop., £171; phosphor tin (5 per cent.), £566. (C. CLIFFORD & SON, LIMITED.)

Nickel Silver, etc.—Ingots for raising, 1s. 5¾d. per lb. (7%) to 2s. 0¾d. (30%); rolled metal, 3 in. to 9 in. wide, × .056, 1s. 11¾d. (7%) to 2s. 6¾d. (30%); to 12 in. wide, × .056, 2s. to 2s. 7d.; to 25 in. wide, × .056, 2s. 2d. to 2s. 9d. Spoon and fork metal, unsheared, 1s. 10½d. to 2s. 5½d. Wire, 10g., in coil, 2s. 4¾d. (10%) to 3s. 0½d. (30%). Special quality turning rod, 10%, 2s. 3¾d.; 15%, 2s. 7¾d.; 18%, 2s. 11¾d.

Obituary

MR. FREDERICK THOMAS LORD, a director of Spurling Motor Bodies, Limited, died recently.

MR. ALBERT W. YOUNG, late of Duncan Stewart & Company, Limited, hydraulic and steelworks engineers, etc., of Glasgow, died on February 3.

MR. JOHN M'CANN, late of Sir William Arrol & Company, Limited, constructional engineers, of Bridgeton, Glasgow, died on February 8, aged 56.

MR. FRANK SALE, who has died at the age of 75, was formerly managing director of H. B. Sale, Limited, engineers, bronze founders, etc., of Birmingham.

MR. THOMAS GRAINGER ALLAN, cashier of the Wallsend Slipway & Engineering Company, Limited, has died at the age of 58. He had been with the company for 44 years. Mr. Allan was Mayor of Wallsend in 1944.

MR. A. G. PARKER, who has died at Southport, was a director of Mather & Platt, Limited, Newton Heath, Manchester. He was also the company's home sales manager for textile machinery. Mr. Parker joined the company after graduating at Manchester University in engineering. He was on the staff of its Russian agency before the 1914-18 war.

MR. CECIL FREDERIC GILBERTSON has died at Abercrave, Swansea Valley, at the age of 70. He was a director of Richard Thomas & Baldwins, Limited, Llanelly Foundry & Engineering Company, Limited, Grovesend Steel & Tinplate Company, Limited, and W. Gilbertson & Company, Limited, steel and tinplate makers, of Pontardawe, near Swansea.

MR. HENRY SCULLY, a director of Barclay, Curle & Company, Limited, shipbuilders and engineers, of Glasgow, who retired from active business in 1942, when he had completed 59 years' continuous service with the firm, has died at the age of 78. He joined the company on leaving school and was made chief clerk in 1900 and secretary seven years later. Mr. Scully was appointed to the board in 1921 and retained his membership until his death.

Parliamentary

Collection of Iron Scrap

The MINISTER OF SUPPLY told MR. CHETWYND that a special appeal had been made to industry for the maximum possible release of scrap. This was being supplemented by intensified efforts to secure additional supplies from shipbreaking and surplus equipment and stores, and by imports from Germany and elsewhere. Supplies of light scrap were adequate, and a special campaign at the present time for the collection of domestic scrap would not justify the effort which would be involved.

In reply to supplemenatry questions MR. STRAUSS said that his department was in close touch with the Admiralty about the breaking-up of its surplus vessels. The Ministry had a programme lasting over this year, and it might be part of next year, for that very purpose.

NOTICE

Small Advertisements in this section of the Journal are accepted at the *prepaid* rate of 20 words for 5/- (minimum charge) and 2d. per word thereafter. Box number advertisements 1/- extra. Instructions together with remittance must be received not later than first post on Wednesday for inclusion in Thursday's issue, addressed to the Advertisement Manager, Foundry Trade Journal, 49, Wellington St., London W.C.2.

Situations advertised under this heading are available only to applicants excepted from the Control of Engagement Order, 1947, No. 2021.

SITUATIONS

ADVERTISER, 20 years' all-round practical and executive experience in gravity die casting, seeks progressive post as Foundry Manager, Tool Room Superintendent, or Technical Sales Representative; willing to take any area.—Box 576, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

BUYER.—Experienced Steel and Iron Foundry, Light and Heavy Engineering, requires appointment; full commercial and works knowledge; age 39.—Box 584, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOREMAN MOULDER, desirous of change; 38 years of age; experience non-ferrous metals, including light alloys.—Apply Box 626, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY MANAGER, M.I.B.F., open for engagement; considerable experience in die and sand foundry, iron and non-ferrous alloys, die design and plate pattern layout; 15 years' executive control; age 43.—Box 640, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY/WORKS MANAGER (40), M.I.B.F., seeks change; 25 years' practical experience in production of light grey iron castings for building and engineering trades, including rainwater and soil goods; wide experience of mechanised plants, male and female labour, up-to-date knowledge of metal patternmaking in ferrous and non-ferrous metals; practical and technically trained; South Yorkshire area preferred.—Box 646, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

METALLURGIST (28) desires change; 10 years' experience cupola control, duplexing methods, high duty and chilled iron, Tropenas converters, sand and refractory control; accustomed full control raw materials, product quality, labour, etc.—Write Box 648, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

SITUATIONS—*Contd.*

WORKS MANAGER, last job 10 years (original trade patternmaker), seeks situation; wide practical experience engineering in England and France.—L. T. SMITH, 169, Princes Gardens, West Acton, W.3.

ALUMINIUM Floor and Bench MOULDERS; first-class men; good pay for good production results; Birmingham district.—Box 614, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

CHARGEHAND IRON MOULDER, for Jobbing Foundry near London; also experienced MOULDERS for good class work; top rates.—Apply Box 638, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

DRESSERS, Aluminium, Brass, Gunmetal Castings; good pay for first-class men; no others need apply; Birmingham district.—Box 616, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

DRAUGHTSMAN, with civil engineering experience, to act as Assistant to Constructional Engineer; knowledge of theodolite and level essential; able to layout for site constructional work; check quantities from contractors' lists, estimating, etc.; state age and salary required, past experience, in chronological order, giving dates.—Applications to LABOUR MANAGER, The Stanton Ironworks Co., Ltd., near Nottingham.

FOUNDRY FOREMAN required, for small Machine Tool Foundry (12 moulders), Halifax; experience of machine moulding and control of all types of labour.—Give full details of age, experience, and salary required, to Box 548, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY MANAGER required; to take full control of medium sized foundry in South Lancs, engaged on the production of all grades of Bronze and Aluminium Castings.—Applicants, who should state age, wages required, together with full particulars of experience and similar previous engagements, and when at liberty, should apply to Box 624, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY FOREMAN required for West Midlands Foundry producing General Engineering, Agricultural and Builders' Castings; must have initiative, drive, and ability in handling workers; experience of core shop an advantage; considerable scope for good man, aged 30/40; salary according to experience and ability.—Box 604, FOUNDRY TRADE JOURNAL, 49, Wellington Street London, W.C.2.

TUB, Floor Moulders, Brass and Gunmetal; first-class men only; good jobs for conscientious workers; Birmingham district.—Box 610, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

SITUATIONS—*Contd*

FOUNDRY MANAGER required for Small Malleable Iron foundry in the Midlands; knowledge of machine moulding essential; working knowledge of laboratory practice also required.—Apply, stating age, past experience, and salary required, to Box 630, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY MANAGER required for medium sized Iron Foundry in Yorkshire making castings in green sand up to 20 tons; must be experienced in plate machine, and loose pattern moulding; good prospects for first-class man.—State age, experience, with names of firms worked for in date order, and salary required, to Box 606, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY MANAGER for Mass Production Light Iron Castings; Birmingham district; 400 to 500 (males and females) in fully and partially mechanised sections; modern machine moulding and core blowing essential; production of castings requiring vitreous enamelling desirable; applicants must have proved ability in complete control of fully mechanised foundry; up-to-date knowledge metal pattern making, and be M.I.B.F.; age preferred, 35-40; salary commencing £1,000 per annum; excellent prospects for man of initiative, tact, and ability; staff pension and superannuation scheme.—Please state age, details of career, and references, to Box 578, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

GENERAL WORKS MANAGER required by Iron Foundry in S. Wales; chiefly interested in high-class jobbing work for the electrical trade; must be highly experienced, and able take sole charge of foundry; state salary required.—Box 574, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

GOOD FOREMAN and ASSISTANT FOREMAN for Brass, Gunmetal; all non-ferrous castings; small firm; first-class production men required; Birmingham district.—Box 612, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

IRON MOULDERS for Loose Pattern Work; experience of 10/15-cwt. castings also PLATE MOULDERS; good wages and bonus, and week's holiday with pay in August if engaged during February.—Apply F. H. CLARK & SON, Ironfounders, Sutherland Road, Blackhorse Lane, E.17.

WEST Country Foundry desires thoroughly experienced MOULDER in jobbing work bench and floor up to 2 tons; must be capable taking over position Foreman in near future when new foundry is ready; housing accommodation found; age 35-40.—Further particulars Box 592, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

SITUATIONS—*Contd.*

MALLEABLE FOUNDRY. — FOREMAN wanted for further development; must have thorough knowledge of production and estimating costs from drawings.—Reply, by letter only, stating age, experience, and salary required, to THE HILL TOP FOUNDRY CO., LTD., Anchor Works, Smith Road, Wednesbury.

STEEL FOUNDRY SUPERINTENDENT required; North-West area; practical and technical knowledge of standard and mixed casting production: up to 20 tons weight; keen on strict methods control; to produce quality castings.—State experience, and salary required, to Box 598, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

WANTED.—Competent Man, to take charge of Cupolas in Iron Foundry; North Midlands.—Box 636, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

WANTED.—JUNIOR FOREMAN, for Semi-Mechanised Foundry, on the North Wales Coast; some metallurgical knowledge an advantage; state age, details of experience, and salary required.—Box 632, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY WANTED

REQUIRED, to purchase, by private treaty, whole or controlling interest in Foundry producing Grey Cast Iron Castings; capital involved secondary consideration.—Write Principal, Box 304, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRIES FOR SALE

FOR SALE.—Ferrous and Non-ferrous Foundry and General Engineering Works, in the London area; PRICE, plant fixtures, goodwill, etc., £6,000.—Write Box 508, REYNELL'S, 44, Chancery Lane, W.C.2.

FOR SALE.—Old-established well-equipped Foundry; situated in North Wales; brick building; floor space of 1,500-2,000 sq. ft.; moulding, fitting and pattern shops; easy access to railway; as going concern.—Further particulars, Box 600, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

PATENTS

THE Proprietors of the Patent No. 575,813, for "Improvements in and relating to Domestic Fireplaces," are desirous of entering into arrangements by way of licence and otherwise on reasonable terms for the purpose of exploiting the same and ensuring its full development and practical working in this country.—All communications should be addressed to MESSRS. GRR & CO., 51-52, Chancery Lane, London, W.C.2.

PATENTS—*Contd.*

THE Proprietor of British Patent No. 565,861, entitled "Sand Moulding Machines," offers same for licence or otherwise to ensure practical working in Great Britain.—Inquiries to SINGER, EHLERT, STERN & CARLBERG, 28, E. Jackson Blvd., Chicago 4, Illinois, U.S.A.

THE Proprietors of the Patents Nos. 513,604 and 513,853, for "Improvements in or relating to Alloying Molybdenum with Ferrous Metals" and "Improvements in or relating to Alloying Tungsten with Ferrous Metals," respectively, are desirous of entering into arrangements by way of licence and otherwise on reasonable terms for the purpose of exploiting the same and ensuring its full development and practical working in this country.—All communications should be addressed, in the first instance, to HASELTINE, LAKE & CO., 28, Southampton Buildings, Chancery Lane, London, W.C.2.

MACHINERY

WANTED.—One 2- or 3-ton Hand Travelling Crane; to suit shop 30 ft. by 40 ft.; state price.—Reply Box 602, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

SANDSLINGER wanted; portable type; new or secondhand; prepared make very good offer.—Box 608, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

WANTED.—One 3-ton bottom pouring Ladle, in good condition, with or without refractories; I.E. Sleeves, Stoppers, Nozzles, Ladle Bricks, etc.—Box 582, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

WANTED.—Two 600-lb. Furnaces; Morgan or similar make; lip tilting; oil or coke fired.—Box 590, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

WANTED, to purchase, Electric Furnace; nominal charging capacity, 500-1,000 lbs. per hr.; suitable for 6,600 volts or 11,000 volts, 3-phase, 50 cycles supply, for manufacture of small low carbon steel castings.—Apply per Air Letter to the BUNDABERG FOUNDRY CO., LTD., Bundaberg, Queensland, Australia.

WANTED.—One Titan or similar Core Blowing Machine, with table approximately 28 in. square; one Osborn 92 Core Blowing Machine or similar, for core box approximately 32 in. by 13 in.—Box 618, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

WANTED.—One to four secondhand Jolt Squeeze Straight Pin Lift Moulding Machines, in good working condition; to take moulding boxes up to 18 in. by 16 in.. or nearest; please state particulars of machines, including type, maker, condition and price.—Replies to BROOKS & DEXEY, LTD., Union Ironworks, West Gorton, Manchester.

MACHINERY—*Contd.*

WANTED.—400- to 600-lb. Coke or Oil-fired Tilting Crucible Furnace.—Box 586, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

WANTED, Hand Moulding Machine, 3 in. draw for 14-in. or 16-in. boxes—not turnover; Core Making Machine, up to 3 in., hand or motorised.—GEO. BAGNALL & CO., LTD., Kirkby Trading Estate, Liverpool.

MACHINERY—*Contd.*

SAND MIXERS and DISINTEGRATORS for Foundry and Quarry; capacities from 10 cwts. to 10 tons per hr. —W. & A. E. Brealey (Machinery), Ltd., Station Works, Ecclesfield, Sheffield.

FOR SALE.—2-ton Geared Ladle; in good condition.—Box 642, Foundry Trade Journal, 49, Wellington Street, London, W.C.2.

SALE.—(1) 6 ft. dia. Sand Mill; (2) Various Cast Iron Box Parts for jobbing work; (3) Shot Blast Cabinet, also Rumbler, complete with Dust Arrestor and Fan.—Richards (Leicester), Ltd., Leicester.

FOR SALE.—Osborn type Roll-over Jolter; length 78 in., width 60 in., depth 23⅜ in., pattern draw 18 in., jolt cylinder diameter 15 in.; lifting capacity at 80-lb. pressure, 5,000 lbs.; code word Yehho.—Box 622, Foundry Trade Journal, 49, Wellington Street, London, W.C.2.

PASSENGER AND GOODS LIFT.—Load 10 cwt.; travel, 12 ft.; can be increased to 14 ft.; steel structure and car; new 1944; suitable for cupola charging and other industrial use.—Box 628, Foundry Trade Journal, 49, Wellington Street, London, W.C.2.

AUTOMATIC STOKER for Sale; manufactured by Prior Stokers, Ltd.; suitable for firing a vertical steam boiler; maker's rating, 1,500,000 B.T.U./hr.; 2 h.p. Electrical Motors, 440 volts, 3-phase, 50 cycles; thermal over-loads; 5-speed gearbox; never been used; price £225.—Box 572, Foundry Trade Journal, 49, Wellington Street, London, W.C.2.

FOUNDRY PLANT AVAILABLE FROM STOCK.

One Titan Cupolette; approx. 20 cwt. capacity.
One Morgan Tilting Furnace; 300 lbs. brass.
One Polford Coke-fired Bale-out; 200 lbs. aluminium.
One Lees Hall Coke-fired Bale-out; 100 lbs. aluminium.
One Lees Hall White Metal Bale-out; 100 lbs.
One Keith Blackman Impeller.
One Geared Ladle; 5-cwt. capacity.
One Geared Ladle; 2-ton. capacity.
One Core Oven, gas-fired; 4 ft. by 4 ft. by 6 ft.
One Core Oven; gas-fired; 6 ft. by 4 ft. by 6 ft.
One Bandsaw; 24 in.; complete with motor.
One Dandy Ladle.
One Union Pedestal Spindle Grinder; 12-in. wheels.
One Sand Riddle and Tripod.
One Moulding Box (three parts); 54 in. by 42 in. by 8 in.
One Midland Monolithic Crucible Lift-out Furnace.
One Flexible Grinding Machine (new); 500 volts, d.c.

W. J. HOOKER, LTD.,
4, Midland Crescent, London, N.W.3.

MACHINERY—*Contd.*

61 G.E.C. Mercury Vapour Lamps; complete with chokes and all fittings for use; 125 watts, 220/230 volts; excellent condition.—Offers to Box FTJ.486, L.P.E., 110, St. Martin's Lane, W.C.2.

George 600 Cohen

COMPRESSOR PLANT FOR SALE.

ONE 922 c.f.m. AIR COMPRESSOR, by Alley McLellan; of the vertical, 2-crank, 2-cylinder, double acting type; series 34A, No. 8; manufactured May, 1941; working pressure 35 lb. per sq. in. when running at 485 r.p.m.; complete with air filter, forced feed lubricator and aftercooler; arranged on C.I. bedplate, and direct driven by 120 h.p. S.R. Motor, by Crompton Parkinson, 400/3/50; screen protected frame, with endshield ball bearings; complete with Crompton Parkinson C.I. S. & R. Starter, with ammeter; Air Receiver, 10 ft. by 4 ft.

ONE 670 c.f.m. AIR COMPRESSOR, by Broom & Wade; type S.I.B.; with cylinders 15 in. bore by 8 in. stroke; water cooled; complete with aftercooler, and arranged for vee belt drive from 70 h.p. S.R. Ind. Motor, by Crompton Parkinson, 400/3/50, running at 1,460 r.p.m.; complete with Allen West C.I. S. & Rotar Starter.

ONE 670 c.f.m. AIR COMPRESSOR, by Broom & Wade; of the vertical, 2-stage, water cooled type; with intercooler, aftercooler, and 2 in. Tangye water circulating pump, with h.p. cylinder 9 in. diam., l.p. cylinder 15 in. diam., both 8 in. stroke; working pressure 80 lb.; arranged on bedplate and direct coupled to 95 h.p. S.R. Motor, by Crompton Parkinson, running at 417 r.p.m.; complete with Brookhirst Starter.

ONE 600 c.f.m. AIR COMPRESSOR, by Broom & Wade; of the 4-cylinder, vertical, single acting, water cooled pattern, with unloaders, inlet air filters, flywheel, and totally enclosed D/H reduction gear.

ONE 550 c.f.m. AIR COMPRESSOR, by Alley McLellan; working pressure, 100 lb.; flywheel, 4 ft. 3 in. by 9½ in. face; complete with intercooler and automatic unloader; mounted on C.I. bedplate, and direct coupled to 100 h.p. S.R. Ind. Motor, by B.T.H., 550/3/50; continuously rated with endshield ball bearings; speed, 361 r.p.m.; complete with control gear. With the Compressor is a spare new Cylinder Block and Piston.

ONE 455 c.f.m. AIR COMPRESSOR, by Tilghman; of the vertical, 2-stage, water cooled type; working pressure, 100 lb. per sq. in.; speed, 350 r.p.m.; complete with intercooler, automatic unloader, air filter; vee rope pulley, 4 ft. diam.; 7 vee ropes and outer bearing.

ONE 400 c.f.m. AIR COMPRESSOR, by Broom & Wade; of the vertical, 3-cylinder, single-stage, water cooled pattern; working pressure 30 lb. at a speed of 323 r.p.m.; fitted with flywheel at non-driving end; direct coupled by flexible coupling to 55 h.p. Motor, by Crompton Parkinson, 400/3/50; speed, 750 r.p.m.; complete with Starter.

ONE 250/300 COMPRESSOR SET, by Alley McLellan; of the vertical, 2-stage type; pattern 23B, size No. 4, ref. 6158; working pressure, 100 lb. per sq. in., with intercooler and aftercooler; vee ropes driven by 67½ h.p. Crompton S.R. Motor; complete with Push Button Contactor Starter and Air Receiver, approx. 6 ft. 6 in. by 3 ft.

ONE 250 c.f.m. AIR COMPRESSOR SET, by Alley McLellan; Sentinel, of the vertical, single-cylinder, water cooled type; series 28A, size 4; speed, 360 r.p.m., for pressure up to 100 lb. per sq. in.; fitted with flywheel, 39 in. by 10¼ in.; face and outboard bearings; belt driven by 50 h.p. slip-ring Motor, by L.D.M.; with Allen West Starter.

ONE A.C. Motor-driven COMPRESSOR EQUIPMENT; comprising 240 c.f.m. Compressor, by Worthington Simpson; of the vertical, 2-stage, water cooled type, size D.A. 36; complete with intercooler and flywheel pulley; speed, 720 r.p.m.; for pressures up to 100 lb. per sq. in.; arranged for V belt drive from 60 h.p. slip-ring Motor, by Crompton; with Oil Immersed S. & R. Starter, by Allen West.

ONE 210 c.f.m. AIR COMPRESSOR Set, by C.P.T., of the vertical, 2-stage type, model PB.4; having a capacity of 210 c.f.m. per min.; delivered at a pressure of 100 lb. per sq. in.; speed, 870 r.p.m.; complete with intercooler and automatic unloader; arranged for V belt drive from 50 h.p. slip-ring Motor, by Brush; complete with slide rails and starter. With this set is an aftercooler, by Broom & Wade; suitable for pressures up to 100 lb.; 5 ft. 9½ in. by 8 ft., with top and bottom air inlet; also vertical dish end Air Receiver, 7 ft. high by 3 ft. 6 in.; complete with fittings; also Motor-driven Pumping Set, by Pulsometer Eng. Co., having a capacity of 16 g.p.m. against 98 ft. head; direct coupled to ¾ h.p. S.C. Motor, by Crompton.

FOURTEEN 108 c.f.m., a.c., Motor-driven, COMPRESSOR SETS; each comprising vertical, 2-stage, air cooled Air Compressor, by Holman; symbol AC.13.S; h.p. cylinder 5½ in. bore, l.p. cylinder 7½ in. bore by 5½ in. stroke; capacity according to maker's 130 c.f.m. displacement, or 108 cub. ft. free air per min. at 1,000 r.p.m., and suitable for pressures up to 125 lb. per sq. in.; complete with intercooler and air governor; fitted with flywheel/pulley; arranged for V belt drive from a 30 h.p. S.R. Ind. Motor, by First Electric Co., 400 volts, 3-phase, 50 cycles, 1,450 r.p.m.; screen protected with endshield ball bearings; complete with Oil Immersed S. & R. Starter, by E.A.C.

ONE 60 c.f.m. AIR COMPRESSOR, by Tilghman; of the vertical, single-cylinder, water cooled type; cylinder 8¾ in. bore by 8 in. stroke; speed, 420 r.p.m.; pressure, 100 lb. per sq. in.; complete with unloader and flywheel, which also act as driving pulley, 40 in. diam. by 5¼ in. face, supported by outer bearing; driven by 25 h.p. S.R. Ind. Motor, by Brook; complete with S.R. Starter, by E.A.C.

GEORGE COHEN
SONS & CO., LTD.,
WOOD LANE, LONDON, W.12
and STANNINGLEY, nr. LEEDS

MACHINERY—*Contd.*

FOR SALE.

"B" type, Fordath, Sand Mixer; chain rope driven from 20 h.p., squirrel-cage, 3/50/400 volts Motor, 720 r.p.m.

Senior Sand Drier, by Fordath.

B.M.M., size T.O.3, Hand Squeeze Moulding Machines.

S. C. BILSBY.
CROSSWELLS ROAD, LANGLEY, NEAR BIRMINGHAM.

MISCELLANEOUS

IMMEDIATE Capacity available for Pattern Making; London area.—Box 480, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

FOUNDRY MAINTENANCE.—Let us help you with your maintenance installation, and machine repair problems. We specialise in Foundry Plant, Conveyors, Sand Plant, Cranes, Hoists, and Runways, Cupolas, etc.—JOSEPH HIPKISS & Co., LTD., 848, Bristol Road, Selly Oak, Birmingham. Sel. 0485.

MISCELLANEOUS—*Contd.*

NICKEL BRONZE.—Approx. 3½ tons; Ni, 47.67; Cu, 29.13; Zn, 20.69; Fe, 1.69; Mn, 82; offers wanted.—M. PORRITT, LTD., Mayfield, Mirfield. Tel.: 3218.

WANTED.—Constant supply of Broken Plumbago Crucibles and Graphite Electrodes.—Full details to buyer, P. R. JACKSON & Co., LTD., Hampson Street, Manchester, 5.

IRON Foundry Capacity available for Castings up to 10 cwts.; both semi-jobbing and repetition; green and dry sand.—MANLOVE, ALLIOTT & COMPANY, LIMITED, Bloomsgrove Works, Nottingham.

MISCELLANEOUS.

August's Portable Core Stove; type C1
Ballard Oil-fired Core Stove; 6 ft. by 2 ft. 7 in. by 7 ft.
Ballard Gas fired Core Stove; 3 ft. 10 in. by 3 ft. 4 in. by 3 ft. 8 in.
Ballard Oil fired Stove; 2 ft. 6 in. by 2 ft. 2 in. by 5 ft. high.
Laboratory Elec. Vent. Oven; 2 ft. by 2 ft. 9 in. by 1 ft. 10 in. deep; driven by V rope from 1/50/230 volts Motor.
August's Borrman Core Blowing Machine; size 3A; 3/50/400 volts Motors.

S. C. BILSBY,
CROSSWELLS ROAD, LANGLEY, NEAR BIRMINGHAM.

MISCELLANEOUS—*Contd.*

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

IMMEDIATE capacity Aluminium and Non-Ferrous Castings; specialists in small precision castings and fancy brass-work; high class work at competitive prices.—BATH AND SMITH, Back Street, Smallthorne, Stoke-on-Trent.

THE PATTERN EQUIPMENT CO., Mount Avenue, Prospect Road, Leicester, have immediate capacity for all types of Wood and Metal Patterns; keenest quotations and delivery by return. 'Phone 23773.

STEEL MOULDING BOXES to customers' specifications; good deliveries.—GLENMOOR ENGINEERING CO., LTD., Eyres Avenue, Stanningley Road, Leeds, 12.

BEEHIVE FOUNDRY, 50, Hall Lane, Walsall Wood, Staffs. for Aluminium Castings up to 28 lbs.; try Aluminium Tub Boards; as cheap as oak and better in every respect.

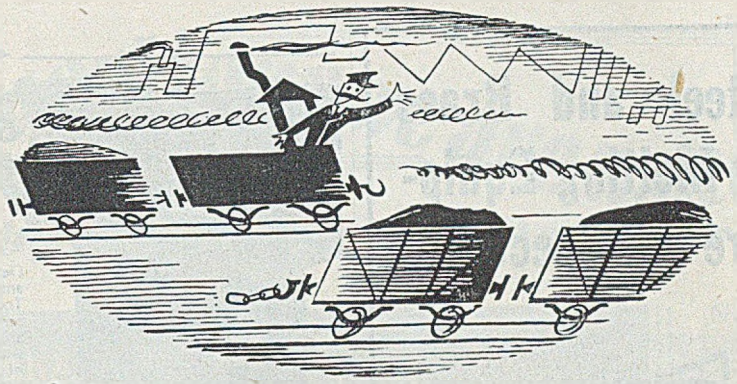
WANTED, in West Midlands, capacity for Small Malleable Castings; repetition work for export and priority.—Box 634, FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

PATTERNMAKING.—Immediate capacity available; high grade work.—ORWIN & SON, LTD., Park Road, Bounds Green, N.11. BOW 4648.

NON-FERROUS FOUNDRY, capacity available, including sand blasting; competition prices quoted.—ALBUTT, SON & JACKSON, Valve Makers and Brass Founders, Greenmont Works, Halifax.

IRON CASTINGS.—Capacity available for early deliveries of High Duty and Grey Iron Castings, by plate and machine moulding methods of production; pattern-making facilities available.—Box 620. FOUNDRY TRADE JOURNAL, 49, Wellington Street, London, W.C.2.

SEYMOUR'S "Castwell" Foundry, Litchurch Lane, Derby.—We specialise in Aluminium Castings; immediate capacity; proprietor, ex-Rolls-Royce employee. 'Phone 3234.



Keep 'em moving

and help solve the wagon problem

Over 20,000,000 tons of freight a month were moved by British railways during the last quarter of 1947. The November peak of 21,500,000 tons was the highest monthly total since the war, and was achieved with 40,000 fewer wagons than a year ago.

These figures reveal the magnificent efforts made by railway staffs, traders, and many enthusiastic volunteers in response to the Government's call for the speedier loading and discharging of wagons. If we can do as well in the next two months, we shall avert one of the gravest threats to the export drive.

But the danger remains. Although the gap is being closed, there are no wagons in reserve. Success can be assured only if all concerned—traffic managers, contractors, business executives, trade union officials, and the men actually handling the wagons—continue to clear every wagon speedily.

If wagons are expected at weekends, arrange for them to be loaded or discharged at once, and make similar arrangements for lorries. Remember, waste of road transport also involves waste of manpower and fuel. So whether you are concerned with wagons or lorries, keep them moving. This will avoid bottlenecks and keep down transport costs.

QUICKER TURNROUND

helps Britain deliver the goods

ISSUED BY THE MINISTRY OF TRANSPORT

Published by the Proprietors; INDUSTRIAL NEWSPAPERS, LIMITED, 49, Wellington Street, Strand, London, W.C.2, and Printed in Great Britain by HARRISON & SONS LTD., Printers to His Majesty The King, London Hayes (Middx. and High Wycombe

FOUN
EST. 1902
TRADE JOURNAL
WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

VOL. 84. No. 1642
Registered at the G.P.O. as a Newspaper
FEBRUARY 19, 1948
Offices: 49, Wellington Street, Strand, London, W.C.2
Single Copy, 6d. By Post, 8d. Annual Subscription, Home and Overseas, 21/- (Pre-paid)