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irish plumbing and heating engineer

SUPPLEMENTS ·
Northern Ireland Monthly Review/Industrial Heating & Ventilating in Ireland.

JANUARY, 1969. Vol. 8. No. 10

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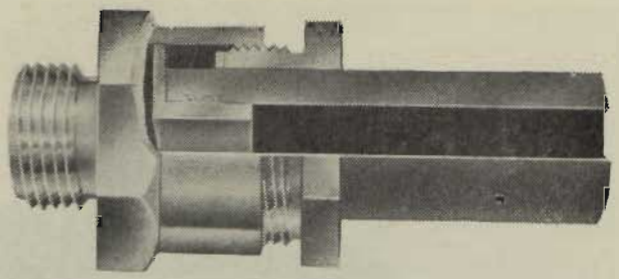
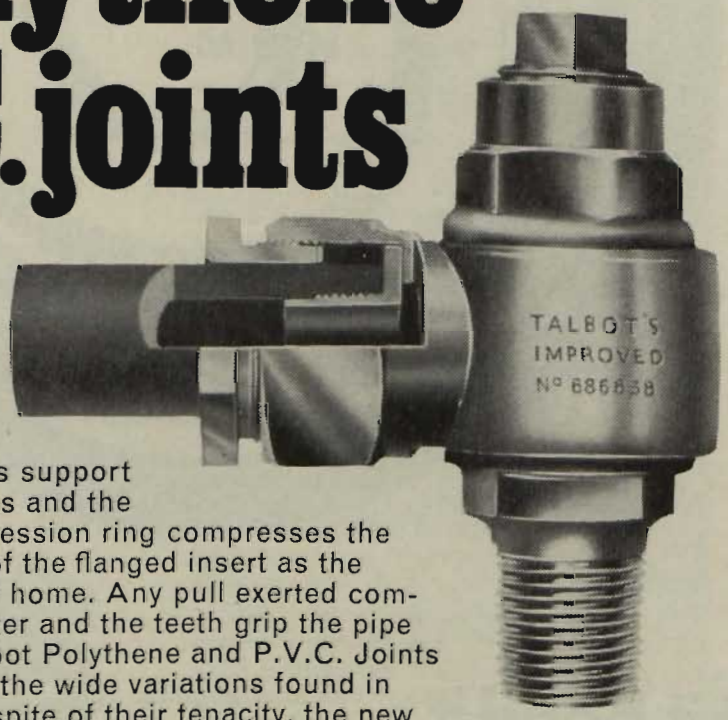


Turn to TALBOT for Polythene & P.V.C. joints



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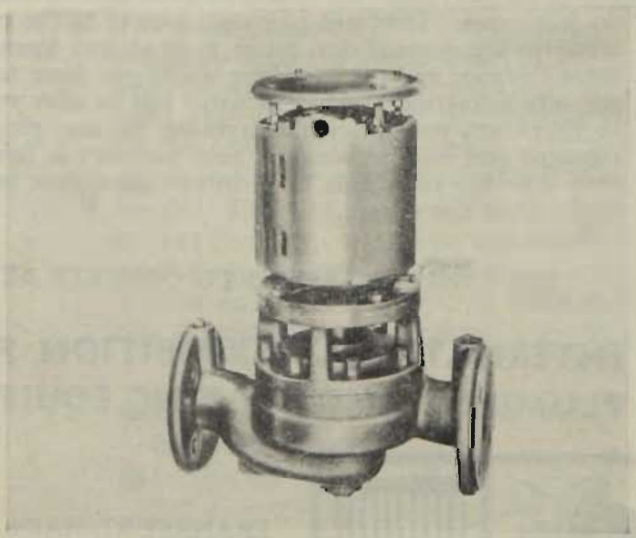

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MONSELL MITCHELL OPEN NEW PREMISES

● MONSELL Mitchell has just celebrated the opening of its impressive new Sir John Rogerson's Quay Dublin, premises where on the night of the official opening we pictured, from left — Gerry Keane, Manager, Pearse St.; Pat Doyle, Dublin Representative; Liam Dillon, Manager, Heating Dept.; Robert Haughton, Manager, Plumbing Dept.; and Des O'Gorman, General Manager. Next month we carry a full report of the opening.

trade Topics

BELCO OVERSPILL HERE

A REVOLUTIONARY bath overspill unit manufactured in London by Belco Manufacturing Company Ltd. has made its appearance on the Irish market, where it it being distributed by E.C.I. Ltd., 19 Marlborough Street, Dublin.

For many years the plumbing industry have been looking for a unit which can be fitted to a standard bath and which will be its operation eliminate as far as is possible the overspilling of water from the bath when the standard overflow is of insufficient capacity to carry away the input from a ¾" mixer or standard pillar taps. Belco have now produced such a fitting.

The Belco Overflow System embodies a combined closable waste outlet and a permanently open one (which is designed so that only a single outlet is visible). This overflow outlet leads to a standpipe, the top of which can be at the same height as the conventional overflow, or a little lower : the free end is connected to the waste drain.

Thus, when the bath water reaches the level of the standpipe top, it starts to run away to the waste drain. Whether or not the water level in the bath will continue to rise depends on the capacity of the standpipe and waste drain — but of course the installation will be such that the standpipe and the conventional overflow will jointly cope, at the maximum rate of inflow, to prevent the both's overflowing.

irish plumbing and heating engineer

THE IRISH PLUMBING AND HEATING ENGINEER is the only publication produced in Ireland catering exclusively for the heating, plumbing, ventilation and environmental industries with a guaranteed circulation covering the Republic of Ireland and Northern Ireland every month.

* * *

IN THIS ISSUE we continue our new series of articles under the title The Control of Domestic Heating Systems. This new series, by a special correspondent, continues with "What makes the wheel go round."

Review of burners, oil, gas and solid fuel and (ii) Review of boiler instruments, controls, etc.

IN his Talking Shop feature, Bob Couchman gets down to a discussion of basics.

TRADE Topics reviews the month's news in all sections.

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CONTROLS

THE CONTROL OF DOMESTIC HEATING SYSTEMS — THIS IS THE TITLE OF A NEW SERIES OF ARTICLES BY A SPECIAL I P H E CORRESPONDENT WHICH WE CONTINUE HERE

PART 2 — WHAT MAKES THE WHEEL GO AROUND?

THE purpose of the last article in this series was to make the case for the use of automatic controls in domestic central heating and to establish some control functions. Before going on to discuss the design of control systems, it would, perhaps, be appropriate to examine the basic mechanisms used in controls. These are relatively few and relatively simple, controls only become complex when they have to cope with a series of alternative conditions.

Undoubtedly, the most common device used in a heating control system is the thermostat; this may be defined as a device which carries out a predetermined function when a given temperature change occurs. In other words, a thermostat identifies temperature changes and does something about them when called upon to do so.

It follows therefore that two functions and two mechanismsare involved : a sensing function and mechanism and an action function and mechanism. The sensing function and mechanism is, perhaps, the more interesting since we are involved with a mechanical assembly that will duplicate one of the functions of our own nervous systems. When the first controls engineer designed the first thermostat he must have started by looking for some means of getting a predictable change of state that could be associated with a change of temperature. If he was a good engineer he would have been aware of developments in other fields and he might, quite possibly, have talked to a clockmaker about his problem. Clockmakers, or horologists as they may more accurately be described, have been concerned since the early eighteenth century with the effects of temperature changes in metal assemblies.

One of the most accurate methods of measuring time is the beat of a pendulum of known length. However, minute variations in length caused by temperature changes could cause serious variations. Therefore, clockmakers were well aware of the thermal expansion properties of metal and they knew that this expansion was precise and predictable. They eventually overcame their problems, first with a compound pendulum so arranged that downward expansion was compensated by upward expansion of a supporting member parallel to the pendulum arm and later by the use of alloys with a negligible coefficient of expansion.

Materials

This area of knowledge would, therefore, have pointed the way towards the design of temperature sensing devices. There are other materials which have a more satisfactory rate of expansion than the metals, for example, fluide with a low boiling point such as Freon or Ether. There is also mercury, metal in a fluid form. One can, in fact, design a very acurate thermostat involving the make-and-break of a low voltage circuit via contacts with a mercury column between them. The degree of expansion, particularly with metals, associated with small temperaturs changes, is very slight.

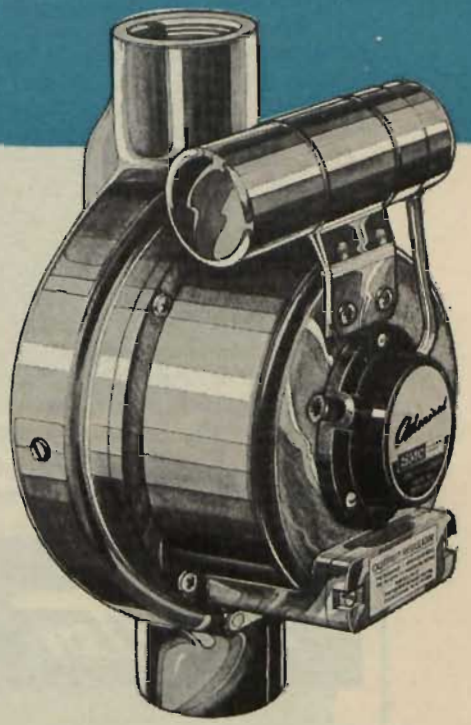
For example, a hundred foot length of iron heating main expands only about three-quarters of an inch from room temperature to working temperature. Therefore, in the design of thermostats, means must be found to magnify the expansion effect by the use of levers and other devices. For example, one popular method is the bi-metallic strip. This involves the use of two strips of metal with widely different expansion coefficients . These are securely fixed together and are anchored at one end. A temperature increase results in the strip deflecting away from the side where the greatest expansion takes place. Strips of this type have been used for many years in gas appliances. When heated by a jet, which is also the pilot jet, the strip, which operates a valve at its moveable end, deflects and permits the passage of the fuel. If the jet is out, then the valve must close. Thus the bimetallic thermostat ensures that gas can only be fed in if the pilot jet is available for ignition.

A somewhat similar approach is used in the pyrostat — a heat detecting device used, particularly in oil burners, as a safety device to stop ignition within a pre-set period if the flame has not been established. In the pyrostat a bimetallic assembly, either coiled or of "W" section, operates a switch at the free end.

Obviously, the longer the strip the greater the movement, under given

Continued page eight

Pipe the NEW Admiral aboard...



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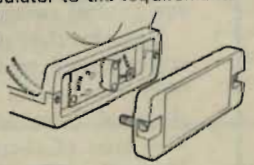
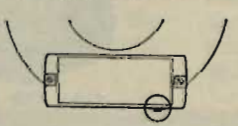


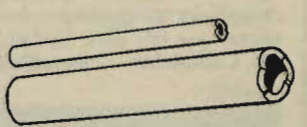
2 Push Button, High Torque Starting Device

is designed to eliminate inconvenience if it becomes necessary to restart the circulator manually due to inertia after prolonged idleness. Water circulation is restored as soon as the button is pressed and the device cuts out the moment inertia is overcome.



3 Micro-bore System

The 'Admiral' can be used without modification, for domestic micro-bore systems.



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conditions, and the most convenient way to house a long strip is to coil it. If the free end is then attached to a lever, wide, and accurate movement is possible. This principle is used with dial thermometers, it is also commonly used with room thermostats. In the latter units a small heater is often incorporated, this accelerates the movement of the coil, once initiated, and has the effect of increasing sensitivity and speed of response.

Fluid-operated thermostats are generally, but not always, used to detect temperature changes at a rather higher level than room temperatures.

Usually a completely sealed unit is used with a sensing bulb or phial connected by a fine tube to a device that moves as the pressure varies. Generally, this takes the form of a metallic bellows with a total travel of perhaps ⅛" or 3-16ths". Another pressure sensitive device is the Bourdon tube. This is a

DOMESTIC HEATING CONTROL

● *From page six*

wide, flattened tube, fairly short and bent to a fairly tight radius, rather like the rolled paper squeakers that unroll in all directions and are responsible for so much of the noise at children's parties. When pressure is applied to a Bourdon tube it tends to straighten and there may be considerable movement at the free end. A Bourdon tube was used in one of the first applications of thermostatic combustion control of a small solid fuel appliance some forty years ago. This was the thermostatic control used in the Aga cooker; it was designed by a blind, but brilliant, Swedish inventor, Dr. Gustav Dalen.

In more recent years hydrocarbon waxes have been used as the expansive medium in thermostats, both in motor car cooling systems and in thermostatic radiator valves. The common factors with all these materials, metal, fluid, or wax, are, first a constant rate of expansion and contraction over a given temperature range and, second, the development of enough energy to operate a switch or move an air-shutter or valve.

There are, of course, delightfully complicated ways of designing a thermostat if one chose to do so, without using thermal expansion at all. For example, one could use a specially sensitised photo-cell to respond to colour changes in a thermo-chronic fluid, i.e. a fluid, such as a cobalt chloride solution, which changes colour as the temperature changes. A more practical application is the use of thermistors, i.e. materials which display a marked variation in resistivity over a temperature range.

The action function and mechanism of a thermostat will nearly always incorporate a device for calibration or adjustment. A sensing element of standard size and type will give a predictable movement. However, the starting and stopping points, which are more or less fixed in their relationship to each other, may need to be moved around a little on the inspection bench or on the site if the unit is to function correctly.

Valuable

If the thermostat is electrical, then a switch, which needs to have a fairly light action, will be incorporated. The mercury micro-switch is particularly valuable in this respect, essentially this type of switch comprises a sealed glass phial containing a small amount of mercury. The thermostat tilts the phial, movement of the mercury makes or breaks contact between terminals penetrating the wall of the phial. One advantage of this arrangement is that there is no possibility of arcing between the contacts. It is partly because of the difficulty of handling mains voltages in delicate mechanisms that so much low voltage control equipment has been used.

Non-electrical thermostats are usually spring-loaded to steady the action and often incorporate leverages to multiply the small travel of the sensing element. This type of thermostat is particularly fascinating. There is something not too far removed from perpetual motion in the idea of a device, with no outside source of power, quietly doing its stuff in some forgotten corner as the years pass over its little mechanical head.

(To be continued)

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trade Topics

VEHA APPOINT SECRETARY

MR. J. F. PICKERILL, A.Comm.A., has been appointed Company Secretary of Veha Ltd. Educated at Wellingborough Grammar School and London University, Mr. Pickerill is an associate member of the Institute of Works Management. He has been head of accounting and administration at Veha since 1961.

A native of Northamptonshire, Mr. Pickerill has lived in Ireland since 1948 and was formerly manager of Bindings Ltd., Dublin. He is married with two children.

★ ★ ★

LEONARD CONTROL FLOW

A NEW method of controlling the flow of steam and water to thermostatic mixing valves with single point outlets has been introduced by Walker Crosweller & Co. Ltd., manufacturers of the Leonard range of thermostatic steam/water mixing valves.

The company is now making available with the Leonard 53/1, 54/1 and A55 models a new coupled inlet flow control mechanism, consisting basically of a single lever operating ball valves on the steam and water inlet pipes. This replaces the interlocked plugcock gear previously available.

Principal advantages of the new inlet control mechanism are its easy and light manual operation and low cost. Further details from Modern Plant Ltd., JFK Industrial Estate, Naas Road, Dublin.

CELANESE Building Components Limited, a member of the Courtaulds Group, announce that their new leaflet CBC.84 giving full information about the 'Series Ten' ball valve is now available.

HEITON McFERRAN TURN THE TABLES . . .

● **PARKRAY'S Area Manager in Ireland, Mr. L. F. Young, who accompanied the consignment, saying good-bye to Mr. Cyril Percival, Sales Office Manager at Belper, with the loaded lorry in the background.**

. . . WITH A STRAIGHT THROUGH OPERATION

MAIN stockists in the Republic for Parkray solid fuel appliances — Heiton McFerran Limited — turned the tables recently when they sent a very large lorry to Parkray's Belper (near Derby) factory.

The Republic is one of the few export markets taking substantial quantities of solid fuel appliances. To speed up the supply of Parkray room heaters, Heiton McFerran sent over one of their large articulated lorries on the Drive On/Drive Off ferry to collect one big order direct from the works. Products loaded onto their lorry at Belper were not unloaded until they reached their destination.

One hundred and nine Parkrays in assorted models from the Parkray 33K room heater to the 88 PF and 88 PD appliances for room heating, central heating and hot water, were packed onto Heiton McFerran's lorry. This travelled from Dublin to Belper and back via the Liverpool night ferry, completing the round trip within 24 hours.

● **Mr. L. F. Young, Parkray's Area Manager in Ireland (left) with Mr. Bill Hough, Despatch Foreman, stand by as the lorry is loaded.**

● **The Heiton McFerran lorry leaves the Belper production centre of Radiation Parkray Limited with 109 appliances aboard.**

The Irish Plumbing and Heating Engineer.

SO MUCH A SIMPLE QUESTION OF BASICS

WHENEVER I run short of ideas, which is nearly every time I sit down to write this thing, I tend to look back through old copies to see what has been said before and to see whether it is still valid. Mind you, not all of it was valid in the first place, but on occasion one of the great truths might have come out and these great truths still remain.

In heating, while men and fashions come and go, the basic problems and the basic solutions remain roughly the same. One is dealing with heat, which follows certain laws, with water and air (sometimes rather unwillingly); one is also involved in problems of combustion, which again follow certain physical laws which cannot change.

My father was a builder of the old fashioned kind and by that I mean he died poor; modern builders die rich. One of his theories was that a good tradesman could do anything at all within the compass of his trade. Following this theory it was not necessary to teach a carpenter how to make a staircase or frame a roof. Instead, you taught him to read a drawing and to use and maintain correctly all the tools of his trade. You then taught him to regard the manufacture of, say, a staircase in terms of reading a drawing or working out a sketch and, thereafter, it was a matter of so many saw-cuts, so many strokes of the plane, and so on. If a man had the basics the rest had to follow.

I believe that there is a great deal of wisdom in that particular theory. In heating practice the level of manual skill in any one area is not especially high, except perhaps for welding, and I prefer to think of heating and, to some extent, plumbing now that the age of lead-work has passed, in terms of physical laws. It is rather hard to list these, but one can try to come up with some of them.

Underlying the whole thing are accepted physical facts like Boyle's Law and Charles' Law, and a good knowledge of these is invaluable. One can, however, bring the heating installers business down to a series of less formal terminology. A short list might be something as follows :—

(1) Look after the customer and he will look after you.

(2) Don't confuse takings with makings. If you have £500 in the bank and you owe £450, then leave the new car until times are better.

(3) Buy right and sell right. This means spending time in finding the right suppliers, checking their invoices and checking the true cost of jobs against the original estimates.

(4) Don't extend your turnover beyond available capital. Many a good business has been ruined in this way.

(5) Don't give too much credit; the money is better in your bank than the other man's.

(6) The only man that earns money in the business is the fitter on the job. Profit must depend on his

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TALKING SHOP

● *From previous page*

productivity; therefore, keep the lads up to the mark and respect and reward them suitably.

On the technical side, a possible set of rules might be :—

(1) Don't take liberties with flues. Remember an appliance is only as good as the flue that serves it.
(2) To work efficiently, an appliance must breathe; always give it enough air.
(3) Stick to well-known, well-proven equipment, backed by a good service.
(4) Never put in an unsafe installation. This is a moral responsibility.
(5) Remember that air has to get away from a system; never leave a high spot that cannot be vented.
(6) Don't take liberties with heat losses. The customer is paying for heat and is entitled to get it.
(7) Always use as much insulation as the job warrants and permits.
(8) Don't take liberties with pipe sizing. This is the most expensive fault of the lot to rectify.
(9) Keep the customer happy by giving him a clean, well finished job.
(10) Deal with call backs promptly. If neglected, the situation always gets worse, not better.
(11) Give really detailed estimates; if you are up against a cut-price merchant quote a basic price with recommended extras.
(12) Put in a frequent appearance on the job while it is going on.

Whenever I come up with a set of recommendations like this I get a sudden attack of humility and wonder by what right I lay down the law since, in all sincerity, I would probably make a lousy installer myself. My justification is that while I would have an awful lot to learn before I could run an installing business efficiently, at least in my job I meet a lot of customers and a lot of installers; also I do deal with a large number of complaints; therefore, I hope I may be forgiven.

● Pictured recently at a reception to mark the visit of Mr. Mark Anton to Dublin were: Mr. Anton (right) and Mr. Kenneth F. Bishop, Managing Director, Kosangas Ltd. Mr. Anton is generally considered to be the father of the LP gas Industry and was recently appointed a Director of LPG Ltd. the holding company of Kosangas Ltd and Kosangas Northern Ireland Ltd. His career began forty years ago when his wife required gas heating for their home, and he set his mind to invent a suitable system. During his Irish visit, Mr. Anton visited Kosangas Installations all over the country.

FENTON, BYRN STOCKING ARRANGEMENTS

FENTON, Byrn have now completed the stocking arrangements for their Ventilating Products in the Republic of Ireland by the appointment as Stockists for that country of Premier Electrical Company Limited, 13 Mount Joy Square, Dublin 1, Ireland.

The stockists for Fenton, Byrn Heating Equipment in the Republic of Ireland are : Monsell Mitchell & Company Limited, 67/73 Townsend Street, Dublin 2, Ireland.

Fenton, Byrn will liason with both stockists through their agent : M. W. Finucane, W. Finucane & Company, 5 Upper Pembroke Street, Dublin 2, Ireland.

industrial heating & ventilating IN IRELAND

trade Topics

● PICTURED dancing at the Clyde Fuel Systems (Ireland) Ltd. Annual Staff Dinner/Dance at the Shamrock Lodge Hotel, Athlone, were, left to right: Gerry Flanagan (Limerick) and Mary O'Donnell, Sligo; Irene McCarthy and Raymond O'Flynn (Dublin); whilst during an interval, Barry McCarthy (Dublin) and Milo Grogan (Kilkenny) provide their own verisons of recent pops.

● ALSO at the Annual Staff Dinner/Dance of Clyde Fuel Systems (Ireland) Ltd. were, left to right: Kiernan and Maura Dalton (Galway); Don Lauhoff (Dublin) with Rose O'Sullivan (Cork); and Phyllis Flanagan (Limerick) with William O'Sullivan (Cork).

HONEYWELL TECHNICAL PRESENTATION IN DUBLIN AND BELFAST

HONEYWELL research and engineering has produced a damper product line and technical manual to provide a technology for damper sizing and application.

The new tecnnology provides the design engineer with the means of easy selection of dampers so that they may be chosen with the same confidence as valves in a hydraulic system.

To launch the products and technical manual, Honeywell are planning technical presentations to design engineers in Belfast and Dublin later this year.

"In depth"

The presentation is called "Trends in the Industry on Air Flow," and will cover 'in-depth' application problems lems from initial selection to site commissioning. Consideration will also be given to control applications of two-position dampers, volumn control dampers and mixing dampers, as well as to examining trends in design of low leakage dampers.

SELF CLEANING FILTERS

NEW range of edge type, self cleaning liquid filters with high flow and viscosity ranges, has been announced by Vokes Ltd.—Leinster Engineering Co. Ltd. are agents here.

Called the Microdisc 4000 series, the new filters are an extension to the company's existing Microdisc range and have a flow capacity of from 200 to 2000 gallons per minute. This is considerably greater than the 600 gallon per minute maximum available from the 3000 series, previously the biggest in the range.

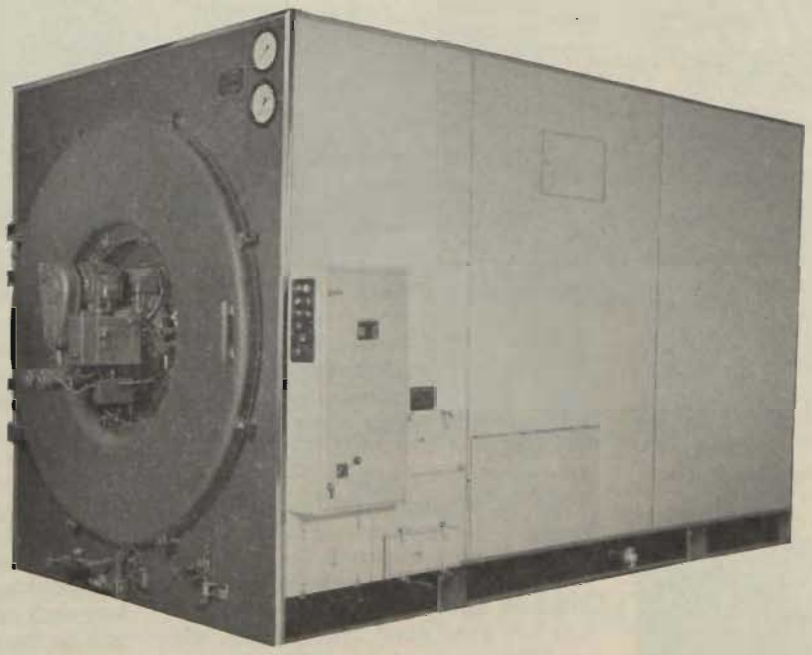
Filters in the new 4000 series are available with from one to eight fitler elements depending on the type of application and flow capacity required. Designed to give an efficient filtration performance down to a particle size of 50 microns, the 4000 series is one of the most competitively priced filters of its type available.

* * *

WON INSTITUTE SCHOLARSHIP

AMONG a number of scholarships awarded by the Institute for Industrial Research and Standards as a result of the competition held in October, 1968, was one won by Mr. Seamus Lee. Foreman, Runtalrad Ltd. to study plant and technique of radiator and convector production at the Runtal factory in Switzerland.

The Cochran Clansman



The hot water boiler designed to meet the needs of Industry today

Positive design advantages incorporating the Cochran unique patented internal re-circulator, make the Clansman one of the world's most reliable and efficient fully flooded hot water boilers.

- ★ **Gas and oil firing.**
- ★ **No water stratification.**
- ★ **Wide temperature differentials–up to 150°F (66°C)–more if required.**
- ★ **Automatic magnesite injection–neutralises sulphuric acid in flue gases.**
- ★ **High thermal efficiency–constant over full range of operation.**

Cochran Clansman boilers are available for low, medium and high temperature hot water applications from 1 million to 25 million Btu/h.

COCHRAN CLANSMAN

Irish Agents :
S. W. CARTY & SON,
12 Lower Mount Street, Dublin 2 (Tel : 62018 and 66346).
SOUTHERN ENGINEERING CO., LTD.,
Parnell Place, Cork (Tel : 21712).
W. H. SCOTT & SON,
130 Upper Newtownards Road, Belfast 4 (Tel : 654680).

COCHRAN & CO., ANNAN, LIMITED, ANNAN, DUMFRIESSHIRE, SCOTLAND.
TELEPHONE : ANNAN 2111. TELEX : 778183.
LONDON : 01-222 4441. TELEX : 27214.

The Cochran Construction Co. Ltd. is able to quote for complete boilerhouse installations, renovations and repairs.

Beverley Chemical Engineering Company Limited, of Billingshurst, is now associated with Cochran & Co., Annan, Ltd.

trade Topics

● TWO of five 16,000 lb/hr Cochran thermax two packaged boilers for Nyanza Textile Industries Ltd., Uganda. The casing is specially designed to overcome height difficulties and loading gauge requirements in Uganda.

ENTERS PUMP MARKET

A MARKETING agreement which will have far-reaching effects is announced between Van den Bosch Limited and H. J. Godwin Limited, the leading U.K. pump manufacturers, established over 90 years. Up to the time of this new agreement, however, the Godwin effort had been largely concentrated on the marine, irrigation, agriculutural and industrial pump fields, and a strong export market has also been build up, particularly in the Middle East and Africa.

● ONE of the Unibloc centrifugal pumps which will now be marketed as a result of an agreement between Van den Bosch Ltd. and H. J. Godwin Ltd.

Allan Cavinder, Managing Director of Van den Bosch Limited, commented on the agreement : "This is consistent with our policy of diversification, and our determination to extend the range of first-class equipment that we can offer to the Contractor and the Specifying Authority as a 'packaged deal.' In recent months we have created specialist divisions to deal with air filtration, insulation, glass fibre Duct System, air conditioning and domestic heating equipment. The rapid success of these divisions has shown that in this day and age customers require sound technical guidance and reliable sales service more than ever before. We shall tackle the pump market in much the same way as the ventilation market, and are pleased and proud to be associated with such fine products made by such a reliable company as Godwin.

There will be a complete range of pumps available through this new agreement, and initial concentration will be made on the Unibloc close-coupled and bare-shaft centrifugal pumps. All pumps will be marketed under the new name of Europair-Godwin.

For further information please contact Europair (Ireland) Ltd., Europair House, Ardee Road, Rathmines, Dublin.

Industrial Section: contd. page 19

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Northern Ireland monthly review

JANUARY ——— 1969

HONEYWELL EXPANSION ANNOUNCED

IN keeping with their rapidly increasing sales of temperature controls for both residential central heating and commercial and public buildings air conditioning systems, Honeywell have obtained further manufacturing facilities at Bellshill.

The new building is the forth and largest factory on the Bellshill Industrial Estate acquired from Scottish Industrial Estates Corporation, by the British company of the world's largest automation systems organisation. Like the other three Honeywell factories on the site, the newcomer will be assigned to the firm's Temperature Controls Group, which transferred main operations from the nearby Newhouse Industrial Estate, late summer of last year.

"With the new block's floor area of 55,500 square feet, the Group has more than doubled its manufacturing area at Ballshill in little more than a year," said Mr. James McGregor, Director of Honeywell's Temperature Control Division.

★ ★ ★

THREE NEW FEATURES

THREE important new developments concerning their Thermostatic Radiator Valves have been announced by Drayton Controls Limited. Firstly the range, which includes both straightway and angle patterns in ½" size, is now extended by the addition of a new ¾" version. This is available in angle pattern and provides a female thread for iron pipe connections. A male compression nut and olive are available as optional extras where copper connections are to be made.

The advent of this new ¾" size means that Drayton's popular, reliable and competitively-priced Thermostatic Radiator Valves may now be applied to many more commercial heating schemes in addition to their extensive use in the domestic field.

Another and significant design development which is being immediately incorporated into all current production models in the provision of a locking pin device, which when inserted into the thermostatic head, prevents further adjustment of the setting.

Finally, Drayton Controls has confirmed the news that the Thermostatic Radiator Valve has been accepted by the Design Centre for inclusion in Design Index.

See picture page seventeen

(Continued foot of next column)

CRANE IN NEW PREMISES

THE Belfast branch of Crane Limited has moved to new premises.

The new premises provide more storage room than the old. There is easy access to the centre of Belfast and to motorways, plenty of parking space for visitors' cars and for lorries using the trade counter.

The Belfast offices's new address is: Crane Limited, Meadowlands, Stockmans Lane, Belfast BT9 7JA. Telephone : 0232 668222/3.

● PICTURED at the O.B.C. Ltd.—Steel Radiators Ltd. promotion in the Park Avenue Hotel, Belfast, were (left to right) — Mr. F. Pickles, Steel Radiators Ltd.; Mr. D. W. Templeton, do.; Mr. J. Roycroft, O.B.C. Ltd.; Mrs. Alice Burnerson, do., and Mr. G. Mason, Steel Radiators Ltd.

New Stelrad C.2. Fan Convector Introduced At Belfast Reception

A NEW fan convector and a new range of pressure jet oil-fired boilers were introduced to the trade at a conference in Park Avenue Hotel, Belfast, organised jointly by Steel Radiators Ltd. of Middlesex, and their Northern Ireland Stockists, O.B.C. Ltd., Belfast.

The Stelrad C.2. fan convector introduction consists of a series of fan convectors which will operate most satisfactorily in a normal central heating system and will warm a room or a house quickly. The first in the series, the new C.2., is a compact, well-styled unit, which projects warm air out and around a room or hall, quietly and comfortably and without draughts. The grille is raked forward to project the air downwards.

The new PJ/9 range of pressure jet oil-fired boilers — also introduced at the show — is designed both for the comfort of the householder and for the convenience of installer and maintenance man. Down-firing offers a high level of efficiency with a low noise factor and ensures clean burning with consequent ease of maintenance. The burner is the Nu-Way ZLO and incorporates a Danfoss RSL oil pump with improved cut-off.

High thermal efficiency is maintained during heat transfer through the use of the proved Stelrad heat exchanger which is of revolutionary design and is fabricated in high quality stainless steel.

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Northern NOTES

BOSSMATIC CONTROL VALVES

THE RANGE of Bossmatic Control Valves by British Steam Specialties Ltd. has been extended to cover all sizes from ½" to 12" nominal bore and valves with either screwed or flanged connections are now available.

Of particular interest are the entirely new fig. 56 Three-position Regulating Valves (British Patent 917648) which are characterised by a new type of double diaphragm drive, providing the following positions of actuation : (a) Main diaphragm for opening; (b) Auxiliary diaphragm for throttling, and (c) Spring bias for closing.

The diaphragm chamber can be loaded manually, via pneumatic or electric remote controls. Automatic actuation can be carried out in conjunction with volumn control mechanisms, e.g. quantity metres with batch and pre-batch facilities, scales etc.

The double diaphragm drive is mechanically adjustable, and can therefore be set to give perfectly reproducible valve settings — Open — Throttling — Close, making three-position regulating valves extremely versatile. Thus, for example, all filling and tapping processes where volume, weight, fluid level, etc., need to be closely controlled, can be carried out automatically.

The adjustable opening rates of these valves, the invariably consistent closing cycle, the wide adjustment feature to suit stages and control of times in relation to operating conditions, the rapid closure from the throttling position, all ensure : a high degree of cut-out accuracy; the ability to utilise measuring equipment with the calibration range, and the protection of plant by limiting the forces exerted by closing against large masses,

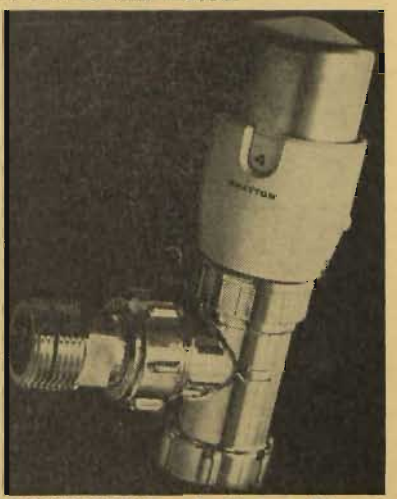
TEMPORARY MOVE MADE

STEWART (Thermal Engineering) Ltd., Agents in Northern Ireland for F. H. Biddle Ltd., Mearsbell Sons and Co. Ltd., and "Firefly" boilers have moved to temporary premises at Annedale Works, Elgin Street, Belfast, BT7 3AG.

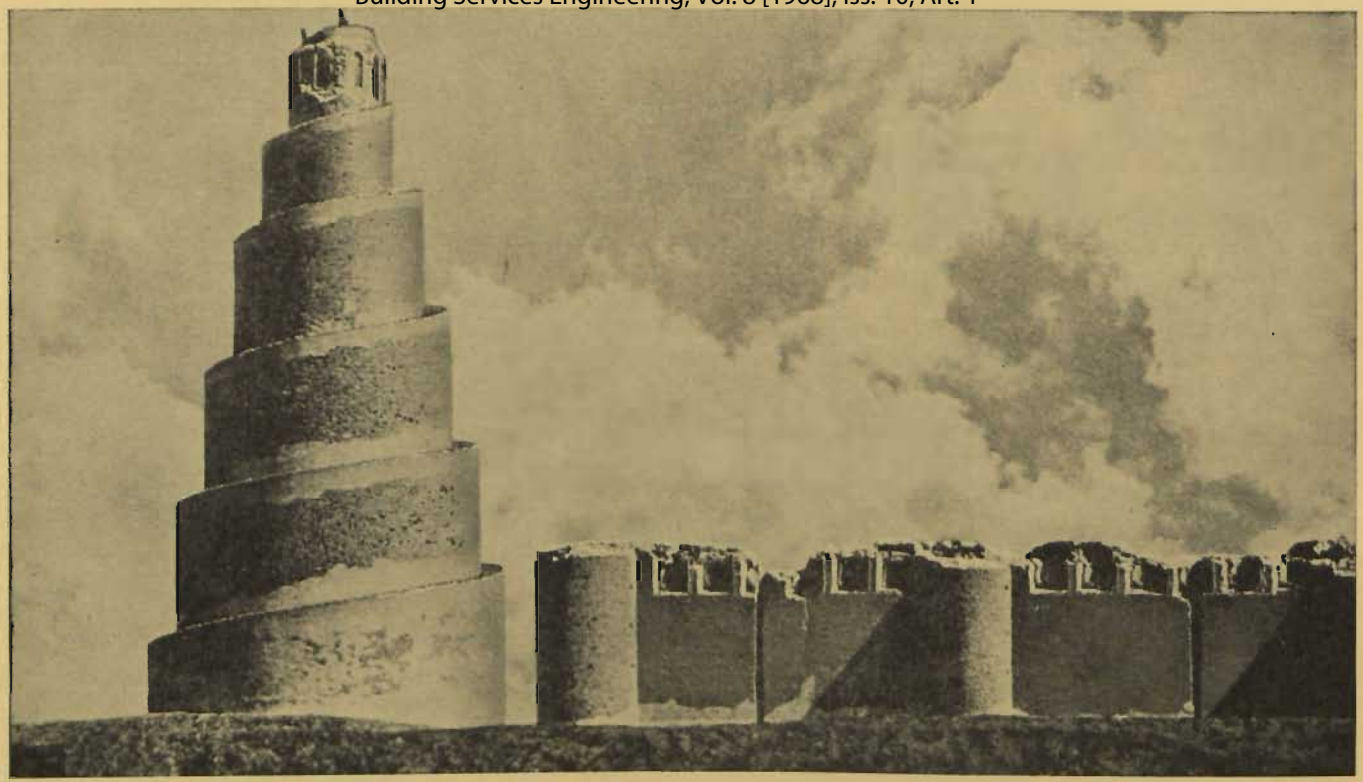
CHANGE OF NAME

A CHANGE of name has been announced for Corbet-Cobb of North Derby Street, Belfast. From 1st. Jan. last, the company's name has changed to Cobb Ref. actories Ltd., 4a Jennymount Industrial Estate, North Derby Street, Belfast 15.

New telephone numbers of the firm, which is not now associated with any company outside Northern Ireland, are 748729 and 748798.



● PICTURED here is the new Thermostatic Radiator Valve from Drayton Controls Limited which incorporates three important new developments — see full report on page fifteen.



They would have finished the tower of Babel if we'd been there

Matthew Hall are past masters
at co-ordinating apparently diverse interests.
Had we installed all the services
–air conditioning, heating electrical services,
sanitation, fire protection and so forth–
the only language difficulty would
have been the usual one on building sites.
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85 & 91 Dykehead Street, Queenslie Industrial Estate, Glasgow, E.3. Telephone: 041-774 3404

11/12 Queen Square, Bristol, BS1 4NT Telephone: 0272 20325/6 Also offices in Australia

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● ABOVE — At the Square D Seminar was Mr. J. Hayes, Branch Manager, Square D Ltd. Below — Also at the Green Isle were, from left: Mr. K. Woods, Fry-Cadbury (Ireland) Ltd.; Mr. W. Tott, do.; Mr. R. Foley, do.; Mr. B. Flanagan, Clondalkin Paper Mills Ltd.; and Mr. W. McNeilis, Roadstone Ltd.

SQUARE 'D' SEMINAR

SQUARE 'D' for the first time in Ireland in association with their Agents Modern Plant Ltd., introduced, in a two-day seminar at the Greenisle Hotel, the Norpak System — a system quite distinct from computer electronics in so far as the main application is automatic process control in high speed production machinery, i.e. since there are no moving parts, continuity of operation is almost guaranteed, this factor is of paramount importance, as loss of production time cannot be recouped.

The Square 'D' Norpak System, in addition, provides counting without limitation on speed; computing or storage functions; shift register, memory, etc. The shift element, for example, has a typical use where a fault is found in production and cannot be interfered with until a later stage — the system synchronizes itself to the output of the machine and rejects, or takes whatever action is required at a later stage.

Square 'D' have already four Norpak systems in Ireland, in confectionery, paper, and a company manufacturing disposable syringes with high speed production machinery. On any automated plant, Square 'D' Norpak provide a method of controlling all the machine functions and the logic elements within; the NOR system reads the various signals from the machine and gives the appropriate responses — the NOR principle is the most commonly used transistor relay system in industry.

★ ★ ★

trade Topics

INDUSTRIAL SECTION
CONTD. FROM PAGE 14

FIRST IRISH BUILDING EXHIBITION

IRELAND'S first International Building Construction Exhibition is to be sponsored by the Federation of Builders, Contractors and Allied Employers of Ireland in the RDS, Ballsbridge, from October 1 to 4 next year.

Details of the exhibition, which will be organised by Irish Services Ltd., Dublin, were announced at a reception in the RDS.

Two principal purposes will be served by the exhibition. First, the construction and civil engineering industries in Ireland will now, at last, have the opportunity of adequately demonstrating their progress in recent years, and their capacity to undertake their unique role in the development of the country's economy, and secondly, they will also be afforded a practical means of appraising new materials, systems, and techniques, plant and equipment —as well as their latest and most efficient applications.

For example, contractors and engineers will be able to see machines working on a demonstration plot specially provided for that purpose.

The general body of visitors will also be able to see apprentices working at their various crafts, and, in cutaway sections, the "Homes of the 1970's"

Concurrently with the Exhibition, AN FORAS FORBARTHA will hold their annual Management Conference at which details will be announced of their programme for the following session.

IBAC '69, accordingly, will be a dynamic exposition of construction and civil engineering in Ireland—a shop window of surpassing value and absorbing interest.

Mr. John J. Hodge, F.I.O.B., President of the Federation of Builders, Contractors and Allied Employers of Ireland, said that the Federation was pleased to be actively associated with the exhibition because it was of considerable potential benefit to the management and workers in the industry.

Mr. Liam Skinner, Chairman, Irish Services Ltd., organisers of IBAC '69, said that their aim was not just another static and stereotyped trade show.

★ ★ ★

VENNER TIME SWITCH

A TIME switch from Venner Ltd. has been designed for the defrost control of refrigeration systems for liquids or food in bulk storage rooms and shop cabinets. It is equally suitable for use with air conditioning plant in industrial and office buildings, hotels and blocks of flats.

The switch (type 990) starts each defrost cycle, which can be set at intervals of 2, 4, 6, 8 or 12 hours; a thermostat associated with the refrigeration equipment terminates the cycle by energising a reset solenoid on the timber, thus closing the time switch contact and restarting refrigeration.

Automatic termination or the defrost cycle is provided by the Venner switch after an adjustable period of between 10 and 45 minutes, giving fail safe control in case of thermostat breakdown. Under normal running a differential thermostat setting gives a delay period for evaporator draining and cooling before the fans are turned on again and the system returns to a refrigeration cycle.

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MONTHLY SPECIAL REVIEW

BURNERS, OIL, GAS AND SOLID FUEL

PROBLEMS REDUCED BY PROPER SETTING UP

OVER the past few years we explained briefly the types of various burners for oil, gas and solid fuel. In any article, it is impossible to detail the working parts, installation, working and maintenance of the different burners. All good manufacturers issue a proper manual with their burners.

While we have established the functions of burners and explained the various types, there remains now the most important task of all and the most interesting and useful for our readers—to cover the many problems encountered over the years, varying from the small domestic burner to the largest power station generator.

Presently, so many topics and problems come to one's mind, it is rather difficult to know which one takes precedence. Later on in this series we shall deal with such problems as nozzles overheating, flame impingement, refractory cracking, flue gas corrosion, developments in gas burning, modern chain grate stokers and finally telephone operated boilers.

Problems

With the development and improvement in the heating trade of mini-bore heating, smaller packaged boilers and now mini-burners for domestic boilers and consequently smaller boilers, many problems have presented themselves. Heat exchanges in the modern C.I. or steel boilers are now much smaller and consequently almost impossible to clean. In the domestic field, the use of refractories is becoming less and less frequent and so the problems have increased again.

So we are faced with the enormous problem of cleaning the combustion and heat transferer surfaces of boilers. The modern boiler is virtually impossible to clean, since the unit is all one piece. The only possible way to clean the fireside is to remove the burner and flue pipe completely and then try to "poke" your way.

The answer, as the writer sees the problem, does not exist basically in the fireside area, but in the proper setting up of the burner from installation and the correct setting of the burner and proper use of oil. The problem could well be very much reduced by (a) proper setting and control of the burner matched to the boiler; (b) proper operating temperatures and stack temperatures, and (c) the handling, storage and cleanliness of the fuel oil.

A common feature inherent in all these boilers is the relatively low temperature of the water cooled heat transfer surfaces. Corrosion on the gas swept surfaces will be due to low temperature corrosion. Boiler corrosion of this type can increase costs considerably not only by reducing boiler life and increasing maintenance charges, but also by producing deposits, which can reduce the efficiency of heat transfer and of burner operation.

Low temperature corrosion and fouling arises mainly from the presence of sulphur as an impurity in the fuel oil, the proportion of sulphur varying with the grade and source of the oil. On combustion the sulphur present is oxidised and the majority appears as sulphur dioxide (SO_2). A small amount, however, usually in the order of 3% of the SO_2 is further oxidised sulphur trioxide (SO_3). SO_3 in combination with the water vapour formed by the combustion of the hydrogen in the fuel oil, will form sulphuric acid vapour, which will condense when sufficiently cooled.

The effect of SO_3 in the flue gas is to give an "Acid Dew Point" (condensation of acid vapours) which is well above the "Water Dew Point" (condensation of water vapour). Quite often confusion exists regarding these two terms. It should be firmly understood that there are two separate and distinct "Dew Points." Both "Acid" and "Water Dew Points" can give rise to their own particular and distinctive corrosion problems. It should, perhaps, also be stressed that the rate of acid and water condensation is a function of surface temperature rather than that of flue gas temperature. Acid vapour dew point is generally associated with temperatures of less than 280° — 320°F and water vapour dew point with temperatures of 125°F and below.

Corrosion

The operating temperatures of the boiler lie mainly below the acid dew point. Even in the case of H.P.H.W. boilers, return water temperatures are well below the acid dew point. The condensation of sulphuric acid vapour on the heating surfaces of hot water boilers results in considerable corrosion of metal and the build-up of hard sulphate scale which reduces the heat transfer efficiency of the boiler. The type of acid condensate depositing on a boiler surface will, depending on the temperature of the surface, fall into one of two categories. If the surface temperature is below the acid dew point and above the water dew point, i.e. between 320°F — 125°F, the condensate will consist of a thin film of concentrated sulphuric acid. Below the water dew point (125°F) a large amount of dilute sulphurous acid (H_2SO_3) and sulphuric acid (H_2SO_4) will deposit.

The condensation of concentrated sulphuric acid on boiler surfaces below the acid dew point gives rise to quite serious corrosion and fouling, particularly in low pressure hot water boilers. A great number of plants suffer from the above condition, which can be quite easily controlled by fuel oil treatment. However, once the temperature of

Continued page twenty-three

DOI: 10.21427/D7MD9B

SPECIAL REVIEW

IN this equipment review we take a look at new developments in the fields covered by this month's special review. (All claims made are those of the manufacturer).

PRECISION Heating Equipment Ltd. of Church Road, Santry, Dublin, supply the BENTOLUX PID burner is a package unit with the new Amanda Boiler series 5 and 6.

This burner is now the largest selling European oil burner and is largely responsible for a huge increase in Bentone sales.

From Bentone also comes a new burner replacing the P series. This is the type L. These burners are specially designed to overcome modern boilers with pressurised combustion chambers—on larger sizes they can overcome combustion chamber over-pressure of 4 inches water gauge.

This in fact means that they are very suitable for installations with poor and difficult flue conditions. Compared with P series the L series has at least twice the statical pressure i.e. the 1400 RPM L series at one million BTU has twice the statical pressure of a P series 2800 RPM at the same output.

★ ★ ★

G. C. Pillinger & Co. Ltd., Croydon, Surrey have added four new models to the Pillinger range of fully automatic Pressure Jet Burners which now even more ecectively cover their pupular hot water/steam heating range with Burners.

Ratings are : Model 602, 60,000 to 300,000 B.T.U.'s; PH Mk.I., 300,000 to 950,000 B.T.U.'s; PH Mk.II., 950,000 to 1,250.000 B.T.U.'s; TM Mk.1., 1,250,000 to 2,500,000 B.T.U.'s; and the TM Mk.II., 2,500.000 to 4,650,000 BB.T.U.'s.

Ratings for Pillinger's "R" series burners are : R.15, 50,000 to 125,000 B.T.U.'s; R.25, 125,000 to 252,000 B.T.U.'s; R.35, 252,000 to 505,000 B.T.U.'s; and R.45, 505.000 to 960,000 B.T.U.'s.

All mode'ls are available as conversion units or as "matched" Boiler / Burner Units. HIGH / LOW flame control is a.so available on some of these Burners where desirable and light sensitive flame failure controls are fitted throughout the range.

Pillinger's new 'R' Series Burners

Continued overleaf

SETTING UP

● *From page twenty-one*

a boiler's heating surface falls below water dew point, an extremely rapid increase in the rate of condensation occurs. Corrosion arising from acid condensate below water dew point can be extremely rapid and serious. Furthermore, because of the large volume of acids so formed, it becomes increasingly difficult to control corrosion and fouling. It is, therefore, apparent that careful attention must be paid to boiler water temperatures, i.e. "flow" and "return" temperatures.

To overcome these problems of low temperature flow and return water, the aim must be to keep the boiler outlet temperature as near to the upper limit appropriate to the operating pressure and to keep the differential between flow and return temperatures as small as possible. These requirements can usually be met by the use of "mixing valves" of the "three-way" or "four-way" types. With the three-way mixing valve, the temperature of the flow to the heating system is regulated by mixing the boiler outlet water with a proportion of the return water. By maintaining a constant high temperature at the boiler outlet, the mean temperature of the boiler water is raised.

Before leaving the subject of boiler fouling and corrosion, a few words should be said about corrosive attack during boiler idle periods. If fireside deposits are allowed to remain on the boiler surfaces after the boiler is shut down, condensation of moisture from the atmosphere occurs, particularly as these deposits are highly hygroscopic. This results in the formation of weak but highly corrosive acids, which can cause even more severe corrosion of the underlying metal. It is, therefore, extremely important that deposit build-up should be kept to a minimum and that when a boiler is shut down for any length of time, the heating surfaces should be thoroughly cleaned. Otherwise measures should be taken to maintain the boiler surfaces at a temperature which will prevent the condensation of moisture from the atmosphere.

are also available as 2-stage units for boiler conditions up to 8" W.G. From their Croydon Works a technical sales and service organization covers the whole of Gt. Britain and the Republic through established centres at 20 Sycamore Street, Dublin; 35 South Terrace, Cork; 5/15 Connswater Street, Belfast; 2. Queen's Terrace, Exeter; BaBnk Chambers. Crown Point, Denton, Manchester; 101 St. Vincent Street, Glasgow, C.2.

★ ★ ★

INTERNATIONAL Janitor Ltd., who produce one of the largest range of domestic central heating products of any company in Britain, supply 10 and 5-position programmers which are not only fitted to their own equipment but also sold to the trade. The 10-position is wall mounted and the 5-position can be either wall or boiler mounted.

Also from International Janitor are Thermopak A1 accelerators, available for closed circuit heating systems, which have a variable head and are able to operate in any plane in domestic systems up to 150,000 Btu/h. The B1 is a similar pump manufactured in bronze for open circuits.

★ ★ ★

QUADRANT Engineers Ltd. of 167 Strand Road, Dublin, distribute the Mark 3 and Mark 4 Abig burners, which are suitable for boilers of outputs of up to 800,000 BTUs.

One of the outstanding features of the Abig burner is its delayed firing action.

★ ★ ★

A PERFECT firing service for any heating application — that is Nu-Way's boast for their range of fully automatic oil burners.

The burners are suitable for operation with either light distillate, medium or heavy fuels and are specified by all the major manufacturers of heating equipment.

Nu-Way also present a range of burners for gas. The GFA range incorporates basic design features of the ZL2 models to facilitate interchangeability and can be relied upon to give an efficient and economical service over a long period.

Nu-Way Heating Plants Ltd. (John R. Taylor Ltd.) have their Irish office at 379 South Circular Rd., Rialto, Dublin.

SPECIAL REVIEW

● *From previous page*

★ ★ ★

THE Eurogauge Co. Ltd. have compiled a six-page A4 size leaflet which gives comprehensive details of their range of EG 161 tank contents gauges. Printed in two colours, the leaflet gives full mechanical details — adequately backed up by illustrations — of the company's EG 161 Popular, Permanent and Unitop type of gauges.

EUROGAUGE ISSUE NEW LEAFLET

Both the Unitop and Popular gauges incorporate a pneumatic pump and are designed to give remote indication up to a distance of 150 ft. (48 metres) from the storage tank. The principal difference between the Unitop and the Popular is that the former can be adjusted on site to suit liquid depths varying from 3 ft. (91.5 cm) to 10 ft. (305 cm) max., whereas the latter is non-adjustable and suitable for use with liquad depths up to 15 ft. (4.5 metres). The EG 161 Permanent incorporates an air bell and can provide remote indication up to a distance of 300 ft. (90 metres) in conjunction with liquid depths up to 20 ft. (6 metres). Further details from W. Finucane and Co., 5 Upper Pembroke Street, Dublin.

. . . and it's also non-combustible, and even more efficient.

In fact, the new Fibreglass FRS 950 rigid section has improved on previous pipe insulation in just about every way there is.

Look at the comparative picture yourself. Go over this chart as exactingly as you know how. Check it in relation to your own design or cost experience. In doing so, you'll see just how far, technologically, the FRS 950 has travelled beyond anything you've known previously in this field.

You'll see that this new Fibreglass specification is the answer to today's—and that means your own—requirements in pipe insulation. We're waiting to give you the full information and answer any queries you may have on the FRS 950. Just ask.

Property	FRS 950	Any Other Product
Temperature Range	35°F – 950°F	
Fire Safety	Non-combustible – B.S.476:Part 1	
k Value	0.28 at 200°F mean 0.46 at 400°F mean	
Weight	5 – 7 lb/ft³	
Range of thicknesses	1" - 4" insulation thickness. Nested sections for minimum heat loss.	
Dimensional Accuracy	Complies with B.S.3958	
Damage Resistance	Robust and non-friable	
Permanence	Vibration resistant – unaffected when tested to B.S.2972 Non-hygroscopic. Meets Non-corrosive B.S. nos. No maintenance 1334: 1968 to warrant 2736: 1958	

NEW FRS 950

Fibreglass Limited

Agents: Monsell, Mitchell & Co. Ltd., Heating and Insulation Division, 67-73 Townsend St., Dublin 2. Tel: 770282.

21 Merrion Square North, Dublin. Tel: Dublin 67060.

MONTHLY SPECIAL REVIEW

BOILER INSTRUMENTS AND CONTROLS

OPTIMUM CONDITIONS ONLY BY USE OF INSTRUMENTS

IN the past few years we discussed the necessary requirements for steam boilers and burners. Present regulations such as the minimum requirements of AOTC (Associated Offices Technical Committee) for insurance, and ASM Boiler and Pressure Vessel Code have become rather strict and severe of late. We welcome such rigid measures, for " Built in control does not mean infallible operation." The subject is of vast importance to oil, gas and solid fuel operation.

In order to efficiently control the operation of oil fired boilers and maintain boiler operating costs at a minimum, it is necessary to maintain boiler efficiency at a maximum. An increase in boiler efficiency means a decrease in fuel consumption with subsequent financial saving. An example of this is that an increase in efficiency from 72 per cent to 78 per cent in a boiler using 100,000 gallons of heavy fuel oil per year will decrease the fuel consumption by 7,600 gallons, showing a financial saving of approximately £300 per year, or 7.6 per cent.

To attain and maintain optimum boiler efficiency, it is very necessary that the boiler plant be properly instrumented, for if the efficiency is not measured, it cannot be controlled.

All boiler plant, no matter how small, should be equipped permanently with instruments to indicate whether it is being operated as efficiently as possible, and such instruments need not be too costly. They should be of sound and simple design, accurate, and should not require too much attention. The cost of these instruments can be usually recovered by the value of the fuel saved within a period of a few months.

The choice of the type of instruments most suitable is governed to some extent by the size and lay-out of the plant, but even the smallest plant should have a CO_2 indicator, flue gas thermometer, draught gauge and water thermometer.

Continued page twenty-eight

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INSTRUMENTS FOR HEATING and VENTILATING

PRESSURE SWITCH
for non-corrosive gas applications. Adjustable over 95% of the range. Range 0–2″Wg. to 0 to 10″Wg. minimum setting 0.15″Wg. pressure or suction. Differential pressure up to 30″Wg. static with full overload protection.

PRESSURE SWITCHES

HYDROSTATIC CONTENTS GAUGES
have transmitters for side bottom or internal installation. The indicators are for wall or flush panel fittings. No outside source of energy is required for operation.

HYDROSTATIC CONTENTS GAUGES

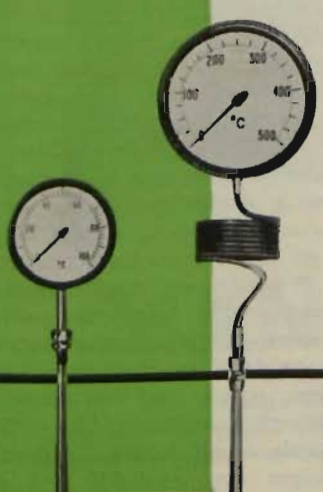
CONTENTS CONTROLLER
The transmitter is self-powered and the instrument is entirely independent of any outside source of power. A three-level switching unit and relay equipment are incorporated.

THE ALTITUDE GAUGE
has cases for wall, flush panel or direct mounting. Pressure ranges are from 0 to 40 ft. hd. up to 0 to 500 ft. hd. Overload capability is up to 25%.

LEVEL CONTROLLERS

LIQUID LEVEL SWITCH
is for non-corrosive applications in vented tanks, in three versions depending on the number of levels (up to three) for which separate operations can be pre-set.

TEMPERATURE CONTROLS



MERCURY THERMOMETERS
have temperature ranges from —30° to +150° or from 0° to 1200°F or equivalent C. Mild steel or stainless steel bulbs and detachable pockets are available.

Our Agent in Northern Ireland:

Messrs. Luke, Martyn & Co. Ltd., 1 Sandyhill Park, Drumbeg, Dunmurry, Nr. Belfast.

KDG
K·D·G Instruments Ltd.
Manor Royal
Crawley Sussex
Tel. Crawley 25151

SPECIAL REVIEW

From page 26

These basic minimum requirements are essential if efficiency is to be measured and controlled.

Larger boiler plant should also be equipped with a feed water or steam flow meter, fuel meter, CO_2 recorder and, particularly when an economiser is installed, thermometers and pyrometers. Indicating instruments are of immediate assistance to operating staff, whereas recording instruments provide information over a period, giving a picture of variation in conditions and load which are necessary for purposes of comparison and costing.

When too little air exists to burn the fuel, noticeable smoke emission quickly indicates the deficiency. When too much air is introduced in relation to the quantity of fuel, no such indication exists. Therefore, it is quite easy for boiler operators to maintain a clear stack by introducing surplus air for combustion.

This practice is extremely wasteful and for indicating this largest source of heat loss in any boiler plant, the master instrument is the CO_2 indicator. The CO_2 reading enables the amount of excess air passing away in the flue gases to be determined and, in conjunction with the flue gas temperature, provides the data necessary to calculate the percentage of heat lost in the flue gas.

The temperature measurements and gas samples should be taken at the same point and the same time. The samples of flue gases should not be drawn near to the flue walls because of stratification in the gas flow and the possibility of air infiltration. It is generally desirable to draw gas samples from different points in the gas flow until a single position is found which provides reasonably representative measurements under normal conditions.

When a boiler plant operates with a fluctuating load, intermittent measurement is rarely an effective guide and the CO_2 instrument should be of the recording type to give the continuous information necessary to maintain close control of the combustion conditions.

Accurate temperature measurements are required for checking the efficiency of boiler plant, flue gas temperature, feed water temperature, and water temperatures. The point at which the temperature is taken and the type of instrument used must be selected to provide both representative conditions and an accurate reading.

For flue gas temperature readings, the instruments usually employed are sheathed thermo-couples and mercury-in-steel thermomenters. Generally, the flue wall temperature is less than the gas temperature, and the instrument will give a reading intermediate between the two. This error can largely be eliminated by using an instrument small in size and taking the measurement at a point where the gas velocity is high.

NEW WEATHER SENSITIVE CONTROL

LANDIS & GYR have recently introduced a new weather-sensitive control for hot water installations. Suitable for use in factories, office buildings and large residences, Sigmagyr operates by co-ordinating several variable factors, such as temperature, taking into account humidity, wind strength and the heat loss factor of the individual building, and it relates these to a pre-set temperature programme.

The control equipment comprises a central unit, an immersion riser temperature sensor, a weather sensor and a motorised valve. The plug-in central unit, which can be wall or flush mounted can be withdrawn for wiring to the motorised valve and sensors. The heating curve is easily set without prior calculation and once the control box has been locked, the desired heating programme can be selected by an exterior switch. A two-wire system to the sensors affords the utmost simplicity of installation.

Sigmagyr is available for either mixing or injection systems and combines ease of installation with a robust and well designed main unit of die-cast aluminium. The unit measures only 5½" x 5½" x 3½", excluding motorised valve, and is available ex-stock.

Further details from Brown-Boveri (Ireland) Ltd., Taney Road, Dundrum, Dublin 14.

★ ★ ★

THE British Steam Specialties Ltd. whose Irish offices are at 33 Leeson Park, Dublin, and Distillery St., Belfast, have recently taken over the sole distributing rights for the U.K. and Eire for the Teddington Thermostatic Control Valves.

Other recent introductions to the Boiler Controls field by BSS are the "Bossmatic" Control valves and the "Rhodes" flow and returns.

Many industrial processes, heating and air conditioning systems, and engine cooling applications require a reliable robust instrument which will accurately maintain a pre-determined temperature by varying the flow of steam, hot water, chilled water, brine and other fluids.

The Teddington KDE has been specially designed and developed to meet such needs and will give years of trouble-free service with the minimum of attention. It is available with a 2 or 3-way valve body from ½ in. to 2 in. connections, screwed or flanged, direct or reverse acting and with temperature ranges

IN this equipment review we take a look at new developments in the fields covered by this month's special review. (All claims made are those of the manufacturer).

from 40 deg.F. to 325 deg.F.

The spring-loaded gland fitted with chevron rings is self adjusting and never needs attention. The complete valve assembly comprises there separate units thus reducing servicing and cleaning problems to a minimum. The KDE is self actuating and requires no external power supply.

The valve is operated by a seamless metallic bellows which is connected by a capillary tube to a phial charged with a volatile liquid. Variations of temperature at the phial result in corresponding changes of vapour pressure within the bellows which cause the bellows to expand on contract. Movement of the bellows is opposed by a spring, the load of which can be adjusted to pre-set the desired temperature range of the heating medium.

The Bossmatic control valves can be actuated by compressed air, water or gas at a maximum pressuer of 30 lbs. p.s.i. and 70 deg.C. The operation is such that the medium acting on the diaphragm can be arranged to either open or close the valve.

A big number of items are available in the range of Rhodes flow switches.

★ ★ ★

SATCHWELL Appliance Controls Ltd. have, among their products, items particularly suitable for boiler control.

The Satchwell TB Thermostat is a short-stem thermostat for the control of automatically fired boilers. The temperature sensitive stem contains a liquid filled phial capable of actuating a micro-gap switch contained in the thermostat head casting. The switch is single-pole double-throw and various scale ranges are available. Models are available having either automatic or hand reset action and a double unit model includes a second thermostat system to provide high temperature limit protection.

The Satchwell TF Thermostat is a remote-phial thermostat enabling the sensitive phial and the control head to be fitted in any convenient positions within the limitations of the connecting capillary. The switch has simple on-off action, various scale ranges are available and suitable

control knobs can be supplied if required.

The Satchwell DGH is a photo-electric control for oil fired boilers. Operating in conjunction with a very sensitive photocell the DGH provides safety in operation and rapid shut-down in the event of flame-failure. The control components are housed in a robust neat die-cast case which is suitable for mounting on the burner. The 10H photocell head is extremly small and has a curved flange for fitting to the burner draught tube. The control is suitable for burners using up to four gallons of fuel per hour and there are three separate models having different ignition characteristics.

Satchwell's Irish office is at 36B James St., Dublin.

* * *

MODERN Plant Ltd., Naas Road, Dublin, have announced a number of new products introduced by their principals recently.

The new products include Anaconda Sealtite Conduit with Thomas and Betts liquid tight fittings to suit.

From Serck-Audco Ltd. comes the Serck Audo Miniseal and Slimseal Butterfly valves.

SPECIAL REVIEW

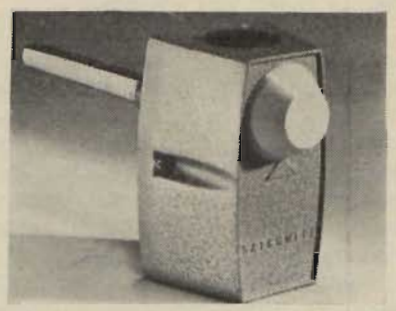
● *From previous page*

Square "D" Ltd., producers of electrical control gear, have introduced a new Square "D" KG starter.

★ ★ ★

ELLIOTT Process Automation's activities in the Industrial Boiler Plant and Heating and Ventilating field are based upon the accumulative experience within the company, gained from supplying instruments and controls to this field for several decades.

As the boiler plant industry has developed, so Elliott has maintained a close vigil on the design and specification of its products to ensure that each trend and new requirement is fully satisfied. Changes in capacity brought about increased instrument ranges, plant operation closer to the design criteria and safety limits needed faster response and higher accuracy, increasing maintenance costs and full-time shift operation demanded more reliability, and different firing systems, e.g. manual bin, chaingrate and ram stoker for solid fuel, and fuel oil called for specialist plant knowledge. All these resulting attributes are inherent to Elliott instruments and control schemes.



● **SATCHWELL TB short-stem thermostat for the control of automatically fired boilers**

One example from Elliotts is their series of electrical controls. Stoker-fired boilers in hospitals, schools, factories and industrial installations can now be controlled automatically to high orders of efficiency by the low-cost Series '75' system which is designed and manufactured by Elliott. This all electrical package control system is compact and flexible and is

Continued overleaf

easy to install and operate.

With the Series '75,' running costs are much lower because manual boilerhouse attention is reduced to a minimum and in some cases, unmanned boilers are possible. The capital cost of the Elliott Series '75,' including installation and commissioning charges, is less than other comparable boiler control schemes.

Elliott's Irish office is at 32B James St., Dublin.

★ ★ ★

S. W. CARTY & SON of 12 Lower Mount St., Dublin, who are the sole agents for Kent Instruments Ltd., can supply a full range of boilerhouse instruments. These comprise water meters for hot water and cold water applications, and oil meters to measure flows up to 300 gallons per hour. Both the water and oil meters are normally available ex-stock Dublin.

For steam flow measurement, two alternatives are offered, either the Rotary Shunt type totalising meter or the more elaborate instrument with associated differential producer, which can provide recording, indication, and integration of steam flow or any combination of these facilities.

SPECIAL REVIEW

● *From previous page*

To complete the range of boilerhouse instruments, the Kent temperature recorders/indicators and Flue-Gas analysis equipment for both O^2 and CO^2 have provel themselves to be very efficient and successful.

★ ★ ★

A FULL range of instrumentation and control equipment and electrical testing instruments from the HARTMANN & BRAUN range is available from H. R. HOLFELD LTD., 2-4 Merville Road, Stillorgan, Co. Dublin.

Individual items, such as recorders etc. can be supplied or if required complete control loops can be supplied and installed to client's requirements. Technical advice is also available together with complete after sales service and spare parts availability from H. R. Holfeld Ltd.

The range of instruments from the HARTMANN & BRAUN ELIMA programme includes panel meters such as ammeters, volt meters, watt meters etc., while the portable range

Continued opposite page

● **A boiler plant with an output capacity of 84 million Btu/h., burning 500 gallons of oil an hour, forms the basis of the system providing central heating and domestic hot water for the Ballymun Housing Project, which was officially completed last month.**

The structural completion of the £10 million project was marked by the ceremonial lifting into position of the last precast concrete unit. Pictured at the ceremony were (left to right) : Mr. Paudge Brennan, T.D., Parliamentary Secretary to the Minister for Local Government; Mr. Neil Blaney, T.D., Minister for Agriculture; Mr. Paddy Burke, T.D., Chairman of Dublin County Council and Mr. Martin Quirke, Project Director, Cubitts Haden Sisk.

IN THIS article a special correspondent discusses some points arising out of his introductory article contributed to last month's special review of radiators, radiant panels and convectors.

CLOSED HEATING AND MINI-BORE SYSTEMS

AT last the scepticism is beginning to disappear. It has taken quite some time to convince the Irish engineer or U.K. engineer for that matter to avail of the many advantages of pressurised and mini-bore system. Our country is tied to tradition, even in engineering. Just over a year ago we had the fortune to discuss at length with a well known heating engineer the above subject and after five hours of drawing diagrams, calculating flow rates of water in pipes, checking water velocities etc., we finally agreed to design a mini-bore pressurised system working at 220°F mean water temperature for his own house, using natural convectors with front facia panels to prevent accidents.

After deciding on a contractor to do the job and utilising coil copper ⅜" and ¼" bore, the job was completed in approximately three days. The system was designed on 230/210°F, 15 P.S.I. with water velocity at 5 ft./sec. The system was such a success that the said heating engineer is gone mini-bore mad. The time has come to move from tradition. In the U.S.A. and Europe for the past 20 years, mini-bore heating (not called mini-bore by name) is standard practise, together with the majority of systems pressurised and working at slightly higher temperatures. One often will ask oneself why are we so backward or perhaps so hesitant. The fact remains that we are not backward, technologically, but like most people will wait to see who will move first.

The essentials of a mini-bore system are outlined hereunder, covering details on higher operating temperatures, higher operating pressures and higher rates of water velocity.

ExpansionT Tank — Pressure Vessel (Heating)—The normal system incorporated an expansion tank. In the mini-bore pressurised system, the expansion or make up tank is replaced by a small vessel fitted with a diaphragm which is filled on one side with a gas—nitrogen, and water on the other connected to the system. When the system has been cleaned or flushed out and filled up, the system is sealed and pressurised to about 15 lbs./P.S.I. by nitrogen. The advantages of such a system are many : No tanks or pipework have to be fitted in the attic: no oxygen pitting of pipes or corosion are needed, since the same water is used all the time which is sealed: ease of installation and the pressure vessel which is compact, require little or no maintenance.

The attraction to such a system, whether mini-bore or not, once pressurised is the ease of raising the heating medium to a higher temperature where suitable, particularly for convectors. This latter point is of major importance when temperatures drop to 0°C or lower and extra heat may be required. In such circumstances, instead of installing greater heating surfaces use can be made of higher heating temperatures. With many natural convectors on the market, when temperatures are raised to approximately 240°F, one can get a correction factor of 1·7 upwards.

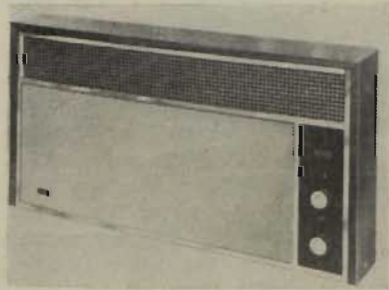
Pump—Pump selection for mini-bore and pressurised system is relatively simple, singe, presently, many pump manufacturers are offering pumps suitable for working temperatures up to 350°F, and variable head up to 20 ft. for domestic application. Hence, water velocity can be increased to the point of little or no noise.

Boilers — The normal C.I or steel boiler is suitable for a working pressure up to 35 lbs./P.S.I. and temperatures up to 250°F. It is essential that (a) a safety valve be fitted to the boiler, and (b) a high limit thermostat combined with pressure stat. These are the minimum requirements. Many installers and designers favour just a dual thermostat. This is not enough. If leakage should occur in the system, water may be totally drained and consequently the boiler will be damaged. Once a low pressure stat and combinad dual thermostat is wired in series with the burner and if the pressure in the system drops to a set limit, the burner will not operate, thus protecting the bolir.

Piping—Pipe sizing will depend on the total heating requirements. For the average 60-125,000 BTUs domestic job, ⅜" and ¼" ½" pipes are used.

Cylinder—It is essential that the hot water cylinder is suitable for a minimum of 15 lbs. P.S.I. working pressure .

It is obvious that closed heating systems have many advantages and have created a great deal of interest in many sections of the industry. While the Heating and Ventilating Research Association (HVRA) in Bracknell have carried out some tests, it is now most desirable that a code of practise be developed applying to both domestic and industrial applications, in order that the fullest advantages can be made of closed systems, and mini-bore heating together with high temperature hot water heating



● **FROM the Myson range of fan convectors we picture here the Envoy Super. In reviewing the Myson range last month we should, of course, have stated that Heiton McFerran Ltd. are the sole distributors in the Republic for the Myson Envoy and Estate range of convectors, together with the room thermostat and Minute Valves.**

Special Review

● *From previous page*

include multi testers and clip-on meters. The panel mounting and portable meters are available ex stock from Holfeld Dublin Office.

H. R. Holfeld are also agents in Ireland for the SHANDON range of equipment which includes the Fyrite CO2 testing kits. The Fyrites are available normally ex stock in standard kits, or in individual items such as CO2 indicator, draught gauges, smoke testers, and stack thermometers etc.

★ ★ ★

LOEWE Silenta Accelerators for Central Heating Systems provide capacities up to 150 g.p.m. and heads up to 25 ft. having all the features of silent running, automatic air removal, anti-corrosion coating and over-sized motors capable of carrying overload for any period a'ways associated with the LOEWE units.

The units are also available from H. R. Halfeld.

The Variable Model V244R covers almost the whole range of normal requirements for small and medium sized installations up to 300,000 Btu/h suitable for either single phase 220V or 3 phase 380V AC supply capable of taking water temperatures of 250°F and system pressures of 85 p.s.i.g. maximum.

The Twin Silenta is an In-Line

Continued overleaf

Accelerator which combines a main and a stand-by pumping unit in one casing having single common suction branch and common discharge branch to serve both units. Parallel operation is also possible and the Automatic Change-Over Control Unit ensures that the stand-by pump automatically comes into operation should the main unit fail for any reason other than a power failure.

The LOEWE Silora All-Bronze Domestic Hot Water Accelerator provides capacities up to 19 g.p.m. and frictional heads up to 9 ft. suitable for single phase 220V AC supply only. This is a new development and the prices of the two Models available are extremely competitive.

★ ★ ★

THE breadth of Honeywell Commercial Division's capabilities in the field of air conditioning controls and building automation, is underlined by the throng of new products—17 of them—being shown for the first time at this year's HEVAC exhibition in Olympia, London, from April 22 - 27 (Stand No. 206).

These devices range from hot water mixing valves and electronic panels, to a standardised pattern of centralised supervisory data centre which, although compact, is capable of providing one-man control of building services in the largest commercial buildings being built in the United Kingdom today.

Honeywell's Irish Offices are at 38 Upper Mount St., Dublin, and 296 Albertbridge Road, Belfast.

The SysteMatic electronic panel (W851) is designed for the control of heating, ventilating and air conditioning plants of any size. The new equipment gives improved control with reduced system offset, at minimum installation cost. There are six basic models, each available with or without a case for single or two-stage control. A built in low limit feature is standard; models with compensation permit selection for 'summer' or 'winter' schedules.

There is also a new series of valves for trouble-free operation with the increasingly difficult service duties being demanded in today's heating and ventilating and air conditioning market. Available in a range of ½ inch to 6 inch, for straight-through (V5049) or mixing-diverting (V5050) duties, the valves are suitable for the standard design of Honeywell electric or pneumatic operators.

★ ★ ★

A high degree of accurate measurement of hot or cold oil is provided by

Special Review

● *From previous page*

Tyler's DM/63 Industrial oil meter (rotary piston positive type) which is available here from Pump Services Ltd., of Synge St., Dublin.

The DM/63 oil meter is designed to meet the demand for the accurate metering of gas oil, Kerosene, diesel oil consumption of industrial heating and steam raising boilers, process furnaces and kilns, diesel engines, gas turbines etc.

The meter comprises a body with inlet and outlet, a measuring chamber which houses the piston and draining components and a register housing. This covers and seals the straight-reading counter. The drive is transmitted by magnetic coupling from the measuring chamber to the register assembly.

The meter is therefore glandless with a Feroba I ring system which is completely non-corrodible.

The total quantity delivered is shown by number rollers which are viewed through a transparent aperture in the register housing. A disc is also provided which rotates in unison with the meter piston giving immediate indication that the instrument is recording—down to dribble flows.

The new DM/63 is designed to meet all the requirements of the Water Engineer, resulting in more efficient measurement at lower cost. It combines the sensitivity and accuracy of the rotary piston principle with several unique features which represent a major step forward in meter design.

★ ★ ★

KINGSTON Control Systems Ltd. (KCS) of Kingston - on - Thames, manufacture a wide collection of equipment for shutting down plant closing valves or dampers and sounding alarms in the event of fire or flood in boiler houses or similar installations.

These include the KKO knock off switch; the KFL electro fusible link; the KAC anchor control; the KQR and KLS quick release control and the KSS sump switch.

The KKO emergency knock off switch is widely used for shutting down burners, electrical circuits and solenoid valves. Fitted with a red mushroom push, the switch remains latched in after operation until reset by rotating the knob clockwise.

The switch is provided with one make and one break pair of contacts rating 3 amps at 250 volt AC.

The KFL is a high sensitivity fusible electro link operating at air temperatures in excess of 145°F.

The powerful electro magnet of the KAC holds the anchor piece secure when electrically energised. On de-energisation the cable is released to close off weighted fire valves or dampers.

The coil is conservatively rated for continuous energisation. Each KAC is supplied with 6' flexible steel cable.

The KQR combines a cable tension switch with red mushroom release push button, which operates both switch and release pin. To reset; the pin is simply re-inserted until held by the catch. The switch is provided with one make and one break pair of contacts rating 3 amps at 250 volt AC.

★ ★ ★

A new oil burner control has been produced by Danfoss in addition to flame control, photo resistor and ignition transformer types.

Danfoss' distributor in the Republic are Messrs. J. J. Simpson & Co. Ltd. 12A Wexford St., Dublin, and in Northern Ireland distribution is taken care of by the Danfoss Subsidiary in London.

Meeting market demands for a small compact control box, the Danfoss oil burner control type 57H, is designed especially for fully automatic control and protection of single-phase burners having capacities of 8 Imp. gal. of oil per h (B.S. 799), or 30 kg of oil per h (Din 4787).

Type 57H is produced parallel with the well-known type 57L, meaning that the range of control boxes now provides fully automatic control and protection of both single-phase and triple-phase burners.

Type 57H of the plug-in type is available in two designs: type 57H1 with pre and post-ignition, and type 57H3 with no pre and post-ignition.

Type 57H1 makes pre-purging possible during the pre-ignition time. Light-grey in colour the cover is made of a new type of impact-resistant ABS plastic. The base, dark grey in colour, is made of 'Nyhamine'. In other words type 57H harmonizes in colour with our other control boxes and boiler thermostats.

To match the small overall dimensions of type 57H it has been necessary to develop a new type photo unit, type LD, featuring a high-ohmic resistor, and to integrate an amplifier in the photo circuit of type 57H.

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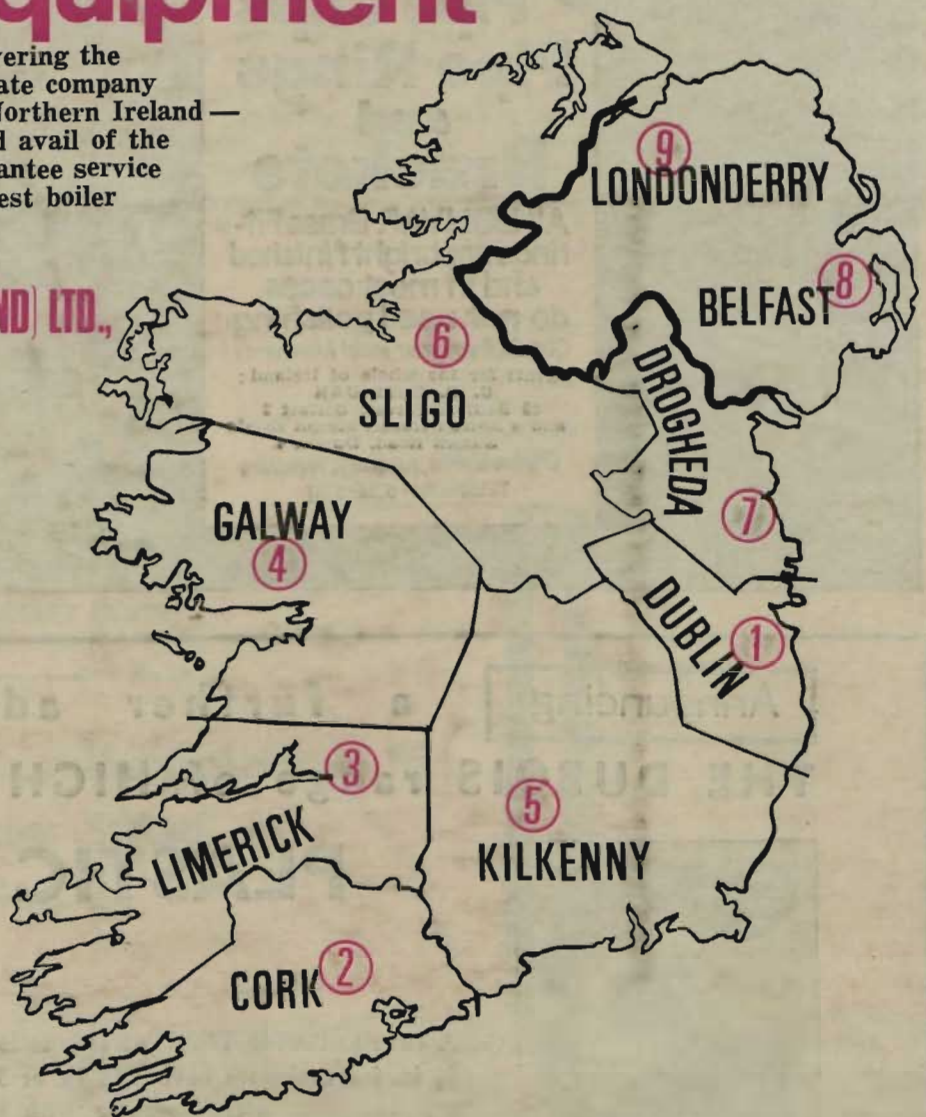

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