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COUNCIL OF IRONFOUNDRY ASSOCIATIONS

Chairman : FitzHerbert Wright, The Butterley Company Ripley, near Derby. Secretary : V. Delport, 2, Caxton Street, Westminster, S.W.1.

Participating Associations : British Bath Manufacturers' Association ; British Ironfounders' Association ; British Malleable Tube Fittings Association; Cast Iron Axlebox Association ; Cast Iron Chair Association; Cast Iron Heating, Boiler and Radiator Manufacturers' Association; Cast Iron Segment Association ; Greensand Pipe Founders' Association of Scotland; Ironfounders' National Confederation ; National Association of Malleable Ironfounders ; National Ingot Mould Association ; National Ironfounding Employers' Federation Association of Automobile and Allied High Duty Ironfounders; British Cast Iron Research Association (affiliated); British Coke Association (affiliated); Flushing Cistern Makers' Association (affiliated) ; Institute of British Foundrymen (affiliated).

INSTITUTE OF BRITISH FOUNDRYMEN

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BRITISH CAST IRON RESEARCH ASSOCIATION

Alvechurch, Birmingham. 'Phone and 'Grams : Redditch 716.
Scottish Laboratories :—Foundry Technical Institute, Meek's Road, Falkirk. (Phone : 332.)

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

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The Manchester Conference

Many are asking whether or not the wartime conferences of the Institute of British Foundrymen are not better than those held under normal conditions. The one held last week-end in Manchester attracted as many members as in peacetime—somewhere in the region of 270. The outlook, however, was different, for in earlier times advantage was taken of these large annual gatherings to publicise the work of the Institute to the world at large. Now, the sole object is the dissemination of technical knowledge to its own members. This was the sole thought which animated the pioneers of the Institute, and it was only about 20 years ago that members were invited to bring along their ladies. Both types of gatherings have much to commend them, and both are worth perpetuating. This would be easy to do if the Institute would only break away from its tradition of holding only one general meeting a year. The holding of a spring and autumn meeting would not only bring it into alignment with the other great technical institutes, but would give potentially a better service to its members.

The election of Mr. J. W. Gardom as President was extremely popular. He enjoys a reputation "for getting things done," an attribute which, through his gifts of making friendships, his sincerity and good humour, eventually wins the approbation of the opposition. His obvious sympathy with the deserving youth of the industry has caused him to make the most unusual gift ever to be associated with technical institutes. He has placed a sum of money at the disposal of the industry to enable a "bright" lad to attend a complete series of meeting of a technical sub-committee from its inception to the production of a report. Thus it will be possible for one or more youths from each foundry centre to participate as a ring-side spectator in the work of every sub-committee. We hope that the firms whose boys have enjoyed this privilege will see to it that the new President's good work is not allowed to lapse when the existing funds are exhausted.

The Edward Williams' lecturer, Sir Charles Darwin, caused his hearers, conversant as they are with specifications carrying all sorts of tolerances, to view the subject through the eyes of the physicist. It was a fascinating subject brilliantly expounded. The major awards of the Institute have this year been increased by the addition of the British Foundry Medal. The award, the gift of Mr. Barrington Hooper, C.B.E., is, in general terms, for the author of the best Paper published in the "Proceedings" issued prior to the annual meeting. This gives time for mature judgment. The award went to Mr. Gardom for his Paper on "Manganese Steel Track Links." As it is possible the divide the full award into the actual medal and cash prize which accompanies it, advantage was taken of this to acknowledge the excellence of Mr. E. Longden's Paper on "Fluid Pressure in the Foundry." The Oliver Stubbs' Medal went to Mr. W. J. Buchanan, who quite rightly in acknowledging the award stressed the fact that he had been working for it for years. Herein, obviously, lies the true value of national awards. Moreover, he really deserved the recognition of his work, which is appreciated internationally. The E. J. Fox Medal, awarded by external assessment, was presented by its donor to Mr. FitzHerbert Wright, whose dynamic energy has created at long last a truly representative employers' federation—the Council of Ironfounders' Associations—to guard the interests of this the largest section of our industry.

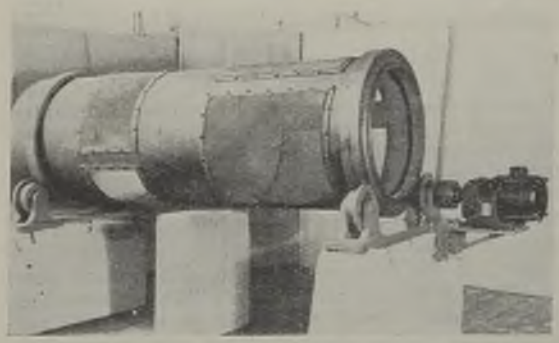
The conference opened on the Friday evening by the presentation of the Report on Mechanical Handling. After an initial hostile reception, based we cannot help but believe on a misconception of its objectives, it received much commendation. It awaits the final judgment of time, which we believe

(*Continued overleaf, col.* 2.)

Contents

PROCESSING MALLEABLE ORE

Our illustration shows a rotary sieve specially designed for removing the fines and extraneous matter from spent and new annealing ore or ensuring a mixture of the two. An internal flange prevents any of the fines reaching the second portion of the drum. This part, carrying a coarser mesh, allows the sieved



ore to be received in a barrow, while the oversized material is ejected from the end of the drum. The machine has been designed by Mr. R. White, of H. J. Maybrey, Limited, and is marketed by W. J. Molineux (Foundry Equipment), Limited, of Marlborough Road, London, N.19.

A WARTIME GOAL ATTAINED

Mr. E. F. Cone, writing in "Metals and Alloys," states that data recently released by the American Iron and Steel Institute, assembled in tabular form, show the capacities in short tons of pig-iron and steel, now and four years ago.

These statistics reveal that in that period the pig-iron capacity has been expanded by nearly 12,000,000 tons, and the steel capacity by more than 12,000,000 tons. Both of these exceed the 10,000,000-ton goal set in 1940.

	Capacity, Jan. 1, 1940.	Capacity, Jan. 1, 1944.
Pig-iron	55,723,640	67,391,270
Steel ingots ..	81,619,496	93,652,290
Electric steel ..	1,882,630	5,350,880

Comparable to this and even more sensational is the expansion in electric steel capacity—nearly 300 per cent.—in the four-year period.

To expand capacity to these large volumes and at the same time to operate furnaces at an average of 95 to 100 per cent. of capacity is a metallurgical and engineering achievement of the highest order—one that the industry and the nation can justifiably be proud of and one unequalled by any other country.

IRONFOUNDRY FUEL NEWS—VII

An inspector visiting an ironfoundry on behalf of the West Midlands Regional Panel of the Ironfounding Industrial Fuel Committee noticed a section of the stock-yard clearly marked "Coal for Ladles." He was interested to see that no coal at all was being stocked there, and, on enquiring into the reason, learned that all ladle drying was being done with coke.

The foundry was producing heavy castings, and all the ladles, varying from 6 to 30 tons capacity, were previously dried and preheated by fires of good, large coal. In view of the special need for economy in the use of this type of fuel the firm purchased a portable, coke fired ladle heater of the type shown in Fig. 10 of the booklet, "Don't Use Coal for Cupola Lighting, Ladle Drying. . . ." In addition to the advantage gained by reducing the amount of smoke in the foundry, about which the workmen were previously complaining, the firm is now only using 14 cwts. of coke per week instead of the 30 cwts. of coal previously used.

The booklet mentioned above has been circulated to all ironfounders, but additional copies are obtainable from the Fuel Officer, Ironfounding Industry Fuel Committee, Alvechurch, Birmingham.

THE MANCHESTER CONFERENCE

(*Continued from previous page.*)

will be more laudatory than adverse. We are unable at the moment to comment on the criticism levelled against the Papers devoted to either iron or steel founding, as we attended the non-ferrous session. This opened up with a sound film which served nearly as well, but not quite as well, as a personal introduction to the American Exchange Paper. The subject covered by Mr. Gregory was the creation of a light alloy foundry at the Caterpillar Tractor Works at Peoria, designed to use a maximum of female labour, whilst the film both showed and explained just how successful the planning had been. Then followed Mr. John Vicker's monumental Paper on the production of die castings for the Merlin engine. In April this was presented to the American Foundrymen's Association as the official British Exchange Paper. The two contributions are extraordinarily complementary, and if, and when, they reach enemy territory there will be a belated realisation of one of a large number of reasons why they lost the war!

Conferences, as well as the war industries, also require planning, and sincere congratulations are due to the overworked staff of the Institute for managing to fit in several committee meetings, a council meeting, a general meeting, a luncheon for 250 people, and the presentation of a dozen or so technical Papers and Reports.

INSTITUTE OF BRITISH FOUNDRYMEN

FORTY-FIRST ANNUAL MEETING AT MANCHESTER

Award of medals and election of officers

In the course of the Manchester conference of the Institute of British Foundrymen, on Friday and Saturday last, the forty-first annual general meeting was held in the Midland Hotel on Saturday morning. The retiring President (Mr. D. Sharpe, of Falkirk) was in the chair.

On the motion of Mr. Roy Stubbs (Past-President), seconded by Mr. H. W. Lockwood (President of the London Branch), the minutes of the preceding annual meeting were taken as read and were confirmed and signed.

Report of Council

The PRESIDENT presented the Annual Report of the Council for the year ended April 30, 1944, and commented on one or two of its main features. The membership, he said, had increased very materially, a fact which was indicated by the accounts. He made particular mention of the fact that the London Branch had put up an altogether unbroken record, the subscriptions of the Branch members during the year being about £700; the work the Branch had been able to do was very creditable.

The cost of publication of the "Proceedings," etc., had been very much heavier during the past year than formerly, as expected. The difficulty of getting materials for printing had been responsible for the delay in the publication of the "Proceedings."

Another matter to which the President referred was the work of the Educational Committee, and he paid tribute particularly to the work of the chairman of that Committee (Mr. S. H. Russell, Past-President).

On the motion of the President, seconded by Mr. V. C. Faulkner (Past-President), who welcomed the Report as a reflection of the success which had attended the President's year of office, the Report was unanimously adopted.

[The Report is printed on page 133 of this issue.]

Finance

MR. T. MAKEMSON (general secretary), who presented the accounts for the year ended December 31, 1943, said that, in view of the record membership achieved, the income and expenditure account showed a record income and a record expenditure. There was a substantial increase in the cost of printing, due mainly to the fact that during the year the Institute had distributed considerably more publications to the members than in any previous year. In addition to the normal publications, two or three special reports had been published. The list of members had been reprinted, and there had been some extra printing which occurred only at intervals of a few years.

The total expenditure by the Branches was not so high as it appeared at first sight, for the account included two years' expenditure by the South African Branch and 1½ years' income. In respect of the other Branches the figures were more or less normal. The excess of income over expenditure, as shown in the account for the year, was £469. In the years following the war there might be all kinds of uncertainties, and the Finance Committee was anxious to keep money in hand to meet those uncertainties. The balance sheet showed a balance of nearly £5,000 in the general funds, as distinct from the various funds which were earmarked for certain special purposes.

MR. C. W. BIGG (Past-President), proposing the adoption of the accounts and balance sheet, said that, although it was right to be cautious, there was clear evidence that the financial situation of the Institute gave cause for the greatest satisfaction.

The motion was seconded by MR. GAMESON, and carried.

Report of Technical Committee

The Twelfth Annual Report of the Technical Committee of the Institute (as published with the Annual Report), covering the year 1943-44, was presented by MR. J. W. GARDOM (the convener of that Committee), who commented on the reorganisation, the purpose of which was to enable the Committee to do more work and to bring more people into it. He also drew attention to the fact that two Papers were to be presented, during the Manchester conference, by two Sub-Committees of the Technical Committee. In view of his nomination as President of the Institute, Mr. Gardom relinquished the convenership of the Technical Committee, a post which he has held for many years. He wished his successor, Mr. P. A. Russell, every success in that office in the future, and proposed the adoption of the report.

MR. P. A. RUSSELL, B.Sc., who seconded the adoption of the Report, said he would do his best to carry on the work of the Technical Committee in the tradition established by Mr. Gardom. He expressed his appreciation of the kindness with which the announcement of his appointment had been received.

The PRESIDENT expressed the Institute's indebtedness to Mr. Gardom for his work in connection with the Technical Committee during the past 12 or 14 years. During that time he had built it up to something really substantial, and he was handing over its affairs in good working condition. There was no response to the President's invitation to discuss the Report, which was unanimously adopted.

Oliver Stubbs' Gold Medal

The PRESIDENT announced the award of the Oliver Stubbs' Gold Medal for 1944 to Mr. W. Y. Buchanan, a member of the Scottish Branch since 1932, the year in which his first Paper to the Institute was published in the Proceedings. Since that time, said the Presi-

I.B.F. Annual Meeting

dent, Mr. Buchanan had delivered more than a dozen Papers to the Institute and its Branches, and many of them had involved original research work. His main studies had been in connection with sand testing and properties, and more recently in connection with the effect of gases in cast iron. He held a Diploma of the Institute. He had also served on the Sands Sub-Committee of the Technical Committee since 1936. Apart from his contributions to the technical activities of the Institute, he had been a most active member of the Scottish Branch, on whose Council he had served for a number of years, and had recently been elected a member of the Council of the Institute.

MR. BUCHANAN, having been presented with a certificate in token of the medal (which latter could not be made during wartime), said he had made particular efforts to qualify for that coveted award for some time. Such encouragement of individual effort, he said, was by no means the least important activity of the Institute; quite a number of very promising young men were just on the point of coming forward, and the Institute would do well to carry on such good work. The writing of Papers was one of the best means of learning one's own business, for the preparation of a Paper which must withstand the slings and arrows of criticism made for better workmanship, and he believed that, on the whole, the author benefited most.

E. J. Fox Gold Medal

The PRESIDENT announced that the Council had unanimously accepted the recommendation of the Assessors (Sir Wm. J. Larke and Dr. J. E. Hurst) that the 1944 award of the E. J. Fox Gold Medal be made to Mr. FitzHerbert Wright.

MR. E. J. FOX, the donor of the medal, was in attendance to present it in token. In presenting this, the seventh, award, he said that Mr. FitzHerbert Wright was a director of the Butterley Company, Limited, and a director of the London & North Eastern Railway Company. He was a Vice-President of the British Cast Iron Research Association and a member of the Departmental Committee appointed by the President of the Board of Education to report on future collaboration between universities and technical colleges on higher technological education in relation to the needs of industry.

Again, Mr. Wright was chairman of the Council of Ironfoundry Associations, and it was particularly in recognition of the outstanding contribution he had made to the progress of the founding industry through his efforts in forming and organising the Council that the Institute had honoured him with the award. The merging of the interests of affiliated societies and associations in the founding industry, said Mr. Fox, was a most important work.

MR. FITZHERBERT WRIGHT, having been presented with a certificate as a temporary token of the medal, said that apparently the medal could be awarded to those who were endeavouring to make a homogeneous man as well as to those who were making homogeneous castings; and perhaps the attempts to develop the homogeneous man were the more difficult. It was due to the wonderful help he had received during the last three or four years from his many friends, including those in the foundry industry that he had been able to do the work which had resulted in the award of the medal. Never before had he enjoyed so much help, and since he had become a member of the Institute he had made more friends in the industry than ever before. The foundry industry had a tremendous part to play in the reorganisation of the world after the war. At the beginning of the war the foundry industry was in a state of considerable disorganisation; those in authority were apt to regard the industry as rather unimportant, particularly on the iron side. But a very great change had since been effected. The organisation of industry, not only in this country, but throughout the world, would prevent any recurrence of such a catastrophe as the present war. If everyone worked under decent conditions and received a decent rate of pay, wars would be unlikely; proper organisation would put that right and would advance our export trade.

British Foundry Medal

The first award of the British Foundry Medal (procured annually out of a fund of £500 provided by Mr. Barrington Hooper, C.B.E., and THE FOUNDRY TRADE JOURNAL, and to be awarded to the author of the best Paper presented to the Institute each year), was made to Mr. J. W. Gardom; and the cash award connected with it was made to Mr. E. Longden.

MR. BARRINGTON HOOPER, C.B.E., who referred to the occasion as a birthday, made the presentation of the medal token to Mr. Gardom. It was an honour, he said, that the first award should be made to one who had done so much by his untiring efforts, not only for the Institute, and especially in connection with the Technical Committee, but in other directions. The Paper in respect of which the award was made was entitled "Manganese Steel Castings." Although it was not possible under war conditions to produce the actual medal, he presented to Mr. Gardom a reproduction of its design, showing the running of metal into a book, symbolising the combining of practice and science. He asked Mr. Gardom to accept the design as a token, with the assurance that, as soon as possible the actual medal would be presented.

MR. GARDOM, in his response, said the Paper in respect of which the medal was awarded dealt with the mechanism applied to the production of manganese steel track links. The mechanisation of the job was in a way fairly simple. But there was very much in it besides that, for it had been said by the scientists that the job could not be done in the manner proposed. But in fact it was done. The foundry concerned had done the job properly in a technical manner, and quite cheaply; and it was so laid out that it would be capable of producing something else than the manganese steel links. In view of the fact that,

after producing the links, the foundry was reorganised within seven days as an agricultural plant, it would be appreciated that a little originality was devoted to its organisation in the first place.

Finally, Mr. Gardom said he was indeed proud of the honour conferred upon him, and he hoped the institution of the medal would encourage further the presentation of technical Papers.

MR. BARRINGTON HOOPER, referring to the cash award which was made with the medal (which could be made, at the discretion of the Council, to the recipient of the medal or to another member), said it had been decided to make the cash award on this occasion to Mr. E. Longden, for a Paper entitled "Fluid Pressure in the Foundry." Unfortunately, Mr. Longden was not able to attend the meeting to receive the award, but Mr. Barrington Hooper paid tribute to him and assured him that the Institute was proud to acknowledge his good work, not only in respect of one particular Paper, but also his efforts on behalf of the Institute and the industry in the past.

The PRESIDENT took the opportunity to express the thanks of the Institute to Mr. Barrington Hooper and THE FOUNDRY TRADE JOURNAL for their generosity and their continued concern for the development of the industry. He endorsed Mr. Buchanan's reference to the inspiration which such awards afforded to individuals in the industry to strive for progress.

Diplomas

The GENERAL SECRETARY announced that the Council had awarded the Institute's Diploma to the following:

Mr. Ian Ross, for a Paper on "Magnesium Foundry Technique," presented to the London Branch.

Mr. R. C. Tucker, M.A., for a Paper on "Cupola Operation and Control," to the East Midlands Branch.

Mr. A. Wood, for a Paper on "A Small Moulding Unit," to the Birmingham Branch.

Mr. M. R. Hinchcliffe, for a Paper on "An Outline of Gravity Die Casting," to the Scottish Branch.

Mr. J. Blakiston, for a Paper on "Mechanical Aids to Core Production," to the East Midlands Branch.

Portraits of Original Members

MR. J. S. G. PRIMROSE presented to the Institute the photographs of twelve original members who had been "on active service" with the Institute for 40 years. He had secured those photographs with the kind co-operation of the members concerned, and he asked that the Institute should accept them, together with a record of the activities of the members concerned, in honour of their long and continued service. The twelve members concerned were:—Mr. F. J. Cook (Birmingham), President, 1908-09; Mr. J. T. Goodwin (Chesterfield), President, 1927; Mr. C. E. Williams (Cardiff), President, 1933; Mr. J. J. McClelland (Newport); Mr. R. L. Rankin (Alexandria); Mr. Jas Galt (Paisley); Mr. J. N. Chadwick (Bolton); Mr. T. W. Markland (Bolton); Mr W. H. Meadowcroft (Burnley); Mr. W. B. Parker (Rugby); Mr. K. M. Burder (Loughborough); and Mr. D. A. Aston (London).

Election of President

The PRESIDENT proposed the election of Mr. J. W. Gardom as President for the ensuing year, on the unanimous recommendation of the Council. He refrained from eulogy, being convinced that the proposal would be received with general approval.

MR. C. H. KAIN accepted gratefully the honour of seconding the proposal. He referred to Mr. Gardom's perennial originality in his approach to difficult problems, which seemed to be enhanced as the years passed, and said that his ability and determination would serve the Institute in every good stead in the very difficult times which were likely to arise in the not far distant future.

(The resolution was carried with acclamation.)

MR. GARDOM, having been invested with the Presidential chain of office by Mr. Sharpe, acknowledged his appreciation of the honour accorded him, and took the opportunity to propose the thanks of the Institute to Mr. Sharpe for his able conduct of its affairs during the past year. Although, he said, Mr. Sharpe was living in Scotland, a fact which involved an additional strain upon a President, he had attended Council meetings, many of the Committee meetings and many Branch meetings. Throughout his year of office he had served the Institute well, and the members were anxious to assure him how much they appreciated it.

(The vote of thanks was accorded with enthusiasm.)

MR. SHARPE, responding, assured the members that he had derived great pleasure from such service as he was able to render. The associates with whom he had worked and the new friends he had made during his year of office had widened his outlook on life enormously and, although the work had been rather harassing, he looked back upon his year as one of the most pleasant periods in a "long short life."

(At Mr. Gardom's request, Mr. Sharpe continued to preside during the annual general meeting.)

Election of Vice-Presidents

MR. F. J. COOK (Past-President), proposing the re-election of Mr. D. H. Wood, was confident that every member of the Institute supported the request that he should continue to serve in office.

MR. H. WINTERTON (Past-President), seconding, assured Mr. Wood how much his efforts in the past on behalf of the Institute had been appreciated, and said that all looked forward to his continued help.

(The motion was carried with acclamation.)

MR. WOOD, expressing his appreciation of the honour, said that inasmuch as he had been elected Senior Vice-President on four occasions, thereby establishing what he believed to be a record, and the Council having decided that he should remain in cold storage until the first post-war conference, he was delighted to accede to their wishes.

DR. J. E. HURST (Past-President) proposed, on the unanimous recommendation of the Council, the election of Dr. T. Swinden as Junior Vice-President. He recalled that Dr. Swinden had joined the Institute in 1908. In the intervening period he had attained a position of very great eminence in the metallurgical

I.B.F. Annual Meeting

world, being perhaps the leading metallurgist in the realm of ferrous metallurgy, particularly steel metallurgy. Because of that, it was very fitting that he should be elected a Vice-President, for that would serve to emphasise that the Institute was equally as interested in the metallurgy of steel in so far as it applied to the foundry as it was in cast iron and the non-ferrous metals.

Dr. Swinden was President of the Sheffield Branch in 1922-23, and was a member of the Council of the Institute from 1911 to 1916. He was serving as director of research in the United Steel Companies, Limited, and the Central Research Laboratory at Stocksbridge; he was a director of the United Steel Companies, Limited, and their subsidiaries. He was a Carnegie gold medallist in the Iron and Steel Institute, and had also been awarded the Bessemer Medal of that Institute, which was recognised as the blue riband of metallurgy in this country. His contributions to metallurgical literature were many and, naturally, were very extensive in the field of steel metallurgy. The Institute had received contributions from him, one of his earliest being in 1910, dealing with cupola slags, a Paper which was still regarded as a classic among those interested in that particular branch of foundry metallurgy. Many of the members still remembered his contribution on ingot moulds, presented jointly with Mr. Bolsover (one of his staff) to the Sheffield conference in 1935.

To elect Dr. Swinden as a Vice-President would reflect honour on the Institute, whilst at the same time Dr. Swinden would be honoured. Unfortunately, he had not yet recovered from his recent illness, and Dr. Hurst suggested that the meeting would like to send a message expressing sympathy and wishing him a speedy return to his normal activities.

DR. C. J. DADSWELL, seconding, said that Dr. Swinden was indeed one of the most eminent metallurgists in the steel industry, and not merely in this country. Before the war he had served on a number of Committees of the Iron and Steel Institute, and was chairman of some of them. More recently, following the death of Dr. Hatfield, he had been chairman of the Technical Advisory Committee for the Iron and Steel Control. In that capacity he had done remarkable work, including the investigation of low-alloy steels, which had been so important both here and in America. Further, he had contributed much in connection with the activities of the United Steel Companies, Limited, in research on refractories.

(Dr. Swinden was unanimously elected to office, and the meeting was assured that a message of sympathy in his illness would be sent to him, as suggested by Dr. Hurst.)

Auditors

On the motion of Mr. H. W. Lockwood, seconded by MR. L. W. BOLTON, the meeting elected Messrs. J. & A. W. Sully & Company (chartered accountants) auditors for the ensuing year.

Election of Members of Council

The following, on the nomination of the Council (there being no further nominees), were declared elected to the Council for the two years ending 1946: Mr. H. Bunting, Dr. A. B. Everest, Mr. E. J. L. Howard, Mr. A. Phillips and Mr. R. B. Templeton.

Overseas Greetings

On the chairman's suggestion, a cable of greetings was sent from the conference to the American Foundrymen's Association. It was recalled that the Institute had received a message of greeting from the A.F.A. Congress at Buffalo last April.

1941-42 "Proceedings"

Inasmuch as copies of the 1941-42 "Proceedings" of the Institute, which had been sent to members in South Africa, had been lost at sea, members were asked to send to the General Secretary any spare copies they might have, to be sent to the South African Branch.

MR. SHARPE, before vacating the chair, expressed his gratitude to the members of Council and the members of the Institute generally for the companionable way in which they had assisted him during his year of office as President. He took the opportunity also to express his thanks to Mr. John Bolton (who has been acting secretary during Mr. Makemson's service with the Ministry of Supply), and said that the work of a President became a pleasure with the assistance of such a man. He had made the arrangements for the Manchester conference almost single-handed. The Council had been well advised to carry on with those arrangements, in spite of the prevailing conditions, and the attendance had justified that decision. Mr. Sharpe paid tribute also to the other members of the staff of the Institute.

Presidential Address

MR. J. W. GARDOM delivered his Presidential Address, which will be printed in our next issue.

Edward Williams' Lecture

The Edward Williams' lecture was delivered by Sir Charles G. Darwin, K.B.E., M.C., M.A., Sc.D., F.R.S. (Director, National Physical Laboratory), in which he discussed the subject of tolerances and inaccuracies in physics

The PRESIDENT, welcoming Sir Charles, said it was a great compliment to the Institute that the Edward Williams' lecturers during the past few years had included two of this country's greatest scientists in the field of physics, namely, Sir Charles Darwin in 1944 and Sir W. Laurence Bragg in 1939.

SIR CHARLES DARWIN, whose personality and facility of expression kept the audience intensely interested in his theme, illustrated by a variety of examples that in all that we did there were errors and tolerances, and urged that the subject of tolerances was worthy of careful attention.

This, too, is being printed in a future issue.

(*Continued on page* 132, *col.* 2.)

TINNING CAST IRON

By R. A. CRESSWELL, B.Sc.

Although cast iron is one of the earliest known metals, and tin is even more ancient, it was believed, until recently, that hot-dipped tin coating on cast iron must inevitably be inferior: and it was difficult to make a soldered joint, and not practicable to bond a white metal bearing strongly to a cast-iron shell. A common expedient was to electro-deposit a coating of iron or copper on the cast-iron parts before hot-tinning. This was only successful if the coatings were thick enough, and the process was quite lengthy.

The trouble arises because cast iron is by no means a homogeneous material, and the pickling acids which remove iron oxide do not attack graphite or silica. Indeed, thorough pickling usually results in the formation of a heavy smear of graphite which is exceedingly difficult to remove, and which gives rise to serious discontinuities in the hot-dipped tin coating.

As the result of considerable research at the Tin Research Institute, it can now be said that a wide range of cast irons can be very successfully hot-tinned if they are suitably prepared, and the procedure now devised is, in fact, less complicated than some of the processes hitherto in use.

We are not free to publish the details of the new technique, but if application is made to the Tin Research Institute by any firm engaged on war contracts, we will apply for the necessary sanction to the Ministry of Supply, Fraser Road, Greenford, Middlesex, on whose behalf the research has been carried out.

* See T.R.I. publication No. 111 and "Tin and its Uses" No. 14

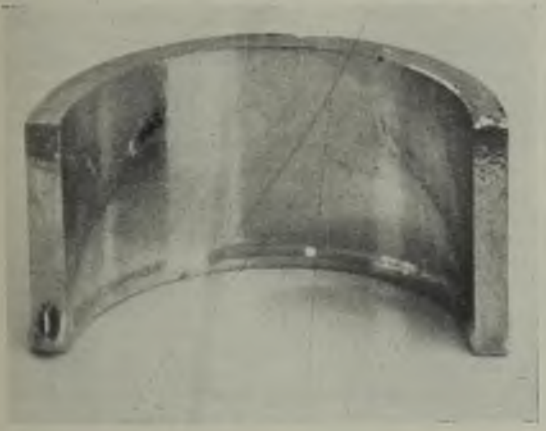


FIG. 1.—MACHINED CAST-IRON BEARING SHELL TINNED BY THE NEW PROCESS.

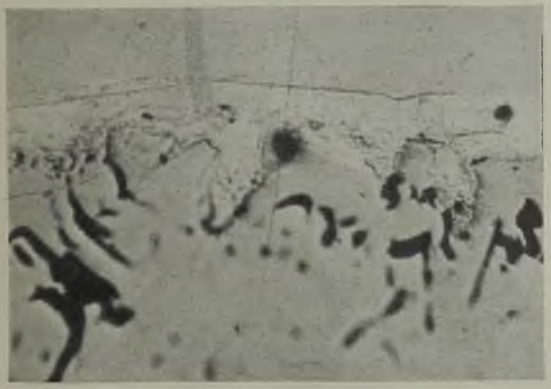


FIG. 3.—WHEN CAST IRON IS PREPARED BY THE NEW METHOD THE TIN COATING IS CONTINUOUS AND KEYS ITSELF INTO THE CAST-IRON SURFACE. ×500.

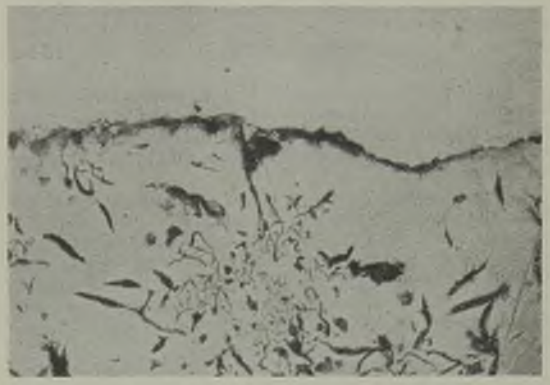


FIG. 2.—A PIECE OF CAST IRON PREPARED BY THE USUAL PICKLING PROCESS SHOWING HOW A SMEAR OF GRAPHITE FORMS OVER THE SURFACE. ×500.

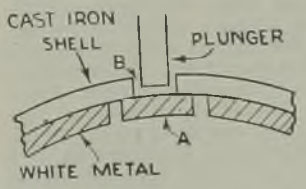


FIG. 4.—TEST FOR MEASURING ADHESION OF WHITE METAL BEARING ALLOY TO CAST-IRON SHELL.

Striking Success Achieved

The success of the process may be judged from three aspects: general appearance, smoothness, gloss, etc.; protection from corrosion; solderability or bond strength to white metal. The first two aspects may be left to the evidence provided in the accompanying photograph (Fig. 1); the third is the most difficult to

(*Continued overleaf, col.* 2.)

CAST DIES FOR FORGING SHELLS

Mr. R. R. Taylor, of Robert Taylor (Ironfounders), Limited, of Larbert, in a letter to the editor of "Metals and Alloys" on the above subject, discloses some fine achievements. *Inter alia,* he says:—

"Several years ago it was decided to adopt a nickel-chromium-molybdenum iron as the standard material for these dies. This is produced in a 30-in. dia. cupola. The analysis varies according to section and is normally within the following limits:—T.C., 2.80 to 3.00 per cent.; Si, 1.60 to 2.20; Mn, 0.70 to 1.00; P, 0.04 to 0.08; S, 0.15 (max.); Ni, 2.00 to 4.50; Cr, 0.10 to 0.50; and Mo, 0.60 to 0.90 per cent.

"The mechanical properties obtained after a stress-relieving treatment of 5 hrs. at 315 deg. C. conform to the following range and are consistently obtained in normal production:—Tensile strength (1.2-in. dia. bar machined to 0.798-in. dia. test-piece), 40 to 46 tons per sq. in.; transverse strength (1.2-in. bar, 18-in. centre), 4,500 to 5,500 lbs.

"Incidentally, these results are comparable with those obtained in America by Flinn and Reese on a similar type of material, the main difference being that our iron has a higher total carbon through being cupola produced.

"The following service results are regularly obtained with the above material: Piercing dies for the 25-pounder shell give an average of 36,400 billets, the highest and lowest figures recorded being 42,184 and 32,040. It is of interest to note that the addition of 0.15 per cent. V to the above metal resulted in a considerably improved performance, the highest figure being in excess of 62,000 forgings.

"Similar excellent results were obtained on nosing dies for all shells varying from the 75 mm. to the 9.2 in. and on A/P bombs up to and including the 500-pounder. It should be emphasised that the above results were obtained from dies which were not recut during service.

"Cast-iron dies are now being extensively used in the drop stamping industry. Such dies have the profile accurately cast to size so that hand finishing is all that is required on the impression. These dies are mainly being used in the stamping of light alloys, although many sets are in operation stamping steel and non-ferrous metals. Such dies have played an important part in the production of stampings for prototype aircraft, as they can be ready for operation in a fraction of the time it takes to die sink the impression in forged steel die blocks, and at the present time help to relieve congestion in the die sinking trade. Remarkable performances have been obtained, and it would appear that these cast-die blocks will stand up as long as forged steel blocks.

"Dies have been cast up to 2 tons in weight for each half, for use in hammers up to 5-ton capacity. The die castings are not heat-treated in any way, and are manufactured in the nickel-chromium-molybdenum iron previously mentioned except that the nickel content may be increased to 5.5 per cent. in very heavy die blocks."

TINNING CAST IRON

(*Continued from previous page.*)

obtain and to assess, and can only be measured experimentally, although Figs. 2 and 3 indicate the nature of the progress made.

Test for Bond Strength

The test used by us to measure bond strength was devised for a study of the general problems of the adhesion of bearing linings.* A layer of white metal is cast on to the prepared iron surface. A small disc A (Fig. 4) is isolated by cutting with a pipe drill. A hole B is then drilled through the cast iron under the centre of the disc of white metal and finished with a flat-ended drill. The test consists of measuring the force required to break the annular bond by pushing the plug away from its base.

This test has demonstrated that the normal methods of tinning cast iron provide little or no adhesion, and values fluctuate between zero and 1.5 tons per sq. in. By using the new technique, adhesion values between 3 and 4 tons per sq. in. are obtained consistently.

Important Industrial Implications

This development will greatly improve the appearance of food handling equipment, will increase its useful life, and facilitate its being maintained in a hygienic condition. It will also enhance the sales appeal of such household equipment as meat mincers, etc. The industrial implications are perhaps even more important. Stronger soldered joints will increase durability, and a reliable bond between cast-iron shells and white-metal bearings will simplify and cheapen many designs and facilitate important economies of metal.

EMERGENCY SERVICES ORGANISATION

The attention of all firms engaged in war production for the Admiralty, Ministry of Supply or Ministry of Aircraft Production, is drawn to the necessity of the immediate reporting of damage arising from enemy action, civil fire, explosion or accident, to the Local Reconstruction Panel of the Emergency Services Organisation. Panels, which exist in every individual area in Great Britain and Northern Ireland, are able to render great assistance in facilitating the restoration of production. They are also the official channels for immediate report of damage to the appropriate production departments, to whom the earliest possible notification is imperative.

If firms are not acquainted with the address of their appropriate panel, such information will be sent upon application to the Emergency Services Organisation, Ministry of Aircraft Production, Millbank, London, S.W.1.

The pig-iron situation in America has eased somewhat and now ironfounders are being allowed to make limited quantities of cooking utensils.

PROGRESS OF BIRMINGHAM BRANCH

A MOST SUCCESSFUL YEAR

The report presented by Mr. A. A. Timmins (hon. secretary and treasurer) at the recent annual meeting of the Birmingham, Coventry and West Midlands Branch of the Institute of British Foundrymen, held at the James Watt Memorial Institute, Birmingham, describes the past year as one of the most successful in its history. Much greater interest, it was stated, had been displayed in the lectures, and the average attendance over the last six meetings was 45. Subjects covered a wide field of interest, embracing such matters as "Current Labour Problems," "A Small Moulding Unit," "Feeding of Non-ferrous Castings," "The Non-ferrous Sub-Committee's Report on Defective Castings," "Industry and Education," and "Spectroscopic Analysis." The last-named Paper was to have been given by Dr. Leonard, of Dublin University, but he was unfortunately unable to leave Ireland owing to travel restrictions. The Branch was fortunate, however, in securing the presence of Mr. D. M. Smith, of the British Non-ferrous Metals Research Association, who, at short notice, gave a lecture on the same subject. On this occasion an invitation was extended to the Birmingham metallurgical societies, and an attendance of 80 was recorded. A noticeable and encouraging feature of all the meetings had been the tendency for the younger members to take an active and useful part in the discussions. It was gratifying that Mr. T. Makemson, General Secretary of the Institute, had been able to attend many of the meetings.

Branch Membership

A new record had been achieved in the membership of the Branch, which still occupied the position of third largest in the Institute. The total membership stood at 394, against 348 last year. During the year 52 new members were elected, while there had only been six losses by resignation or death. Mr. A. Harley, who died recently,was a well-known member, and a Past-President of the Institute. A younger member, Lieut. F. W. Taylor, was killed in action in Italy.

The annual dance was again arranged, some 75 members and ladies attending. Financially, the Branch had had a very successful year. The subscription income totalled £579 16s. 6d., compared with £578 15s. last year. Branch expenditure was a little lower than last year—£119 3s. 2d., against £124 12s. 3d.

The report and accounts were adopted.

Appointment of Officers

Officers for the ensuing year were appointed, Mr. G. R. Shotton, Senior Vice-President, being elected to succeed Mr. J. J. Sheehan as Branch President. Mr. Sheehan said that Mr. Shotton had been conscientious in attendance at the meetings, and in devotion to the work of the Branch and the Institute. He had an extensive technical knowledge, which he had made available unstintedly.

Mr. Shotton, having taken the chair, spoke of the gratification he felt at his election, and submitted the name of Mr. A. J. Shore as Senior Vice-President. Mr. Shore, he said, had served as Junior Vice-President during the past year, and had had something like twenty years' association with the Branch. Throughout that period he had shown great interest in the meetings, and as a member of the Branch Council had devoted a lot of time to its work.

The President's proposition was endorsed by the meeting.

Mr. E. C. Dickinson (Coventry), was appointed Junior Vice-President, and Mr. A. A. Timmins was re-elected hon. secretary and treasurer. There were five candidates for four vacancies on the Branch Council, and, on a ballot, the following were successful:—Messrs. J. Hird, A. Lister, W. Todd, and A. G. Robiette. Messrs. J. J. Sheehan, T. H. Gameson, A. J. Shore, and A. Tipper were elected to serve as delegates to the General Council of the Institute.

Institute Technical Council

When the appointment of representatives on the Institute Technical Council was under consideration, the secretary explained that during the last few weeks a change had taken place in the constitution of that body. With the object of making it more representative, both from a geographical and metallurgical point of view, it had been decided to accept only one representative from each of the Branches, afterwards co-opting such other members as might be qualified by reason of their peculiar experience. The Branch-President, Mr. Shotton, was appointed for this duty.

Thanks were accorded to Mr. Sheehan and the Branch Council for services rendered during the past year, Mr. E. Hunter remarking that much of the success was due to Mr. Sheehan's dynamic personality.

A diploma of the Institute, awarded for his Paper, entitled "The Continuous Production of Manganese Steel Castings from the Tropenas Converter," in which he had the collaboration of Mr. J. Hill, was handed to Mr. L. W. Bolton.

Following the business proceedings, a member of the Branch, Mr. E. R. Dunning, gave his Paper, which has already been published, on "The Use of the Syphon Brick Method of Cupola Tapping."

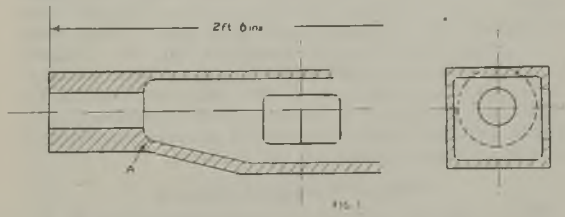
Last year, the American foundry equipment industry sold $52,656,000 (say £12,500,000) worth of plant, whilst the turnover in electric steel-melting furnaces was £2,700,000.

The May issue of the "Nickel Bulletin" contains abstracts dealing with the low temperature properties of welded joints, fatigue strength of welded nickel steel joints, effects of nitrogen in austenitic valve steels, resistance of materials to attack by high-temperature steam and the scaling of steels in furnace atmospheres. Copies of this publication may be obtained, free of charge, on application to the Mond Nickel Company, Limited, Grosvenor House, Park Lane, London, W.1.

FOUNDRY INQUEST—VII

By "Coroner"

Many wasters are caused by wrong gating methods and often an alteration in runner position will cure a trouble. Fig. 1 shows a casting requiring to be pressure-tight. It was essentially a square tube 2 ft. 6 in. long with three outlet holes on one side and round bosses at each end. The general metal thickness was ¼ in., while the bosses were comparatively heavy.



Making two in a box and running from one end resulted in a large number of rejects from a shrinkage cavity at A, Fig. 1, which was difficult to see in the rough casting. Transferring the gate to the centre eliminated the trouble, which had been caused by a "hot spot" being created in the region of A, which retarded solidification at this point, resulting in the drawn area which, on the hydraulic test, failed to withstand the required pressure.

PUBLICATION RECEIVED

Standards Review (Vol. 1, No. 1. May, 1944). To be published quarterly by the British Standards Institution, 28, Victoria Street, London, S.W.1. Price 3s. 6d. for members and 7s. 6d. for non-members.

It is an excellent notion to publish a quarterly bulletin of a popular character, for so many concerns only make contact with the Institution when they are requested by a customer to furnish goods against a B.S.I. specification. The first issue has necessarily to be devoted to giving a general appreciation of what standardisation means and how it operates both nationally and internationally. Here it is suggested that there is an omission, as the man in charge of a factory likes to know with whom he has to deal and the names of the executive staff should certainly have been included. This first issue runs to 32 pages and is well illustrated. It seems germane in this case to state that the editor has set himself a standard which it will be difficult to maintain.

Chile is to add to metallurgical industries, which now centre around copper, by the installation of a steelworks and rolling mill. An annual production of 100,000 tons of finished steel is envisaged. Sections of the plant are expected to start up in the summer of 1946.

ANNUAL REPORT OF THE INSTITUTE OF BRITISH FOUNDRYMEN

(*Continued from page* 138.)

E. S. Renshaw, and Mr. P. A. Davenport. Mr. Rivett has been appointed hon. secretary to the Sub-Committee. An extensive study has been made on the basic lining of cupolas and a first report on this subject is to be presented to the 1944 annual meeting. Further work is being continued under the convenership of Mr. L. W. Bolton.

Defects in Castings Sub-Committee.—For a number of years several Sub-Committees have given consideration to the preparation of an atlas illustrating and identifying typical defects in castings. It is now proposed to correlate this preliminary information with a view to the ultimate publication of an illustrated booklet, which it is considered will be of particular value to inspection authorities as well as to foundrymen. For this purpose a special Sub-Committee has been appointed, with Mr. J. W. Gardom as convener.

Details of the personnel of the Technical Council, Technical Committee, and the Sub-Committees were given in the recently published List of Members of the Institute.

The Report is signed by Mr. J. W. Gardom, convener.

INSTITUTE OF BRITISH FOUNDRYMEN

(*Continued from page* 128.)

At the conclusion of the morning's proceedings, the President expressed the good wishes of the Institute to the members who are serving in H.M. Forces.

To kindred societies he voiced the greetings of the Institute, particularly to the Institute of Vitreous Enamellers, represented at the conference by its chairman, Mr. Todd. There were also personal friends of the members present, and he accorded them a hearty welcome.

Again, he offered his personal thanks to the staff of the Institute, and particularly to the general secretary and the acting secretary, who, with their colleagues, constituted a very good team: and finally to his own staff, especially his secretary, who during the past few months had put up with much extra work and had accepted it willingly.

Mr. K. J. Zwanziger, the hon. secretary, was the speaker at the inaugural meeting of the Cape Town Section of the South African Branch of the Institute of British Foundrymen. Mr. L. Rowley presided. The subject of Mr. Zwanziger's Paper was "Patternshops in Holland." The author, by the way, joined the Royal Netherlands Navy at the outbreak of war, and was sent to Sourabaya. On the naval base being evacuated in the face of the Japanese advance, he managed to escape and, after many hazardous adventures, returned to South Africa.

ANNUAL REPORT OF THE INSTITUTE OF BRITISH FOUNDRYMEN

With Twelfth Report of the Technical Committee

This report covers the period May 1, 1943, to April 30, 1944.

Finance

There has been an increase of £1,094 7s. 3d. in the expenditure of the Institute during the year, very largely due to the additional publications which have been circulated to members. Increases of expenditure in other directions are for the most part a direct reflection on the ever increasing membership of the Institute and the activities of its various Committees and the Branches. It is gratifying therefore to find that once again it has been possible to transfer the substantial balance of £419 13s. 1d. to the accumulated funds of the Institute, after making a small reserve of £50 to cover the cost of tokens which have been supplied during the war to recipients of the Oliver Stubbs and E. J. Fox awards.

There have been satisfactory increases in the amount of subscriptions received and the value of publications sold, and while the increase in the revenue from investments is relatively small, it is a welcome sign of the steadily developing resources of the Institute. The accounts of the Bristol and West of England Branch are included in this report for the first time, and well reflect the encouraging work which is being carried on in the South-Western area of the country.

It is also fitting to draw attention to the very noteworthy growth of the London Branch, whose record membership has yielded over £700 in subscriptions. It will be recalled that it was impossible last year, owing to delays in mail, to include full particulars of the 1942 accounts of the South African Branch. These are, however, embodied in the present statement together with the 1943 particulars and again reflect the progress of the Dominion Branch.

Membership

The present position of the membership and the changes which have taken place during the year are recorded in Tables I and II. Once again there is a marked increase to record, particularly in the Bristol,

TABLE I.—*Changes in Membership*, 1943–1944.

	Subscribing firms.	Members.	Associate members.	Associates.	Associates (students).	Totals.
At April 30, 1943	96	1,093	1,294	83	36	2,602
Additions and transfers from other grades	31	181	228	13	4	457
	127	1,274	1,522	96	40	3,059
Losses and transfers to other grades	—	21	76	11	5	113
At April 30, 1944	127	1,253	1,446	85	35	2,946

TABLE II.—*Analysis of Membership at April* 30, 1944.

Branch.	Subscribing firms.		Members.		Associate members.		Associates.		Associates (students).		Totals.	
Birmingham	13	(12)	194	(167)	164	(149)	14	(15)	4	(5)	389	(348)
Bristol	4	(4)	56	(45)	50	(42)	1	(1)	—	(—)	111	(92)
East Midlands	7	(6)	88	(81)	170	(157)	5	(4)	2	(2)	272	(250)
Lancashire	16	(15)	135	(131)	234	(212)	16	(17)	1	(1)	402	(376)
London	18	(15)	267	(237)	182	(149)	5	(2)	—	(—)	472	(403)
Middlesbrough	1	(1)	42	(36)	62	(51)	3	(6)	11	(12)	119	(106)
Newcastle	9	(6)	26	(25)	12	(17)	19	(21)	5	(5)	71	(74)
Scottish	10	(8)	118	(106)	224	(213)	3	(2)	3	(2)	358	(331)
Sheffield	7	(6)	95	(84)	77	(80)	2	(2)	—	(—)	181	(172)
Wales and Monmouth	—	(—)	48	(40)	61	(45)	1	(—)	9	(9)	119	(94)
W.R. of Yorks	6	(7)	71	(68)	117	(112)	5	(4)	—	(—)	199	(191)
South African	35	(15)	86	(50)	71	(50)	11	(9)	—	(—)	203	(124)
Unattached	1	(1)	27	(23)	22	(17)	—	(—)	—	(—)	50	(41)
TOTALS	127	(96)	1,253	(1,093)	1,446	(1,294)	85	(83)	35	(36)	2,946	(2,602)

Figures in brackets are totals at April 30, 1943.

Institute's Annual Report

London, South African, and Wales and Monmouth Branches.

It is with regret that the Council has to record the deaths of the following members:

Prof. E. Touceda, Honorary Life Member. Elected 1922.

Mr. W. Gibson, Member, Newcastle Branch. Elected 1939.

Mr. J. Graham, Member, Scottish Branch. Elected 1921.

Mr. A. Harley, Past-President of the Institute, Past-President International Committee of Foundry Technical Associations, Past-President of the Birmingham Branch. Elected 1910.

Mr. W. H. Hatfield, D.Met., F.R.S., Member, Sheffield Branch. Branch Past-President. Elected 1909.

Mr. C. V. Lineham, Member, East Midlands Branch. Elected 1943.

Mr. W. Machin, M.B.E., Lancashire Branch. Elected 1917.

Mr. W. O'Keefe, Member, London Branch. Elected 1917.

Mr. F. L. Patterson, Member, Newcastle Branch. Elected 1932.

Mr. S. W. Wise, Member, West Riding of Yorkshire Branch. Past Vice-President and Registrar of the Newcastle Branch, Honorary Secretary of the West Riding of Yorkshire Branch. Elected 1912.

Mr. T. Blackadder, Associate Member, Scottish Branch. Elected 1928.

Mr. H. B. Clapp, Associate Member, London Branch. Elected 1925.

Mr. J. S. Ferguson, Associate Member, Scottish Branch. Elected 1934.

Mr. J. Forrester, Associate Member, Scottish Branch. Elected 1933.

Mr. A. Francis, Associate Member, South African Branch. Elected 1939.

Mr. J. Kein, Associate Member, Lancashire Branch. Elected 1943.

Mr. J. Marks, Associate Member, Birmingham Branch. Elected 1909.

Mr. J. N. McArthur, Associate Member, Scottish Branch. Elected 1926.

Mr. W. Olsen, Associate Member, Newcastle Branch. Elected 1910.

Mr. T. T. Owen, Associate Member, London Branch. Elected 1933.

Mr. H. Smith, Associate Member, West Riding of Yorkshire Branch. Elected 1939.

Mr. S. Southcott, Associate Member, Wales and Monmouth Branch. Branch Past-President. Elected 1928.

Mr. W. Wright, Associate Member, Scottish Branch. Elected 1913.

Mr. J. Young, Associate Member, Scottish Branch. Elected 1919.

Mr. Ferguson, who was resident in Hong Kong, and was taken prisoner while serving in the Hong Kong Volunteer Defence Corps, died while in Japanese hands.

Ninety-four members are now serving in H.M. Forces.

Honours Conferred upon Members

The following are amongst those who have been honoured during the past year:—

Mr. F. Swift (Member) was a recipient of the M.B.E. in the Birthday Honours list.

Mr. E. J. Kelly (Member) was awarded the British Empire Medal in the New Year Honours list.

Mr. G. E. France (Member) was re-elected President of the Foundry Trades' Equipment and Supplies Association and Mr. D. Cherry Paterson (Member) was re-elected a Vice-President.

Dr. W. T. Griffiths (Member) was elected President of the Institute of Metals and Mr. G. L. Bailey (Member) a Vice-President.

Sir Summers Hunter (Member) was elected President of the North-East Coast Institution of Shipbuilders and Engineers.

Mr. G. T. Hyslop (Member) was re-elected Vice-President of the Association of Bronze and Brass Founders and chairman of the Association's Technical Committee.

Mr. P. Pritchard (Member) was re-elected President of the British Cast Iron Research Association and Mr. V. Jobson, Mr. W. B. Lake, Dr. T. Swinden, Mr. P. H. Wilson, O.B.E., and Mr. FitzHerbert Wright (Members) were re-elected Vice-Presidents of the Association.

Mr. FitzHerbert Wright (Member) was re-elected chairman of the Council of Ironfoundry Associations.

Awards

E. J. Fox Gold Medal.—The 1943 award of the E. J. Fox Gold Medal was made on the recommendation of the Assessors, Sir William J. Larke and Dr. J. E. Hurst, to Mr. W. B. Lake, J.P., chairman and managing director, Lake & Elliot, Limited, Braintree, Past-President of the Institute. The presentation took place at the annual meeting in London, on June 26, 1943, and was made by Mr. E. J. Fox.

Oliver Stubbs Gold Medal.—The Council unanimously awarded the Oliver Stubbs Gold Medal for 1943 to Mr. C. H. Kain, in recognition of the value of the many Papers which he has presented to the Institute, his long service as a member of the Technical Committee, his convenership of the Steel Castings Sub-Committee, and of his services on the General Council of the Institute and a number of standing committees.

Meritorious Services Medal.—The Meritorious Services Medal for 1943 was awarded to Mr. A. Hares, hon. secretary of the newly formed Bristol and West of England Branch. Mr. Hares was very largely responsible for the formation in 1936 of the Bristol Section of the Wales and Monmouth Branch, and for the development of this Section which led to the granting to it of Branch status in January, 1943.

Diplomas.—Diplomas were awarded to the following members during the year:—Mr. J. Arnott (Scottish Branch), Mr. L. W. Bolton (Birmingham Branch), Mr. W. Brown (Lancashire Branch), Mr. F. Dunleavy (East Midlands Branch), Mr. W. Gladwell (London Branch), Mr. J. R. Horton (East Midlands Branch), Mr. J. Hill (Lancashire Branch), Mr. J. McPheat (Scottish Branch), Mr. W. Montgomery (Scottish Branch), Mr. J. Vickers (Scottish Branch), and Mr. H. G. Warrington (London Branch).

It will be recalled that Diplomas are awarded by the Council to the authors of Papers of outstanding merit, and that of recent years Diploma holders have been ineligible for further awards. The Council, on the recommendation of the Literary and Awards Committee, has now resolved that, in future, Papers of exceptional merit presented to the Institute by authors to whom a Diploma has already been presented, may be recognised by a suitable endorsement on the authors' Diploma.

British Foundry Medal.—As announced in the last annual report, the first award of the British Foundry Medal will be made at the forthcoming annual meeting. The medal is to be procured annually out of a fund of £500 provided by Mr. Barrington Hooper, C.B.E., and THE FOUNDRY TRADE JOURNAL, and will be awarded by the Council to the author of the best Paper presented to the Institute each year.

Edward Williams' Lecture

The Edward Williams' Lecture for 1943 was delivered at the annual meeting by Dr. S. F. Dorey, Chief Engineer Surveyor, Lloyds Register of Shipping, whose subject was "The Contribution of the Steel Founder to Marine Engineering."

Branch Activities

Full syllabuses of meetings were arranged by Birmingham, Bristol, East Midlands, Lancashire, London, Middlesbrough, Scottish, Sheffield, South African, Wales and Monmouth, and West Riding of Yorkshire Branches, and by the Burnley, East Anglian, and Falkirk Sections. A number of meetings were also arranged by the London Branch at Slough, which resulted in a successful application being made by members resident in that area for the formation of a Section of the London Branch. Slough has of recent years become a centre for the light metals founding industry, and there has been a corresponding growth in the membership of the Institute in that locality. The Council fully anticipates that this decision to establish a Section there will lead to still further developments, and will prove to be fully justified.

The Council is very pleased to record the continuing progress of the South African Branch, which has fully participated in the considerable development which has taken place in the founding industry of the Dominion during the war. The Branch is centred mainly in the Johannesburg area, but a Section has now been formed at Cape Town, and it is understood that the Branch Council has other areas under consideration.

Satisfactory attendances have been recorded by almost all the Branches at their meetings, and it is interesting to note that a number of works visits have also been arranged. In this connection particular mention may be made of the Wales and Monmouth Branch, where all meetings during the 1943-44 session have been held in conjunction with works visits.

Due to war difficulties peculiar to its geographical position, the Newcastle Branch has, unfortunately, been obliged to suspend its activities during the past few sessions. Two meetings of the Branch Council have recently been held, however, and arrangements are in hand for the resumption of meetings next session.

The Council desires to take this opportunity of tendering to the Branch Presidents and Council its cordial thanks for the arrangements which have been made in their areas and for the marked success which has attended all their endeavours during the past year.

Publications

The publication of Vol. XXXVI of the "Proceedings" was delayed through circumstances beyond the Council's control, but every effort will be made to ensure the earlier issue of future volumes. Two special reports, No. 3 "Fuel Economy in Foundries," and No. 4 "The Education and the Workshop Training of Young Foundrymen," have been issued to members, as well as a revised List of Members as at November 24, 1943, and a short report of the Technical Committee, entitled, "Wood Dust in Moulding Sand." A further Technical Committee report on "The Reclamation of Porous Non-Ferrous Castings by Bakelite Sealing Fluids" has been made available on request to the Acting Secretary.

The booklet containing the Institute's Royal Charter bye-laws, rules for the management of Branches, and rules governing the award of medals, has been reprinted and copies issued to those members elected since the publication went out of print in 1941.

The Papers presented to the 1943 annual meeting were also circulated to all members in "advance copy" form, and similar arrangements have been made for those which are to be presented to the 1944 meeting.

The Council desires to take this opportunity of thanking the Council of Ironfoundry Associations and the Association of Bronze and Brass Founders for the financial assistance which they rendered in connection with the publication of Special Report No. 3.

Educational Work

The Education Committee under the chairmanship of Mr. S. H. Russell, Past-President, has been most active during the past year, and its findings on some matters connected with apprentice training and education have been placed before members in Special Report No. 4, which has been widely circulated throughout the industry.

The Committee has also given evidence before a Committee on the Training of Metallurgists appointed by the Department of Scientific and Industrial Research, upon which a number of members of the Institute are serving.

Institute's Annual Report

Close touch has been maintained with the authorities of the University of Sheffield in connection with the degree course in founding, and it is with pleasure that the Council has noted the election of Dr. J. E. Hurst to the Faculty of Metallurgy of the University. The constitution of the Advisory Committee to the foundry department of the Faculty of Metallurgy has been somewhat broadened during the year to include representatives of the trade associations, and the number of I.B.F. representatives has been slightly reduced from eight to six, namely:—Mr. V. C. Faulkner, Mr. J. W. Gardom, Dr. J. E. Hurst, Mr. T. Makemson, Mr. S. H. Russell, Mr. J. J. Sheehan, Mr. R. C. Shepherd, Mr. D. H. Wood, and Mr. J. Bolton as alternate to Mr. Makemson.

A meeting of the City and Guilds of London Institute Advisory Committee on examinations in foundry practice, and science and in patternmaking, was held in March, 1944, with Mr. S. H. Russell in the chair. A Syllabus Sub-Committee has been appointed to review the regulations and syllabuses of the existing examinations and to prepare a syllabus for a higher examination in foundry practice and science, the institution of which has been agreed upon by the Advisory Committee.

The results of the City and Guilds examinations held in 1943 are as follow:—

	No. of candidates.	Pass 1st class.	Pass 2nd class.
Patternmaking—Intermediate	46	7	19
Patternmaking—Final	19	6	8
Foundry Practice and Science	47	13	18

Buchanan Medals and book prizes were awarded to candidates in the foregoing examinations, as follow:—

PATTERNMAKING:—

Silver Medal.—No award.

Book Prizes.—J. Playle, Braintree, Essex, and F. Round, Braintree, Essex.

FOUNDRY PRACTICE AND SCIENCE:—

Silver Medal.—F. K. Howlett, Smethwick, Staffs.

Book Prizes.—R. T. Rounce, Dollis Hill, London, N.W.2, and S. L. Finch, Anderton, Lancs.

The John Surtees Memorial Examinations which are arranged annually by the Newcastle and Scottish Branches alternately, were last year held in Scotland. The report of the examiner (Prof. A. Campion) shows that the standard of the entries to the last examination in both the senior and junior grades was higher than it has been on any of the previous eleven occasions when the examinations have been administered by the Scottish Branch. The number of the entrants were also considered to be satisfactory, and prizes were awarded as follow:—

SENIOR GRADE:—

Gold Medal and First Prize.—R. D. Cheyne and J. G. Nisbet.

Second Prize.—T. Sneddon.

Third Prize.—J. D. F. Yuille.

JUNIOR GRADE:—

Silver Medal and First Prize.—J. Steele.

Second Prize.—A. McCulloch.

Third Prize.—J. Murdoch.

Largely through the activities of the Bristol and West of England Branch, technical classes in foundry subjects have now been formed at the Merchant Venturers' College, Bristol, where a model foundry has been established to aid in the pupils' instruction.

An interesting development has also taken place in the Manchester area, where the Lancashire Branch Council has undertaken to give an annual lecture on the founding industry to senior students at one of the larger elementary schools.

In Scotland a widely representative committee has met to consider the education and training of foundry apprentices in relation to the Scottish educational system and the Scottish Branch is represented upon it.

Progress has also been made by the Institute's Education Committee, in conjunction with the Technical Committee in the preparation of a series of lecture notes for the use of teachers in foundry subjects. These notes are being designed to cover the existing City and Guilds Foundry Practice and Science examination syllabus.

Kindred Associations

The Institute maintains cordial relations with a number of kindred institutions and societies, and a number of joint meetings between Branches and local sections of those societies have been held during the year. Members of the Iron and Steel Institute were invited to attend a session of the 1943 annual meeting, when a number of Papers on steelfoundry practice were presented for discussion.

Relations with the majority of oversea foundry Associations have, of course, been temporarily suspended, but again the Council is able to report the continuance of friendly co-operation with the American Foundrymen's Association. The normal annual exchange of Papers to the Institute's annual meeting, and the Association's annual convention, has been continued, Mr. E. R. Briggs being the American author and Mr. J. W. Gardom the British author in 1943. Their Papers are printed in Vol. XXXVI of the "Proceedings."

A notable development of this exchange arrangement was made during the 1942-43 session, when Papers were exchanged between the London Branch and the Metropolitan Chapter of the A.F.A. Following this lead, it has been suggested that similar exchanges might be made between other Branches and A.F.A. Chapters and the matter is already under examination by the Branch Councils.

Appointment of Representatives

The Institute continues to be represented on the governing bodies and committees of a number of educational establishments, on standardising committees and on committees appointed by trade associations.

Ironfounding Industry Fuel Committee

The Ironfounding Industry Fuel Committee was established in October, 1942, by the Council of Ironfoundry Associations, with the active co-operation of the Institute and the British Cast Iron Research Association. Since that time 16 meetings have been held under the chairmanship of Mr. J. G. Pearce.

The advantages of a regional organisation through which the Committee might maintain the closest possible touch with the 1,700 ironfoundries in the country, was early recognised, and very largely with the assistance of the Branch officers of the Institute, 14 Regional Panels of the Committee were established. About 80 meetings of these Panels have now been held and over 350 works inspections made, with a view to rendering technical assistance in the national effort for maximum fuel economy and efficiency. Liaison is maintained by the Panels with the Regional Fuel Efficiency Committees of the Ministry of Fuel and Power. A number of technical reports have been reported by the Committee and circulated widely throughout the industry. Mr. W. J. Driscoll, B.Sc.(Eng.) (Associate Member), continues to act as full-time Fuel Officer, and Mr. J. W. Gardom, Mr. P. A. Russell, B.Sc., and Mr. A. E. Pearce represent the Institute on the Committee. The Acting Secretary of the Institute has continued as hon. secretary to the Committee during the year. Of the approximate total of 120 foundrymen who comprise the Regional Panels, the majority are members of the Institute.

The Council considers that the Committee has given, and continues to render, useful information and assistance on the increasingly difficult problems associated with fuel economy and efficiency, and desires to tender its thanks to all officers and members of the Committee and Regional Panels for the useful programme of work which is being carried through.

The Committee and Panels are financed by the Council of Ironfoundry Associations.

Council

The Council, the Executive Committee, the Literary and Awards Committee, and the Finance Committee have each held four meetings in London, and at Birmingham and Manchester. Six meetings of the Education Committee and an Education Sub-Committee were held in London, and at Birmingham and Manchester.

Of the ten members of the Council who are elected by ballot for a period of two years, five retire each year. Those who retire at the annual meeting at Manchester, on June 10, 1944, are Mr. H. Bunting, Dr. A. B. Everest, Mr. F. K. Neath, Mr. A. Phillips, and Mr. R. B. Templeton.

The Council desires to tender its thanks to Mr. S. H. Russell, Past-President, who in addition to his duties as hon. treasurer, has during the year been most actively engaged in connection with his chairmanship of the Education Committee. The Council is also greatly indebted to the Junior Vice-President, Mr. J. W. Gardom, for the work which he has done as convener of the Technical Committee.

Officers

It is expected that, at the annual meeting in June, the Council will nominate Mr. J. W. Gardom as President, 1944-45, and Mr. D. H. Wood for re-election as Senior Vice-President. The Council has accepted the recommendation of the Past-Presidents for the nomination of Dr. T. Swinden as Junior Vice-President, 1944-45 and this nomination will also be placed before the annual meeting.

Annual General Meeting, 1943

The annual general meeting was held at the Waldorf Hotel, London, on Saturday, June 26, 1943. The formal business meeting was followed by the Presidential Address, delivered by Mr. D. Sharpe, and the Edward Williams' Lecture by Dr. S. F. Dorey, whose subject was "The Contribution of the Steelfounder to Marine Engineering." There was an informal luncheon, which was followed by three technical sessions, to one of which members of the Iron and Steel Institute were invited.

Staff

The Secretary, Mr. T. Makemson, continues to be engaged at the Iron and Steel Control, but is able to maintain close contact with the Institute's work.

The Report is signed by Mr. D. Sharpe, President, and Mr. John Bolton, Acting Secretary.

TWELFTH ANNUAL REPORT OF THE TECHNICAL COMMITTEE

Two meetings of the Technical Council, four meetings of the Technical Committee, two meetings of Sub-Committee conveners, and thirty meetings of the various Sub-Committees have been held during the past year. Additionally, a considerable number of technical inquiries from members have been dealt with.

Representation on External Committees

Through the Technical Committee the Institute has continued to be represented on a number of British Standards Institution Committees dealing with matters relevant to foundry practice and products and a number of recommendations for the preparation of new standards or the revision of existing ones have been made to the British Standards Institution during the year.

Representatives of the Institute, appointed by the Technical Committee, continued to serve on the Ironfounding Industry Fuel Committee of the Council of Ironfoundry Associations and on the Technical Advisory Panel to the Joint Directors for Iron Cast-

Institute's Annual Report

ings, Ministry of Supply. Mr. F. Hudson, as convener of the Non-Ferrous Sub-Committee, has also served on the Technical Committee of the Association of Bronze and Brass Founders. The Institute has also been represented, through the Technical Committee, on a number of other external committees, including the Steel Castings Research Committee (and its sub-committees) of the Iron and Steel Institute, the Joint Committee on Tests for Moulding Sands and the Joint Committee for Materials and their testing.

Reorganisation

It will be recalled that hitherto the Technical Council has been composed of a convener and deputy-convener elected by the Council of the Institute, two members elected annually by each of the Branches, and the conveners of the standing Sub-Committees of the Technical Committee. Its investigational work and the preparation of reports have been entrusted to these Sub-Committees, which consist partly of members of the Technical Council and partly of co-opted persons whose special qualifications were of particular value to the individual Sub-Committees. The Technical Council, together with those co-opted persons, formed the Technical Committee, which during the last few years, and particularly during the war, has largely acted for the Technical Council.

This position has been under consideration with a view to improving the efficiency of the Technical Council and its Sub-Committees. As a result of this consideration a recommendation has been made to and accepted by the Council of the Institute that in future the Technical Council shall be composed of a chairman and deputy-chairman and one member elected annually by each Branch, and with power to co-opt not more than eight members. This recommendation will come into effect after the next annual general meeting and will, it is hoped, secure a Technical Council fully representative both from the point of view of geographical distribution and of the various aspects of founding.

With regard to the Sub-Committees, it was considered that, notwithstanding the success which has attended their work in the past, the future work of the Technical Council could be handled more expeditiously by *ad hoc* Sub-Committees with more specific terms of reference. In this way it is hoped that more members will be enabled to participate in the various technical activities of the Institute from time to time.

The Sub-Committees

The following paragraphs summarise the activities of the Sub-Committees during the year:—

Mechanical Development Sub-Committee.—This Sub-Committee, established in May, 1942, under the convenership of Mr. J. W. Gardom, to report on mechanical handling methods in foundries, completed its work in February, 1944, and will present its report entitled, "Mechanical Handling in Foundries," to the 1944 annual meeting. The Report reviews and compares the mechanical handling methods most commonly used in foundries.

Non-Ferrous Sub-Committees.—The Sub-Committee's report on a copper-antimony-nickel gear alloy, referred to in the last Annual Report, was presented to the 1943 annual meeting and the atlas of defects in non-ferrous castings, also referred to, was presented for discussion in draft form before a number of Branches during the 1943-44 session. This draft, together with the report on the Branch discussions, has been passed to the Sub-Committee on Defects in Castings. In view of the great interest which has under war conditions been displayed in reclaiming slightly porous non-ferrous castings by plastic sealing solutions, the Sub-Committee prepared a brief report on this subject, which has been made available to all members on request to the Institute. A very large number of copies has already been distributed. Steps have also been taken to introduce two new British Standard Specifications, one covering standard forms of test-bars and the other outlining inspection methods. During the year work was done in connection with the revision of War Emergency Specifications on Cast Copper Base Alloys. These specifications specifically refer to some past work of the Sub-Committee. Mr. F. Hudson has continued as Sub-Committee convener during the year.

Cast Iron Sub-Committee.—The Sub-Committee's report on "Meeting the Raw Materials Supply Position" was presented to the annual meeting, 1943, and resulted in considerable discussion, to which the Sub-Committee has drawn up its reply (see "Proceedings," 1942-43). Information has been made available to the Sub-Committee on Defects in Castings and a preliminary review made of methods of casting test-bars in current practice. This latter information is being correlated and added to with a view to putting forward recommendations for standardisation of practice. Dr. A. B. Everest has been appointed to succeed Mr. P. A. Russell as Sub-Committee convener.

Sands Sub-Committee.—The Sub-Committee, under the convenership of Mr. A. Tipper, has completed its investigation of the possibilities of using wood dust in moulding sands and a short report was issued to members in December, 1943. If any members of the Institute require further information on this development they are invited to communicate with the Institute. The Sub-Committee has provided information to the Sub-Committee on Defects in Castings and has prepared a report on "Recommended Methods of Testing Dry Clay Bonded Sand" for the Joint Committee on Sand Testing. Its work on testing procedure for oil sand has also been continued, and it is expected that this latter information will be published through the Joint Committee with which the Sub-Committee is collaborating.

Melting Furnaces Sub-Committee.—The Sub-Committee has been strengthened during the past year by the co-option of Mr. F. A. Rivett, Mr. E. Shaw, Mr.

(*Continued on page* 132, *col.* 2.)

NEWS IN BRIEF

GEO. W. KING, LIMITED, manufacturers of mechanical handling equipment, etc., have increased their capital from £100,000 to £200,000 by the creation of 400,000 additional 5s. ordinary shares.

DALBEATTIE TOWN COUNCIL are urging the Ministry of Supply to open out a local deposit of iron ore, claimed to be high in Fe content and low in phosphorus. Ore was worked at Dalbeattie 40 years ago.

THOS. W. WARD, LIMITED, of Sheffield, have acquired the old-established business of John Smith (Keighley), Limited, Keighley, Yorkshire, manufacturers of cranes and stone working machinery. The following directors have been appointed:—Messrs. Frank R. Stagg (chairman), James Bussey, G. Albert Smith, W. H. Sharp, and C. A. Lee.

THE PARTNERSHIP between Walter Wheeldon and Albert Edward Wrigley, carrying on business as steel and brass producers and wrought-iron workers at Clarence Works, Bollington, Macclesfield, under the style of Wheeldon & Wrigley, has been dissolved by mutual consent. Debts will be received and paid by Albert Edward Wrigley.

APPLICATIONS for the deferment of apprentices are in future to be decided by the district man-power boards instead of by the local offices of the Ministry of Labour and National Service. It is expected that most of the apprentices in engineering and shipbuilding will be allowed to continue their apprenticeships, but in other industries applications will be scrutinised more severely.

THE MONTHLY INFORMATION SHEET for May, 1944, of the British Standards Institution, of 28, Victoria Street, Westminster, London, S.W.1, announces that a draft standard is being circulated for comment entitled Draft Revision of B.S. 569 Asbestos Cement Rainwater Pipes and Gutters. Its number is C.G. (A.S.B.) 6686. It is free to members, and costs 2s., post free, for non-members.

THE COMPANIES REGISTRATION OFFICE gives notice that the names of the undermentioned companies have been struck off the register and such companies are dissolved:—Birchfield Stainless Metals, Limited; Malone Engine Company, Limited; Maritime Engineering & General Repairing Company, Limited; Tigon Mining & Finance Corporation, Limited; Tower Manufacturing & Chemical Company (Little Hulton), Limited; W. & J. F. Jones, Limited.

SIR STAFFORD CRIPPS, Minister of Aircraft Production, speaking at a luncheon of the Institute of Engineering Inspection, said that this country was not adapted for the most intense form of mass production owing to the comparative smallness of our population. We had not the same vast home market as America or Russia. We should, of course, mass-produce many articles in the future, but he believed that we should still have to rely largely upon our reputation for precision engineering in all fields.

THE MINISTER OF LABOUR AND NATIONAL SERVICE recently referred to the National Arbitration Tribunal for settlement, in accordance with the provisions of the Conditions of Employment National Arbitration Order, 1940, a dispute existing between the Clyde Alloy Steel Company, Limited, Motherwell, and members of the Association of Scientific Workers in the employment of the company at two works as chemists, metallurgists and physical metallurgists, and laboratory assistants. The Tribunal, after due consideration of statements and submissions made on behalf of the parties, found against the claim made on behalf of the Association's members and awarded accordingly.

BIRTHDAY HONOURS

Honours to members of the iron and steel and allied industry were announced in the Birthday Honours List published last week. Below are brief details of some of the principal awards.

MR. A. I. BAKER, production manager and chairman, Baker, Perkins, Limited, of Peterborough, has been awarded the C.B.E.

THE HON. J. K. WEIR, who receives the C.B.E., is a director of G. & J. Weir, Limited, and of Contraflo Engineering Company, Limited.

MR. ERNEST EDWARD BIRD, who receives a knighthood, is a director of the Park Gate Iron & Steel Company, Limited, Staveley Coal & Iron Company, Limited, and other companies. He is honoured for services as President of the Law Society.

MR. LLEWELLYN THOMAS GORDON SOULSBY, Regional Director, Merchant Shipbuilding and Repairs, Admiralty, receives a knighthood. He is managing director of Mounstuart Dry Docks, Limited, Barry Graving Dock & Engineering Company, Limited, and Cardiff Channel Dry Docks & Pontoon Company, Limited.

MR. MARK FRANK LINDLEY, who receives a knighthood, has been Comptroller-General of Patents, Designs and Trade Marks, and Comptroller-General of the Industrial Property Department of the Board of Trade, since 1932. He joined the examining staff of the Patents Office in 1903, transferring to the Trade Marks Branch as Assistant-Comptroller in 1926.

MR. HERBERT WRAGG, M.P., chairman and managing director of Thomas Wragg & Sons, Limited, firebrick and stoneware manufacturers, and James Woodward, Limited, glazed brick and stoneware pipe manufacturers, chairman of the South Leicestershire Colliery Company, Limited, and a director of the Granville Colliery Company, Limited, receives a knighthood. He is a past-president of the Ceramic Society and of the National Federation of Clay Industries.

MR. A. ROWLAND SMITH, M.I.Mech.E., who receives a knighthood, is managing director of the Ford Motor Company, Limited, and controller of the plant built by Ford in this country for the Ministry of Aircraft Production in which the Merlin aero engine is made on flow production lines. He was first general manager of the Ford Company, and after 10 years in that position he became managing director in May, 1941. He has been associated with the Ford organisation for about 30 years.

COMPANY RESULTS

(Figures for previous year in brackets)

Beyer, Peacock—Net profit for 1943, £40,853 (£38,008).

Ambrose Shardlow—Final dividend of 5%, making 7½% (same).

J. Brockhouse & Company—Interim dividend of 7½% (same).

Johnson Matthey & Company—Dividend of 7%, making 10% (same).

Mason & Barry—Profit for 1943, £3,718 (£4,452); ordinary dividend of 5% (nil).

Siemens Bros.—Profit, £314,452; ordinary dividend of 7½% (same); forward, £488,712 (£413,010).

Whessoe Foundry & Engineering—Final dividend of 30% (same), making 40% for the year to March 31 last (same).

Newall Engineering—Net profit to March 31 last, £11,481 (£13,881); ordinary dividend of 30%; forward, £8,087 (£15,438).

London Electric Wire Company & Smiths—Final dividend of 5½%, making 7½% (same), and an interim dividend of 2% in respect of 1944 (same).

Power Plant Company—Profit for 1943, £24,188; E.P.T., £3,000; income-tax, £9,000; depreciation, £4,500; dividend of 15%; forward, £12,828 (£12,640).

Alley & Maclellan—Net profit, after depreciation, income-tax and E.P.T., £16,580; staff pensions, £4,200; final dividend of 7½%, making 15%; forward, £6,191.

Derbyshire Stone—Net profit, £40,250 (£40,026); preference dividend, £11,715; ordinary dividend of 10% (same); staff fund, £2,000 (nil); forward, £62,058 (£56,823).

Robert Stephenson & Hawthorns—Profit for 1943, after all charges, £19,454 (£18,566); dividend of 5% (same); to general reserve, £5,000 (same); forward, £4,535 (£3,831).

Baker Perkins—Net profit for 1943, after depreciation, income-tax, N.D.C. and E.P.T., £116,125 (£115,778); final dividend of 5½% on the ordinary stock, making 9% (7%); to general reserve, £15,000; to pensions reserve, £2,500; forward, £131,446 (£110,175).

PERSONAL

MR. LOUIS V. DUNLOP, general manager of the Govan yard of Harland & Wolff, Limited, and a director of the company, has completed 50 years' service on the shipbuilding industry.

MR. E. W. L. FIELD has been appointed director of the North-West Engineering Trades Employers' Association. He has been for many years assistant to the engineering director of John Brown & Company, Limited, Clydebank.

Wills

CLAXTON, C. W., joint managing director of the Sheffield Twist Drill & Steel Company, Limited £187,643

COLLEY, JOSEPH, of Bilston, chief engineer and manager of the steel department of the Alfred Hickman branch of Stewarts and Lloyds, Limited £30,609

NEW COMPANIES

("Limited" is understood. Figures indicate capital. Names are of directors unless otherwise stated. Information compiled by Jordan & Sons, 116, Chancery Lane, London, W.C.2.)

Blenheim Engineering (Sheffield), 5, Orange Street, Sheffield—£7,000. J. Dempsey, P. Heard and R. Cook.

Weld-Engineers Accessories, Victoria House, Southampton Row, London, W.C.1—£500. G. H. Benton and J. M. Hudson.

Acacia Engineering Company, 182-192, Carlton Vale, London, N.W.6—£5,000. J. Oakes, C. W. Exton and Brig. the Hon. W. Fraser.

Whittington Engineering Company, South Street North, New Whittington, Chesterfield—£10,000. P. L. Richards and A. F. Pates.

S. Greenman, 104, High Holborn, London, W.C.1—Manufacturers of metal goods, hardware, etc. £5,000. C. and R. Greenman and L. Gelberg.

Arolby Engineering Company, 7, Princes Street, Storeys Gate, London, S.W.1—£3,000. H. W. F. Cheverill, W. F. Russell, B. Blakeborough and E. C. Butlin.

North Derbyshire Supply Company, 2, Unity Villas, Darley Dale, Derbyshire—Quarrymasters, stone and mineral merchants, etc. £3,000. J. McLean and W. and J. A. Tomlinson.

OBITUARY

MR. FREDERICK SALKELD, late chief engineer, Leeds Steelworks, died at Oxford on June 1.

MR. WALTER SUMMERS, a director of John Summers & Sons, Limited, died suddenly last week at his home in London.

MR. JOHN GILLESPIE, who, with his father, founded the firm of A. Gillespie & Son, consulting engineers, Glasgow, died recently. He was in his 80th year.

MR. ARTHUR BYRAM GOWAN, a former managing director of Palmers Shipbuilding & Iron Company, Limited, Jarrow and Hebburn, died recently. He was over 80 years of age.

PORTUGUESE WOLFRAM

According to a message from Washington, which was confirmed by Mr. Eden in the House of Commons last week, the Portuguese Government has undertaken to impose a total prohibition of exports of wolfram, and to cease immediately the production of wolfram in Portugal.

The recently formed Magnesium Association held its first meeting in Chicago. It listed as post-war uses the following in addition, of course, to aircraft construction:—Portable tools, wiry components; railway coach parts; radio components; conveyors; wheels; office equipment; dock board; exhaust fans; and household appliances.

Raw Material Markets

IRON AND STEEL

Conditions in the foundry trade do not vary much from week to week, and offer little prospect of increased activity in the immediate future. Establishments engaged on the production of engineering and speciality castings are still much more favourably situated than the light and jobbing foundries, where additional opportunities of employment are badly needed. In these circumstances the call for high-phosphorus iron is much below normal, but considerable tonnages of low-phosphorus and refined iron and steel scrap are being absorbed in the engineering foundries.

The exclusive employment of the re-rolling mills on work of high importance and the heavy commitments they have undertaken over the next few months call for a large and uninterrupted flow of steel semis, and it is evident that to this task the Control is devoting close and unremitting attention. Whenever the supply of primes and defective billets falls short of requirements, release of imported material is authorised, but on the whole withdrawals from stock have been reduced to small proportions, the great bulk of the material passing through the mills being provided from home sources.

It would be erroneous to deduce from any slight abatement in the call for steel plates that the activity of the mills may shortly be reduced. All the plate mills still have very substantial bookings, and the chief variation in the demand is the predominance of the specifications for light plates for the multitudes of light naval craft in course of construction. In comparison heavy plates are in less urgent request, and there is a similar differentiation in the trade in joists, channels, and sections, heavy sizes constituting a small proportion of total demand. The sheet and wire mills are committed for long periods ahead, tube works are steadily employed, and collieries are pressing for bigger quotas and quicker delivery of roofing bars, props and arches.

NON-FERROUS METALS

There have recently been no outstanding features in the non-ferrous metal market. There has been no appreciable increase in the demand from manufacturers, and, if anything, the downward trend of the market has continued, with a marked falling off in the demand for certain products, notably brass and copper. This is especially noticeable in the case of scrap, where there is a very easy position. Low-grade copper scrap is becoming increasingly difficult to place.

The Allied attack on the Continent is likely to make itself felt on the import position, in view of the large number of vessels required in such a gigantic operation. As far as is known, however, there are adequate reserves held in this country, both of copper and other metals, which could be drawn upon should the need arise.

The tin position is largely unchanged. Most of the needs of this country are being met with output from Empire sources. Attempts have also been made to increase production in the Cornish mines. Bolivia continues to supply the United States with her tin requirements. At the moment there seems to be no likelihood of an acute tin shortage on either side of the Atlantic, though careful control of distribution will continue to be necessary.

NEW PATENTS

The following list of Patent Specifications accepted has been taken from the "Official Journal (Patents)." Printed copies of the full Specifications are obtainable from the Patent Office, 25, Southampton Buildings, London, W.C.2, price 1s. each.

560,282 WILLIAMS' TILTON ROAD WORKS, LIMITED, T., and BAKER, C. W. Safety device for drop-forging machines and drop-stamps.

560,299 WILLIAMS, R. C., and G.W.B. ELECTRIC FURNACES, LIMITED. Furnaces with agitating conveying means.

560,309 SPEAR & JACKSON, LIMITED, and PARSONS, G. W. Machines for cutting metal by the application of heat.

560,352 BIRMINGHAM ALUMINIUM CASTING (1903) COMPANY, LIMITED, and PRITCHARD, P. Electric resistor furnaces for the heating and melting of metals.

560,407 DEHN, F. B. (Clarkiron, Inc.) Electric furnace.

560,410 SIMMS, F. R., and COMPOUND ELECTRO METALS, LIMITED. Abrasive and cutting tools and processes for the manufacture thereof.

560,458 BARROW HÆMATITE STEEL COMPANY, LIMITED, HAMILTON, W. B., and KILLINGBECK, W. Production of hard carbides.

560,465 MALLORY METALLURGICAL PRODUCTS, LIMITED, BROOKER, H. R., and HUNT, L. B. Springs.

560,483 BRITISH PISTON RING COMPANY, LIMITED, TWIGGER, T. R., and JUDD, J. A. Manufacture of metal articles or masses from powdered materials.

560,505 MISFELDT, C. C. Method of and apparatus for forming sheet metal blanks.

560,594 BUHLER BROS. Devices for varying the grinding pressure of roller mills.

560,599 ARNOLD, C. (Wood, W. H., and Trautman, O. C.). Apparatus for the heat treatment of metal wire, strip and the like.

MR. J. F. ROBB, manager of the Liverpool office of William Jacks & Company, Limited, and W. B. Ihne & Company, died on June 4, in his 71st year. Born at Peterhead, he started his business life on Merseyside at an early age with the Leeds and Liverpool Canal Company, and at the age of 22 joined the firm of W. B. Ihne Company and George Rae Anderson. When these two firms were absorbed in 1941 by William Jacks & Company, Limited, he became their Liverpool manager.

CURRENT PRICES OF IRON, STEEL AND NON-FERROUS METALS

(Delivered, unless otherwise stated)

Wednesday, June 14, 1944

PIG-IRON

Foundry Iron.—CLEVELAND No. 3: Middlesbrough, 128s.; Birmingham, 130s.; Falkirk, 128s.; Glasgow, 131s.; Manchester, 133s. DERBYSHIRE No. 3: Birmingham, 130s.: Manchester, 133s.; Sheffield, 127s. 6d. NORTHANTS No. 3: Birmingham, 127s. 6d.; Manchester, 131s. 6d. STAFFS No. 3: Birmingham, 130s.; Manchester, 133s. LINCOLNSHIRE No. 3: Sheffield, 127s. 6d.; Birmingham, 130s.

(*No. 1 foundry 3s. above No. 3. No. 4 forge 1s. below No. 3 for foundries, 3s. below for ironworks.*)

Hematite.—Si up to 2.25 per cent., S & P 0.03 to 0.05 per cent: Scotland, N.-E.Coast and West Coast of England, 138s. 6d.; Sheffield, 144s.; Birmingham, 150s.; Wales (Welsh iron), 134s. East Coast No. 3 at Birmingham, 149s.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, 140s. 6d., delivered Birmingham.

Scotch Iron.—No. 3 foundry, 124s. 9d.; No. 1 foundry, 127s. 3d., d/d Grangemouth.

Cylinder and Refined Irons.—North Zone, 174s.; South Zone, 176s. 6d.

Refined Malleable.—North Zone, 184s.; South Zone, 186s. 6d.

Cold Blast.—South Staffs, 227s. 6d.

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

FERRO-ALLOYS

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

Ferro-silicon (5-ton lots).—25 per cent., £21 5s.; 45/50 per cent., £27 10s.; 75/80 per cent., £43. Briquettes, £30 per ton.

Ferro-vanadium.—35/50 per cent., 15s. 6d. per lb. of V.

Ferro-molybdenum.—70/75 per cent., carbon-free, 6s. per lb. of Mo.

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

Ferro-tungsten.—80/85 per cent., 9s. 8d. lb.

Tungsten Metal Powder.—98/99 per cent., 9s. 9½d. lb.

Ferro-chrome.—4/6 per cent. C, £59; max. 2 per cent. C, 1s. 6d. lb.; max. 1 per cent. C, 1s. 6½d. lb.; max. 0.5 per cent. C, 1s. 6¾d. lb.

Cobalt.—98/99 per cent., 8s. 9d. lb.

Metallic Chromium.—96/98 per cent., 4s. 9d. lb.

Ferro-manganese.—78/98 per cent., £18 10s.

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

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms and Slabs.—BASIC: Soft, u.t., 100-ton lots, £12 5s.; tested, up to 0.25 per cent. C, £12 10s.; hard (0.42 to 0.60 per cent. C), £13 17s. 6d.; silico-manganese, £17 5s.; free-cutting, £14 10s. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £15 15s.; case-hardening, £16 12s. 6d.; silico-manganese, £17 5s.

Billets, Blooms and Slabs for Forging and Stamping.—Basic, soft, up to 0.25 per cent. C, £13 17s. 6d.; basic hard, 0.42 to 0.60 per cent. C, £14 10s.; acid, up to 0.25 per cent. C, £16 5s.

Sheet and Tinplate Bars.—£12 2s. 6d., 6-ton lots.

FINISHED STEEL

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

Plates and Sections.—Plates, ship (N.-E. Coast), £16 3s.; boiler plates (N.-E. Coast), £17 0s. 6d.; chequer plates (N.-E. Coast), £17 13s.; angles, over 4 un. ins., £15 8s.; tees, over 4 un. ins., £16 8s.; joists, 3 in. × 3 in. and up, £15 8s.

Bars, Sheets, etc.—Rounds and squares, 3 in. to 5½ in., £16 18s.; rounds, under 3 in. to ⅝ in. (untested), £17 12s.; flats, over 5 in. wide, £15 13s.; flats, 5 in. wide and under, £17 12s.; rails, heavy, f.o.t., £14 10s. 6d.; hoops, £18 7s.; black sheets, 24 g. (4-ton lots), £22 15s.; galvanised corrugated sheets (4-ton lots), £26 2s. 6d.; galvanised fencing wire, 8g. plain, £26 17s. 6d.

Tinplates.—I.C. cokes, 20 × 14 per box, 29s. 9d., f.o.t. makers' works, 30s. 9d., f.o.b.; C.W., 20×14, 27s. 9d., f.o.t., 28s. 6d., f.o.b.

NON-FERROUS METALS

Copper.—Electrolytic, £62; high-grade fire-refined, £61 10s.; fire-refined of not less than 99.7 per cent., £61; ditto, 99.2 per cent., £60 10s.; black hot-rolled wire rods, £65 15s.

Tin.—99 to under 99.75 per cent., £300; 99.75 to under 99.9 per cent., £301 10s.; min. 99.9 per cent., £303 10s.

Spelter.—G.O.B. (foreign) (duty paid), £25 15s.; ditto (domestic), £26 10s.; "Prime Western," £26 10s.; refined and electrolytic, £27 5s.; not less than 99.99 per cent., £28 15s.

Lead.—Good soft pig-lead (foreign) (duty paid), £25: ditto (Empire and domestic), £25; English, £26 10s.

Zinc Sheets, etc.—Sheets, 10g. and thicker, ex works, £37 12s. 6d.; rolled zinc (boiler plates), ex works, £35 12s. 6d.; zinc oxide (Red Seal), d/d buyers' premises, £30 10s.

Other Metals.—Aluminium, ingots, £110; antimony, English, 99 per cent., £120; quicksilver, ex warehouse, £68 10s. to £69 15s.; nickel, £190 to £195.

Brass.—Solid-drawn tubes, 14d. per lb.; brazed tubes, 16d.; rods, drawn, 11¾d.; rods, extruded or rolled, 9d.; sheets to 10 w.g., 10¾d.; wire, 10⅝d.; rolled metal, 10¼d.; yellow metal rods, 9d.

Copper Tubes, etc.—Solid-drawn tubes, 15¼d. per lb.; brazed tubes, 15¼d.; wire, 10d.

Phosphor Bronze.—Strip, 14d. per lb.; sheets to 10 w.g., 15d.; wire, 16½d.; rods, 16½d.; tubes, 21½d.; castings, 20d., delivery 3 cwt. free. 10 per cent. phos. cop. £35 above B.S.; 15 per cent. phos. cop. £43 above B.S.; phosphor tin (5 per cent.) £40 above price of English ingots. (C. CLIFFORD & SON, LIMITED.)

Nickel Silver, etc.—Ingots for raising, 10d. to 1s. 4d. per lb.; rolled to 9 in. wide, 1s. 4d. to 1s. 10d.; to 12 in. wide, 1s. 4½d. to 1s. 10½d.; to 15 in. wide, 1s. 4½d. to 1s. 10½d.; to 18 in. wide, 1s. 5d. to 1s. 11d.; to 21 in. wide, 1s. 5½d. to 1s. 11½d.; to 25 in. wide, 1s. 6d. to 2s. Ingots for spoons and forks, 10d. to 1s. 6½d. Ingots rolled to spoon size, 1s. 1d. to 1s. 9½d. Wire round, to 10g., 1s. 7½d. to 2s. 2½d., with extras according to gauge. Special 5ths quality turning rods in straight lengths, 1s. 6½d. upwards.

NON-FERROUS SCRAP

Controlled Maximum Prices.—Bright untinned copper wire, in crucible form or in hanks, £57 10s.; No. 1 copper wire, £57; No. 2 copper wire, £55 10s.; copper firebox plates, cut up, £57 10s.; clean untinned copper, cut up, £56 10s.; braziery copper, £53 10s.; Q.F. process and shell-case brass, 70/30 quality, free from primers, £49; clean fired 303 S.A. cartridge cases, £47; 70/30 turnings, clean and baled, £43; brass swarf, clean, free from iron and commercially dry, £34 10s.; new brass rod ends, 60/40 quality, £38 10s.; hot stampings and fuse metal, 60/40 quality, £38 10s.; Admiralty gunmetal, 88-10-2, containing not more than ½ per cent. lead or 3 per cent. zinc, or less than 9⅛ per cent. tin, £77, all per ton, ex works.

Returned Process Scrap.—(Issued by the N.F.M.C. as the basis of settlement for returned process scrap, week ended June 10, where buyer and seller have not mutually agreed a price; net, per ton, ex-sellers' works, suitably packed):—

Brass.—S.A.A. webbing, £48 10s.; S.A.A. defective cups and cases, £47 10s.; S.A.A. cut-offs and trimmings, £42 10s.; S.A.A. turnings (loose), £37; S.A.A. turnings (baled), £42 10s.; S.A.A. turnings (masticated), £42; Q.F. webbing, £49; defective Q.F. cups and cases, £49; Q.F. cut-offs, £47 10s.; Q.F. turnings, £38; other 70/30 process and manufacturing scrap, £46 10s.; process and manufacturing scrap containing over 62 per cent. and up to 68 per cent. Cu, £43 10s.; ditto, over 58 per cent. to 62 per cent. Cu, £38 10s.; 85/15 gilding metal webbing, £52 10s.; 85/15 gilding defective cups and envelopes before filling, £50 10s.; cap metal webbing, £54 10s.; 90/10 gilding webbing, £53 10s.; 90/10 gilding defective cups and envelopes before filling, £51 10s.

Cupro Nickel.—80/20 cupro-nickel webbing, £75 10s.; 80/20 defective cups and envelopes before filling, £70 10s.

Nickel Silver.—Process and manufacturing scrap: 10 per cent. nickel, £50; 15 per cent. nickel, £56; 18 per cent. nickel, £60; 20 per cent. nickel, £63.

Copper.—Sheet cuttings and webbing, untinned, £54; shell-band plate scrap, £56 10s.; copper turnings, £48.

IRON AND STEEL SCRAP

(*Delivered free to consumers' works. Plus 3¾ per cent. dealers' remuneration. 50 tons and upwards over three months, 2s. 6d. extra.*)

South. Wales.—Short heavy steel, not ex. 24-in. lengths, 82s. to 84s. 6d.; heavy machinery cast iron, 87s.; ordinary heavy cast iron, 82s.; cast-iron railway chairs, 87s.; medium cast iron, 78s. 3d.; light cast iron, 73s. 6d.

Middlesbrough.—Short heavy steel, 79s. 9d. to 82s. 3d.; heavy machinery cast iron, 91s. 9d.; ordinary heavy cast iron, 89s. 3d.; cast-iron railway chairs, 89s. 3d.; medium cast iron, 79s. 6d.; light cast iron, 74s. 6d.

Birmingham District.—Short heavy steel, 74s. 9d. to 77s. 3d.; heavy machinery cast iron, 92s. 3d.; ordinary heavy cast iron, 87s. 6d.; cast-iron railway chairs, 87s. 6d.; medium cast iron, 80s. 3d.; light cast iron, 75s. 3d.

Scotland.—Short heavy steel, 79s. 6d. to 82s.; heavy machinery cast iron, 94s. 3d.; ordinary heavy cast iron, 89s. 3d.; cast-iron railway chairs, 94s. 3d.; medium cast iron, 77s. 3d.; light cast iron, 72s. 3d.

(Note.—*For deliveries of cast-iron scrap free to consumers' works in Scotland, the above prices less 3s. per ton, but plus actual cost of transport or 6s. per ton, whichever is the less.*)

SITUATIONS

FOUNDRY FOREMAN; practical and technical; 25 years' experience all types iron castings; take complete charge; City and Guilds certificate; A.M.I.B.F.—Box 536, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

MOULDER (31), capable, keen, seeks position which offers opportunity of his gaining experience in technical and administrative side of Foundry Trade.—Box 538, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

FOUNDRY MANAGER (38), M.I.Brit.F. Practical, technical, commercial; repetition expert, light grey and malleable; excellent record; accept full control all depts.; now with London foundry; URGENTLY desires post, MIDLANDS; domestic reasons; free short notice; moderate salary; guarantee results; keen, live wire; tactful, firm disciplinarian.—Box 534, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

FOUNDRY MANAGER required by established General Engineering Co. in Midlands, to take charge of Foundries producing wide range of castings up to 12 tons, with a capacity of 5,000 tons per annum; good technical qualifications and experience essential.—Write, stating age, experience, and salary required, to Box 498, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

WANTED.—Foundry Superintendent, for Pressure Castings; near Glasgow; must be practical, with sound knowledge of moulding machines, coreblowing machines; used to making castings in gunmetal and cast iron; approximately 70 tons per week; able to handle tactfully skilled and unskilled labour; good post-war prospects.—Box 542, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

FOUNDRY SUPERINTENDENT required for control of Foundry producing light and medium malleable grey iron and non-ferrous castings; must be good disciplinarian and organiser; good post-war prospects for applicant having good technical qualifications and experience.—Write, stating age and full particulars of experience and salary required, to Box 512, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

REPRESENTATIVE for Scotland, on commission basis, required by well-known manufacturers of foundry supplies; good connections with foundries essential.—Offers with details to Box 544, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

EMPLOYMENT REGISTER.

Correspondence should be addressed to the General Secretary, Institute of British Foundrymen, St. John Street Chambers, Deansgate, Manchester, from whom full particulars can be obtained of this service.

FOUNDRY MANAGER; light alloys, sand, gravity and pressure castings and billets; mechanisation; degree in metallurgy. (463)

FOUNDRY MANAGER or Metallurgist; light alloys, sand, gravity, pressure and billet experience; melting shop and heat-treatment management; A.I.D. inspection; honours graduate. (463)

PROPERTY

FOR SALE.—Non-Ferrous Foundry; Manchester district.—Box 546, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

MACHINERY

600 CUB. FT. per min., vertical, water-cooled, 4-cylinder, Air Compressor, by BROOM & WADE; 100 lbs. sq. in. working pressure; vee-rope driven by 100 h.p. S.R. motor, for 400-volt, 3-phase, 50 cycles; complete with starter and control gear; complete with receiver; new 1932; inspection near Leeds.—NEWMAN INDUSTRIES, LTD., Yate, Bristol.

FOR SALE.—Hand-Squeeze Moulding Machine, by British Moulding Machines; type S.F.; for snap flask work; new condition; or exchange for Hand Ram Roll-Over Moulding Machine.—HARTLEY'S BRASSWORKS, Gordon Street, Boothtown, Halifax.

Geared Crane Ladle; 2/3 tons cap.; equal to new; price £50.

Six Ungeared Crane Ladles; 600 lbs. cap.; all in perfect condition; £9 10s. each.

One Semi-Rotary Furnace; oil- or gas-fired.

Coke-Fired Tilting Furnace; 1,000 lbs. cap.

Two dozen 6-in. Hand Ladles and Lifting Tongs.

1,000 lbs. cap. Aluminium Tilting Reverberatory Furnace; can be arranged for coke, gas or oil.

One 500 lbs. Zinc Bale-out-Furnace; complete with burner and Motorised Fan, 440 volts, 3-phase.

Steel Crucibles for magnesium melting (6).

One Heat-Resisting C.I. Crucible; 2 ft. 9 in. dia. by 2 ft. 6 in.

THE FURNACE EXCHANGE.
MIDLAND DRIVE, SUTTON COLDFIELD.
Telephone: Sutton 3749, ext. 1.

SKLENAR Patent Melting Furnaces; coke- or oil-fired; capacity 2 tons, 1 ton, ½ ton, 500 lbs.—SKLENAR PATENT MELTING FURNACES, LTD., East Moors Road, Cardiff.

FOR SALE.—One Electric Sand Riddle; one 6-ft. Intensive Sand Mixer; both new.—Box 510, FOUNDRY TRADE JOURNAL, 3, Amersham Road, High Wycombe.

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Tabor (Macnab) Vert. turnover, table approx. 40 in. by 30 in.
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PATTERNS for all branches of Engineering, for Hand or Machine Moulding.—FURMSTON AND LAWLOR, Letchworth.

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Genuine Morgan lip axis 600 lbs capacity furnace.
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New 600 lb. oil or gas-fired centre axis tilting furnace complete with bar burner and equipment, £220.

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