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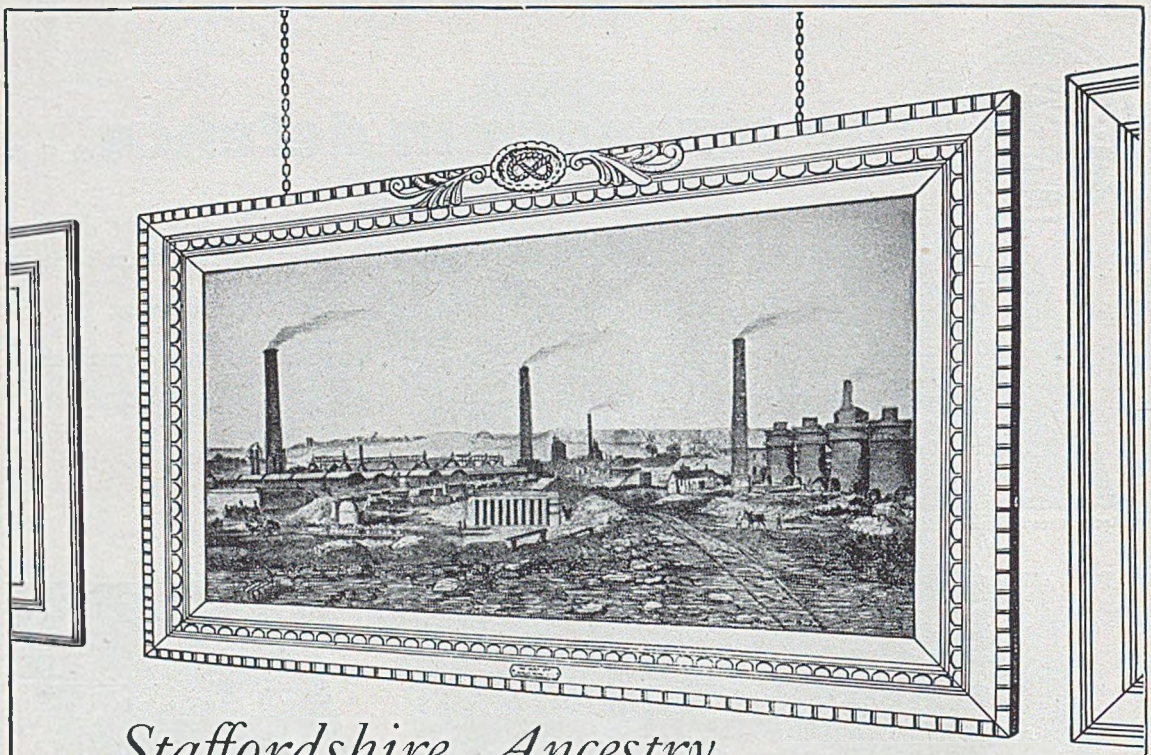

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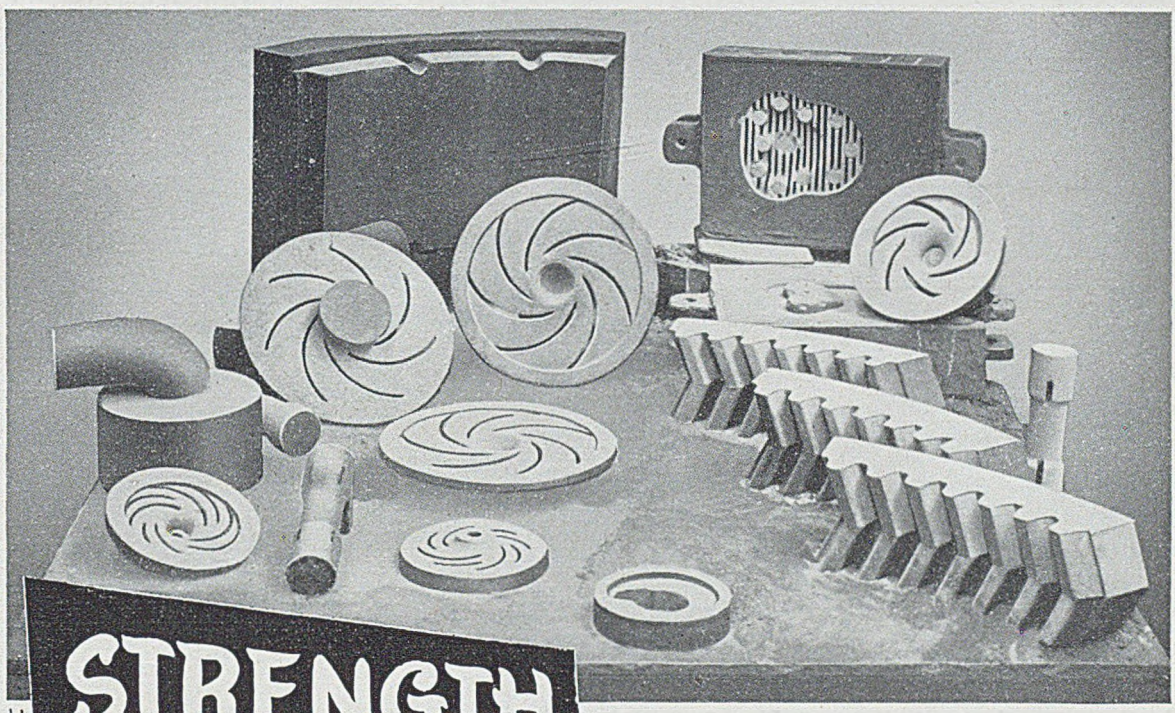

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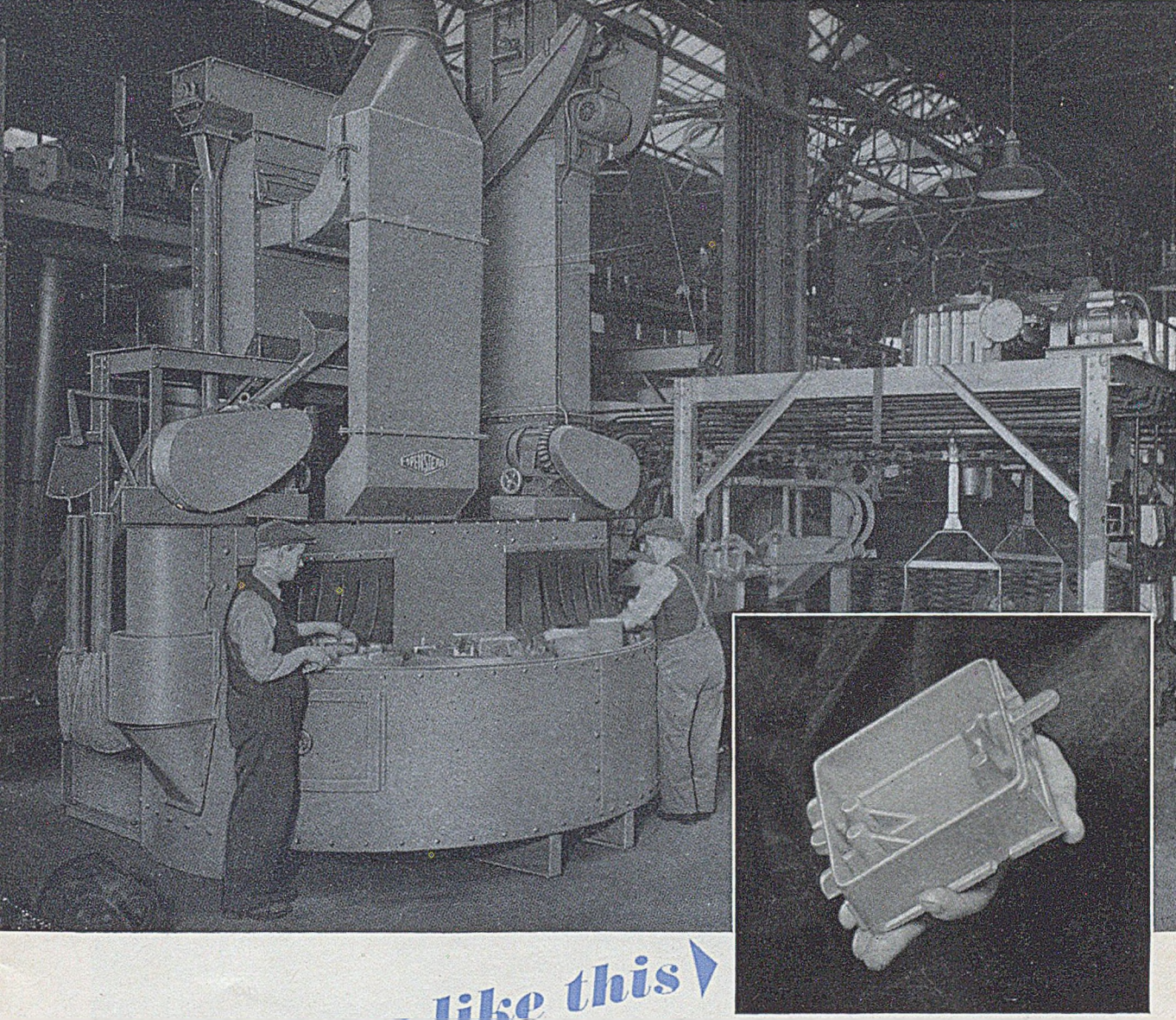

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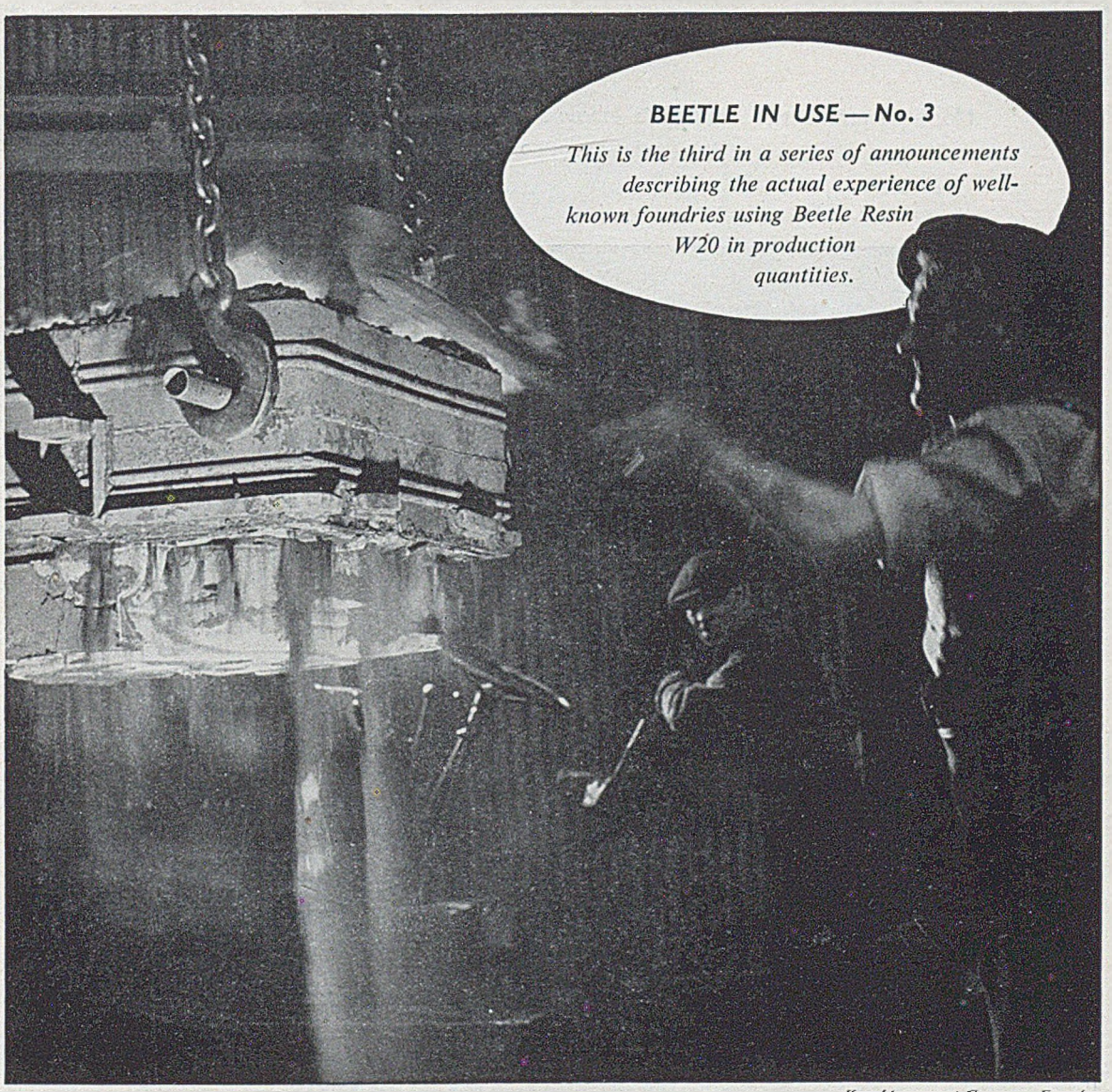

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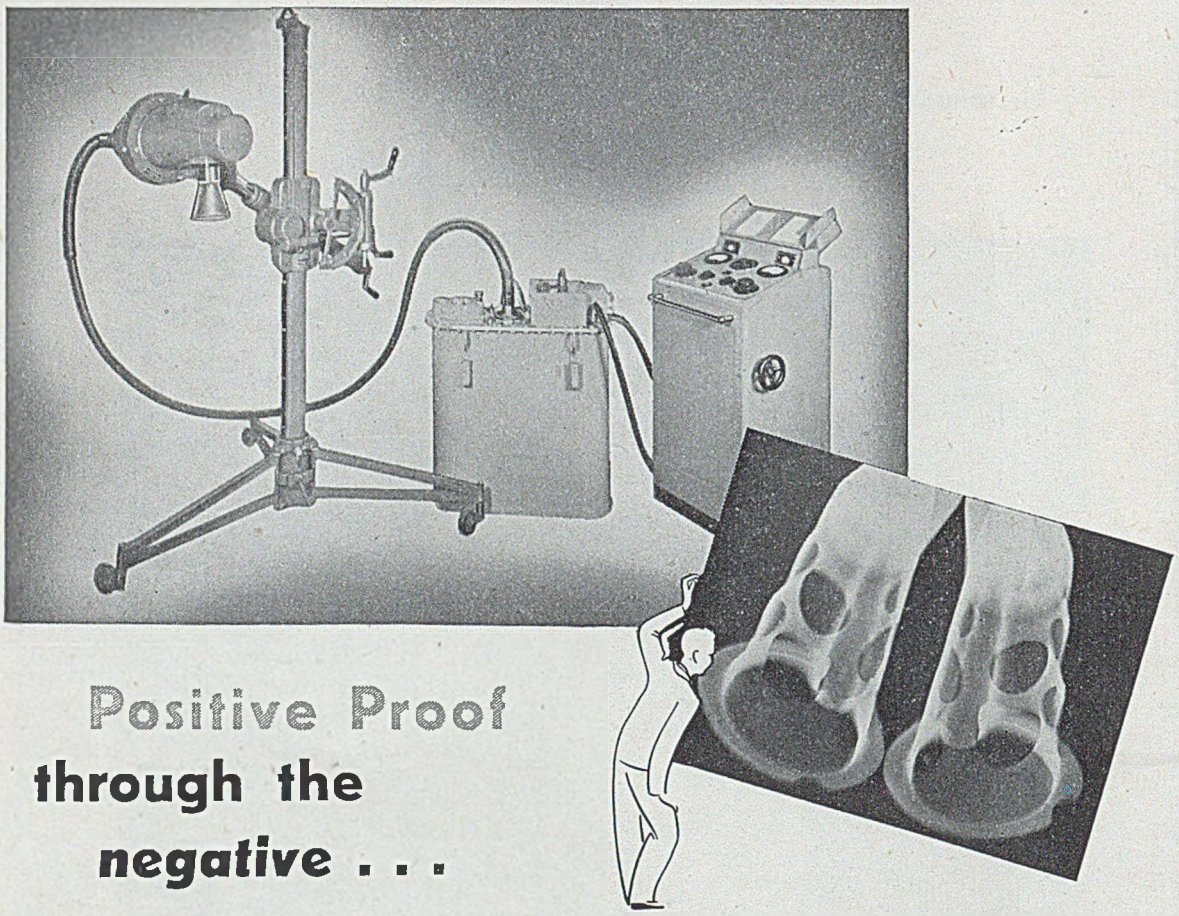

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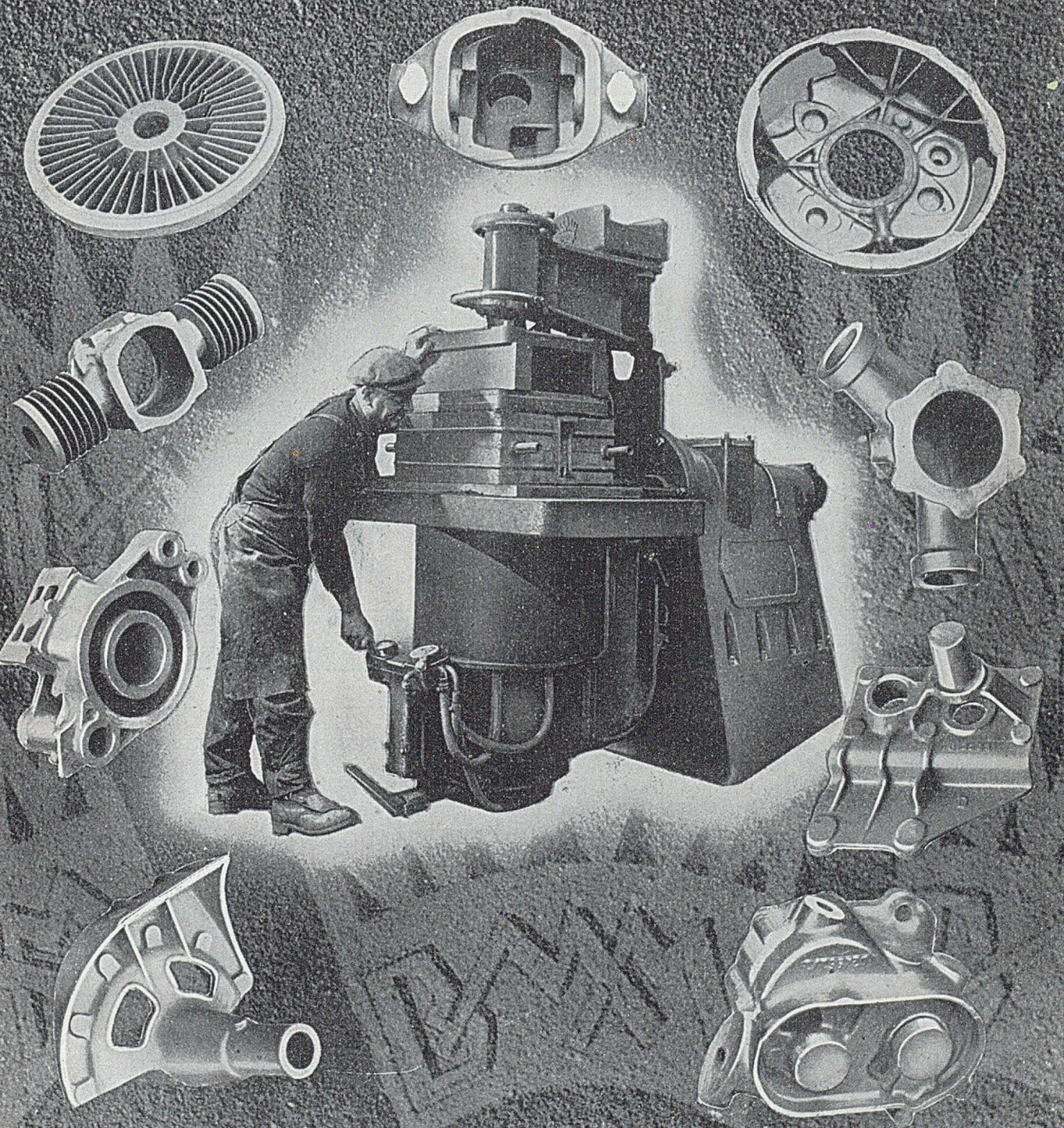

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CONTENTS

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

C.F.A. Annual Report

A study of this excellent and most enlightening report of the activities of the Council of Ironfoundry Associations makes one wonder how this important section of our industry conducted its co-operative business before the creation of the C.F.A. Of course, since the war, the Government, through its various controls has fettered trading activity so much that to do or undo or modify anything requires the backing of the whole industry. Never, in the short history of the C.F.A., will the need for statesmanlike (in the old-fashioned sense) guidance be more insistent than in the near future, —an age to be characterised as the battle for raw materials. From the report, it will be noted that the industry in 1950 has fared reasonably well, as it was permitted to spend £1,269,948 on buildings and equipment. Of this amount no less than £164,792 was for amenities. Since 1946, the foundry industry has made capital investments of nearly £11,000,000.

Naturally, the Report devotes a long paragraph to the report of the team of ironfounders which visited the States. This report we are told is not to "lie on the table" but is constantly before a committee charged with securing from it the maximum benefit to the industry. There is a most interesting review of the raw-material situation, which since the compilation of the Report has deteriorated and has, moreover, the appearance of getting out of hand. Market development, perhaps better described as co-operative publicity, is now to be undertaken, and £10,000 has been made available for this purpose. We, in common with our readers, are looking forward to its appearance. Participation in the foundry section of the Engineering & Marine Exhibition next September is announced.

The serious interest which the C.F.A. takes in educational matters is shown by the considerable help they have given to the National Foundry College and the National Foundry Craft Training Centre. Furthermore, the publication of film strips and wall charts has been warmly welcomed by the industry and teaching profession. In addition to this, the C.F.A. very handsomely supports both the British Cast Iron Research Association and the Institute of British Foundrymen. Other topics included are the very important questions of costing, conditions of sale and transport. Rightly included as an appendix are the statistics of the industry, and of those probably Table IV is the most interesting. Taking the moulder as a unit, foundries will be able to see whether their staff conform to or radically depart from the general pattern of the industry. This Report reaches all those concerns which are members of the bodies associated with the C.F.A., yet as it is a plain record of solid achievements it should be read by those concerns which for various reasons are still unaffiliated, and we suggest to them that they should apply for a copy to Crusader House. The joint work of the staff of the C.F.A. and the honorary officers has been of a really meritorious character and the ironfoundry industry should be grateful to them, especially those who give up so much of their time quite voluntarily for the general good of their fellow founders.

British Industries Fair

At the British Industries Fair, Engineering and Hardware Section, which opens at Castle Bromwich, near Birmingham, on Monday next, a number of foundry-equipment manufacturers and suppliers of foundry materials are exhibiting. For the convenience of readers who are planning visits to the Fair a list of these firms is printed below.

Allday, William, & Company, Limited, Stourport-on-Severn. D.505.

Blending Machine Company, Limited, Birmingham. C.605.

Boydell, E., & Company, Limited, Manchester. Outdoor 1301/1200.

Broom & Wade, Limited, High Wycombe, Bucks. Outdoor 1201/1100.

Bullows, Alfred, & Sons, Limited, Walsall, Staffs. D.743.

Electromagnets, Limited, Birmingham. C.605.

Flexible Drives (Gilmans), Limited, Smethwick, Staffs. D.506.

Fordath Engineering Company, Limited, West Bromwich. D.146.

Foundry Equipment, Limited, Leighton Buzzard, Beds. D.322.

Hawker Sanders, Limited, Kingston-on-Thames. D.721.

Hopkins, E. C., Limited, Birmingham. D.741.

Incandescent Group, Smethwick. B.309/208. C.727/628.

Kleen-e-ze Brush Company, Limited, Bristol. D.143.

Lister, R. A., & Company, Limited, Dursley, Glos. D.205.

MacDonald, John, & Company (Pneumatic Tools), Limited, Glasgow. D.133.

Monometer Manufacturing Company, Limited, London. D.731.

Morgan Crucible Company, Limited, London. D.305/204.

Morris, B. O., Limited, Coventry. D.423.

Pioneer Mixers, Limited, Monkseaton, Northumberland. Outdoor 1328.

Reed Crane & Hoist Company, Limited, Bristol. D.702.

Ward, Thos. W., Ltd., Sheffield. D.719 and Outdoor 1360.

Canning, W., & Company, Limited, Birmingham. D.211 and D.207/106.

Colin Stewart, Limited, Winsford, Cheshire. B.601.

Colin Stone Company, Limited, London. B.601.

Fullers' Earth Union, Limited, the, Redhill, Surrey. D.117.

Sankey, J. H., & Son, Limited, London. B.405.

Standard Brick & Sand Company, Limited, Redhill, Surrey. D.119.

Sternol, Limited, London. D.751.

Wright, Ernest N., Limited, Wolverhampton. D.511/408 and Outdoor 1333/1232.

The Fair remains open on weekdays until May 11, from 9.30 a.m. to 6 p.m. each day, except the last, when it closes at 4 p.m.

Dinner

SILICA AND MOULDING SANDS ASSOCIATION

The second annual dinner of the Silica and Moulding Sands Association was held on April 18 at the Savoy Hotel, London; Mr. Thomas Watson presided. Amongst those present were Mr. J. J. Sheehan, Mr. F. C. Arnold, Colonel C. E. Ponsonby, Mr. Frank Rowe, Mr. N. P. Newman, Mr. A. S. Lee, Mr. R. O. Warburg, Mr. H. Halliday, Mr. A. B. Lloyd, Mr. G. M. Menzies, Mr. J. W. Gardom, Mr. V. C. Faulkner, Mr. J. Jackson, Mr. P. A. Russell, Mr. R. B. Templeton, Mr. A. H. Catton, Mr. D. Rider and Mr. A. Carr. This successful function was organised by the secretary, Mr. C. K. Temperley.

MR. WM. W. MALONEY, the secretary-treasurer of the American Foundrymen's Society, accompanied by Mrs. Maloney, is paying a hurried visit to Europe. From May 5 to 11, they are to be in Paris, May 11 to 16, in Rome, May 17 to 20, in Zurich, May 21 to 24, Belgium and Holland, and May 24 to May 31, in London. After a short visit to Ireland they fly back to the United States on June 2.

More Management Scholarships

The Ministry of Education announced on April 19 that 40 more scholarships, for the study of management in the United States, are to be awarded in 1951. These are in addition to the 35 scholarships for the study of technology recently announced. Funds for these awards are to be provided by the American Economic Co-operation Administration, and the scheme is under the sponsorship of the Ministry of Education, the Scottish Education Department and the British Institute of Management.

The aim of the scheme is to enable suitable candidates to extend their knowledge and experience of management by spending nine months in America undergoing a period of organised study, together with plant experience. Successful candidates will normally spend approximately six months taking a special course of management subjects and techniques at selected universities or technological institutes, together with periods in industrial plants and in visits to professional, government and labour organisations.

The awards will be open to persons between the ages of 23 and 35, of adequate educational standard and with at least three years' industrial experience, who expect to occupy positions of responsibility in industry, or who propose to teach management subjects. Successful candidates will be expected to leave early in September, 1951, and applications must reach the Ministry of Education by May 15. Full details may be obtained from the Ministry of Education, Curzon Street, London, W.1.

Iron and Steel Productivity Team

An iron and steel productivity team, covering pig-iron and heavy steel, will be sailing on May 17 for a six-weeks' visit to the United States under the auspices of the Anglo-American Council on Productivity, with E.C.A. technical assistance. The team will study and report on the organisation and methods of the United States iron and steel industry. It will also consider the factors bearing on the comparative productivity of the U.K. and U.S. industries, and recommend whether and by what methods U.S. experience can with benefit be applied or adapted in this country. Much is already known here about the American industry, whose scale, raw materials and markets are, of course, very different from our own. It is, however, felt that a fuller interchange of information and a first-hand study of the relevant wide variations of practice and conditions to be found in the U.S. will be of benefit to development in this country. The leader of the team will be Sir Charles Goodeve, F.R.S., director of the British Iron and Steel Research Association, and the deputy leader Mr. S. Thomson, executive director of Colvilles, Limited, and general manager, Dalzell and Lanarkshire steel works.

Report of the D.S.I.R.

The Report of the Department of Scientific and Industrial Research for the year 1949-1950 is as usual mainly taken up with the work of the various research associations, which they aid financially, together with more than a dozen institutions organised directly by the Department. The subjects covered are extremely wide, but there is something for everybody. In the case of the foundry industry, there are reports of the work done by the British Cast Iron Research Association; the British Iron and Steel Research Association and the British Non-Ferrous Metals Research Association.

Foundry Management To-day

By J. Stott, B.Sc., A.M.I.Mech.E.

The Paper reviews some of the general tendencies of industrial management to-day and their impact on the ironfoundry industry. Management controls are discussed, and an example is given of a simple system of yield control; training for management is considered. The Paper concludes with some examples of inexpensive "good housekeeping."

Introduction

Size of the Ironfounding Industry.—Figures made available by the Ministry of Supply and kindly given to the Author by the Council of Ironfoundry Associations for the last quarter of 1948 are as follow:—

Year's production, of the order of 3,500,000 tons.
Number of non-clerical workers, 143,205
Average rate of production, 24 tons per man/year.
Number of irontoundries (free and "tied"), 1,856.

Size of the Foundry Unit.—At the end of 1948 the number of ironfoundries grouped according to the direct labour employed was as follows:—

No. of workers.	Iron foundries.
1-100	1,520
101-200	197
201-300	57
301-400	37
401-500	12
500+	33

From this table it is apparent that the typical foundry unit has less than 100 direct operatives. Details of the 1,520 ironfoundries in the 1 to 100 group are:—

No. of workers.	Iron foundries.
1-25	778
26-50	413
51-75	214
76-100	115

The typical unit is thus small. If one applies the figure of 24 tons per man-year to a foundry with 70 direct workers, an output of 1,680 tons per year arises. At an assumed selling price of £60 per ton, the turnover would be at the rate of £100,800 yearly.

Centralisation.—Advocates of centralisation can make good use of these figures in recommending means of amalgamating or increasing the size of the smaller units to give larger units with consequent cost reduction. This Paper does not consider the pros and cons of size increase as a way to greater efficiency and lower costs. Size is mentioned merely to illustrate the smallness of the average unit and to suggest that foundry management techniques must be designed to suit the typical small unit.

General Industrial Tendencies.—Current economic problems have affected industry strongly. It is rarely disputed that an increase in productivity, or production per man-hour, is the only sure way of increasing national wealth and economic stability. The increases in general productivity obtained in recent years in most industries are due to a number of causes, among them being:—Improved material utilisation; new and improved plant and machinery and handling methods; greater utilisation of unskilled labour; better planning to avoid lost time, and fair means of incentive payment to operatives.

Impact on the Foundry.—The spread of these general tendencies into the foundry has been slow. Certain highly-mechanised units are comparable in productivity and working conditions with the best to be found in other industries, but in general the small foundry unit lags behind. The extent of the lag has been shown by the recently-published report of the grey ironfounders' productivity team which visited the United States. Comparisons with the U.S. are often made that are on a debatable basis, but even allowing for slight differences in the method of compiling the data, the American figure of production per man-year of 46 tons is a challenge as compared with the domestic figure of 24 tons.

Work Measurement.—Modern management and operatives in many industries accept the principle of a "fair day's pay for a fair day's work." Co-operation and understanding of the necessity to both sides of increased prosperity arising from higher productivity has allowed the principle to be put into action. Job evaluation, a scientific analysis of the qualities and skills required for each job, gives practical expression to the "fair day's pay." Production study, using a stop-watch as one of its tools, measures work in the most accurate manner yet developed, fixes fair allowances for rest and establishes a method and an output which is the "fair day's work." On such accurately-made work measurements, a sound system of production planning, estimating, costing, and financial control can be established.

When the employees' organisations have realised that production study is a friend and that the days of the time-study man who set his values on the fastest time he recorded are over, the opportunity will come for the same great upswing in productivity and operative earnings observed in other industries following the introduction of production study and fair incentives.

The body of this Paper presents some of the main improvements in management technique that are possible without the full use of production study. They are techniques that will fall into place naturally when operatives and management are ready to accept production study.

Yield Control

If every pound of raw material that entered a cupola could be converted without loss into a finished casting, it is not difficult to imagine the magical drop in selling price that would result. The present costs of raw materials emphasise the need for obtaining

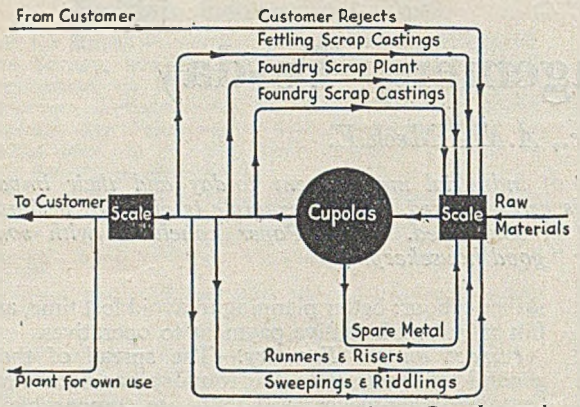

FIG. 1.—*Flow of Metal through a Cupola and Possible Routes of Rejection for Some of that Material.*

the maximum yield of good castings from the raw materials melted.

In a foundry melting 100 tons per week, a 1 per cent. increase in the weight of raw materials converted into saleable castings represents an increase in turnover of £60 per week, with consequent overhead reduction and profit increase.

Most foundries give much attention to "waster control," but this is only a part of the whole problem of material utilisation. Fig. 1 illustrates the flow of material through a cupola, and the possible routes of rejection for some of that material. It will be seen that the diagram shows all materials passing over weighbridges prior to leaving the foundry or being remelted. Accurate weighing and recording of all metal in transit is the first step in yield control. The weighing machines must be accurate. A stamped scrap casting may be used to check discrepancies between scales.

A daily report of all materials charged is required. A simple charge-board (as in Fig. 2) on which weights are recorded as materials are charged should be placed near the cupola scales. The daily totals are recorded on the rear of the charge-sheet seen on the right-hand side of the board. The completed charge-sheet thus serves three purposes: (*a*) An instruction to the furnace charger; (*b*) a record of actual charges, and (*c*) a basis for yield control.

Weekly or monthly summaries of the operating figures are made. Fig. 3 shows an example of a monthly yield report. It will be seen that all the production figures are shown as a percentage of the total melt. The "target" percentages may have been decided upon after a special campaign in which supervision concentrated upon getting the highest yield; they may have been selected from best pre-war conditions, or may be the foundry manager's estimate of what is an achievable maximum. The balance of "deficiency" represents what is usually known as "furnace loss," together with the loss of small pellets of iron which may not be reclaimed by final magnetic separation. The "deficiency" is not directly measurable but requires constant watchfulness to ensure it is kept to a minimum. Yield is shown as the percentage of usable product from a given total of raw materials melted. The establishment of a simple system of yield control as described will inform management regularly of the state of material utilisation, and will facilitate control and reduction of losses.

Production Standards

The best measure of productivity is production per man-hour. Comparisons of productivity from foundry to foundry are not easy because of differences in layout or in moulding methods, and of course the type of casting made. Management in any one foundry cannot operate efficiently without

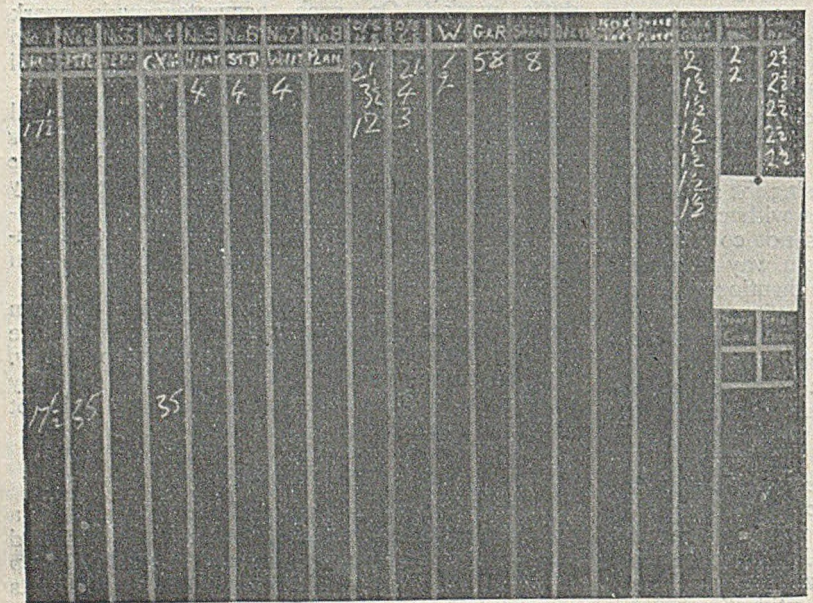

FIG. 2.—*Simple Charge Board, to be Placed Adjacent to the Cupola Scales, on which Weights are Recorded as Materials are Charged.*

MONTHLY REPORT

Year : 1950. Month : July. Number of Casts : 20

Material Balance

	Tons.	Per cent.	Target, per cent.
Total melt	100	100	—
Saleable castings ..	60	60	66.0
Wasters..	10	10	8.0
Spare metal	3.5	3.5	2.5
Runners and risers ..	17.5	17.5	16.0
Plant made	1	1	1.0
Balance deficiency ..	8	8	6.5

$$\text{Yield} = \frac{(\text{Good castings} + \text{Good plant}) \times 100 \text{ per cent.}}{\text{Total melt}}$$

$$= \frac{(60 + 1) \times 100}{100} = 61 \text{ per cent.}$$

FIG. 3.—*Monthly Yield Report showing the Actual Production as a Percentage of the Total Melt.*

setting up production standards. These will generally be in the form of times for each job. A daily "standard" output will be composed of the sum of a number of "standard" job-times plus a time allowance for pattern or equipment changes and an allowance for rest. Where production records show that standard output is not maintained, detailed investigation will often show surprising causes. Skilled moulders may be found to be doing actual productive work for less than 40 per cent. of their time in the foundry. Bad servicing, waiting for instructions, insufficient or inadequate equipment, improperly-prepared sand, or even the actual preparation of sand, may absorb the rest of their time.

Production standards should be set up as follows:—(1) Decide the best method of doing the job; (2) set down the correct method and instruct supervision and operatives in that method, and (3) decide a reasonable time for the average operative to perform the job and add an allowance for rest.

Comparison between actual and standard times will indicate divergencies worthy of investigation by management. A control of simple form should be established to show the total hours worked daily in each section of the foundry compared with the "standard" times of the jobs produced, and showing the reasons for the divergence. Detailed examination of this "lost time" might show recurrent causes which could be removed by improvements in plant, supervision, or servicing.

Production Control

Good deliveries and delivery promises that are fulfilled are essential to the successful management of a foundry to-day. Where production standards have been established, estimates and delivery promises can be given with confidence. The loading of machines and moulding floors can be planned ahead to give maximum labour and machine utilisation. Even in the smallest foundry a line or Gantt-chart type of production control will give much assistance to management at very little extra cost. Absenteeism is often said to nullify even the most elastic of planning systems. Experience of numerous production-control systems shows that even absenteeism should not prevent full planning of four days' work in each week, with the fifth day reserved for contingencies and those special jobs known as "managing director's specials." The modern foundry foreman's office is incomplete without a labour control board, such as is shown in Fig. 4. This enables "at a glance" appraisal of the daily labour and machines available. Variations of the working programme to suit changes in the labour available can be done quickly in the office without the need to walk around the foundry counting heads.

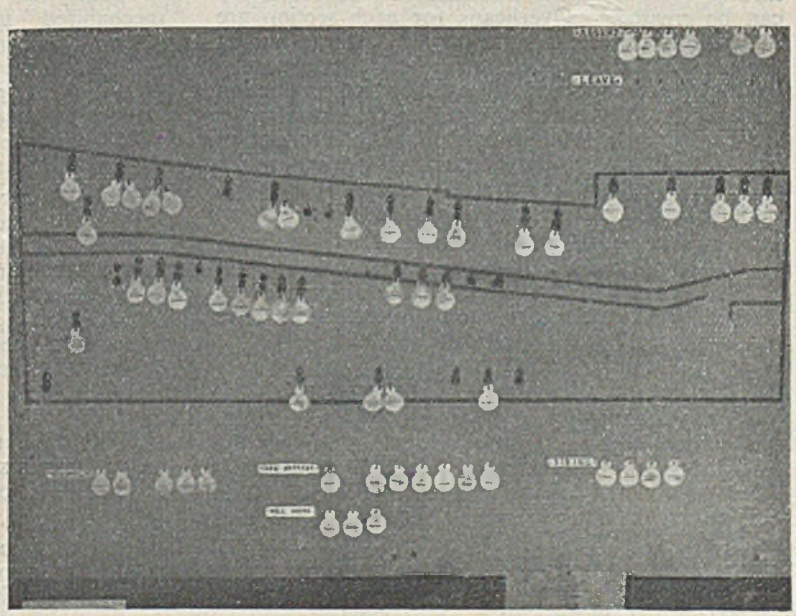

FIG. 4.—*Labour Control Board which Permits a Rapid Visual Appraisal of Labour and Machines Available.*

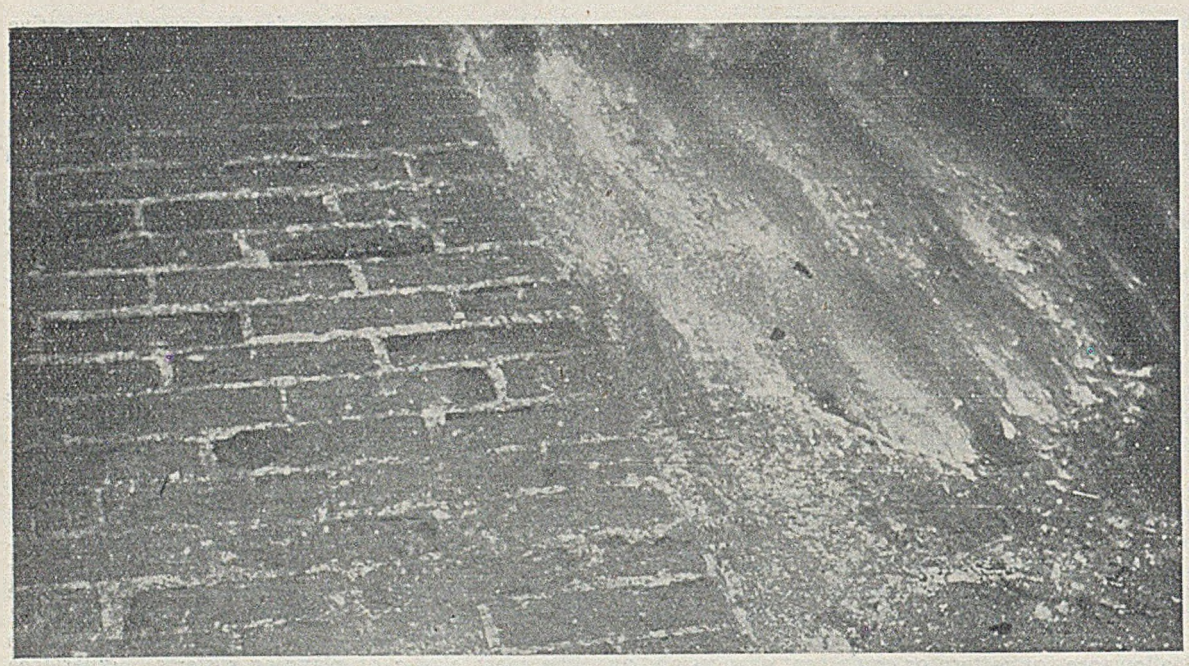

FIG. 5.—*Two Areas of Fettling-shop Floor Laid at about the Same Date, One of Hardened Concrete and One of Blue Bricks. The Concrete has worn about 2 in. below the Brickwork.*

Cost Control

Traditional methods of costing and accounting are largely inquests in that they present results and costs after they have occurred. These results are compared with those for a corresponding year or half-year. Managements which have adopted the system of production standards and controls previously outlined are able to make use of another tool—standard costs. Standards of production having been set-up, a standard cost for each job can be created. Overheads for each section are allocated against a standard output. Thus a budget for the output expected for each month can be drawn up and the standard costs for that production shown. At the end of the month the actual costs are compared with the standard. The production controls will have shown the causes of divergencies from standard, and, for each section of the foundry, the management can then ask and be told:—

(*a*) What did I plan to produce?
(*b*) What did I actually produce?
(*c*) What were the causes of the difference?
(*d*) What should my actual production have cost?
(*e*) What did it cost?
(*f*) What are the reasons for excess costs?

A very interesting and informative booklet on this subject was produced during the war by the Phosphor Bronze Company, Limited, and is entitled "Standard Costing and Cost Control." It is obtainable from the Association of Bronze and Brass Founders,* and should be read by all foundry managers wishing to keep abreast of modern methods. It is not a book for accountants—it is a book for the practical foundry manager.

* c/o the Secretaries, Heathcote and Coleman, 25, Bennetts Hill, Birmingham, 2.

Material Handling

Much has been written of the importance of correct material handling in the foundry. Comparisons with practice in the United States show staggering differences in methods and costs. Improvement in this country has tended to concentrate on the larger "mechanised" units. The older and smaller foundries do not seem to have benefited greatly by the new knowledge of the significance of correct material handling.

Without going into details of modern handling techniques, some illustrations have been prepared to show certain principles applicable to all foundries.

Floors.—Where materials have to be moved over foundry floors, a durable and smooth surface is required for reasons of ease of movement and of safety. Much argument is heard as to what type of floor is best. Experience in other industries has indicated that a good floor to resist abrasion due to heavy weights could be formed from engineers' blue bricks bedded into concrete. A trial in the fettling shop of a local foundry was made. Fig. 5 shows two areas laid about the same date. One is of hardened concrete, one of blue bricks. The difference in wear is such that the concrete is now 2 in. below the level of the brick.

Core Loading.—The ease with which one man can load a unit type core-oven is amply illustrated by Fig. 6. The time to load by hand the number of cores shown, should be estimated mentally and

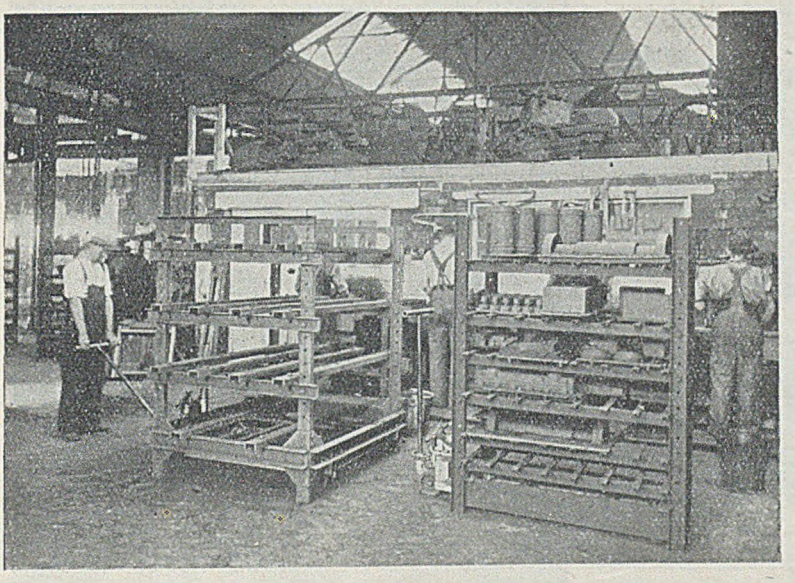

FIG. 6.—*Unit-type Core Oven loaded by One Man using a Jack-truck to lift and transport a Loaded Carrier.*

compared with the time to push the loaded carrier into the stove using a jack-truck.

Shot-blasting.—Fig. 7 shows an example of an early swing-table shot-blast plant. Castings are delivered by runway direct to the swing-table and, after blasting, are removed by the same runway. The blasting time is short, about 2 to 3 min. for an average load, but the time for loading and unloading by crane may be 5 min. for each operation. Machine utilisation is low, being controlled by the handling time.

Fig. 8 shows a logical development of the single-table machine previously illustrated. Two tables are employed and one is loaded whilst the other is carrying the castings being blasted in the chamber. Thus the total time of the cycle for a load of castings has been reduced. Part of the handling is done at a time (during blasting) when previously men stood idle waiting for the machine. This is a fundamental principle in increasing machine utilisation.

Management Training

It is notable that in the average foundry, senior posts above foreman are generally filled from other foundries. The advertisement columns of the FOUNDRY TRADE JOURNAL amply illustrate this point. Part of the desire to import executives is due to the difficulty of obtaining a person with broad experience from any but the larger general foundries. A fundamental reason is that management training within the foundry is generally so poor or non-existent that a competent practical foreman may

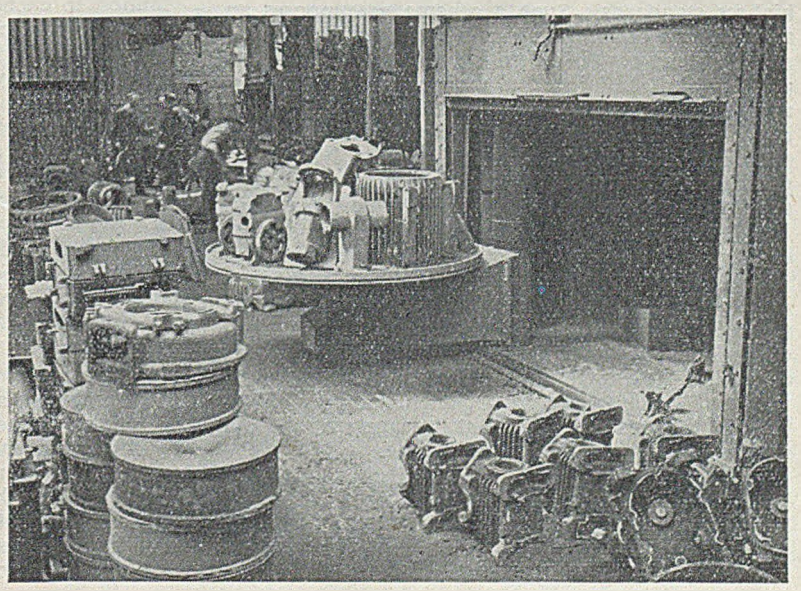

FIG. 7.—*Example of a Swing-table Shot-blast Plant. Machine Utilisation is Limited by the Handling Time.*

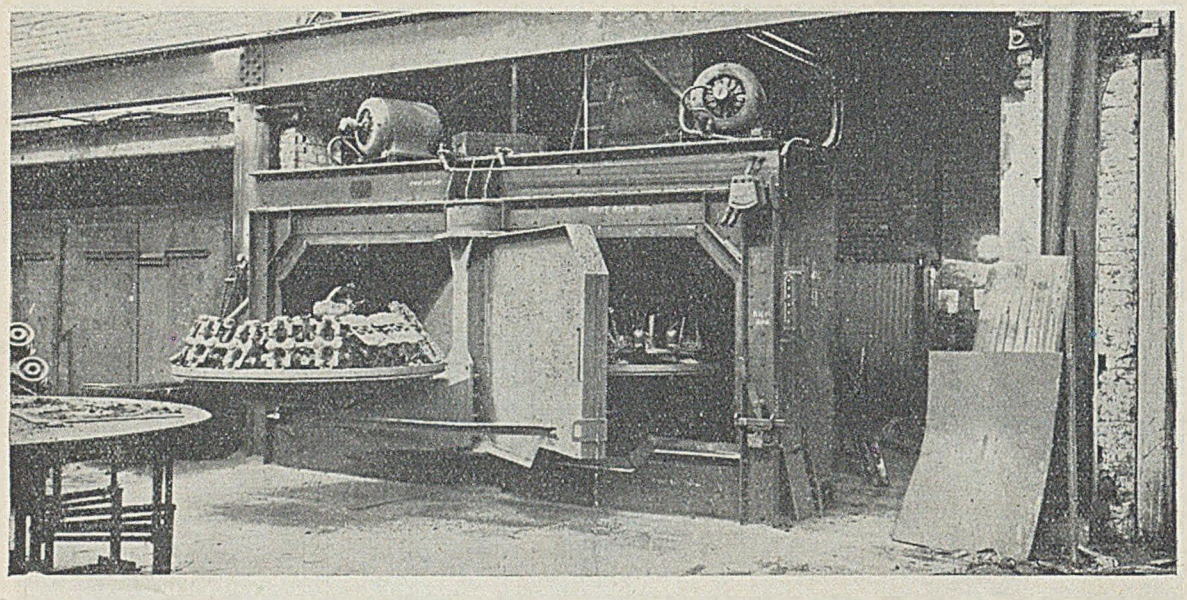

FIG. 8.—*Two-table Shot-blast Plant. Part of the Handling is done whilst the Machine is in Operation.*

grow up without any guidance to furnish him with the understanding of productivity and costs essential as a preliminary to promotion to senior posts. Larger and more far-sighted foundries provide a balanced technical and managerial training for their junior executives, producing men fitted for senior posts. In all but the smallest foundries, management should consider itself gravely at fault if among its younger foremen and charge-hands there is not one or more potential general manager. To bring in outsiders is detrimental because:—(1) It depresses the ambition of existing staff, and (2) it indicates a lack of proper staff training.

Modern management recognises the need for continuous training of operatives and staff up to the highest standards. Such a scheme presupposes an appreciation of the idea that the modern foundry is run by a team whose remuneration and status depend on skill, training, and responsibility. Management requires skill and responsibility of a high order, but it can be learned, as can other skills. The best candidate for management is one who has had a good practical training and has then been encouraged to study production and management methods. A valuable part of this training is discussion of production and costs with the trainees' own manager. Unless junior executives are given access to operating figures and performances in their own foundry, and are shown the financial effects of their own operations, they cannot fit themselves for eventual control of those operations. The day when an "iron curtain" lay between management and manufacturing functions has gone, but managers of the old school find this difficult to appreciate.

A general training policy in a foundry would be:

(1) An active training policy for apprentices, including part-time technical facilities, and visits to the Foundry Craft Training Centre.

(2) Early selection of craftsmen suitable for more advanced training.

(3) Selected potential supervisors to be encouraged to join and be active in the Institute of British Foundrymen and to pursue further education. Both technical and administrative courses in foremanship and production engineering, followed by industrial administration, are now available at most technical colleges.

(4) Training within the foundry to include periods in the wages, costing, sales, and production-planning departments.

(5) Visits to other industries and contact with foremen from other trades. The foundry industry does not stand alone and has much information to exchange.

The courses for foundry foremen organised by the Institute will form a useful part of the training of potential supervisors. The Lancashire branch of the Institute can take pride in two important developments in management training within its area:—(*a*) the post-graduate courses in foundry management organised by a member of the Institute and held at Salford Royal Technical College each winter; and (*b*) the two-week courses in foremanship and management held at Burton Manor Adult College near Chester. Foundry foremen or charge-hands attending these courses have profited greatly from free discussion with men of equivalent status in other trades.

Good Housekeeping

Management and employees' organisations in the foundry industry have a common object in improving standards of plant tidiness and safety summed up in the words "good housekeeping." The lead must come from management, but without full co-operation from operatives little improvement will result. In "housekeeping" the foundry in the past lagged behind

FIG. 9.—*Use of a Special Dispensing Gadget for Applying a "Barrier Cream" to the Hands. This should be done before Commencing Work.*

other industries. Improvement is still possible and co-operation between management and operatives may be fruitful in producing better relations generally as well as in improving housekeeping.

Good housekeeping is a common attitude towards factory tidiness and is not secured merely by the publication of a number of management edicts. A joint attack must be made first on the "personal" housekeeping of the factory. Amenities of a high order, well used, well maintained, and scrupulously tidy are the first steps to the inculcation of "tidy-mindedness" in employees. Full co-operation can be expected in this.

Foundry workers have dirty hands; the dirt is often ingrained beyond the power of soap and water to get it out. The use of a suitable "barrier cream" and dispensers as shown in Fig. 9 will allow manual workers to leave work with hands as clean as the office clerk. Fig. 9 is interesting because the woman chargehand using the dispenser is putting cream on already dirty hands. This was posed to illustrate something often forgotten in amenity and housekeeping schemes. It is that employees must be first educated in the correct use of facilities, and that management must then maintain such schemes as they would maintain a machine or process.

Some general examples of inexpensive good housekeeping are shown in the following illustrations:—

Fig. 10. When planning electrical distribution, a system of central bus-bars, group isolators, and feeders to distribution boards provides a safe, compact, clean, and easily-maintained service and applies to the power side of a foundry the same principles of tidiness as would be applied to gangways and working areas.

Fig. 11 shows an old method of storing high-speed grinders when not in use. Damage to machines and trailing cables is reduced by the simple storage method shown in Fig. 12. Available working space is increased and shop-tidiness improved.

Fig. 13 shows a simple spare-part store in a small foundry. It is made from old ammunition boxes,

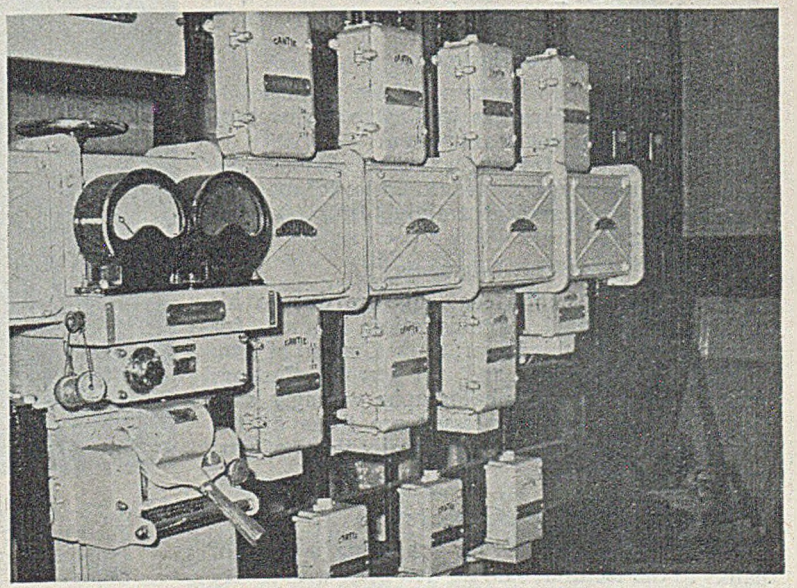

FIG. 10.—*Example of Centralised Electrical Distribution Switchgear and Controls.*

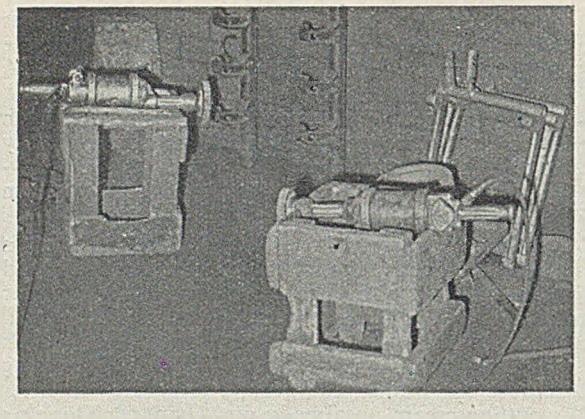

FIG. 11.—*Wooden Stools used in the Old Method of Storing High-speed Portable Grinders. Damage to Machines and Cable was of Frequent Occurrence.*

and brass letters, and has reduced the space required and made neater and easier the problem of storing spares, and finding them quickly.

Fig. 14 illustrates a simple method of storing pattern-plates in use in the foundry. The illustration shows the simple cast-plate and steel tie-rod method of construction which allows the same components to be made adaptable for plates of all common sizes. Compared with holding plates on the floor (as seen on the left) the plate carrier has the following advantages:—(1) Protection of patterns from damage; (2) Storage at working height thus reducing handling effort and time, and (3) reduction in storage area.

The earlier illustrations are typical of some of the simpler ways in which " good housekeeping " can be implemented. The last example is significant in showing some of the results to be expected from the application of sound " housekeeping " principles. The advantages of increased safety from better tidiness need no emphasis.

Conclusions

It may be useful to list some of the main points dealt with in this Paper as leading to higher productivity and efficient management:—

(*a*) Yield control; (*b*) production standards based on production study; (*c*) standard costs; (*d*) material handling; (*e*) management training, and (*f*) good housekeeping.

Acknowledgments

The Author's acknowledgments are due to his employers, Personnel Administration Limited, for permission to read this Paper; to the Council of Iron Foundry Associations, and to Ferrous Castings Limited, for data and photographs willingly supplied. Any opinions expressed are those of the Author personally and not necessarily those of past or present employers.

Vote of Thanks

MR. C. VAN DER BEN in proposing a vote of thanks to the lecturer, said he had dealt with a very broad field of knowledge and experience, and therefore perhaps had not been able to deal with as much detail as he might have desired. Nevertheless, the Paper contained many useful points which should prove to be of considerable value.

It was interesting to learn how many small foundries there were in the country, and their existence should certainly be borne in mind when endeavouring to determine an economic size, particularly in connection with the question of management efficiency.

MR. LAWSON seconded the vote of thanks, which was carried unanimously by acclamation.

MR. STOTT, in responding, said that without going into the matter in detail, there were various ways of looking at the size of a foundry. First of all, had it to serve an urgent local need for castings. Personally, he would say that a foundry within the range of 150 to 200 workers would provide the best size where first-class conditions could be obtained, from the point of view of really efficient management and the turning out of good work.

Then there was the problem of delegation of authority. Delegation should apply right down to the chargehand. Responsibility for every job should be delegated as nearly as possible down to the operative doing the job after due preparation and

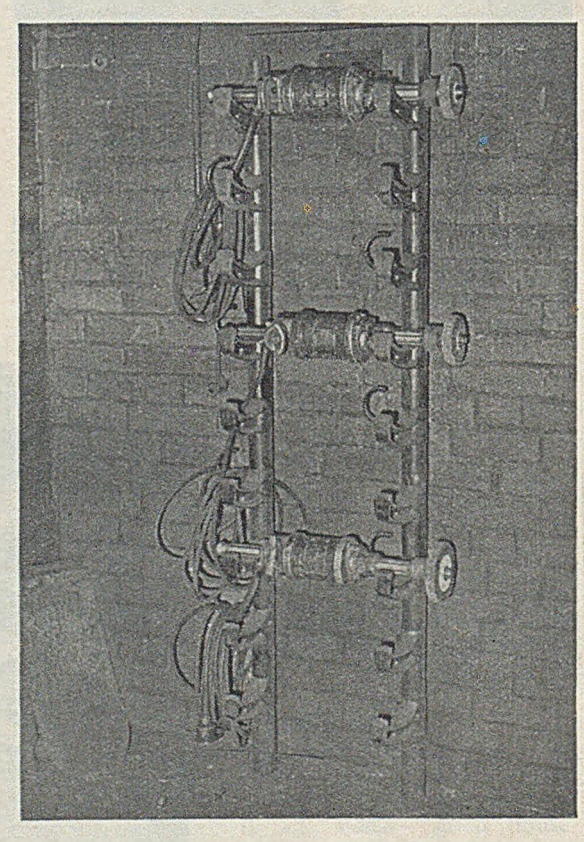

FIG. 12.—*Present-day Method of Storing High-speed Portable Grinders on Wall Brackets; Available Working Space in Increased and Shop-tidiness is Improved.*

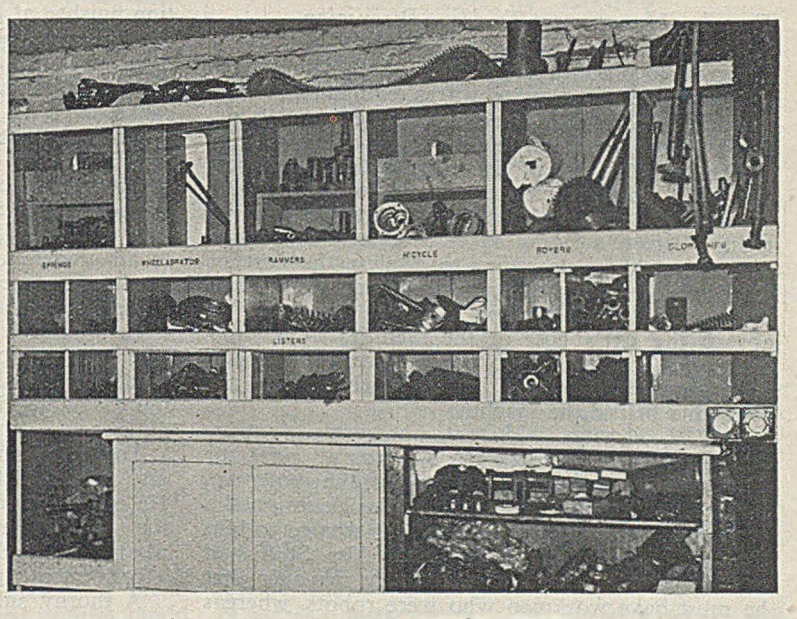

FIG. 13.—*Spare-part Stores of a Small Foundry constructed from Old Ammunition Boxes Labelled with Brass Letters.*

instruction. Promotions should not be based merely upon seniority and without pre-selection and training.

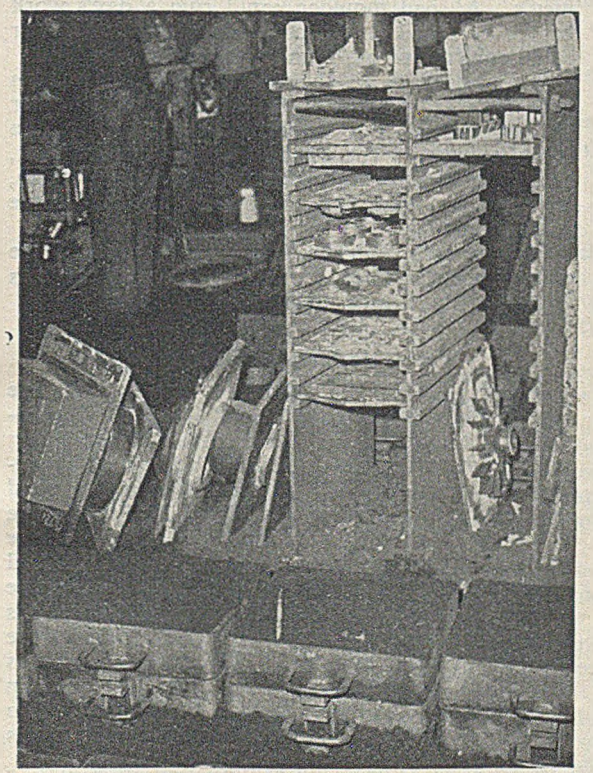

FIG. 14.—*Method of Storing Pattern-plates by the Cast-plate-and-tie-rod Method. Old Method of Storage on the Floor is shown on the Left-hand Side.*

DISCUSSION

MR. MILNER said the first point upon which he would like information was the chart which was shown in the office giving the details where the men were, whether a machine was working, and how many blank spaces there were. It was obvious that the information must be obtained each morning, and he would like to know who obtained it, and how soon the manager received it? He thought a manager could see those things for himself without adopting any complicated system.

With regard to a man being trained for management, Mr. Stott had not mentioned the National Foundry College. He, Mr. Milner, had received that training recently, and the possibility of obtaining it should be mentioned. It broadened a man's outlook besides fitting him for actual foundry work.

MR. STOTT thought that Mr. Milner had misunderstood the purpose of the labour chart. There was present the foundry manager who actually used it, and who could describe exactly how it worked. Perhaps Mr. Farren would deal with the point?

MR. FARREN said the men started work at 7.30, and he received the information at 7.45, and production changes were made by 8 a.m.

MR. STOTT remarked that although he had not mentioned the National Foundry College by name, he had really included it in his definition of a technical course. It was a foundry technical university, and he was quite well aware of the value of the course of education which was available there.

Rôle of the Small Foundry

MR. LAWTON thought it was an important fact that a small hand-moulding foundry might be established which was suitable for the purpose required by a local area for relatively small castings. In the course of time it might be considered

advisable to produce larger ones with a corresponding increase in employees, wages, equipment, maintenance, etc., and a decrease in direct labour. Fundamentally, this would be more important in determining the size of the foundry than the question of a manager or a couple of foremen.

MR. STOTT believed that Mr. Lawton was quite right. Before deciding upon a scheme of expansion it would be necessary to analyse the cost of the extra facilities and equipment required, and to decide the tonnage which must be produced to absorb the extra cost of the facilities at a sufficient level to make a job competitive. There was an output per machine below which it was not economic to use the machine.

MR. H. HAYNES said that, apparently, foundry managers must be supermen. It was all right for Mr. Stott to tell them his story about the superman, but was that superman going to make just as good a casting as the ordinary worker? It seemed to him that in order to carry out what Mr. Stott had explained with regard to a foundry manager that he must have workmen who were robots, whereas they must be able to think for themselves.

The foundry manager's job was to be on the floor and see that good castings were produced. Mention had been made of 24 tons per worker in this country and 46 tons per worked in America. Personally, he did not know how such figures were arrived at, but was it to be inferred that productivity in America was twice as much as in England?

Also, he did not know how Mr. Stott arrived at his figure of £60 a ton for castings. The price should be based on an individual cost.

Qualities for a Manager

MR. STOTT was well aware that Mr. Haynes possessed a vast amount of practical knowledge, for which they all respected him. He would reply to him in the following way. Human relations had not been dealt with because it was too big a subject. But there was no doubt in his mind that the happier foundries, also the most efficient moulders, would be found in an efficient, go-ahead concern where their efforts were well rewarded by good pay, where suggestions for improvements were accepted, and paid for. Where working conditions and amenities were good, then the workers took pride in their production.

The suggestions he had outlined did not produce robots; they produced a keener and a happier type of man. After all, nobody would care to go on as in the older days of moulding. There were many occasions when a man had to hang around for a long time awaiting instructions, or for materials or tackle. If a man was keen on productivity he would not like that. To produce robots was something no one would want to do, because a robot could not think.

His talk that afternoon had been designed for the purpose of making his audience think, and the work of training in the foundry should be to make the workers think also. Nowadays, school education finished at 15, and if the schools did not undertake the work of thought training, then the foundry manager must. Moreover, education did not stop at 21 yrs., it also went right through to the top ranks.

He knew that Mr. Haynes would agree with him when he stated that if he was not trying to make the people under him better workmen he would be a poor manager. Mr. Haynes had had a lifetime of training, and that training should be applied to all grades, and it should be with the object of producing somebody inside the works to take one's place rather than to go outside it for supervisors.

He wished it to be quite understood he was not stating that productivity in America was twice as much as it was in this country, but merely that the available figures indicated there was a large difference.

The price quoted at £60 per ton was merely to give an idea of the effect of a turnover in a foundry. He quite agreed with Mr. Haynes that a price per ton was not satisfactory. The price was so much per piece, and the £60 per ton was merely quoted as a convenient figure.

A thorny subject was the question of pay. It was common throughout industry to find that because of his better organisation the piece worker was earning much more than his supervisor. A supervisor's responsibility was greater than his men's. A bad moulder could ruin a day's work before he could be detected, but a bad supervisor could ruin the whole foundry output.

It was perhaps a debatable point, but it was his experience from being in the foundry and in other industries, that the opportunities given in the foundry industry for a man to rise from the floor, and raise himself to successful managerial status, were not anything like as good as those in some other industries.

The foundry industry must try to produce the man, who combined Mr. Haynes' practical bias with his, Mr. Stott's, theoretical opinions.

Profitable Good-housekeeping

MR. F. A. HARPER suggested that a good title for his Paper would have been "Good Housekeeping in the Foundry." The emphasis of the Paper was upon orderliness, tidiness and good-housekeeping, and, said Mr. Harper, knowing a good deal about foundries in the North of England he would say that such a foundry would be the one to make the money in the end. Mr. Stott had said there might be a saving of 1 per cent. of spare metal. He disagreed with him, because if there was 1 per cent. of spare metal it merely meant there were not enough moulds. The loss or gain was simply on the re-melt. If that 1 per cent. of scrap could be saved, there would be a worthwhile saving. It seemed to him the system to adopt was to keep down the scrap.

MR. STOTT said that as far as tidiness in the foundry was concerned, he ought to have stated himself that an orderly works was generally the one which was producing its products most efficiently, and paying its way.

The value of scrap and waste material increased the nearer it got to the sales end of the foundry. Therefore waster control, and the saving of wasters, was most economical, and quite rightly most foundries concentrated on this point. In the case of materials which had to be processed twice, the loss of material was practically nil, but the money loss would be high. If a ton of metal too much was melted in a day, then it had to be re-melted; the material was being processed twice and its cost was mounting.

Work Measurement

MR. STOTT, answering a question by Mr. Kirkham, said the modern type of work study involved the measurement of work by the stop-watch. It was not actually a timing device. Production study comprised a study of the methods and the motions with which the average operative could do the job, and still take a calculated amount of rest to recover from fatigue. The object was to measure the amount of work in a job, and having measured that amount of work, to express it in terms of time. Nowadays the employees' own representatives, nominated quite freely by them, did part of the actual timing, so that nothing could be fairer. Their results were accepted as reasonable by both the management and employers. The idea was to increase output, make the men happier and produce better products, and to raise the team spirit.

The stop-watch used in deciding how to measure a job was one of the tools by which the planning and costing departments could act.

MR. VAN DER BEN observed that a bright idea which lessened production time and production costs was worth a dozen stop-watches.

One-off Jobs

MR. LAWTON stated that in the case of a number of foundries, particularly in the Lancashire area, quite a number of people were engaged in fixing rates for one-off jobs. There was no possibility of timing such jobs.

MR. STOTT said that production study was only a means to an end, namely, of measuring work, not of rate-fixing. It was a means of finding out what was a reasonable output. The rate for the job was fixed by job evaluation. In quite a few foundries the output was fixed per day. A fair day's rate was decided for the job irrespective of the output.

MR. R. S. YEOMAN said it would not be practicable to have good housekeeping unless reasonable profits could be maintained.

MR. A. KIRKHAM said that a really good time engineer did not time a man, instead he speeded up the whole of the operative's productive capacity.

MR. STOTT, referring to businesses other than the foundry industry, said his experience was that if one went into the average factory in order to put in modern production-study methods and incentives, it was generally found that the useful output was about a figure which was termed 80,

(*Concluded at the foot of column two*)

and it was only rarely after reorganisation that the figure was below 130. The average productivity in non-incentive, non-study shops in this country, taken over all, might be assessed at about 80. He did not put forward this result as an advertisement, it was merely a statement of fact.

The PRESIDENT, in drawing the proceedings to a close, felt that the manager had to accept the methods outlined by Mr. Stott as his tools. He felt also that they were very useful tools in that they disclosed all sorts of inefficiencies which were not realised by just walking down the shop.

Shortage of Alloys

There is a grave shortage of nickel, tungsten and molybdenum, and consequently of alloy steels. A statement issued in the House of Commons by the Minister of Supply last Friday says that everything possible is being done to obtain greater supplies, but there is immediate need to make savings in the civil use of these metals to provide for the very heavy requirements of the re-armament programme, which of course must be met.

To make this possible in respect of nickel, certain other uses for nickel must be cut immediately. Nickel supplies have not fallen, but the heavy defence demand coming on top of a rising civilian demand has produced an acute shortage. As an emergency measure, as from May 1, the amount of nickel supplied for stainless-steel production will be cut to 70 per cent. and supplies of nickel anodes for plating to 50 per cent. both related to the 1950 level. These cuts will be followed by the prohibition of less-essential uses of nickel. The United States have already enforced prohibitions in this field.

Supplies of molybdenum, for which this country is entirely dependent on the United States, are far below the 1950 level, and there is a sharply-increased demand for the defence programme. If the re-armament demand has to be met in full from the current rate of supplies, there will be hardly anything left for civil production. Supplies of tungsten are also precarious. To supplement imports, the mining of tungsten ore is to be recommenced in Devonshire. There is little scope for prohibiting non-essential end-uses of either molybdenum or tungsten.

Technical committees of the iron and steel industry have been set up to examine urgently what economies can be made in the use of nickel, molybdenum and tungsten by way of modification of alloy-steel specifications. In this they will have the co-operation of the alloy-steel using industries. These committees will also be of great assistance in the examination of the specifications of alloy steels for the re-armament programme to find what further economies can safely be made there.

All these measures will have to be supplemented as soon as possible by closer control of the distribution of nickel, tungsten, molybdenum and the alloy steels. It must be stressed, however, that the only way in which the re-armament programme and the basic requirements of our civil economy can be met, including exports, is by obtaining increased supplies. The greatest importance is therefore attached to a favourable outcome of the international discussions on this subject. Even so, it must be envisaged that measures of economy and restrictions on the lines now to be enforced will be necessary for a considerable time.

Book Reviews

Addressbuch der Deutschen Giesserei-Industrie (Directory of the German Foundry Industry). Published by Giesserie Verlag G.M.B.H., 1, August Thyssen Strasse, Düsseldorf. Price 15 D.M.

This reliable directory covers the Western Section of Germany, a section of Europe remarkably rich in castings production. The book opens with details about the German technical institute—the *Verein Deutscher Giessereifachleute* (V.D.G.) and follows this with a somewhat lengthy and unusual list of foreign foundry associations. For this country, only the Institute of British Foundrymen is listed, but no fewer than eight are given for Italy and nine for the States.

For the commercial part of the directory symbols have been used much in the same way as are associated with the *Guide Michelin*. The country has been divided into its major sections starting with Baden and the foundries are then listed alphabetically. If one is not sure of the "county" then the next list gives all the towns geographically and the page numbers where they are to be found. Then comes an alphabetical list of the various types of foundry—iron, steel and so forth. An alphabetical list of products is then followed by advertisements for foundry plant and supplies and finally the products of these concerns, and where obtainable, are set out. This information is set out in four languages. We congratulate the publishers on having done—and done very well—a real service to the foundry industry of the world.

Kurs Odlew-nictwa. By K. Gierdziejewski. Published by Czytelnik, Spoldzielnia, Wydawniczo-Oswiatowa, Poland.

The reviewer's knowledge of Polish being confined to three words, he finds it difficult to review this 640-page book. However, he is sure of one thing, and that is it is worth a better binding than it has received. The Author is a well-known—probably the best known—foundry metallurgist in Poland, and a past-president of the International Committee of Foundry Technical Associations. One can, however, get an appreciation of the contents of the book from the illustrations and from these it seems to be a sound textbook for students. The bulk of the book is devoted to melting processes and of this no fewer than 100 pages are devoted to the cupola. During the perusal of the book, the reviewer has at least doubled his vocabulary, and one interesting discovery is that "piece" means "furnaces." The reviewer is confident that this 2nd edition of an earlier work will meet with approbation in its country of origin.

New Catalogue

Grinding Wheels. The Norton Grinding Wheel Company, Limited, of Welwyn Garden City, Herts, have just issued a new booklet, "Facts about Grinding Wheels." To be useful this type of booklet must of necessity contain much tabular matter. Now for pure dullness nothing can surpass the appearance of page after page of tables. Thus it is necessary to brighten up such trade literature, and in this case the complier decided to embellish his pages with outsize red type. This has been quite effective even if bordering on the garish. The data presented are extremely useful to users of grinding wheels, as every aspect is covered—selection, running speeds, and so forth. It is available to our readers on writing to Welwyn Garden City.

Film Reviews

"Sound Steel"

A 16 mm. Kodachrome film showing the manufacture of high-grade alloy steels by the electric arc process has been produced for Thos. Firth & John Brown, Limited, by the Brown-Firth Research Laboratories, Sheffield. Running for 27 minutes, the film lays emphasis on the constant care, works checks and laboratory control exercised. Casting of steel into ingot moulds, preparation of ingots for rolling and their testing for cleanliness in the works is well shown, as well as detailed examination in the laboratory prior to rolling into bars, and final heat-treatment and examination before despatch. The film covers production of solid and hollow forgings made from all sizes of acid open-hearth ingots, including those of over 200 tons in weight, under a 6,000 ton hydraulic press. A range of applications of these special steels as applied to road transport, power stations, railways, shipbuilding, mining and quarrying, textile, spinning and automatic machinery and the aircraft industry is described. Copies of this film are available, free of charge, to technical associations and responsible bodies, on application to Thos. Firth & John Brown, Limited, Atlas Works, Sheffield.

"Arc Welding"

The Quasi-Arc Company, Limited, Bilston, Staffordshire, have produced a new film "Arc Welding" having a running time of about 20 min. It is a 16 mm. film with sound and is printed in colour. It was produced in response to demands for an instructive film giving information on the arc-welding process for the wide number of engineering audiences who come in contact with welding but have no detailed knowledge of it. With the aid of animated diagrams it shows the way in which a weld is made and the principles to be followed to ensure that sound welds can always be produced. It also deals with the type of equipment used, how welding operators are trained, the method of manufacturing arc-welding electrodes to ensure consistency and reliability, and the testing of finished welds.

House Organ

Nickel Bulletin, Vol. 24, No. 1. Published by the Mond Nickel Company, Limited, Sunderland House, Curzon Street, London, W.1.

A useful feature of the January issue of the Nickel Bulletin is a four-page section giving authoritative and up-to-date data on the physical and mechanical properties of pure nickel. Tables show typical properties of the various commercial forms at room temperature and also show the effect of temperature. Diagrams illustrate how alloying additions affect the magnetic transformation temperature and show the effect of temperature on specific heat and on the modulus of elasticity.

The remaining pages contain some 40 abstracts of a number of important technical Papers published recently covering a wide field of interest. Among these are abstracts dealing with maintenance of the standard of nickel plating or with deposition of nickel powder. The use of nickel in coinage alloys and in electro-formed dies, as described in the Royal Mint report, the influence of heat-treatment on nodular cast iron, and the selection of cast heat-resisting alloys for specific applications are the subjects of other useful abstracts. Copies may be obtained on application to Sunderland House.

Foundry Trades in the Great Exhibition, 1851

The Festival of Britain, which officially begins next week, commemorates the centenary of the Great Exhibition of 1851. *If this year's displays are to depict life in the "current idiom", on the same basis the* 1851 *Exhibition could be said to express construction of that era in the cast-iron idiom. Not only was the Crystal Palace itself a masterpiece of cast-iron but many other displays featured cast iron in a manner perhaps never previously or since assembled together, as the following account shows.*

When, on May 1, 1851, Queen Victoria drove to Hyde Park to open the "Great Exhibition," the Royal party entered the imposing Crystal Palace through the Coalbrookdale Company's magnificent iron gates, which, when the Palace was transferred to Sydenham, remained in Hyde Park as a permanent memorial of one of the most memorable events of the nineteenth century.

What could be more appropriate than that the Exhibition should be approached by iron from one of the country's leading foundries, since the Crystal Palace itself was, in the words of "Punch," "a vast iron foundry, where millions of swords and pieces of ordnance were in course of being melted up in order to be turned into ploughshares and locomotives?" In its shining avenues, Britain's manufacturers exhibited iron in all its forms, from the saucepan to the sword-blade, from the candlestick to the cannon.

The Exhibition was, in fact, a symbolical representation of the new "Iron Age," and it was fitting that the Crystal Palace itself was a vast iron contraption roofed with glass. There could be no Crystal Palace until Britain's ironmasters had been called into consultation, and on their accuracy and good faith the entire Exhibition depended. It came into being because "the ironmaster passed his word to cast in due time 3,300 iron columns (varying from 14½ to 20 ft. in length), 34 miles of guttering tube, 2,224 girders (but some of these were of wrought iron), besides 1,128 bearers for supporting galleries." The total amount of iron used was about 4,500 tons (700 wrought, 3,800 cast).

This happy combination of iron and glass was erected in a miraculously short space of time, to astonish and fascinate over six million visitors as a modern wonder of the world. There are interesting contemporary accounts of the elaborate tests made when the cast-iron girders and wrought-iron trusses had been placed in position, finishing with an ingenious and exacting experiment suggested by Maudslay & Field. And when, on that memorable first of May a century ago, the Exhibition was opened amid scenes of glittering pageantry, Britain's "men of iron" occupied a place of honour in the grand inauguratory procession.

In the forefront marched Sir Joseph Paxton, the designer of the building, and with him Sir Charles Fox, the contractor. Fox was responsible for many of the mighty iron structures of his generation; and so were Isambard Kingdom Brunel, who came close behind him in the procession (among members of the building committee), and Samuel Morton Peto, a member of the finance committee. Further back were the two "special commissioners," one of whom was Dr. Lyon Playfair (later Lord Playfair), who was Professor of the School of Mines in Jermyn Street.

The "ordinary" commissioners included Robert Stephenson, builder of iron bridges and locomotives; and Sir William Cubitt ("our Cubitt," said the Queen proudly, her "Journal" recording that he "went round the machinery with us, explaining all so admirably and concisely").

In the avenues and galleries of the spacious building which this procession perambulated, the industry and wealth of Britain were displayed, with the products of her basic industries prominent. In the words of Thackeray's famous mock-Irish poem detailing the wonders of the Exhibition:—

"There's granite flints
That's quite imminse,
There's sacks of coal and fuels."

Not unnaturally, the more fragile and intrinsically more precious exhibits were conspicuous in the centre of the Exhibition, some of the objects that were purely utilitarian being placed discreetly *outside* the building, so that the Coalbrookdale iron gates were a kind of link between them. For example, the Koh-i-Noor diamond shone in secure seclusion in a place of honour, whereas visitors had to walk outside the west end of the building to see the "large masses of coal." "Punch" was quick to seize on the significance of the difference between the spectacular "mountain of light" and the unlovely blocks of coal outside, and to reverse the popular conception of their relative values. It was suggested that the "Black Diamond," not the "Koh-i-Noor," was the real "mountain of light," and there was an imaginary conversation between the "Coal Gnome" and the "Koh-i-Noor Gnome," in which each extolled its virtues.

Sections

The exhibits were divided into thirty classes, and "mining, metallurgical operations and mineral products" were, appropriately, in Class I; machines and mechanisms comprised Class V; manufacturing machines and tools, Class VI; philosophical instruments, Class X; cutlery and edge-tools, Class XXI; iron and general hardware, Class XXII; and mineral manufactures, Class XXVII. The highest award to successful exhibitors was the coveted gold (Council)

medal, which was so sparingly conferred that in many classes none at all was issued. It is interesting, however, to recall briefly some of those that were allotted.

In Class I, Council medals rewarded H. L. Pattinson's process of treating lead ores, Gutler's treatment of arsenical ores, Baron von Kleist's " iron of superior quality and manufacture," and Krupp's " cast steel of superior quality." There were awards in Class V for marine engines, a double turbine, Appold's centrifugal pump, the locomotives of Thomas Russell Crampton (a famous maker of boilers, and the inventor of a rotary dust-fuel furnace), and a " composite " award to Cockerill's, the famous Belgian iron foundry of British origin, whose exhibit included a tubular boiler.

The favoured exhibits in Class VI included Nasmyth's steam hammer, Fairbairn's riveting machine (which " revolutionised the manufacture of boilers "), the American David Dick's engineers' tools and anti-friction presses, B. Hick & Son's " mill gearing, radial drill, engineer's machine tools, improved mandrills, and portable forges," and the composite exhibits of Sharp Brothers & Company, and J. Whitworth & Company. Nasmyth's steam hammer was one of the " star " exhibits, although many visitors were disappointed because it was not seen " in action." The exhibit of the company of Sir Joseph Whitworth (the famous iron and metal manufacturer) comprised a large collection of engineers' machine tools of all kinds, screw stocks, standard gauges, and his machine for measuring " less than the 200,000th part of an inch."

Foundry Awards

The Coalbrookdale Company were deservedly recipients of a Council medal in Class XXII, but not, oddly enough, for the most spectacular of their contributions (which were undoubtedly the massive entrance gates, and their colossal ornamental ironwork dome), but for " cast-iron statues, a new method of bronzing steel grates, and diamond flooring for steam engines." The Royal Prussian Foundry was recognised in this group, and there were awards for iron fountains, iron doors, brass-foundry work, steel grates, castings in bronze, and zinc castings.

The sole Council medal in Class XXI went to Spear & Jackson, for a cast-steel circular saw. In Class X there was a medal for William Thomas Henley (owner of ironworks and collieries) for electricity and magnetism; and another for Count Dunin's expanding figure of a man in steel—which, since it was a " freak " exhibit, was adversely criticised in many quarters, despite the approval of the jurors.

It will be seen that many of the favoured exhibitors were from overseas—a reminder that practically every nation in the world was represented in the Exhibition. There were impressive displays of Belgian coal and iron, the products of Swiss metallurgy, iron from Saxony, the mineral and metallurgical products of Spain (especially from the mines of the Asturias), the iron ores of Italy, Sicily, and Holland, Norway's chrome-iron ores, and numerous specimens of Russian iron and copper (in ore, and manufactured). It is somewhat surprising to a modern generation to find an 1851 commentator observing that " even the finest varieties of English iron in sheets have not that uniformity of surface and evenness of texture which Russian sheet-iron possesses. We heard an ironmaster say that in comparison with English iron the Russian possessed the fineness, flexibility, and surface of india-rubber."

Other Foreign Machinery

There was Danish machinery, including a steam-whistle which also served as a water-gauge for steam boilers. But the outstanding Scandinavian contribution was that of Sweden, whose mines " were renowned for yielding the finest iron in the world." Austria was " a large contributor of every variety of metal manufacture," and it was pointed out that there were 142 steelworks in that country. Milan steel and lead pipes were much admired; Nassau " sent her iron ores in considerable variety, as well as manufactured iron "; and in the Zollverein Department (comprising the North German States) there were to be found the ores of those states, and the iron manufactured from them. There were steel weapons ranging from the Turkish scimitar and Spanish toledos to the beautiful blades of Damascus and the highly decorative arms of Indian chiefs.

The Queen noted the " splendid exhibits in iron " from Berlin, and another contemporary critic observed that the Prussian capital had " long been celebrated for its iron castings," although he hastened to add that " the gates of the Coalbrookdale Company, and of Cottam and Hallen, are evidence that we have the ability to produce castings of equal beauty to those of Berlin." Krupp's sent a block of crucible cast steel weighing 2¼ tons, which was " a larger mass of the metal than had ever been shown before, and was looked upon with no little astonishment."

French, American and Empire Exhibits

In the French Department there were examples of castings and other modes of production in iron, brass, bronze, and zinc, French metallurgy being unexpectedly impressive. A reminder that the viewers were contemplating 1851 and not 1951 was apparent in the following description: " The United States are yet young as a metal-producing country. Notwithstanding their extensive supplies of iron ore, most of the iron they employ, and all the steel, is imported from England." It is interesting, on the other hand, to recall that Canada's collection of economic minerals was regarded as the most complete and interesting in the Exhibition. Other Empire exhibits were Trinidad's magnetic iron, the rich iron sand of New Zealand and Tasmania, copper figures from Ashanti, lead ore, iron and graphite from South Africa, and the " wootz steel " of India. There was copper from Canada and Australia, and tin from the Indian archipelago

Processes and Novelties

A fascinating feature was a collection by Mr. Blackwell, of Dudley, comprising all the iron ores of the United Kingdom; and there were the "novelties in iron manufacture" of Mr. Morries Stirling, including his patented method of mixing together malleable and cast iron. The "Swansea Committee" illustrated the process of copper-smelting; and a display by the Ebbw Vale Company included a model of their blast furnaces. In Class XXII the Low Moor Works exhibited bar iron; and there was the Staffordshire iron of Bird & Company, and the products of the Scottish iron and coal fields presented by the Monkland Iron & Steel Company.

Among numerous other exhibits of various kinds were Captain Ibbetson's castings in brass, Parr & Company's machine for drilling holes in metal, Shepherd's self-acting lathe and screw-cutting apparatus, Hornsby's portable steam engine and threshing machine, filters of various types, coining presses, iron ploughs, wheel-turning lathes, iron railroad bars, railway plant of every variety, cast-iron fountains, cast-iron balustrades, specimens of cast-iron permanent way, pumps of all kinds, ornamental iron-work of every description (including elaborate stoves and grates), and "the largest example of bar-iron ever rolled."

Henry Bessemer (who had not yet made the discovery that perpetuated his name) was represented in the Exhibition; and that famous metallurgist (Sir) William Siemens obtained a prize for his "chronometric governor" for steam engines. William Brunton (who erected copper-smelting furnaces and rolling mills in Wales, whose calciner was used in mines from Cornwall to Mexico, and who produced a "steam horse" for use in collieries, and improved colliery ventilation), exhibited models of his various inventions.

The Queen paid many visits to the Exhibition, and in mid-May her "Journal" records:—"We went through the sections of raw materials beautifully arranged: minerals, ore in all shapes, coal, copper, etc." Two days previously she had made "a very detailed inspection of the Sheffield ware, beginning with a model of the process by which steel is made from iron." This is a reminder that in 1851 Britain recognised that the conversion of iron into steel was the principal manufacture of Sheffield, and the "several processes of cementation, blistering, shearing, casting, tilting, and tempering," were illustrated by specimens in the Exhibition. The Turton concern contributed a "monster steel ingot" weighing 24 cwt.—and a steel piston-rod weighing 16 cwt. was exhibited by Johnson, Cammell & Company, of the Cyclops Works.

Heavy Machinery

A final glance may be paid to the "Machinery Section," wherein were displayed such marvels as the "Great Hydraulic Press," manufactured by the Bank Quay Foundry Company, which had recently shown its value by raising the tubes of the Britannia Bridge across the Menai Strait. Nearly opposite there were working models of Armstrong's hydraulic hoisting machinery, and Henderson's patent derrick crane; and on every side "thousands of little machines which well deserved the epithet of beautiful, were hard at work, and ingeniously occupied in the manufacture of all sorts of useful articles."

The most active of all exhibits was, however, concealed outside the building in a boiler-house, for here was installed a steam engine, of upwards of a 100-h.p., which provided the motive power of the "machinery in motion," occupying the north-western part of the Palace. It seemed a touch of irony that the engine which supplied the power, and the coal on which engine and machinery depended, were relegated to the exterior of the Crystal Palace, and were thereby, in effect, excluded from the Exhibition of which they were the motive force.

British Standards Exhibition

This year the British Standards movement attains its Golden Jubilee, and as a part of the celebrations an exhibition supported by practically the whole range of British industry will be held at the Science Museum, South Kensington, during the two weeks beginning June 18, 1951. As Britain was the first country to put industrial standardisation on an organised basis nationally through the British Standards Institution, it is fitting that the first exhibition devoted to this subject should be staged in London—and during the national festival year.

The benefits derived from standards, standardisation and simplification will be graphically presented, and each industry will show how standards have simplified production, reduced costs and maintained quality, and how in turn they have benefited the users of that industry's products. The exhibition will also show how research at one end of the production chain and quality control at the other are linked with and helped by standardisation. Other special features will include apparatus used in testing for compliance with British Standards.

The exhibition will be opened at 11.30 a.m. on June 18 by the President of the Board of Trade. Admission will be free, and opening hours will be 10 a.m. to 7 p.m. each day (except Sunday) from June 18 to 28, inclusive.

Midland Foundries' Pension Scheme

A non-contributory pensions fund is to be set up by the Dudley Foundry Company, Limited, (Brierley Hill) and its subsidiary companies, Thomas Adshead & Sons, (Dudley), and Metal Laundries, Limited, (Dudley and Bury).

Making this announcement last week, Mr. W. E. Harper, managing director, said the cost of it would be borne by the companies, and all employees would be entitled to benefit.

The benefits would be: On retirement at 65 or later to employees with ten or more continuous years' service, a pension of 1s. per week for each year of service up to a maximum of 40s. per week. To those who defer retirement until after 65 the rates will be slightly higher.

Dependants of a man dying while in the service of the companies will be paid a lump sum of £75 if he has been with the company for not less than five consecutive years, or £150 for not less than ten years' service.

The scheme will be administered by three trustees, one of whom will be chosen by the employees who number about 500.

Personal

MR. J. S. ELLIOTT, principal of Gateshead Technical College, is to be president of the north-eastern section of the Institution of Production Engineers for 1952.

DR. R. S. EDWARDS has been reappointed chairman of the Council of Industrial Design by the President of the Board of Trade. MR. A. N. SILVER has been appointed a member of the council.

MR. HORACE WILSON, managing director of William Hamilton & Company, Limited, shipbuilders, of Port-Glasgow, has been elected president of Greenock Chamber of Commerce for the ensuing year.

MR. ARTHUR DEAN, chief officer engineering (works), Railway Executive headquarters, who has been appointed civil engineer, North-Eastern Region, York, began his career with Samuel Butler & Company, Limited, structural engineers, of Stanningley, near Leeds.

SIR HAROLD SPENCER JONES, the Astronomer Royal, has been appointed chairman of the National College of Horology and Instrument Technology by the Minister of Education in place of the late Sir Allan Gordon Smith. Sir Harold is succeeded as vice-chairman by MR. D. W. BARRETT, chairman of the British Clock and Watch Manufacturers' Association.

MR. A. C. HARTLEY has been elected president of the Institution of Mechanical Engineers. Mr. Hartley was chief engineer of the Anglo-Iranian Oil Company, Limited, until the end of last year, when he relinquished the post to become consultant to the company. From April, 1942, he was engaged with the petroleum division of the Ministry of Fuel and Power on the invention, development, production, and laying of the "Pluto" cross-Channel pipelines.

SIR ERNEST OPPENHEIMER is to relinquish his directorships of several companies, including the African Metals Corporation, Limited, and the Vanderbijl Engineering Corporation, in pursuance of his desire to restrict his business activities, which include the chairmanship of Anglo-American Corporation of South Africa, De Beers Consolidated Mines, and other financial and copper-producing companies in Northern Rhodesia. Earlier in the year he resigned from the boards of several goldmining and other companies.

MR. FRANK LONSDALE, general manager of Fraser & Chalmers Engineering Works, Erith, has resigned owing to ill-health. Joining the company in 1909, Mr. Lonsdale subsequently became manager of the turbine contracts department and drawing office. In 1918, when the firm was absorbed by the General Electric Company, Limited, he became sales manager, and was appointed general manager in 1938. A director of the General Electric Company, Limited, since 1946, he will remain a member of the board and continue to act in an advisory capacity at Erith.

Cargo Fleet Cut Production Again

The Cargo Fleet Iron Company, Limited, Middlesbrough, which last month had to cut the number of shifts worked at its mills and furnaces owing to the shortage of raw materials, announces that from April 28 the light section and bar mill at present working on the two-shift system will be reduced to one shift per day. The board states that the extra ingot tonnage thus released will be transferred to the heavy mill, which has urgent orders in hand for rearmament purposes, and is at present not running at maximum capacity owing to the ingot shortage.

Obituary

MR. FRED BLAKEY, a former chief metallurgist with B.S.A. Tools, Limited, Birmingham, died on April 13.

MR. WILFRED SHELDON, a New York director of Imperial Chemical Industries, Limited, for the past 11 years, died at the age of 58.

MR. RAYNAR DE HELE ST. STEPHENS, a director of the Climax Rock Drill & Engineering Works, Limited, Carn Brea (Cornwall), died recently.

THE DEATH OCCURRED on April 15 of Mr. George Bateson, of Haley Fax, Wood View Road, Oakworth, Keighley, at the age of 55. For many years Mr. Bateson was chief engineer for George Hattersley & Sons, Limited, engineers and ironfounders, of Keighley.

Wills

DICKSON, ROBERT, chairman of the Lion Foundry Company, Limited, Kirkintilloch £9,976

NEILL, WILLIAM, late of Glasgow, a retired delegate director of Cassel Cyanide Company, Limited, a subsidiary of I.C.I. £37,129

HOLBROW, C. A., of Darlington, formerly outside representative on the north-east coast for C. A. Parsons & Company, Limited, Newcastle-upon-Tyne £1,059

HART, MAJOR OWEN, a director and chairman of Derbyshire Stone, Limited, and a director of other companies engaged in stone quarrying and road-making £20,448

BROWN, D. S., late a director of Parsons Marine Steam Turbine Company, Limited, Wallsend, and a vice-president of the North East Coast Institution of Engineers and Shipbuilders £22,204

COBB, PROF. J. W., Emeritus Professor of Leeds University, and formerly Livesey Professor of Coal, Gas and Fuel Industries at that university, an authority and pioneer of fuel research £35,581

GRIFFIN, BRIG. A. W., a director of Jack Olding & Company, Limited, manufacturers of earth-moving equipment, etc., of Hatfield (Herts), and Myers, Griffin & Company, engineers' merchants, of Leeds £17,042

Schuman Plan Signed

With the signing of the Schuman treaty in Paris on April 18 a steel and coal pool for 160,000,000 Europeans was virtually created for 50 years. Under the treaty, which still has to be ratified by the parliaments of the countries concerned, provision is made for a European Coal and Steel Community, with, eventually, a common market, the pooling of resources, and no customs barriers.

Although it is expected that some difficulty may be created by certain industrialists and trade unionists over the ratification, the signing of the treaty indicates that agreement has at last been reached on certain major differences between the countries taking part—France, Germany, Holland, Italy, Belgium, and Luxemburg. Views on the composition of the High Authority and the voting of the Ministers' Committee, which controls that authority, had been divided.

The High Authority will have nine members, of which eight will be appointed by the governments of the countries concerned, through the Ministers' Committee, regardless of nationality, and one co-opted. The suggestion of Count Sforza, the Italian Foreign Minister, on the method of voting in the committee, was accepted. This arrangement, in effect, gives Germany and France the power of veto, where they are agreed, and favours Germany where they are not agreed and the voting is equal.

The common assembly will have 78 members: 18 each from France, Germany, and Belgium, 10 each from Holland and Italy and four from Luxemburg. Members will be elected by direct suffrage or through their parliaments.

Institute of British Foundrymen

Lancashire Branch Annual General Meeting

The annual general meeting of the Lancashire branch of the Institute of British Foundrymen was held at the Engineers' Club, Manchester, on Saturday, April 7, Mr. D. Fleming, the branch president, in the chair.

The members stood in silent tribute to the memory of their late colleague, Mr. Roy Stubbs, a past-president of the Institute and a past-president of the Lancashire branch.

After the adoption of the minutes of the previous annual general meeting, the financial statement for the year was presented and approved.

Secretary's Report

The honorary secretary (Mr. R. Yeoman), in his Report stated that the increase in membership and the progressive policy of its officers continued to be well maintained. Each branch president conducted and promoted the business of the branch in his own characteristic way and, without reflection upon his predecessors, everyone must have appreciated the real sincerity with which Mr. D. Fleming had conducted the branch affairs.

Six branch meetings had been held, all well attended, the average attendance being 85 to 90.

The lecturers were Mr. A. Kirkham, Mr. W. J. Driscoll, Mr. G. W. Fearfield, Mr. J. Stott, Jr., Mr. T. Freeman (president of the Burnley Section), Mr. D. Redfern, and Mr. F. Hudson, leader of the Non-Ferrous Productivity Team which recently toured America.

It was a pleasure to report the active propaganda work undertaken during the year. A special meeting was held in St. Helens on November 20, 1950, at the Gas Showrooms, when a large attendance listened to Mr. A. Kirkham, when he presented a Paper on American foundry practice. An animated discussion followed, and the meeting was most encouraging to the organisers. A further meeting has been arranged at which Mr. E. Longden would speak upon cupola practice.

In October a works visit was paid to the well-known foundries of John Hall & Sons (Oldham) Limited, when the members were courteously received and conducted on an interesting tour of the company's works. The thanks of the branch were due to the directors of the company for their kind permission to make the visit and for their hospitality.

In December, Mr. D. Fleming, the branch president, invited members and friends to attend a President's Day at his company's works, Dobson & Barlow Limited, Bolton. Those participating were cordially received and entertained. In the morning, Mr. Heyes, foundry manager, gave a talk on foundry mechanisation, and in the afternoon a tour of the works was made. The event was a compliment to the branch president by his directors, to whom the members were indeed grateful.

The Burnley section was encountering some difficulty, and the thanks of the members were due to Mr. T. Freeman for continuing in office for a second year as president. It was hoped that the younger men joining would co-operate with the veterans of the section and produce a team which would soon re-establish the strength of the section.

The section had also held a special meeting in the canteen of the British Northrop Loom Company, Blackburn, for recruitment purposes.

Social Events

Following the opening meeting in October, a dinner and smoking concert was held in the Engineers' Club, and the national president honoured the branch by his presence. In February of this year, the annual dinner and dance was held at the Grand Hotel, Manchester, when 174 members, friends and ladies assembled and participated in one of the most successful social events organised by the Lancashire branch. Mr. Colin Gresty and Dr. Dadswell deputised for the president and contributed much to the success of the evening. A presentation was made to Mrs. Fleming by Mr. T. Freeman, president of the Burnley section, on behalf of the branch in appreciation of her husband's year of office. Congratulations were also extended to Mr. R. L. Handley who, at the Annual Conference, was elected to the general council, where he joins Mr. E. Longden, as Lancashire branch members who have been elected to general council, from the Institute's members.

The congratulations of the branch were extended to Mr. R. K. Jackson of Darwen who was successful in securing a grant from the Students Fund, made possible by the Joint Iron Council. This grant Mr. Jackson elected to use as assistance for attending the National Foundry College.

The officers of the branch had again over the past year organised a short paper competition for apprentices and had coupled the award of the John Wilkinson Medal with the competition. The medal was inaugurated to commemorate one of the pioneers of the foundry industry. The award might be new to members who recently enrolled but older members would recognise it as part of the functions of the Lancashire branch in former years.

Technical Council

The Report, having been adopted, Mr. van der Ben, branch representative, then reported upon the work done by the Technical Council during the past year. He had been much impressed by its scope and the potential of information, knowledge, experience which was placed at the disposal of the members. As most of them would know, the Council consisted of the president of the Institute, together with the senior and junior vice-presidents, the secretary, the chairman of the Technical Council, the deputy chairman, 12 branch

I.B.F., Lancashire Branch Annual Meeting

representatives, and six co-opted members who were permanent members of the industry. In addition, the chairman of the Technical Council had an advisory panel whose duties were to consider suitable subjects for investigation, and to submit proposals for approval.

Mr. van der Ben then referred to the work carried on by the various sub-committees and mentioned that many firms granted permission to members of their staffs to participate in any necessary investigation work. There was prospect of much valuable research work being undertaken in the near future.

After a vote of thanks to the retiring president and officers the following were elected to serve for the following session.

As *president*, MR. C. VAN DER BEN, as *senior vice-president*, MR. R. YEOMAN, as *junior vice-president*, MR. F. A. HARPER, as *members of council* (for three years), MR. E. JACKSON, MR. G. C. STUDLEY and MR. W. SPENCELEY (for one year), MR. S. BROOKS, MR. H. HAYNES and MR. J. JACKSON, and as *auditors*, MR. D. CAMERON and MR. F. NIELD.

Short Paper Competition

The short paper competition was also associated with the giving of the "John Wilkinson Memorial Medal" to the first prize winner, in addition to a cash prize, the other winners receiving cash prizes.

The successful candidates were:—first, Mr. Terry Walton (Buckley & Taylor Limited); second, Mr. John Robinson (Leyland Motors Limited); third, Mr. George Lovack (Wm. Dickinson & Son) and fourth, Mr. Douglas Fisher (Vickers Armstrongs).

Originally, it had been intended to present three prizes, but in view of the result which had been achieved it had been decided to give four, as there had been a tie for the third place.

In presenting the successful candidates with their prizes, the president elect, Mr. van der Ben, reviewed the life and work of John Wilkinson. The original John Wilkinson medal was a replica of one of the Wilkinson tokens which was in possession of the late Mr. J. S. Primrose. The first-prize winner, Mr. Terry Walton, was then invited to read his Paper on "A Combination of Loam and Dry-sand Moulding to Produce a Crane Barrel."

During the course of the afternoon, a film entitled "Sand-storm Secrets" was shown. It illustrated the basic principles of core-blowing, and was kindly loaned for the occasion by J. Blakeborough & Company, Limited, Brighouse.

MEETING IN GLASGOW RECENTLY, Scottish members of the constituent organisations of the Coal Utilisation Joint Council and representatives of manufacturers and distributors of solid-fuel appliances approved a resolution to consider the establishment of a service and showroom scheme in Scotland. Mr. W. McLeod, deputy marketing director (commercial) of the Scottish Divisional Coal Board, was appointed chairman of the committee appointed to carry out the scheme.

Export Licensing Control Changes

Licences are now required for exports to all destinations of iron and steel in various forms, mixtures of specified abrasives, some types of used steel, manufactured cotton cleaning waste, and certain drugs and chemicals. Licences are also required for the export, to all countries except the Commonwealth, Republic of Ireland, and the United States, of some types of precision and electronic instruments and of some types of mineral separation plant.

Details of these changes, which came into effect on April 16, are as follow:—

ALL DESTINATIONS

IN GROUP 4:—

Mixtures, in a dry form, consisting wholly or mainly of one or more of the above, is added.

IN GROUP 6(1), the items under the heading "Alloy steel and other alloys in any of the following forms" are deleted and the following substituted:—

Angles, channels, tees, and other sectional material (whether fabricated or not), including crop ends, but not including machinery parts; bars, rods, and bar and rod ends, of all kinds, including hollow-mining drill steel; castings and forgings (including drop forgings) in the rough or machined, but not including machinery parts; hoop and strip, whether coated or not; pipes and tubes; plates and sheets of all kinds, whether coated or not, including plate and sheet cuttings; tool-bits and tool-bit blanks; welding electrodes and welding rods; wire, including stranded wire, wire cable and rope, whether insulated or not; wire rods—containing by weight more than 55 per cent. of iron, and one or more of the following constituents in the proportion stated:—(*a*) 0.40 per cent. or more by weight of chromium or nickel; (*b*) 0.10 per cent. or more by weight of molybdenum, tungsten, or ganadium; (*c*) 10.00 per cent. or more by weight of manganese.

Some items have been regrouped as follow:—

Iron and steel (including alloys containing by weight more than 55 per cent. of iron) in the following forms: Billets, blooms, and slabs, including crop ends; colliery arches and pitprops, and parts thereof; header bars; ingot moulds; ingots; pig-iron; tube rounds, squares, and hollows, including crop ends.

Under the heading relating to used iron and steel material: Steel scaffolding and fittings, therefor, is inserted.

IN GROUP 9:—

Under the heading "Cotton and manufactures of cotton of the following descriptions," the item relating to waste is deleted and the following substituted—wastes, wholly or mainly of cotton.

IN GROUP 13(1):—

The following items are added:—Mandrake peltatum. Sulphur dioxide and its derivatives, the following, and mixtures consisting mainly of one or more of these materials: Acetone metal bisulphites, aldehyde metal bisulphites, dithionites (hydrosulphites), metabisulphites (bisulphites), sulphites, sulphoxylates, sulphurous acid, thiosulphates.

DESTINATIONS OTHER THAN THOSE SPECIFIED IN THE THIRD SCHEDULE

IN GROUP 12(2):—

Micro-balances giving a direct reading to, and with a sensitivity of 0.001 mg. (one-thousandth of a milligram or better).

Mineral separation plant and parts thereof, of the following descriptions: electrostatic separators having a voltage of more than 1,000 volts across the air gap and specialised parts of such separators.

Spectrographs, spectrophotometers, spectrometers, and monochromators for ultra-violet, visible, or infra-red, as follow: (*a*) Grating types with or designed for use with diffraction gratings (original or replicas, plane or concave) and gratings therefor; (*b*) prism types designed for use with prisms of which the length of any side of the base is 35 mm. or more; (*c*) prism types designed for use with prisms giving a spectrum of 20 cms. or more in length between 2,000 Angstrom units and 9,000 Angstrom units.

MARCH STEEL PRODUCTION in the United States exceeded 9,000,000 tons and was the highest for any month in history. Announcing this, the American Iron and Steel Institute stated that the industry reached a record of 25,658,868 tons in the first quarter of 1951.

The March output was equal to more than 106,500,000 tons annually, exceeding the record volume of 100,145,000 tons attained in the 12 previous months.

Taxation of Trading Profits

The Committee on the Taxation of Trading Profits, appointed in June, 1949, "to inquire into the method of computing net trade profits for the purpose of charging them to income-tax and to consider the question of the basis period to be taken in assessing the tax on the profits so ascertained; to inquire into the method of computing net profits for the purpose of charging them to profits tax; and to report upon alteration of the tax law which may be desirable," has now issued its report (Stationery Office, 3s. 6d.).

The following are among the committee's chief recommendations:—

Business losses should be carried forward without time limit.

The owner of a business should be entitled to claim that a loss incurred in the last year of the business should be carried back and set against assessments on the business for the three preceding years.

A business loss should be able to be carried forward and set against non-business profits for the following income-tax year.

There should be a right of appeal to the courts on points of law arising in connection with claims under Section 34 of the Income Tax Act, 1918.

The administrative concession under which wear and tear and other capital allowances are allowed to augment or create a business loss for purposes of relief under Section 34 of the Income Tax Act, 1918, should be legalised.

A minimum rate of initial allowance should be prescribed; any association which represents a particular industry should be entitled to apply for a higher rate by reference to the price level of the plant or machinery in question and the importance of the industry to the national economy.

Recoveries, etc., of sums previously debited should be treated as business receipts.

The cost of tax appeals should be deductible.

Revenue expenditure incurred before business begins should be allowed in the first accounting period.

Legal costs, etc., on the acquisition of a lease should be allowed over the period of the lease.

A profit or loss on the sale of overseas securities compulsorily acquired should be treated as a receipt or expense of the business.

An expense or loss incurred in providing benefits for employees should be deductible.

Depreciation allowances should be given for commercial buildings.

Depreciation allowances should be given for land which has to be surrendered on the expiry of a mining concession, and other concessions made to companies engaged in mining or prospecting overseas.

Allowances for overtime working of plant and machinery should depend on the facts in the basis period.

If the costs of demolishing an asset exceed the scrap proceeds the excess should be taken into account in computing a balancing allowance or charge.

Expenditure on dilapidations, or payments in lieu thereof, if not deductible should be taken into account in computing a balancing allowance to the lessee.

If a company agrees to reimburse a loss incurred by another company in the same group, any payment made under the agreement should be taken into account in computing the liability both of the payer and the recipient.

A company which is a member of a group should be entitled to value goods purchased from another member at the cost to that other member.

(*Concluded at the foot of column two*)

If relief from double taxation is inadequate because capital allowances are given on different bases in this country and abroad, the taxpayer should be entitled to claim to postpone the whole or part of the allowances until a later year.

In relation to profits tax, in the case of a director-controlled company, the allowance for directors' remuneration should be increased in proportion to the number of full-time working directors.

Legal sanction should be given to the administrative concession under which patent royalties are allowed as an expense in computing profits where they are paid to a person abroad and income-tax is not deducted by reason of a double taxation convention.

Movement of Wholesale Prices

A rise of 2.6 per cent. was recorded in the Board of Trade index of wholesale prices in March—the first full month in which the general rises in prices of coal and steel were effective. Compared with 1938, the index for all items has risen by 209.1 per cent., and for industrial materials and manufactures by 257.8 per cent.

The following table, taken from the "Board of Trade Journal," shows the movement of wholesale prices of industrial and building materials, expressed as percentage increases on the average for the year 1930 = 100.

Group.	1950.				1951.		
	Mar.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Coal ..	305.3	303.4	308.6	311.2	311.2	329.9	332.7
Iron and steel	257.8	262.6	265.1	265.4	267.8	*269.5	277.2
Non-ferrous metals	274.3	399.6	434.8	461.0	467.2	453.2	451.3
Chemicals and oils	196.6	216.5	220.1	221.2	223.4	231.3	232.9
Building materials	225.6	236.9	237.9	237.6	238.6	241.2	252.1

* The figure published last month has been amended. Amendments made earlier are not marked, but wherever the figures given in earlier articles differ from those above, the latter should be used.

U.K. Exports Fall

United Kingdom exports in March were valued provisionally at £190,100,000, a decrease of £4,800,000 compared with the January/February average, but £9,200,000 above the 1950 average. Exports in the first quarter of the year were £579,900,000, being 4 per cent. below the fourth quarter of 1950.

Imports in March rose to £303,100,000 (provisionally), which was £5,200,000 above the high January figure and exceeded the 1950 monthly average by £86,200,000. Re-exports in March were valued at £17,100,000.

In the first quarter, the provisional value of imports was £848,200,000 and of total exports £613,300,000, bringing the excess of imports (valued c.i.f.) over total exports (valued f.o.b.) to £234,800,000 compared with a quarterly average in 1950 of £87,000,000. In the first quarter of 1950 the corresponding figures were £604,700,000, £533,600,000 and £71,100,000, respectively.

U.K. exports to the United States in March were valued provisionally at £12,300,000, being £1,800,000 above the January/February average. The provisional value of exports to Canada in March was £11,200,000, which was £2,600,000 above the low monthly average in the first two months of the year. Exports to North America in the first quarter were equivalent to a monthly average of £20,700,000, compared with £25,100,000 in the fourth quarter and £15,300,000 in the first quarter last year.

News in Brief

WOLFRAM was quoted at 500s. to 530s., nominal, per unit, c.i.f., in London on April 18. The previous quotation was 500s. to 540s., nominal.

A FLASHBACK from a furnace oil pipe burned a hole through the roof of a drop-forging shop at the works of J. Stanley & Company, Limited, Wednesbury (Staffs), on April 11.

VALUED at $1,500,000, an order for 500 capstan lathes has been placed with Warne, Wright & Rowland, Limited, Birmingham, by the British Industries Corporation, New York.

A POST-WAR RECORD number of people—approximately 405,000—attended the National Trades Exhibition at the Bingley Hall, Birmingham, during the 29 days it was open.

A PARTY from the Imperial Defence College will visit Sheffield on April 29 for a five-day tour of industries in the city, which will include visits to a colliery, a cutlery works, a steelworks, and a toolworks.

PLANT ordered by the British Electricity Authority to meet the power shortage is valued at over £21,500,000 and comprises 57 turbo-alternator sets with an aggregate capacity of some 2,500,000 kW. and ancillary plant.

A NEW SHOWROOM, designed especially for the display of domestic electrical equipment, has been opened by Rowe Bros. & Company, Limited, builders' merchants, at their premises in Berkley Street, Birmingham.

AN INDUSTRIAL GAS CONFERENCE is to be held at the Queen's Hotel, Birmingham, on Monday next. The chair will be taken by the chairman of the Gas Council, Sir Edgar Sylvester, K.B.E., and Mr. J. C. Burman is to be the principal speaker.

THE NATIONAL RATES COMMITTEE of the Road Haulage Association has recommended that members of the association increase their general haulage rates by 2½ per cent. as from May 1 following the increased duty on motor fuel imposed by the Budget.

IN ORDER TO CLEAR a recent accumulation of freight—mainly coal and steel—from South Wales, British Railways have suspended 13 passenger trains, running chiefly between London, Cardiff, and the West Country, for about three weeks, from April 16.

AN ORDER for 7,000 tons of steel sleepers for the Egyptian State Railways has been received by the Workington Iron & Steel Company branch of the United Steel Companies, Limited, which is at present carrying out a contract for 3,500 tons of steel rails for Irish railways.

ASSEMBLY WORK on the various halls of the Exhibition of Industrial Power—part of the Festival of Britain—which opens on May 28 at the Kelvin Hall, Glasgow, is more than a week ahead of schedule. There will be 500 exhibits on view, the total cost of the exhibition being £393,000.

JUTE MACHINERY ORDERS for a new mill and factory to be established at Manila (Philippines), valued at more than £140,000, have been placed with Thomas C. Keay, Limited, and the Lawside Engineering & Foundry Company, Limited, Dundee, and James F. Low & Company, Limited, Monifieth.

AT THE REQUEST of trade associations requiring more adequate data for their members, the Board of Trade has revised the areas for which statistics are given so that Wales is shown as a separate region. Formerly North Wales was included in the north-west area and South Wales in the Midlands.

G. & J. WEIR, LIMITED, Glasgow, are to supply East Yelland power station, Barnstaple, with two 30,000-kw. condensing plants, and the Portobello power station at Edinburgh is to be provided with a 60,000-kw. turbo-alternator condensing and feed-heating plant by Richardsons, Westgarth & Company, Limited.

UNDER THE AUSPICES of the Anglo-American Council on Productivity and the Economic Co-operation Administration, the Education for Management Team, sponsored by the British Institute of Management, sailed for America recently. The Team is led by Lieut.-Col. L. Urwick, O.B.E., M.C., M.A.

THE KEIGHLEY ASSOCIATION OF ENGINEERS held its 51st annual dinner in the Assembly Hall of the Mechanics' Institute, Keighley, on Saturday, April 14, when the chief guest was Sir Lionel Kearns, chairman and managing director of H. W. Kearns & Company, Limited, who has only recently returned from Australia.

THE RECONSTRUCTION of the iron-ore mines at Kirkenes in the north of Norway, is expected to be completed by the end of this year. The mines, which were destroyed during the war, are the largest in Norway. When production is resumed next year, output at first will be at the rate of 500,000 tons a year, but it is intended to double this output after a time.

SHIPBUILDING AND MARINE ENGINEERING INTERESTS in Greenock and Port-Glasgow have appointed a committee to prepare a memorandum on the scheme to develop the Great Harbour, Greenock. When it has been prepared, Viscount Hall, First Lord of the Admiralty, will be asked to meet a deputation to discuss the scheme.

MATTERSON, LIMITED, of Rochdale, manufacturers of overhead travelling cranes, hoists and industrial gearboxes, have arranged to be represented in the four northern counties by Mr. G. D. Clothier, B.SC., A.M.I.E.E., of Consett Chambers, 116, Pilgrim Street, Newcastle-upon-Tyne. Mr. Clothier is a graduate of King's College, Durham, having served his time with A. Reyrolle & Company, Limited, and their associate Pyrotenax, Limited, and remained with them, apart from service in the Royal Engineers during the late war, until recently.

SINCE THE BEGINNING of the year about 120 vessels, with a total gross tonnage of more than 800,000, have been ordered from Scottish shipyards. The Clyde's 23 yards will handle about three-quarters of this tonnage. At the rate of production for 1949 and 1950, it would take two years to cope with the orders for the first three months of this year. In the first three months of 1949, 36,000 tons of shipping was ordered from Scottish yards, with a total of 147,000 tons for the whole year. Business improved considerably in 1950, when in the first quarter 205,350 tons of shipping was ordered. Officials then spoke of the "extraordinary" increases in orders. But in 1951 contracts poured into Scotland at an even higher rate and the problem for the employers was how to cope with them.

THE BRITISH STANDARDS INSTITUTION has recently published B.S. 1723: 1951 "Brazing", a preliminary supplement to B.S. 1724, "Bronze welding by gas" (in course of preparation) prepared as part of the programme of welding standards authorised by the welding industry standards committee of the Institution. The brazing processes covered are blowpipe (torch), furnace, electric-induction, electric-resistance, dip and salt bath. A general section specifies requirements for joint design, general preparation, flux removal, inspection and testing procedure. Each process is dealt with in a separate section in terms of a description of the processes and the permissible filler metals for the various parent metals. Copies may be obtained from the sales department, at 24, Victoria Street, London, S.W.1, price 3s.

Raw Material Markets

Iron and Steel

The export of pig-iron is already controlled, and the first steps have been taken to ensure a more equitable distribution of available supplies to home consumers. Foundries are no longer permitted to carry more than three weeks' stock of pig-iron—formerly the stock limit was four weeks' supply—and further restrictions are regarded as inevitable. The position in regard to high-phosphorus iron is not too bad, but supplies of low- and medium-phosphorus grades are unobtainable in the quantities required by the engineering foundries and, although these establishments are prepared to use hematite as a substitute, this grade is also relatively scarce.

Rollers of small bars and light sections and also the sheetmakers are confronting ceaseless anxieties concerning their supplies of steel semis. Business in all classes of re-rolled material is brisk. Home and export bookings to the end of June are formidable, but there is no improvement or prospect of improvement in the arrivals of Continental billets, slabs, sheet bars, etc., and home producers are finding it more and more difficult to keep pace with the heavy requirements of the re-rolling mills. Defectives, as well as primes, are eagerly sought, and it is a sign of the times that the Board of Trade has peremptorily stopped the export of re-rolling scrap.

The decline in ingot production is already exercising a retarding influence upon the operations of the rolling mills. And as the rearmament programme gathers momentum this can only result in a restriction of deliveries to other home or oversea buyers—or to both. Impressive tonnages of plates, sections, angles, etc., are required by shipbuilders, engineers, boilermakers, and wagon and locomotive builders, and an interruption of deliveries, which is now foreshadowed, will be attended with grave industrial consequences. Export commitments are on a heavy scale, but shipments are held up in many instances owing to lack of cargo space.

Prices of scrap have been increased as from Saturday last under the Iron and Steel Scrap (No. 2) Order, 1951. All foundry scrap is dearer by 3s. 1d. per ton. In the case of steelworks scrap, the increases vary according to district and specification from 2s. 11d. to 5s. 11d. per ton. They reflect the recent advance in transport costs.

Non-ferrous Metals

Figures relating to the production and consumption of copper, issued by the Copper Institute in New York, reveal that March brought an intensification of activity in non-ferrous metals in the United States. Production of crude copper totalled 90,670 short tons, compared with 81,600 tons in February. Refined copper output was 112,935 tons, against 101,055 tons in February, an increase, it will be noted, of some 12,000 tons. Deliveries to domestic consumers in March amounted to 116,795 tons, which registered a substantial increase on the February figure of 99,485 tons. Stocks of refined metal at March 31 were 55,610 tons, a fall of nearly 4,000 tons on the total of 59,325 tons in producers' hands at the end of February.

Outside the U.S.A., output of crude copper in March was 119,320 tons, compared with 108,665 tons in February, while production of refined was 100,935 tons, against 90,155 tons in the previous month. Stocks were up by 10,000 tons at 161,470 tons, while deliveries of refined amounted to 80,285 tons.

Last week's tin market was relatively quiet and changes in value certainly on a less spectacular scale than of late. In regard to lead, which is still in short supply in the U.K., it has been announced in Washington that this metal is no longer on the current purchasing list for the strategic stockpile programme. It has been stated that the objective has been reached. A big cut in nickel was announced last Friday, when the Ministry of Supply told the House of Commons that as from May 1 stainless steel producers would receive only 70 per cent. of their 1950 deliveries, while nickel anodes for plating would be 50 per cent. of 1950 supplies. There would be prohibition of nickel usage for the less essential purposes.

Metal Exchange official tin quotations were as follow:—

Cash—Thursday, £1,165 to £1,170; Friday, £1,160 to £1,170; Monday, £1,160 to £1,165; Tuesday, £1,165 to £1,170; Wednesday, £1,155 to £1,165.

Three Months—Thursday, £1,130 to £1,135; Friday, £1,135 to £1,145; Monday, £1,130 to £1,135; Tuesday, £1,140 to £1,145; Wednesday, £1,145 to £1,150.

Revised Form of Application for Import Licence

A revised form of application for import licence, ILB/A (revised), for goods other than vehicles, machinery, plant, scientific instruments and parts, was introduced by the Import Licensing Branch of the Board of Trade on Monday last. The form provides that the applicant, in effect, completes his own form of import licence with two copies, and in approved cases, this will be validated as an import licence by the Board of Trade. The date of the issue of the licence will be indicated by a perforated device.

While applications for licences on the old form of application will continue to be accepted by the Board of Trade, it is hoped that importers will use the new form as soon as possible. Copies may be obtained from the Board of Trade, Import Licensing Branch, Romney House, Tufton Street, London, S.W.1, or from the regional offices.

North-east Shipbuilders' Officers

President of the North East Coast Institution of Engineers and Shipbuilders for 1951-52 is Sir Philip B. Johnson, managing director of R. & W. Hawthorn, Leslie & Company, Limited, Newcastle-upon-Tyne, who has been re-elected for a second year. The newly elected vice-presidents are Prof. L. C. Burrill, who is Professor of Naval Architecture at King's College, Newcastle, and Mr. W. H. Purdie, a director and general manager of the engineering department of Wm. Doxford & Sons.

There are three new ordinary members of council (non-associates' section). They are Prof. A. F. Burstall, who is Professor of Mechanical and Marine Engineering at King's College, Newcastle; Mr. W. S. Paulin, a director and general manager of Donkin & Company, Limited, Newcastle, and Mr. T. E. Smith, joint managing director of Smith's Dock Company, Limited, North Shields and Middlesbrough.

Canada's Steel Record

A record output of 299,410 tons of steel ingots was produced by Canadian mills in January, compared with 283,894 tons in January, 1950. The previous monthly output record was 287,885 tons in March, 1949.

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

(*Delivered, unless otherwise stated*)

April 25, 1951

PIG-IRON

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

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

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

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

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

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

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

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

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

FERRO-ALLOYS

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

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

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

Ferro-molybdenum.—65/75 per cent., carbon-free, 8s. 9d. per lb. of Mo.

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

Ferro-tungsten.—80/85 per cent., 33s. 3d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 35s. 3d. per lb. of W.

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

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

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

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

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

SEMI-FINISHED STEEL

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

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

Sheet and Tinplate Bars.—£17 6s. 6d.

FINISHED STEEL

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

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

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

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

NON-FERROUS METALS

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

Tin.—Cash, £1,155 to £1,165; three months, £1,045 to £1,150; settlement, £1,160.

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

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

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

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

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

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

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

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

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

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

Forthcoming Events

APRIL 30 to MAY 11

British Industries Fair

Engineering and Hardware Section :—Weekdays, from 9.30 a.m. to 6 p.m., at Castle Bromwich, near Birmingham.

APRIL 30

Incorporated Plant Engineers

West and East Yorkshire Branch :—"Tractors, Excavators and Civil Engineering Plant," by H. Leverton & Company, Limited, 7.30 p.m., at the Fuel Department, or the Mining Department, Lecture Theatre, Leeds University.

MAY 1

Purchasing Officers Association

Manchester Branch :—"Uses of Soaps and Detergents in Industry," by F. H. Bell, B.Sc., of Thomas Hedley & Company, Limited, at the Engineers' Club, Albert Square, Manchester.

MAY 2

Institution of Production Engineers

Nottingham Section :—Discussion among five members of productivity teams recently returned from the United States, at the Victoria Station Hotel, Milton Street, Nottingham, at 7 p.m.

MAY 3

Purchasing Officers Association

East Anglia Group :—Two films : "Romance of Carborundum" and "Farm by the Sea," by the Carborundum Company, Limited, 7.15 p.m., at the Red Lion Hotel, Colchester.
Edinburgh Group :—Visit to Dalzell Works of Colvilles, Limited, Motherwell.

Leeds Metallurgical Society

Annual General Meeting, folowed by Junior Members' Papers, 7 p.m., at the Chemistry Department, the University, Leeds.

Institute of Industrial Supervisors

Leeds Section :—"Incentives," by C. W. Mustill, M.B.E., M.I.MECH.E., 7.30 p.m., at the College of Commerce, Leeds.
Warrington Section :—"Plan for Training in Industry," by L. S. Newton, 7 p.m., at the White Hart Hotel, Sankey Street, Warrington.

MAY 4

Institute of Economic Engineering

Open Discussion, 7.30 p.m., at the Engineers' Club, Albert Square, Manchester.

Institution of Mechanical Engineers

Presentation of James Watt International Medal to Dr. H. H. Blache, of Denmark, and James Clayton Lecture on "Stages in the Design of the Large Burmeister and Wain Marine Diesel Engine," by Dr. Blache, 5.30 p.m., at Storey's Gate, St. James's Park, London, S.W.1.

MAY 5

Shipley Technical Institute Engineering Society

Works Visit to Imperial Chemical Industries, Limited, Huddersfield. (Details to be obtained from the Secretary.)

TWENTY-SEVEN Diesel engines manufactured by F. Perkins, Limited, Peterborough, were on show in Holland at the recent Utrecht Fair.

LORD CITRINE, chairman of the British Electricity Authority, speaking at the annual luncheon of the British Electrical Development Association, of which he is president, said that load-shedding was likely to persist for several years.

CAMMELL LAIRD & COMPANY, LIMITED, the Birkenhead shipbuilders and engineers, is raising its final dividend on the ordinary capital by 2½ per cent. to 9 per cent., making a total of 12½ per cent. for 1950, against 9½ per cent. in the previous year.

FOSECO products are now manufactured in France by the Societe Francaise des Catalyseurs, 4, Rue Guillemi-not, Chaville (S.-&-O.), a Company which is closely associated with Foundry Services (Overseas) Limited. Mr. H. J. Neel is the managing director and Mr. G. H. Garreau, the sales manager.

CLASSIFIED ADVERTISEMENTS

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

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

SITUATIONS WANTED

FOUNDRY METALLURGIST desires Executive position. Good technical qualifications and experience high duty cast iron and steel melting; sand control; metallurgical analyses. Young, keen, capable of acting on own initiative. N.E. Coast preferred.—Box 888, FOUNDRY TRADE JOURNAL.

GENTLEMAN (36), with sound business connections amongst all classes of manufacturers in Birmingham and the Midlands, seeks to represent a firm of repute on an Agency basis. Car owner. Telephone installed.—Box 892, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

FOUNDRY SUPERINTENDENT required by old-established West of England Engineers. Pattern Shop, Ferrous and Non-Ferrous. Apprenticeship, subsequent experience covering field as above, essential.—Reply to Box 880, FOUNDRY TRADE JOURNAL.

FOREMAN, experienced, aged 30/40, for Foundry in Central Scotland making greensand, drysand and loam castings totalling over 2,000 tons annually. House available.—Box 846, FOUNDRY TRADE JOURNAL.

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

JUNIOR METALLURGIST required for control work in Grey Iron Foundry of an expanding concern engaged in manufacturing agricultural machinery. State age, experience, and wage required.—Apply EMPLOYMENT SUPERVISOR, International Harvester Co., Doncaster.

ASSISTANT required for Malleable Iron Foundry Laboratory, with experience of Chemical Analysis and Physical Testing. Some knowledge of Sand Testing an advantage.—Applications to JOHN MADDOCK & Co., LTD., Oakengates, Shrops.

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

PATTERNMAKERS (Wood and Metal). Excellent opportunities for younger men on all classes of work, under ideal conditions in the largest modern pattern shop.—G. PERRY & SONS, LTD., Hall Lane, Leicester.

SITUATIONS VACANT—*Contd.*

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

FOUNDRY FOREMAN required for Ceylon, to take charge of Iron and Non-ferrous Foundry turning out general engineering castings. Must have thorough floor and machine moulding experience and a sound knowledge of patternmaking and preparation of plate patterns. Age not over 35 years. Salary equivalent to £1,300 a year is offered for a man with the desired qualifications. Terms include Provident Fund benefits and periodical furlough.—Write, stating age and giving full particulars of experience, etc., to Box "74/4," c/o 95, Bishopsgate, E.C.2.

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

FOUNDRY SUPERINTENDENT (aged 35/45) required for Grey Iron Foundry handling also High Tensile Iron, in West Riding of Yorkshire, producing 50 to 60 tons of high quality precision machine castings per month. Applicants must have proved themselves in a similar capacity and should be capable of taking full responsibility to the Works Manager for both the pattern making department and complete foundry covering coremaking, machine and floor moulding, fettling, cupolas and metal and sand control. Preferably also to have knowledge to facilitate instituting and operating visual foundry loading system and knowledge of stress relief which will possibly be installed in the foundry. Starting salary commensurate with responsibility.—Replies, which will be treated as strictly confidential, should state age, full details of practical and technical training, positions held, and present salary.—Box 864, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*Contd.*

ESTIMATOR required for Foundry handling and producing 400 tons a month. All types of castings up to 4 cwt. in weight. Must have had rate fixing experience. Position is permanent, in pleasant surroundings, and will offer scope for initiative. Please state experience and salary required.—Box 868, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN required for Iron Foundry in South of England; light and medium castings produced. Applicant must be able to control semi-skilled labour, and have sound knowledge of modern production methods, Floor, Machine Moulding and Sandslinger.—Full particulars, age, salary expected, to Box 870, FOUNDRY TRADE JOURNAL.

EXPERIENCED FOUNDRYMAN, with managerial qualifications, will be accepted by an East Midland Company manufacturing Core Binders, Fluxes, etc. —Box 894, FOUNDRY TRADE JOURNAL.

MOULDERS.—Skilled Jobbing Iron Moulders required; top rates, plus bonus.—HIGH WYCOMBE FOUNDRY CO., LTD., incorporating Foundry Division of Dexter & Co. (HW), Ltd., Chapel Lane, Sands, High Wycombe.

LARGE manufacturing organisation in Yorkshire requires the services of a MOULDER highly skilled in making aluminium castings for patterns, core boxes, core carriers, and match plates. Must be able to prepare own sand and metals, produce sound castings to accurate dimensions, good surface finish. Permanent position with prospects. Day work wage.—Reply, stating age, experience, and wages required, to Box 838, FOUNDRY TRADE JOURNAL.

OWING to the present Manager leaving to take up a position abroad, a vacancy occurs for a FOUNDRY MANAGER to take control of Pattern Shop, Ferrous and Non-ferrous Foundries producing medium and light castings averaging 50 tons per week. Applicants must be experienced, practical, with a good theoretical knowledge, and have held a position with similar responsibility.—State age, experience, qualifications and salary expected, to the WORKS MANAGER, Thomas Robinson & Son, Ltd., Rochdale.

BUSINESS FOR SALE

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

FOUNDRY FOR SALE

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

PLANT FOR SALE

ONE "Foundry Plant" Portable type Sand Slinger, with Gyratory type Shaker Gear, and complete with all electrical equipment suitable for 500 volts, d.c. supply.—Further particulars on application to GIMSON & Co. (LEICESTER), LTD., Vulcan Road, Leicester. Telephone No.: Leicester 60272.

MATERIALS WANTED

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

ANGLO-ASIAN CO., LTD.,
22, Baillie Street, Colombo 1.
Cables—Lodestar.

MATERIALS FOR SALE

16 CWTS. (bagged) Oil Impregnated Cereal Binder, 60s. per cwt.; loaded lorry or rail Todmorden.—THE SANDHOLME IRON CO., LTD., Todmorton.

MACHINERY WANTED

WANTED.—Sand Slinger, suitable for iron foundry. Hand loading or hopper loading.—Reply to Box 882, FOUNDRY TRADE JOURNAL.

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

HORIZONTAL 20 ft. Casting Wheel, for 10-12 Flat Open Moulds 3 ft. by 4 ft. State price.—Reply to Box 836, FOUNDRY TRADE JOURNAL.

OFFER YOUR SURPLUS PLANT TO
FRANK SALT & CO., LTD.,
Station Road, Blackheath, Birmingham.
BLA. 1635.

MACHINERY FOR SALE

IMMEDIATE DELIVERY.

NEW Bray Hydraloader; ⅞ cub. yard bucket; mounted on Fordson - Major petrol / paraffin tractor; fitted with electric starting, and complete with driver's cab.

THOS. W. WARD, LTD.,
Brettenham House,
Lancaster Place, Strand, London, W.C.2.

MACHINERY FOR SALE—*Contd.*

"SKLENAR" FURNACE.—500 lbs. capacity, oil fired; complete with blower. Spare set of bricks for re-lining. Price £250.—Box 286, FOUNDRY TRADE JOURNAL.

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.

ALBION TWW WORKS

BLOWING AND EXHAUSTING FANS.

BLOWING FANS:

SEVERAL NEW ELECTRIC FORGE BLOWERS. 125 c.f.m., 3 in. w.g., 2¼ in. inlet, 2 in. outlet, 400/3/50.

SEVERAL NEW KEITH BLACKMAN BLOWING FANS. 10,000 c.f.m., 13 in. w.g. 1 h.p. Motor, 400/3/50. Blast gate and starters.

MOTOR DRIVEN BLOWING FAN, Keith Blackman. 150 c.f.m., 10 in. w.g. 1 h.p. S.C. Motor, 400/3/50.

SIROCCO MOTOR DRIVEN BLOWING FAN, Davidson. Approx. 490 c.f.m., 6 in. w.g. 1½ h.p. S.C. Motor, 400/3/50, 2,800 r.p.m.

NEW SIZE 20 MULTIVANE STEEL-PLATE PRESSURE FAN. 1,500 c.f.m. against 18 in. w.g. 10 h.p. S.C. Motor, 400/3/50.

MOTOR DRIVEN BLOWING FAN, Keith Blackman. 2,800 c.f.m., 16 in. w.g. 12½ h.p. S.C. Motor, 380-400/3/50, 2,800 r.p.m.

NEW SIZE 24 MULTIVANE STEEL PLATE PRESSURE FAN. 2,820 c.f.m. against 22 in. w.g. to 20 b.h.p. S.C. Motor, 400/3/50.

MOTOR DRIVEN BLOWING FAN, KEITH BLACKMAN. 3,400 c.f.m., 24 in. w.g. 25 h.p. S.C. Motor, 400-40/3/50.

MUSGRAVE MULTIVANE MOTOR DRIVEN BLOWING FAN. 2,500 c.f.m., ¾ in. w.g. 10 h.p. S.R. Motor, 400/3/50, 1,400 r.p.m., Ellison O.I. Starter.

BELT DRIVEN:

SEVERAL BELT DRIVEN FANS, by KEITH BLACKMAN. Size 14, Type 9, 5 in. inlet, outlet 3 in. by 3½ in. 330 c.f.m. at 8.5 w.g., 2,900 r.p.m., or 560 c.f.m. at 14 in. w.g. Vee rope pulley 3½ in. dia.

VEE BELT DRIVEN STEEL PLATE CASING FORCED DRAUGHT FAN, by Standard Pulverised Co. 16 dia. suction, 12 in. dia. discharge; capacity 5,000 c.f.m., 16¾ in. w.g., 1,450 r.p.m.

EXHAUST FANS:

NEW SIZE 9 PADDLE BLADE FAN. 450 c.f.m. against 3 in. w.g. .75 h.p. Motor, 400/3/50. Inlet 5⅞ in. dia., outlet 5⅞ in. by 5¼ in.

SIZE 12 PADDLE BLADE FAN. 1,000 c.f.m. against 5 in. w.g. 2 b.h.p. S.C. Motor, 400/3/50.

SIZE 15 PADDLE BLADE FAN. Capacity 2,000 c.f.m. against 6 in. w.g. 5 h.p. S.C. Motor, 400/3/50. Outlet 9¾ in. by 8 in.

BELT DRIVEN PADDLE BLADE FAN. 24 in. inlet, 25 in. by 18 in. outlet; extended shaft, double bearings, mounted on stool. Approx. 9,000 c.f.m., 2 in. w.g.

BELT DRIVEN PADDLE BLADE FAN. 18 in. inlet, 15 in. by 17 in. outlet. Bareshaft Extension.

THOS W. WARD LTD.

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AIR COMPRESSORS.

450 C.F.M., 30-lbs., Alley & MacLellan, Vert., single-cyl., Series 23A/3, direct coupled 52½ h.p. Motor with Starter.

400 c.f.m., 60-lbs., Broom & Wade, Vert., single-cyl., Type S1B, with Aftercooler, and 65 h.p. Auto-syn. Motor, 1,450 r.p.m., with Starter.

250 c.f.m., 100-lbs., Consolidated Horizontal, double-acting, Type NSB, with 60 h.p. S.C. Motor and Starter.

200 c.f.m., 100-lbs., Consolidated Horizontal, double-acting, Type 10 by NSB, with or without 50 h.p. Motor and Starter.

200 c.f.m., 100-lbs. Alley & MacLellan, "Sentinel" Vert., two-stage, Size No. 5, with or without 40 h.p. Motor and Starter.

140 c.f.m., 60-lbs. Tilghman, Vert., single-cyl., double-acting, Type FC4E, with or without 20 h.p. Motor.

120 c.f.m., 30-lbs., Reavell, Vert., twin-cyl., single-stage, Type DSA7E, direct coupled 17½ h.p. S.C. Motor and Starter.

100 c.f.m., 100-lbs., Tilghman, Vert., Type SA11, single-acting, single-stage, with 25 h.p. Motor and Starter.

90 c.f.m., 100-lbs., Consolidated, Vert., twin-cyl., Type P7DB, with 20 h.p. Motor and Starter.

85 c.f.m., 100-lbs., Consolidated, 2-stage, air-cooled, Size PB2, with 20 h.p. Motor and Starter.

40 c.f.m., 150/450-lbs., Reavell, single-acting, 2-stage, Type CSA6, with Intercooler and 20 h.p. Motor and Starter.

25 c.f.m., 100-lbs., Reavell, Type SA5, Vert., direct coupled 7½ h.p. Motor and Starter.

25 c.f.m., 100-lbs., Cooke & Ferguson, twin-cyl., air-cooled, with 7½ h.p. Motor and Starter, mounted on horizontal Air Receiver 2 ft. dia. by 5 ft. 6 in. long.

6 c.f.m., 500-lbs., Reavell, two-stage, high pressure, with 5 h.p. Motor and Starter and with Air Receiver.

6 c.f.m., 450-lbs., Broom & Wade, Portable, twin-cyl., with 3 h.p. Motor and Starter.

ALSO a number of other Types and Sizes.

All above motors for 3/50/400 V.

REASONABLE OFFERS FOR ANY OR ALL OF THE ABOVE WILL BE ACCEPTED.

S. C. BILSBY, A.M.I.C.E., A.M.I.E.E.,
Crosswells Engineering Works, Langley Green, near Birmingham. Broadwell 1359

IN STOCK AT SLOUGH FOR IMMEDIATE DELIVERY.

SIX only brand new 10-cwt. FOUNDRY LADLES. £26 each to clear.

SAND THROWER, a.c., 3-phase, similar to Royer, new, £55.

Alfred Herbert SAND DISINTEGRATOR, £48.

Spermolin CORE SAND MIXER, £18.

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

25 practically new BALE-OUT FURNACES, cheap.

31 in. CUPOLA complete, by "Constructional," with spark arrester, Keith Blackman Blower and new lining—all at £250.

36 in. ditto complete, for £395.

ADAPTABLE MOULDING MACHINES, £45 each.

TITAN CORE BLOWER, as new, 150 lbs. £285.

WEIGHING MACHINES, by Avery. Type 282, as new, 3-cwt. size.

Large stock new Broomwade Compressors, new. A.C. Motors and Keith Blackman Fans.

ELECTROGENERATORS LTD.
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Telephone: Slough 22877.

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10-CWT. Geared Ladle.
5-Cwt. Ungeared Ladle.
25-Cwt. Hand Mobile Workshop Crane.
Grinding Wheels: 16 in. dia. by 2½ in. face by 1½ in. bore, 14 in. dia. by 2 in. face by 1½ in. bore.
Quantity of Electric Motor Slide Rails.
Coggan Core Blower, 15-lb. capacity.

S. C. BILSBY, A.M.I.C.E., A.M.I.E.E., Crosswells Engineering Works, Langley Green, near Birmingham. Broadwell 1359

FOR SALE.

1 NO. 8 Herbert Attritor, in new condition. Reconditioned by makers, complete with motor, piping and burners.
1 No. 6 Herbert Attritor. Complete with hopper, elevator and pressure, and full set of spares.
1 No. 8 Herbert Attritor, in fair condition.
Apply:—

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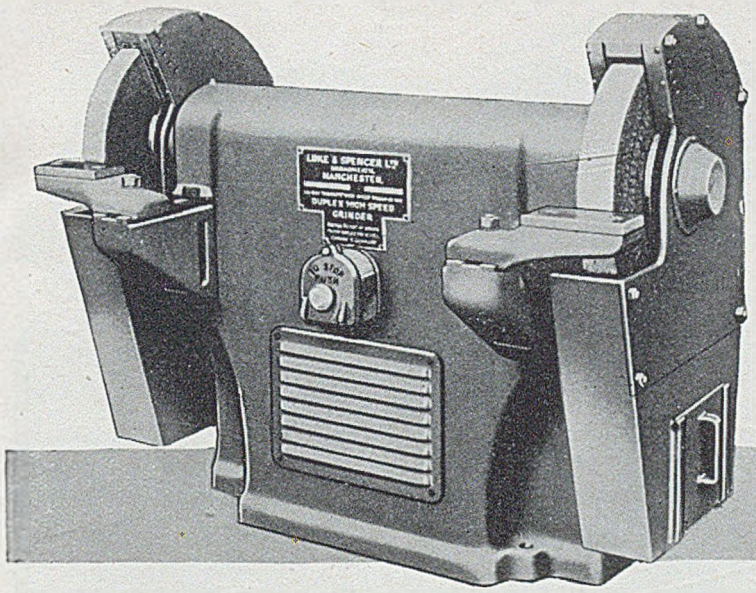

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