

2-1-1964

The Irish Plumbing and Heating Engineer, February 1964 (complete issue)

Follow this and additional works at: <https://arrow.tudublin.ie/bsn>



Part of the [Civil Engineering Commons](#), [Construction Engineering Commons](#), and the [Construction Engineering and Management Commons](#)

Recommended Citation

(1964) "The Irish Plumbing and Heating Engineer, February 1964 (complete issue)," *Building Services Engineering*: Vol. 3: Iss. 11, Article 1.

doi:10.21427/D7N71W

Available at: <https://arrow.tudublin.ie/bsn/vol3/iss11/1>

This Article is brought to you for free and open access by the Journals at ARROW@TU Dublin. It has been accepted for inclusion in Building Services Engineering by an authorized editor of ARROW@TU Dublin. For more information, please contact arrow.admin@tudublin.ie, aisling.coyne@tudublin.ie, vera.kilshaw@tudublin.ie.

ENGINEER



**MRS
1970
KNOWS WHAT
SHE WANTS**

And she knows just where to get it. Because the hard hitting advertising which first sells her on the idea of installing Shell and BP Housewarming also tells her of the superb service offered by her local Appointed Installer. The special Shell and BP Appointed Installer's sign is prominently featured in each advertisement to help her remember it. There are hundreds of Mrs. 1970's. All looking for the Irish Shell and BP Limited Appointed Installer's sign — the sign which they know means prompt efficient service. Hundred's of Mrs. 1970's — hundreds of systems to install and service. It's obviously very good business to give Mrs. 1970 what she wants!

SHELL AND BP HOUSEWARMING

THE ORIGINAL SCHEME FOR OIL-FIRED CENTRAL HEATING IN THE HOME

IRISH SHELL AND BP LIMITED
SHELL-BP HOUSE,
13-15 FLEET ST., DUBLIN 2.



February 1964

Published by ARROW@TU Dublin, 1963

Vol. 5 No. 11

Special Monthly Supplement
Industrial Heating & Ventilating In Ireland

WATER STORAGE

the
ASBESTOS
way



No water storage problems
if you instal Asbestos
Cement tanks. Strong,
light and economically
priced Asbestos Cement
tanks cannot rust
or corrode and
require no maintenance.

For details, write today!

ASBESTOS CEMENT LIMITED

19 Lr. Pembroke St., Dublin 2.

Asbestos

Grosvenor

When a plumber is looking for a pump...



...for **CENTRAL HEATING**

he cannot buy better
than the

SIGMUND THERMOPAK or SILENTFLO

and the prices are very competitive. Why not buy the best at practically no extra cost?

SPECIAL FEATURES:

- Super Silent and self-lubricating.
- Being glandless, is free from leaks and needs absolutely no attention whilst operating.
- Special silicon-impregnated winding—no starter protection needed.
- Precision-ground sleeve bearings—for long life.

PRICES AND ILLUSTRATED LITERATURE SENT ON APPLICATION.

ONLY AVAILABLE FROM THE SOLE AGENTS FOR REPUBLIC OF IRELAND:

MONSELL, MITCHELL & CO. LTD.

67-73 TOWNSEND STREET, DUBLIN 2.

Phone 76282



FULLY GUARANTEED
AND COMPLETE AFTER
SALES SERVICE AVAIL-
ABLE.

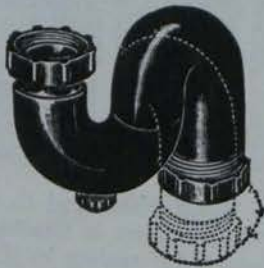
A NEW
PRODUCT

"THE DUBOIS PLASTIC TRAP" (Regd.)

A NEW
PRODUCT

Provn. Pat. No. 38070/60.

1 1/4" and 1 1/2" diam. x 1 1/2" seal "S" and "P" BLACK HIGH DENSITY PLASTIC TRAPS



- Orthodox Shape!
- Smooth Bore Tubular construction.
- Outlets can be turned through 220°.
- A two-piece trap at a one-piece price.
- Outlet on 'S' trap turned to inlet forms a through-bore bottle trap.
- Frost and damage resisting.
- Light weight = lower transportation costs.



Manufactured by:—

THE DU BOIS COMPANY LIMITED

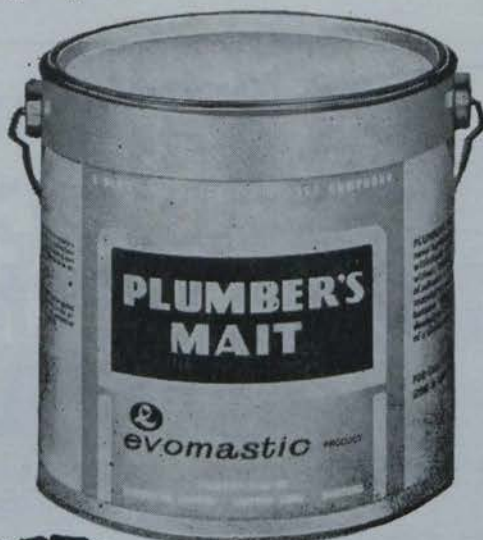
15 Britannia Street, London, W.C.1

Telephone No.: TERminus 6624-5.

Telegraphic Address: "Bleitrap, London."

One

The Irish Plumbing and Heating Engineer.



EVERY PLUMBER NEEDS HIS MAIT!

It's PLUMBER'S MAIT – an amazing, flexible sealing compound which has wonderful qualities of adhesion and yet is clean and easy to handle.

**FAST!
FLEXIBLE!
CLEAN!
WATERPROOF!
PLUMBER'S
MAIT
REPLACES
RIGID
JOINTING!!**



PLUMBER'S MAIT will withstand excessive movements which often lead to failure with traditional jointing materials. This is because Plumber's Mait is flexible thus allowing movement within the joint. Plumber's Mait is ideal for sealing W.C. pans, taps and waste pipes, gutters, downpipes and drains, overlap joints in structures of metal, wood, glass, ceramic or plastic—on any job in fact which requires a flexible, waterproof joint, giving permanency, maximum efficiency, and all round economy.

Don't be without
PLUMBER'S MAIT
FILL IN AND POST
THIS COUPON FOR
FULL DETAILS NOW!

Please send full details and free sample of PLUMBER'S MAIT

NAME

ADDRESS

Let us quote you for Boilers by
B.S.A., HOTSPUR, WILSON, CRANE, IDEAL, POTTERTON
TRIANCO, GRAHAM STEWART, and others

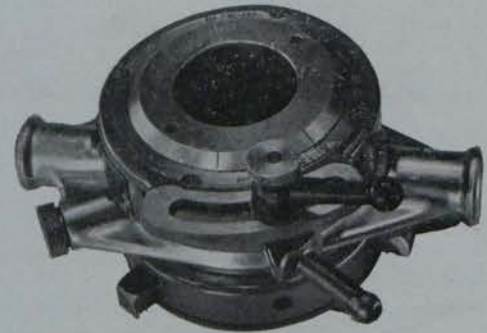
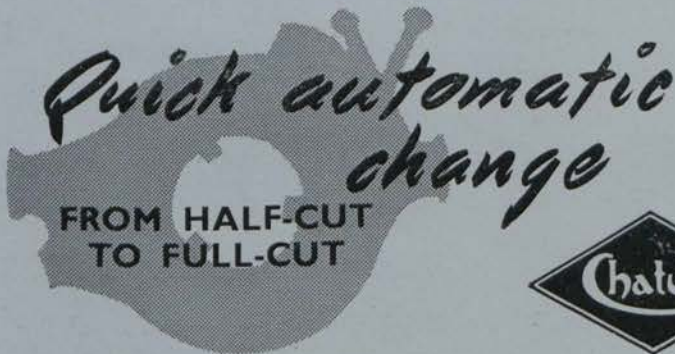
Heating Controls & Devices Ltd.

6 Mount Street Crescent, Dublin, 2. Phones 66480/89

CARROWREAGH ROAD, DUNDONALD, BELFAST, N.I. Telephone: Dundonald 2683 (3 lines).

Stockists of Components by:—

**SATCHWELL, DANFOSS, HONEYWELL, K.D.G., NORMOND, FUNDER, IVO, STEINEN,
 SANGAMO, VENNER, HORSTMANN, OPIO, ANGLO NORDIC, HKL, PEGLER**



**"48" PATTERN PATENT ADJUSTABLE
 RATCHET TYPE CHASER DIE STOCK**

"48" Pattern Chaser Die Stock 1½", 2" and 4" B.S.P.
 Quick automatic change from half-cut to full-cut
 enables threads to be formed, when required, in two
 operations on 2" and 4" sizes (Patented).

THOMAS CHATWIN & CO.

Victoria Works, Great Tindal Street, Birmingham, 16.
 Telephone: Edgbaston 3521-3.

CHATWIN also manufacture
 Stocks and Dies
 (Angular and Square
 Pattern) Pipe Cutters
 Stillson Pattern Pipe
 Wrenches
 Screwing Machines up
 to 2" (Pipe and Bolt)
 Stocks, Taps, Dies,
 Tap Wrenches in
 polished wooden
 cases

ONE OF THE **BROCKHOUSE** COMPANIES

Three

BREAK THE COST BARRIER WITH THE

IDEAL CONCORD™

IDEAL-Standard



NEW AUTOMATIC GAS BOILER RETAILS AT ONLY £45!

“IDEAL CONCORD” GAS BOILER brings chore-free central heating within reach of all . . . increased business for you!

HERE ARE THE FACTS:

35,000 BTU, ONLY £45 RETAIL.

45,000 BTU, ONLY £55 RETAIL.

POSITIVE QUICK-ACTING THERMOSTAT.

COMPOSITE, EASY-ACCESS CONTROL-LINE SIMPLIFIES SERVICING.

DELIVERED ASSEMBLED—ONLY GAS, WATER AND FLUE TO BE CONNECTED.

COOL MODERN DESIGN.

CLOCK CONTROLLER, OPTIONAL EXTRA.

**“IDEAL CONCORD” WILL BE
A QUANTITY SELLING BOILER.**

Choose “IDEAL” cast-iron radiators for a lifetime's service.

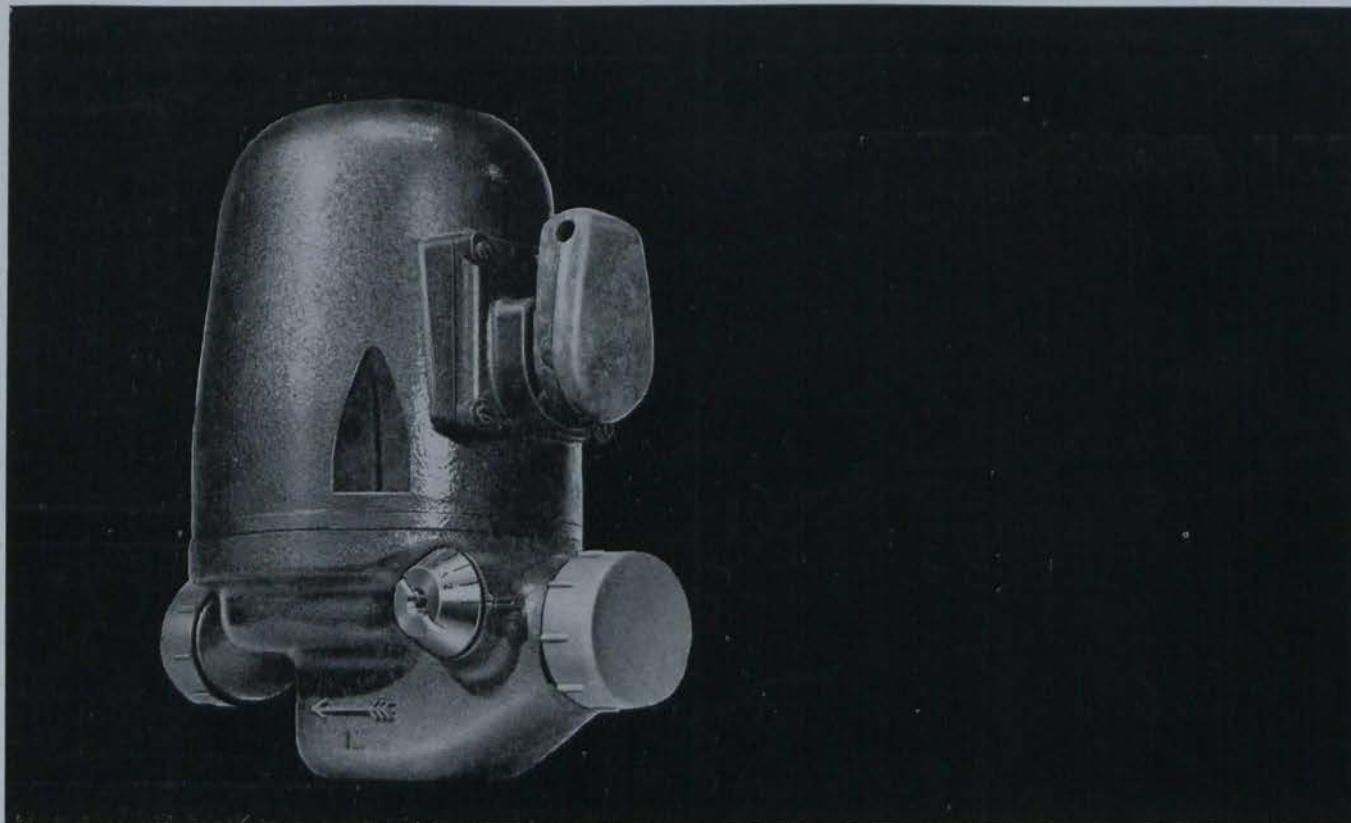


For full details, write to:

IDEAL - Standard
LIMITED

PO Box 60 · Hull · Yorkshire

“Ideal” and “Concord” are trade marks of Ideal-Standard Limited



ONE PUMP ONLY gives you all this



unmatched variability



clutch combined with
press button venting

- * super silent operation
- * can be installed in any position
- * 2 year free replacement guarantee
- * covers all domestic installation requirements

Only the OPIOMATIC glandless circulating pump gives you all these features in one pump



OPIOMATIC

B.S.A. HARFORD PUMPS LIMITED

Northside House, Mount Pleasant,
Cockfosters, Herts. Tel: HADley Green 2244

The world's largest manufacturers of variable output accelerators BHI

Six



trade Topics

SANBRA FYFFE Limited have announced that they have received an order worth £100,000 for hot brass pressings for export to an associate company in Britain. This company manufactures the well-known Conex Instantor compression fittings and a wide range of plumbers' brass ware, including Aqualyne luxury taps, copper traps and Setflo radiator valves, for the Irish market.

The factory at Santry Avenue has recently been extended by the addition of a new bay of 10,000 square feet, and 250 persons are now employed.

This fine order, which is for delivery before the end of May next, is additional to the normal requirements of the British Company, with which a steady export trade is carried on. It will involve the introduction of shift working in the press shop.

* * *

THE E.S.B.'s Secretary, Mr. J. G. Gargan, has warned that persons not authorised by the Board are offering

WARNING FROM E.S.B. CHIEF electric heating systems for sale with the claim that these systems have the approval of the Board and qualify for special rates of charge.

"The Board feels it necessary to warn the public that any such claims

Continued overleaf

Speed up in meter making

BY the application of work study principles, the Arkon Instrument Division of Walker Croweller & Co. Ltd., of Cheltenham, Glos., has doubled operator efficiency for the production of its $\frac{1}{2}$ in. oil flow meters and raised output by nearly 80 per cent., without any increase in the existing labour force.

An increase in the production capacity has been necessary to accommodate the rising demand for this meter, which in the last year alone, has more than doubled.

One of the largest single contributions to the new high output rate has been the use of specially designed assembly units, which incorporate assembly tools and component trays so arranged that machined parts can be loaded and used in a sequenced order.

The operator is then able to locate each one, as and when needed for assembly, with the minimum of movement. A unit of this type enables a production rate of one meter every five minutes to be maintained and it can be used for a full day without the need for replenishing.

Modern Plant Limited of Crumlin Road, Dublin, have been appointed sole distributors in the Republic for the Arkon Instrument Division of Walker Croweller & Co. Ltd.

IRISH PLUMBING & HEATING

ENGINEER

Vol. 3. No. 11. FEBRUARY

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

After the introduction last month of the Engineer's industrial section the I.P.H.E. continues to carry all its regular popular features.

New contributor, W. J. R. Couchman, has earned the attention of all domestic heating installers with his Seven Deadly Sins series. Another sparkling article in this issue.

This month John G. Bolton concludes his own series on small bore heating design.

The subject of the special review feature this month is tap fittings and controls. A product review covers many of the new introductions.

Another A. L. Townsend contribution deals with hot water supplies. Trade Topics review the month's news.

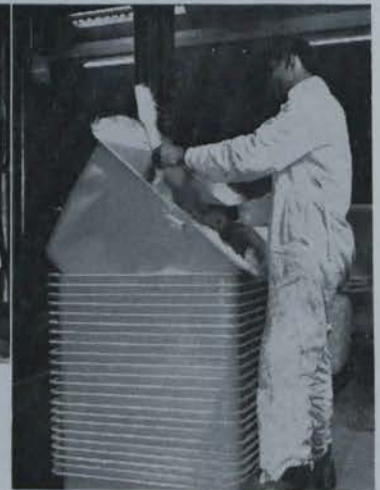
Published monthly by Irish Trade & Technical Publications Ltd. Annual subscription, 21/-, post free. Single copies, 1/9, post free.

Editorial and advertising offices:

Callaghan Chambers, 13/15 Dame Street, Dublin 2. Tel. 56465-6.

London: J. T. Robson & Son Ltd., 30 Fleet Street, London, E.C.4. Tel.: Fleet Street 4438.

Belfast: Allen McDowell, 43 Horn Drive, Belfast 11. Phone 614606.



**trade
Topics**

from previous page

should be carefully checked. If you are in doubt, you are invited to inquire at any E.S.B. office or show-rooms," said Mr. Gargan in a statement.

The Board recommends only the Electric Warm Home Plan as offered by the E.S.B. and approved electrical contractors.

* * *

THE ASSISTANT Sales Manager of Shires and Co. (London)

MORE ABOUT BALLVALVES

Ltd., Mr. D. Slinn, M.R.S.H., made the following two important points when he wrote us regarding

A. L. Townsend's recent article on domestic water supply in which he dealt with ballvalves.

The majority of B.S.S. 1212 ballvalves do not incorporate devices for adjusting the arm to provide the correct water level. Most of them are as illustrated in the drawing, and necessitate the physical bending of the arm to obtain adjustment.

It is suggested that because the seatings in the B.S.S. 1212 ballvalve are loose, they are also interchangeable. This is true only in respect of B.S.S. 1212 ballvalves, made in what is known as the No. 2 body. It is not possible to substitute a low pressure or fullway seating for the high pressure seating fitted in the No. 1 body ballvalve.

Making 70-gallon plastic cisterns

SHOWN here are three of the stages in the making of the Osma 70-gallon reinforced plastics cistern. In the first picture (from left) the preform is placed on the mould, a glass fibre overlay mat is draped over it and a measured quantity of catalysed and pigmented Cellobond polyester resin is poured over this. After the 250 ton Daniels press has been closed and pressure applied, the resin mixture is caused, by the pressure, to flow evenly into the preform and the heated matched-metal mould "cures" the resin/glass mixture and causes it to harden.

When the press is opened the rigid moulding is removed (second picture). The complete cycle takes approximately four minutes. The last stage is the trimming off of excess material. The finished cisterns are then subjected to rigorous inspection and various standard tests are also made.

EXAMINATIONS in welding for both senior and junior levels of apprenticeship are to be introduced at an early date for students at the College of Technology, Bolton Street, Dublin, said the Minister for Education, Dr. Hillery, speaking recently at the college.

MINISTER ON NEW WELD TESTS

the College of Technology, Bolton Street, Dublin, said the Minister for Education, Dr. Hillery, speaking recently at the college.

Dr. Hillery was attending the presentation of a VKW vertical tube boiler to the college, for use in demonstration to students, by the firm of Vereinigte Kesselwerke AG, Dusseldorf, Germany. The presentation was made by Mr. William Humphreys to Mr. Donal O'Dwyer, principal of the college.

Dr. Hillery, who thanked the firm on behalf of the City of Dublin

Vocational Education Committee, said that the model was an example of a break-through of Irish industry into the highly specialised field of steam boiler production. This achievement, he said, resulted from a partnership between Messrs. J. and C. McGloughlin of Dublin and the Vereinigte Kesselwerke company of Dusseldorf.

The model was complete in every detail. Full scale production of modern boiler tubes, he said, was a complicated process calling for special skills. It was a matter for pride in Irish engineering circles that part of the new boilers for the E.S.B. generating station at Ringsend was manufactured in Dublin, and that a portion of a contract between the Spanish Government and the German AEG/VKW consortium for a boiler, now being erected in the Canary Islands, was being carried out at Inchicore.

* * *



The low-priced Ideal Concord gas boiler is available in two sizes—35,000 B.t.u's/hr. and 45,000 B.t.u's/hr. Ideal say the sizes have been selected to suit the majority of smaller homes.



AT A highly successful Dublin reception Dunham-Bush Limited introduced their series "G" Temperator to architects, consulting engineers, heating engineers and oil company representatives.

SUCCESSFUL DUNHAM-BUSH VIEWING

At the viewing of the latest Dunham-Bush heating and air conditioning products a short illustrated lecture was followed by an informal discussion on the applications of these products.

The series "G" Temperator, a dual purpose warm air unit, attracted keen interest. "It will enable consulting engineers and architects to plan ahead and select the same unit for both winter heating and summer cooling; the same unit for free standing, semi-recessing or totally concealing," say Dunham-Bush, who are operating from 20 Harcourt Street, Dublin.

Each of the basic components has been designed specifically for this absolutely new air conditioning system. Their flexibility enables as many as 101 variations to be offered, each in a range of five sizes giving a total choice of 505 standard models.

The series "G" temperator is designed to operate on pumped hot water central heating systems, steam heating systems, chilled water circuits, and, with a different coil fitted, direct expansion circuits if required.

These units can be sited in separate rooms in buildings where individual comfort control is required. One unit in the winter offering quiet efficient heating, and in the summer the same unit provides comfort cooling.

In a similar way as the heating boiler is sited centrally—a Dunham-Bush packaged water chilling unit can be installed as a central station plant. For individual cooling units a small Dunham-Bush air or water cooled condensing unit can be incorporated.

Also exhibited were centrifugal pumps.

FROM LEFT, ABOVE: Mr. D. J. Smith, Sales Manager, Dunham-Bush; Mr. B. J. Feathersone, Consulting Engineer, Dublin; Mr. B. Wafer, Design Engineer, Oil Fired Homes (I.) Ltd.; Mr. V. A. Cooke, Managing Director Henry R. Ayton Ltd., and Mr. J. Galley, Marketing Manager, Dunham-Bush, were all at the Jury's Hotel viewing.

BELOW: Mr. D. J. Smith, Sales Manager, Dunham-Bush, explaining one of the units to the meeting.



THREE recent appointments in Sanbra Fyffe Ltd. are: Mr. John F. Darcy as general manager of the company, Mr. Brendan C. Byrne as sales manager, and Mr. Thomas P. Stuart as works manager.

THREE NEW SANBRA FYFFE APPOINTMENTS

Mr. Darcy, who is a chartered accountant, has been secretary of the company for a number of years. Mr. Byrne was formerly chief sales representative with the company.

Our picture (below) shows from left: Mr. Stuart, Mr. Darcy and Mr. Byrne.

● Further news from Sanbra Fyffe, the manufacturers of Conex-Instantor compression couplings and plumbers' brass ware, is that they can now offer supplies of

Aqualyne luxury taps and mixers from Dublin stock. "Furthermore, prices for these luxury fittings have been reduced, making them the most competitive in their class," say Sanbra Fyffe.



trade Topics

THE NEW Advisory Committee for Sanitary Services Works, which has been set up by the Minister for Local Government, Mr. Blaney, met for the first time last month, when it was addressed by the Minister in Dublin.

SANITATION ADVISORY COMMITTEE

The Committee will advise on matters relating to the design and operation of water supplies, sewerage installations and other sanitary services works which may be referred to it.

In his address to the members, Mr. Blaney stressed the magnitude of the current ten-year programme of water supplies and sewerage schemes, both in the public and private sectors, would throw up technical problems of planning and design in the solution of which the committee could provide valuable assistance.

"In your approach to these matters," he said, "you will, I am sure, be aware of the new spirit of progress abroad in the country, and the need to ensure that our sanitary services are geared to cope with the ever-increasing demands of an expanding national economy. You will have due regard to the Government's second programme for economic expansion, and to the local development plans which are to be formulated by planning authorities," he said.

"One of the first questions which will be referred to the Committee for examination will be the adequacy of the present design considerations used in the planning of regional water supply schemes.

"It would be impossible to predict accurately what the ultimate developments in the field of water supplies in this country may be.

The Irish Plumbing and Heating Engineer.

HIGH DENSITY POLYETHYLENE TO RESCUE IN LIMERICK

OUR picture shows the happy ending to a very interesting story from the Co. Limerick estate of the Earl of Harrington near Patrickswell. The problem was a rising main and it was installed to draw water from a 375 ft. artesian well. Such a main would normally consist of 20 ft. lengths of steel pipe screwed together; in this case, however, it was found that the bore of the well when drilled was crooked and it was not possible to get the steel pipe down more than 15 ft. in the well.

Mr. Jackie Gleeson, O'Connell St., Limerick, who was carrying out the installation, got in touch with Stephen F. Stokes, Limerick, who in turn got in touch with Stewarts & Lloyds of Ireland Ltd., and it was decided to produce the required length of water main in High Density Polyethylene. The High Density Polyethylene Pipe was made at the S. & L. factory in Dublin and transported in one unbroken length to Lord Harrington's estate in Limerick. Because of its extreme flexibility the pipe was lowered successfully into the well.

This High Density Polyethylene main is the longest unbroken length of 4"



The giant length of H.D.P. is lowered into the well.

pipe ever made in Ireland, say S. & L.

High Density Polyethylene is a new plastic material discovered by Professor Zeigler of Mulheim in Germany in 1956. It is an improved grade of polythene. Pipes made from High Density Polyethylene are extremely tough and capable of taking very high hydraulic pressures. At the same time they are light and flexible and can be used in very long lengths, therefore eliminating the use of joints.

Not long after the completion of the Limerick installation a similar problem presented itself at the quarry of Roadstone Ltd., Bunratty. Again High Density Polyethylene came to the rescue, this time in the form of an unbroken length of 175 ft. of 4" pipe.



ROTHERHAMS Ltd., Coventry, announce that Mr. G. A. Reid, 16, Fade Street, Dublin, has been appointed Agent for the sale of the Company's circulating pumps in both the Republic and Northern Ireland.

* * *

DESPITE the hard winter that reduced orders during the first three months of 1963 to a mere trickle, F. H. Bourner & Co. (Engineers) Ltd.—a member of the Delta Group—manufacturers of Supataps and Tempex thermostatic mixers, report an increased turnover to an all-time record. "Prospects for 1964 are such that internal re-organisation is already taking place to increase the production capacity of our plant," said a spokesman.

* * *

THERE were eight times as many fires from electric blankets and bed-warmers in Britain last year as in 1955, figures just out disclose, and "there is no indication that the frequency of these fires will decrease in the near future." In the same report, from the Joint Fire Research Organisation, the electrical appliances that caused most outbreaks were cookers, space heaters and electric blankets.

* * *

GUMMERS LTD. announce a new thermostatically - controlled mixing valve incorporating many new features. A single control operates both shut-off and temperature control, and an automatic shut-off is built in as a safety device, should the cold water supply fail. The valve is available as either concealed or exposed pattern. No additional stop cocks are necessary as all valves are available complete with isolating and non-return valves. Full details are available from Gummers Ltd., Rawmarsh Road, Rotherham, Yorks. Irish agents: Irish Development Supply Co.

* * *



DUE to heavy demands on space this month, part two of our new "Seven Deadly Sins of Domestic Installation" has had to be held over until next month.

Stockists of—

G.B. TUBES & FITTINGS

RADIATOR VALVES

SAUNDERS DIAPHRAGM VALVES

up to 10" and most other types for oil, water and steam.

CIRCULATING PUMPS

James J. Doherty Ltd.

36 Lower Gardiner Street, Dublin. Phone 47927 (5 lines)

SPECIAL REVIEW**THIS MONTH****TAP FITTINGS, CONTROLS****TAP IS MOST USED**
BUT TROUBLE FREE ITEM

THE tap, cock, faucet, call it what you will, is the about most used yet the most trouble free item in the vast range of plumbing fittings.

Present-day taps are well designed, functionally sound, and long-lasting. All of these things are dear to the conscientious plumber and hot water fitter. But are these commendable qualities sufficient in themselves? Technically, and to the busy plumber, they may well be, but what of the non-technical tap users—and those of us who might find time to stop and stare, even for a brief moment, at these ambiguous conveniences which are so readily taken for granted by one and all?

IF the tap can serve its purpose efficiently and without trouble and yet be attractive to look at too, then this pleases everyone. Manufacturers, having standardised dimensional tolerances so far as working parts are

concerned, and having developed durable alloys from which the fittings are made, now wisely turn attention to improving its appearance, and ease of manipulation.

THIS is all to the good, for now; a discerning client can choose tap styles to his individual taste, regardless of their standardised functional insides. Gone are the days, of but a few years ago, when the plumber would wander into the merchants and order a tap, or a pair of taps. To-day, catalogues need consulting, display boards need careful scrutiny, and the question "separator" or "combination" fittings? has to be considered and decided upon.

Yet another point to be decided, especially if one has been fortunate enough to win the "Sweep," is whether the taps shall be chromium or gold plated. Some readers will have seen the 9ct. gold plated taps. Several styles were shown at the re-

cent Building Exhibition in London. The price of these?—100% on the price of the same fitting in chromium plate—the film star style bathroom becomes a possibility for all!

Shower fittings are really catching the public eye. This valuable bathroom accessory is no longer regarded as something for only the well-to-do, or for the sports stadium. It is being increasingly recognised as a water and time saving appliance which offers an immediate warm or cold shower with all the well-being that the more leisurely slipper bath can give.

The need for careful installation of the hot and cold services requires no elaboration here. All will be aware of the need for adequate head pressure and good pipe sizing in doubtful cases, that is where the head available is not more than 3ft. from maintainable cistern water level to shower spray. Incidentally, most shower spray manufacturers prefer installations to have at least 5ft. head at the spray. If simple, yet adequate frost protection is applied, the cold feed-storage cistern can be elevated in the roof space with little trouble.

THE need for anti-scald mixer valves to shower fittings, especially to those for use by unattended youngsters and old folk, will also be clear.

Walker Crossweller of Cheltenham, Glos., are well known in this field of thermostatically controlled shower valves.

Among notable new introductions, Gummers Ltd. have produced a new thermostatic mixing valve which has a single control, operating both shut off and temperature control.

F. H. Bournier & Co., of "Supatap" fame, weigh in with an interesting, quite new approach to shower-bath or sink supply, thermostatic controlled mixer assembly—the "Temperfix."

In the non-thermostat combination

Continued page twenty-five

McNEILL
(ENGINEERING) LIMITED

Northern Ireland Agents

for

BROOKS & WALKER LTD.

and

TRENT VALVE CO. LTD.

VALVES AND FITTINGS EX STOCKS

Held at—



TELEPHONE 745211 - 78 DUNCRUE ST., BELFAST 3

the
author

John G. Bolton

Lecturer in Plumbing and Heating at the College of Technology, Bolton Street, Dublin.

SMALL BORE HEATING

DESIGNING A TYPICAL DOMESTIC INSTALLATION

IN last month's article the various factors relating to the design of a small bore heating system was considered. We will now take a typical dwellinghouse and design a suitable heating for installation in it. In response to requests we will consider a semi-detached three-bedroom house such as is commonly found on new housing estates. A plan of the house is shown in Fig. 1. The construction is of hollow-block, plastered and dashed, with a cavity wall brick front. The roof is concrete tiles with roofing felt underneath.

Assuming that the client has asked us to provide full heating in the house, and has specified temperatures for the various rooms, where do we go from here?

Well, first, we must find out the heating surface or, in other words, the radiator size for each room. This size will depend on the temperature required in the room and also on the outside air temperature. For maximum safety this latter is always assumed to be 30°F. (freezing point). As mentioned, however, in a previous article, even lower temperatures may occur on, perhaps, two or three days—or nights—in mid-winter, but with a well insulated house sufficient heat is already absorbed in the fabric to counter this on the few occasions it happens.

ROOM temperatures will, of course, be the client's decision, but in general

Living Rooms are usually taken as 65°F., Bedrooms 55°F., Hall 60°F., Bathroom 60°, and other rooms 55° to 65°, depending on their use.

Having got this far, we now begin our calculations—we can, of course, do this in the traditional way, by ascertaining the "U" values for the walls, ceiling, floor, windows, doors, etc. These "U" factors are set out in most text books on heating—in some cases, as in the Esso guide, in great detail. Having decided on the relevant figures for heat loss, we must then take the surface area of each wall, ceiling, floor, etc., and multiply each by the correct value—a time consuming business for those unfamiliar with the use of the slide rule.

However, we can avoid this trouble

CENTRAL HEATING SYSTEM FOR SEMI-DETACHED HOUSE

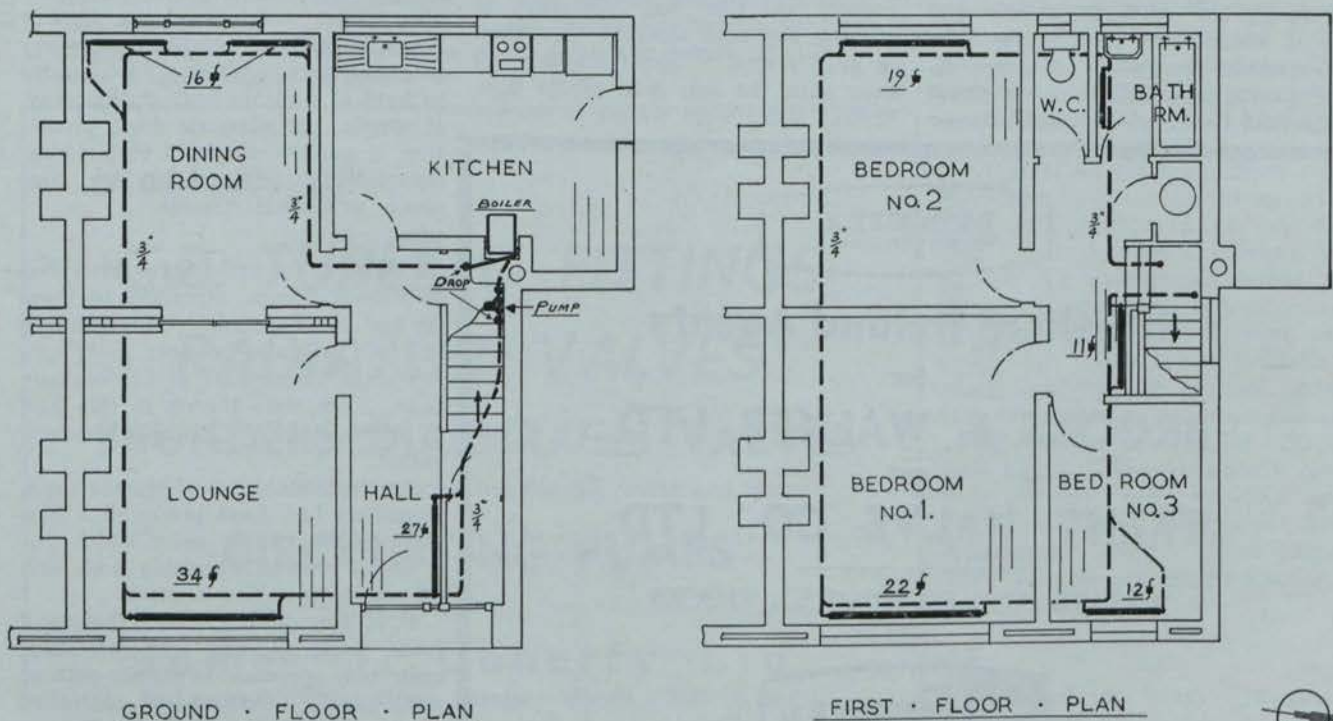


FIG. 1.

from previous page

by using a specially designed calculator, such as the Mears Domestic Central Heating Calculator, or the Sigmund Heating Engineers' Calculator, or the Shell Calculator, etc. These instruments, when used in accordance with the supplied instructions, will give accurate and speedy figures for heat requirements, radiator and pipe sizes, circuit lengths, boiler ratings, etc., thereby cutting out the drudgery formerly associated with heating calculations.

In the case of our semi-detached house, we will use the Mears Calculator—however, no preference is intended, as the other calculators provide equally satisfactory results.

IN Fig. 1 we have the ground and first floor plans, and in our calculations we will take it that the adjoining house is unheated, so heat loss will occur through the party wall. If, on the other hand, the house was heated we would avoid this loss, and could reduce our radiator sizes. Single bank steel panel radiators are specified and must be installed in the positions indicated on the drawing. In the case of the bathroom and W.C. we will take them as one unit because the dividing partition is of studding with plaster-board face, and a certain amount of heat will pass through.

It is intended that most of the system pipework be installed beneath the floors, and will be covered with a 3/4 in. thickness of spun glass or other suitable insulation to reduce heat emission to a minimum.

We will now set out the details of each room as follows:—

Room	Size	Temp. °F.	Heat Requirements B.t.u.'s/ Hour	Steel Panel Radiator Size. Sq.Ft.	Water Flow Galls/ Hour
Lounge	.. 14'-6" x 12' x 8'-6"	65°	6,700	34	36
Dining Room	.. 13' x 11'-6" x 8'-6"	65°	6,000	32	34
Kitchen	.. 14' x 10' x 8'-6"	—	Boiler	—	—
Hall	.. 17' x 7'-6" x 8'-6"	60°	5,200	27	30
Bedroom 1	.. 15' x 12' x 8'	55°	4,200	22	24
Bedroom 2	.. 13' x 11'-6" x 8'	55°	3,600	19	21
Bedroom 3	.. 10'-6" x 7'-6" x 8'	55°	2,300	12	13
Bathroom	.. 8' x 6' x 8'	60°	1,900	10	11
Landing	.. 11' x 8' x 8'	55°	2,000	11	12
Totals	..		31,900	167	181

You should use a good calculator

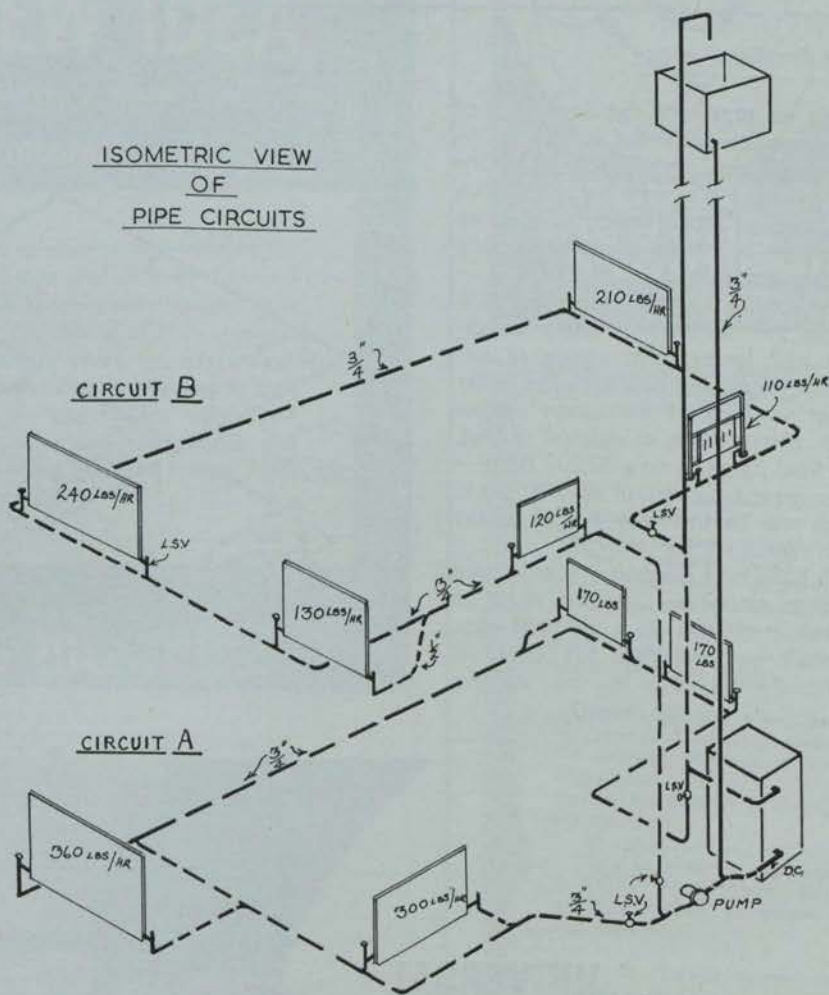


FIG. 2

It will be noticed that no allowance is made for the kitchen as this will be heated by radiation from the boiler casing. The heat requirements for the upper floor will also be seen to be less than for the ground floor, but this is due to allowance having been made for heat flow from the ground floor passing upwards and so balancing the load.

The radiator sizes shown are as calculated, and it will be necessary to select from the manufacturer's catalogue radiators conforming as near as possible to these sizes, due allowance being made in height for fitting under windows.

To the heat requirements of 31,900

Continued overleaf

The Irish Plumbing and Heating Engineer

Select the nearest conforming radiator

The rest of your favourite regular I.P.H.E. features are continued from page twenty-three onwards.

from previous page

B.t.u.'s we must add the domestic hot water needs—8,000 B.t.u. for a 30-gallon cylinder, and 12,000 B.t.u. for a 40-gallon. We will take, in this case, a 40-gallon cylinder, so that we now have a combined total heating and hot water load of 43,900 B.t.u.—say 44,000. To this is added 30% margin for extreme weather conditions and losses from piping in unheated spaces, and to ensure the boiler is not working at maximum output when meeting the calculated output. The final figure is now 57,200 B.t.u.—say a round figure of 60,000 B.t.u. which will be the rated output of the boiler required for the job.

We have now reached a point where the pipe circuit or circuits must be plotted, and here it is a good idea to mark on your plan the direction of the floor boards in the various

Continued page thirty-five

ALTERNATIVE SYSTEM OF PIPE CIRCUITS

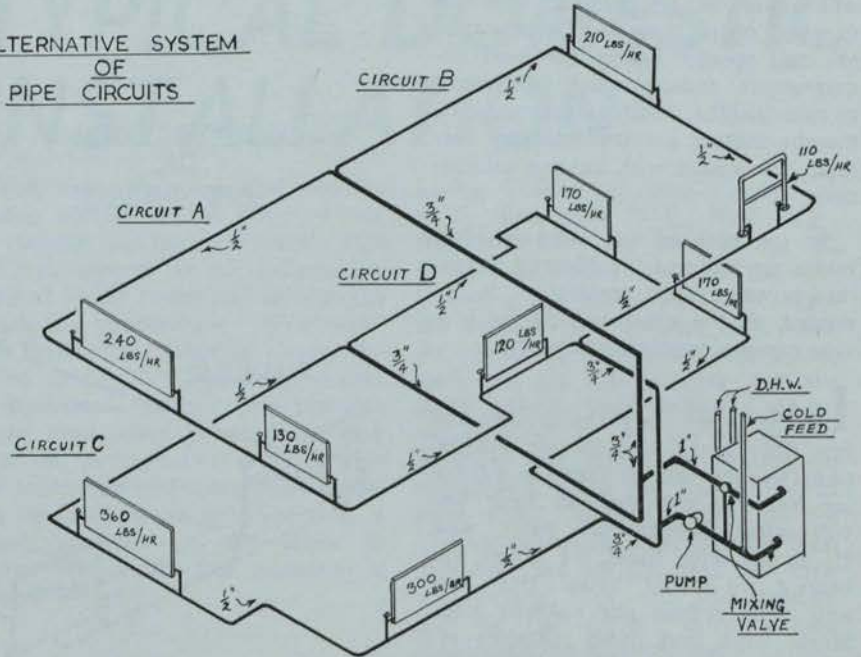


FIG. 3.

**UNIVERSAL
FABRICATORS
LIMITED**

**STORAGE
TANKS
UNLIMITED**

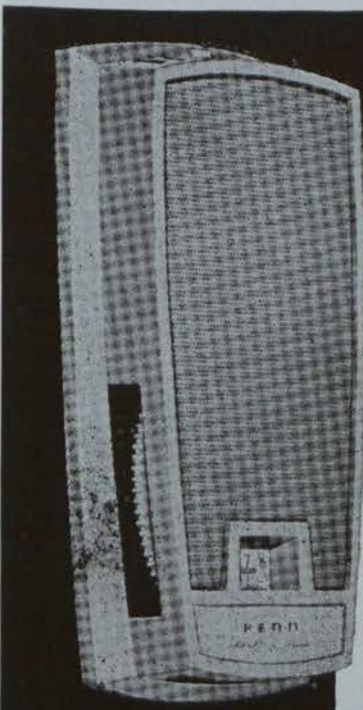
for fuel oil
kerosene
petrol
also

PRESSURE VESSELS
PIPELINES
WELDED PLATE
STRUCTURES
to
A.P.I. & ASME
specifications

Sales Distributors

Carthorn (1949) Ltd

Commercial Buildings, Dame St., Dublin 2



Here's the first really
NEW IDEA
in electric heat
thermostats

There's no other room thermostat like it. Its large dial actually "meters" desired temperature changes. Each "click" is a change of 1° . . . reduces tendency to over-, or under-adjust. And, it gives faster response to both convective and radiant heat. You'll also like the faster installation and easier wiring. Write for Bulletin 3205 . . . it's free!

PENN CONTROLS, INC. Goshen, Indiana

● Easier to wire. There's no more looping of wires . . . simply insert straight wire end under the new "quick-connect" large terminals and tighten.

● Decorator Panel Click Dial Thermostat blends perfectly with any room decor. Snap-in front panel is easily removed for painting to match any colour scheme.

MANOTHERM LTD.

14 CORN EXCHANGE BUILDINGS, BURGH QUAY, DUBLIN. Tel. 73913

NEXT MONTH

NEXT MONTH, and every month, the Industrial Section will include special reviews.

MARCH—Review of Calorifiers and Cylinders, Pressure Vessels, Tanks.

APRIL—Review of Heaters (Radiators and Convectors).

MAY—Review of Air Conditioning & Refrigeration, Ventilation, Ducting.

JUNE—Directory of Manufacturers, Agents, Representatives, etc.

See page thirty-six for full details.

JULY—Review of Heaters (Electric, Electric Surface, Feed Water, Gas, Immersion, Oil, Tubular). Also review of Valves, Pumps, Pipe Fittings.

**industrial
heating
& ventilating**
— IN IRELAND

IN THIS second edition of the Engineer's new industrial section a special review feature looks at water treatment, descaling and anti-corrosion compositions. A product review deals with new developments in these fields.

Daniel Heeney continues his series of articles under the heading Mechanical Refrigeration To-day. This month his subject is Refrigerants.

How returned condensate achieved worthwhile heat savings makes an interesting report.

Trade Topics cover the month's news.

NUMBER 2 — Presented with the February, 1964, issue of the Irish Plumbing and Heating Engineer.

●
Editorial and Advertising Offices:

Callaghan Chambers, 13/15 Dame Street, Dublin 2.

Tel. 56465-6.

London: J. T. Robson & Son Ltd., 30 Fleet Street, London, E.C.4. Tel.: Fleet Street 4438.

Belfast: Allen McDowell, 43 Horn Drive, Belfast 11. Phone 614606.



There's a place for these and we'll keep it occupied

How Biddle can solve one or two of the basic problems of raising productivity—space heating and ventilation

A comfortable place of work is a good place to work. And more good work gets done in an atmosphere where the coats and cardigans, the boots and balsam are needed only for arrival and departure.

As many firms have found, and literally to their cost, keeping a building warm, but not oppressively so, isn't simply a matter of enough Btu's and open windows. Premises differ structurally; are used in different ways. The equipment and installation plan that's right for one may be totally wrong in principle for another.

We at Biddle know the right answers to all heating and

ventilating problems. We design and make the equipment with more experience and resources than any other manufacturer in the country. That means more to you than reliably making the best use of whatever fuel is chosen. It includes standard equipment ranges which economically meet wider demands than many an 'individual requirement' offer. And equipment engineered to work at low noise levels—specifically guaranteed.

Tell us what heating and ventilation has to do for you; in cold and warm weather, both for the time being and in the future. Our answers make companies comfortable—and their balance sheets.

F H BIDDLE LIMITED 16 UPPER GROSVENOR STREET LONDON W1 HYDE PARK 0532

(BRITISH TRANE CO LTD—MANUFACTURING DIVISION)

H & V Equipment Research · Development · Production



biddle

IN the early days of mechanical refrigeration few chemical compounds were available that were suitable as refrigerants and the types of refrigerating equipment were necessarily limited to those that could be used with those few refrigerants.

The use of refrigeration in the home and in retail businesses called for a refrigerant with low condensing pressures to permit the use of lighter, smaller and cheaper equipment; sulphur dioxide and methol chloride came into use, and chemists examining hydrocarbons of the methane and ethane series found that by substituting chlorine and/or fluorine for hydrogen atoms, almost any type of refrigerant needed for a specific application could be synthesised.

The refrigerants thus formed are known as the halo-carbon group. These are now commonly grouped under the name of Freons with the appropriate code number, i.e., 11, 12, 22, etc., but since this is a trade name, it is more accurate to refer to them as refrigerant 11, refrigerant 12, etc. The search still continues with the trend towards non flammable, non toxic, odourless refrigerants of greater stability even though these characteristics may be obtained at the expense of efficiency, hp per ton, and performance coefficients.

THE desirable characteristics, in practice, are: a low boiling temperature to permit the use of low evaporation operating temperatures while still maintaining a small positive differential between the crank case pressure and atmospheric pressure. This will tend to prevent air leakage into the system. The effects of air in a refrigerating system are varied and all harmful. The refrigerant should have a condensing pressure low enough to afford a high safety factor to permit the use of light weight material for the high pressure portions

MECHANICAL REFRIGERATION TO-DAY

PART 2: REFRIGERANTS

of the plant. An excessively high condensing pressure will increase the likelihood of leakage and the danger involved in handling and working such a refrigerant.

The temperature associated with the discharge pressure should also be relatively low to prevent breakdowns of lubricating oil in the compressor. Its critical temperature and pressure should be well above the normal working temperature and pressure. Low compression ratio within the normal

industrial, commercial, air conditioning and domestic applications are ammonia, Freon 12 and Freon 22.

Table A shows a table of performance figures for these three refrigerants at standard conditions of +5°F. evaporating temperature, and +85°F. at condensing temperature. Ammonia, the traditional refrigerant of these three, is most widely used in industrial plants with skilled staff in attendance, and commercial plant over 25 h.p. Its low boiling temperature of -28 d F at 0lb.p.s.i.g. makes it suitable for use in cold rooms with temperatures down to -50 d F.

By

DANIEL HEENEY

An Applications Engineer with a leading Dublin specialist firm.

working temperature range is also desirable as it makes for greater volumetric efficiency. Other desirable thermal properties are a high latent heat of vaporisation, a low specific heat of the liquid and a high specific heat of the vapour. A low specific volume of the vapour is also a good characteristic as it permits lower compressor displacement and smaller tubing to be used on the low side of the system. Chemical Stability under all working conditions with regard to oil, air, moisture, metals, is a useful property.

It can be said with certainty that the refrigerants in current use for in-

THE theoretical refrigerating effect is 474 B.t.u. per lb. of liquid, but its high specific volume at 8.15 lb. p.c. ft. means that a compressor displacement per ton refrigeration, though somewhat lower than Freon 12 and 22, is not significantly so, but at .989 h.p. per ton refrigeration it has the best theoretical efficiency of the three. Its high condensing pressure and associated compressor discharge temperature render it unsuitable for small commercial plants and its unpleasant and pungent odour excludes its use in air conditioning plants.

Freon 12, second only to ammonia in its range of applications, is not as efficient as the former. Its boiling temperature at 0 lb.p.s.i.g. is -21 d F, which limits its practical use to cold store temperatures of approx. -30

Continued overleaf



GAS OR ELECTRIC? WELDING OF COURSE!



But we also have a wide range of cutting and heating equipment, accessories and safety equipment. Delivery services everywhere.

CONTACT **INDUSTRIAL GASES (I.F.S.) LTD., DUBLIN**

Seventeen

TABLE A

Refrigerant	Chemical Symbol	Boiling & Temp. at 0. PS16	Critical Temperature	Critical Pressure	Evaporator Pressure at 5° F.	Condensing Pressure at 86° F.	Ratio of Compression at 86° F. & 5° F.	Net Refrigerating Effect of Liquid.	Refrigerant Circulated per ton Refrigeration	Specific Volume of Vapour at + 5° F.	Compressor Displacement per ton Refrigeration.	Horse Power per ton at 86° F. 5° F.	Temp. of Compressor Discharge.
Ammonia	NH ³	-28.0° F.	271° F.	1657 PSIA	19.6 PSIG.	154.5 PSIG.	4.94:1	474 B.t.u./lb.	0.422 lb./min.	8.15 cu. ft. lb.	3.44 C.F.M.	0.989	210° F.
Refrigerant 12 (Freon 12)	CCL ² F ²	-21.6° F.	232° F.	582 PSIA	11.8 PSIG.	93.2 PSIG.	4.07:1	51.1 B.t.u./lb.	3.92 lb./min.	1.49 cu. ft. lb.	5.81 C.F.M.	1.022	100° F.
Refrigerant 22 (Freon 22)	CHCLP ²	-41.4° F.	204° F.	716 PSIA	28.3 PSIG.	159.8 PSIG.	4.06:1	69.3 B.t.u./lb.	2.89 lb./min.	1.25 cu. ft. lb.	3.60 C.F.M.	1.011	131° F.

REFRIGERATION

from previous page

d F. It is, however, acceptable for ordinary freezing and chill room work on most commercial plants as its low condensing pressure, 93.2 p.s.i.g., allows the use of much lighter and cheaper equipment. The low value of its net refrigerating effect at 51 B.t.u. per lb. is offset by its low

specific volume at 1.49 cu. ft. per lb., giving a piston displacement per ton refrigeration of 5.81 c.f.m. Its stability, lack of odour, absence of toxicity and non flammability are very real advantages in retail shops, domestic and air conditioning plants.

Freon 22 has a similar condensing pressures to ammonia, though at 131 d, its discharge temperature is considerably lower and with a refrigerating effect of 69.3 B.t.u. per lb. and low

specific volume of 1.25 c.f. per lb., giving piston displacement per ton refrigeration of 3.60 c.f.m. It finds its greatest use in large and small air conditioning plants where the low displacement allows a compact compressor and condenser arrangements to be used and its chemical characteristics, similar to Freon 12, are acceptable in buildings with a high occupancy rate such as office blocks, factories, theatres, etc., where air conditioning is required.



KNOCKMORE, LISBURN

AIR CONDITIONING, VENTILATING AND FAN ENGINEERS. STEEL AND LEAD STOCKHOLDERS

MANUFACTURERS OF—

Centrifugal Fans — Cyclones — Sack Cleaning Plants — Ventilating, Dust and Fume-Removal Plants — M.S. Chimneys and Flues — Box and Valley Gutters — Steel Containers — Hoppers — Tanks — Coal and Coke Bunkers — Dust Bins — Steel Pallets — Steel Racks and Shelves

FABRICATIONS IN—

Mild Steel — Galvanised Steel — Stainless Steel — Aluminium — Brass — Copper

SUPPLIERS OF—

Steel Universal Beams and Columns — Joists — Channels — Angles — Flats — Squares — Rounds — Reinforcing Bars — Leads

TELEPHONE 2277 (4 lines), 2771 (3 lines)

THE EXTENT of the air pollution problem in this country is still under examination, and **TREND OF POLLUTION IN OUR AIR** measurements designed to assess the level and trend of pollution are being

considered. It is generally considered that a minimum period of five years observation is required to gauge with any degree of accuracy the trend of pollution in an area, the Department of Local Government has said. Accordingly no firm conclusions regarding the level of pollution in Dublin can be reached at present. The programme of measurements was organised by the department in co-operation with some local authorities and industrial undertakings.

Specific controls will be applied when the nature of the pollution has been ascertained, it is understood.

A misconception of the problem of atmospheric pollution held by the public was that it was not confined to winter, Dr. P. J. Lawther, director of the Medical Research Council at the Air Pollution Research Unit, St. Bartholomew's Hospital, London, said in Dublin recently.

The doctor was speaking at a meeting of the Irish Tuberculosis and Thoracic Society, at I.M.A. House, Fitzwilliam Place. He said that in years gone by the first thing people considered was that buildings were



aesthetically intolerable because of smoke. Little attention was paid to physical or chemical propensities produced by pollution.

Mr. F. E. Dawson, chief health inspector, Department of Health, suggested a three-pronged approach to solving it. First, obtain proper control of new industrial fuel installations in the planning stage; secondly, contain the present amount of domestic pollution by insisting that future housing schemes should include fittings for smokeless fuel and, thirdly, tackle the existing industrial fuel-burning situation by insisting that they become smokeless in operation.

* * *

SOME interesting points were made in a letter from the Technical Director of John Thompson

CHAIN GRATE STOKERS

(Triumph Stoker) Limited, Mr. E. D. Gaunt, arising out of last month's special review article on combustion equipment and in particular

Why work it out ?

WHAT is 1750 degrees F. equal to? Well, for those who don't want to work it out a leading firm of cross-channel refractory specialists have produced an easy-to-use Fahrenheit/Centigrade conversion chart. I.P.H.E. can have copies of the chart free on application to Norton Abrasives Limited, Refractories Division, Welwyn Garden City, Hertfordshire.

our reference to chain grate stokers.

Mr. Gaunt made the point that sprinkler stokers are virtually obsolete and underfeed stokers are not entirely suitable for Shell type boilers. "Chain grate stokers are undoubtedly the most popular firing appliance for use with Shell type boilers and are capable of handling a wide range of coals."

John Thompson can fit Shell type boilers with flues 2' 2" inside diameter up to over 5' 0" diameter and they have also a range of "Mini" type chain grate stokers which can be used with sectional boilers from 300,000 to 3,000,000 B.t.u.'s/hr.

New Torridaire space heater from Biddle

THE latest model of the "Torridaire" space heater, manufactured by F. H. Biddle Ltd., incorporates a number of modifications. These have eliminated vibration and mechanical noise, enabled the air volume and the heat output to be easily and accurately regulated at the flick of a switch, and have approximately halved the total weight of the unit to facilitate positioning on walls and ceilings as well as on the floor... It is the first large space heater to be fitted with a fan speed control switch, say Biddle.

The new "Torridaire," a development of previous Torridaires, is manufactured in eight sizes, each with four different mountings, allowing the units to be placed on the floor, on walls, inverted on walls,

and on ceilings. This has been made possible by the entirely new fan operating assembly construction.

The unit is fitted with a five speed fan control switch on one side of the cabinet for regulating air volume. When a unit is ordered the control switch is set to the central position of "3" to provide heat required for normal conditions in the installation in question. This allows two differing speeds either side of normal, increasing or reducing heat as required.

Mechanical noise has been eliminated by the introduction of fan units with which new electric motors now form an integral part. Each unit has either a steam or hot water heat exchanger and can be fitted with an air filter, and a damper-controlled fresh air intake, if required. The larger models in the range have three fans units, the smaller have two.

The air output of the largest model the 315, is 1,750,000 B.t.u./hr. at 18,500 c.f.m. Capacities of the



The new "Torridaire"

other models are proportionately lower. Agents in the Republic: Quadrant Engineers, and in the North, D. H. Butler.

(1)



MONTHLY SPECIAL REVIEW

WATER TREATMENT,
DESCALING, ANTI-
CORROSION
COMPOSITIONS

TREATMENT OF WATER WILL VARY CONSIDERABLY

TREATMENT of water in hot water heating systems, or when used as feed to steam raising boilers, can vary considerably according to the hardness of the water and the conditions under which it is used.

Taking first hot water systems—these can be of high or low pressure, but irrespective of which and irrespective of whether the water is very hard or soft, lime scale will not be formed provided there is no draw off of water from the system. What will be encountered, however, is corrosion of the ferrous metal, which reacts with the hot water to form ferrous hydroxide and hydrogen.

It will often be found, particularly in high pressure hot water systems, that on opening the air vent, the escaping gas can be ignited and burnt, i.e., it is not air, but hydrogen. The treatment of the water is to raise the pH value to approximately pH 11 and maintain a sulphite reserve to ensure absence of oxygen. If the water is to be treated as outlined then galvanised pipes should not be used, because a water of pH 11 will dissolve away the zinc coating.

On the other hand, if hot water is regularly drawn from the system, and if the make-up water has a high temporary hardness content, then lime scale can build up in the boiler and pipe lines and the treatment will be quite different from the one already given.

THE pH value of the water must not be raised by the addition of alkali, which would aggravate scale formation, but a chemical such as sodium hexameta phosphate should be added to the water in threshold quantities, i.e., about 3 parts per million, to inhibit scale build up. In extreme cases it may be necessary to soften the water prior to using.

Turning to the treatment of feed water for steam raising boilers, this is governed by the hardness of the water, the amount of condensate being returned, the type and pressure of the boiler and also whether pre-heating equipment is installed. It would be quite useless to add chemicals to a feed water to prevent scale in a boiler, if those same chemicals accelerated the build up of scale in the economiser and feed lines. This can very easily happen if for example a formula of treatment containing caustic soda is added to a feed water of high temporary hardness. It may prevent scale in a boiler, but a calcite scale would certainly build up in the feed lines and pre-heating plant. In such a case dual treatment would be necessary.

TO prevent scale in the economiser and feed lines a solution containing sodium hexameta phosphate and tannin should be added continuously to the feed water, and to prevent scale in the boiler a treatment based on soda ash or trisodium phosphate should be shot fed to the boiler.

The reaction of the chemicals in the boiler is to precipitate all the scale forming salts as sludge which can easily be got rid of through the blow-down. In other words the boiler is used as a softening plant, the only difference being that with a softening plant the scale forming salts are removed prior to the water entering the boiler.

In many cases, as for example with Dublin town's supply, which would be termed a "soft" water, a softening plant might be quite unnecessary, particularly if the feed water is mixed with condensate returns. The addition of chemicals would suffice to keep the boiler in a clean and corrosion free condition. However, there are parts of Ireland such as Limerick where a

softening plant may be essential, particularly if a modern packaged type of boiler is in use, and little, if any condensate is being returned.

With many of these high efficiency modern boilers, the rated capacity is high in relation to the volume of water held in the boiler to working level. The result is that with an internal chemical treatment, the sludge formed by the precipitation of the hardness salts in the feed water can concentrate so quickly in the boiler water that it is not possible to get rid of it properly by means of a blow-down and what is termed "baking on" can take place with the formation of a bulky scale on the heating surfaces.

With regard to steam generators where the water is rapidly flashed to steam in a coil, only in a very few cases is it possible to operate without first softening the make-up feed water to zero hardness by means of a softening plant, otherwise scale will quickly build up in the coil. After softening to zero hardness the water should then be treated to ensure that the feed entering the coil has a pH value of over 10 and has also a sulphite reserve to ensure absence of oxygen and thus prevent corrosion.

IT will be seen from the above remarks that when a new boiler or generator is being installed, in order to ensure that it always operates at its maximum efficiency, full considerations should be given to the feed water conditions and advice should be sought from Consultants who specialise in water treatment. Apart from scale and corrosion in boilers, trouble is often experienced due to severe corrosion of condensate pipes. This is caused by the gases carbon dioxide and oxygen, particularly the former. If steps are taken to remove the carbon dioxide from the condensate, then

from previous page

in the majority of cases the corrosion will be reduced to negligible proportions.

Most of the carbon dioxide in steam is derived from the breakdown of the temporary hardness in the water. The temporary hardness, due to magnesium and calcium bicarbonate, decomposes with heat to form the normal carbonate with the evolution of carbon dioxide with the steam. It follows, therefore, that condensate from make-up feed water high in temporary hardness tends to be corrosive.

The best and cheapest method of



This Special Review article is compiled by G. T. Peat, B.Sc., F.R.I.C. (Irish Feed-water Specialists Ltd.).

dealing with this problem is to kill two birds with one stone and soften the water prior to it entering the boiler by means of a Lime/Soda softening plant. In this way not only are the scale and sludge forming salts removed from the water, but the softened water will produce a non-

corrosive steam and condensate, because all the carbon dioxide in the water is removed by the lime.

A type of softener which should not be used to soften water high in temporary hardness if it has to be used as boiler feed, is the Base/Exchange Plant. The reason is that the hardness salts of calcium and magnesium are placed by the non-scale forming salts of sodium. Thus the zero hardness softened water still contains sodium bicarbonate in equivalent quantity to the original temporary hardness.

IN the boiler the sodium bicarbonate decomposes in exactly the same manner as temporary hardness with the evolution of carbon dioxide with the steam, but instead of precipitating insoluble chalk and magnesium carbonate, sodium carbonate is formed which is soluble and can build up excessive alkalinities in the boiler water with resulting troubles such as priming and foaming. Again this sodium bicarbonate hydrolyses, i.e., it reacts with water, to form caustic soda and a further quantity of carbon dioxide passes off with the steam. Thus when the steam condenses a really corrosive condensate is formed.

In some cases even when a fairly soft water is used as boiler feed, the condensate can at times be fairly corrosive to ferrous metal. The reason is that although a small amount of carbon dioxide is given off by the make-up water, nevertheless it tends to build up in the condensate, feed tank, boiler, steam, condensate system, to a point where the condensate can become corrosive. In such cases the corrosion can be eliminated by the addition of a volatile amine such as cyclohexylamine or morpholine to the feed water. The amine neutralises the carbon dioxide, raising the pH value of the condensate, rendering it non-corrosive. Initially a fairly large dose of the amine may be necessary to neutralise the accumulated carbon dioxide in the condensate, but when this has been done quite a small daily addition may suffice to deal with the traces of CO₂ entering the system via the make-up feed.

WHEN large volumes of carbon dioxide pass over with the steam, use of a volatile amine may be very expensive because of the quantity required. In some cases, however, a filming amine can be used. This amine, in emulsion form, is added continuously into the

Continued overleaf

(iii)

WHY LINCOLN WARM AIR?

OVER 300 HEATING ENGINEERS THROUGHOUT THE COUNTRY ARE LINCOLN AUTHORISED INSTALLERS WHO RECOMMEND AND INSTALL LINCOLN WARM AIR HEATING. THERE MUST BE A REASON—IN FACT MANY REASONS!

- ★ **Lincoln provide a unit for every purse and purpose.** The widest range of equipment, gas, oil and electric, to give outputs of from 32,000 BTU's/hr. to 870,000 BTU's/hr.
- ★ **Lincoln Warm Air is rapidly increasing** in popularity and providing Authorised Installers with ever growing profits.
- ★ **Lincoln equipment is guaranteed quality** equipment—preventing unnecessary service calls. All Plenums, ducting and fittings are made in our own plant in this country—ensuring controlled delivery—the right products in the right place at the right time.
- ★ **Lincoln give 100% support to Authorised Installers**—selling equipment **only** through Authorised Installers and providing full information, instruction and training of staff.
- ★ **Lincoln advertise Nationally** in the home-making magazines—Ideal Home; Homes & Gardens; House Beautiful; House & Garden, etc. **All enquiries are passed to the local Authorised Installer.**
- ★ **Lincoln supply** an individual 'Plenum Plan' for each installation.
- ★ **Lincoln Warm Air System is the modern system.** Warm Air Central heating is **proved** in over 80% of Canadian homes.
- ★ **Lincoln provide a full range** of sales promotion material and arrange approved local co-operative advertising.
- ★ **Lincoln Authorised Installers are completely independent**—not owned, operated or controlled by Lincoln.

All Authorised Installers can recommend Lincoln equipment with full confidence.



WARM Air
CENTRAL HEATING

We want to appoint further Authorised Installers in certain areas; if you are interested complete this coupon NOW!

AB1

Please send, without obligation, information of Lincoln Warm Air Central Heating with details of your Authorised Installer plan.

NAME

ADDRESS

Lincoln Warm Air Heating Equipment Ltd.,
East Grinstead, Sussex, England. Telephone: 21266.

THE THEODOR Christ water treatment plant for total demineralisation of water is being increasingly installed in Ireland. A number of Electricity Supply Board stations are fitted with this type of plant, which is also suitable for packaged steam boilers.

The purity of the water required

Steam must be pure, uncontaminated

from previous page

steam and when the steam condenses, the amine, which at ambient temperature is a greasy solid, forms a monomolecular layer on the metal which repels water and also prevents the gases oxygen and carbon dioxide attacking the metal.

It will be seen that where it is essential that the steam should be pure and uncontaminated, then lime treatment of the water to remove carbon dioxide and temporary hardness prior to the water entering the boiler, is the answer to steam and condensate line corrosion.

Before concluding mention should be made regarding idle boilers. If a boiler is going to stand idle for any length of time then it should be emptied and allowed to dry out. Trays of quick lime or silica gel (1lb. per cubic foot of air space) should then be put into the boiler and the boiler closed up. Before refilling the boiler with water the trays of quick lime or silica gel should be removed. The silica gel can be reactivated by heating to 300°F. when the colour once more turns from purple to blue. It can then be stored in a sealed container until required.

If it is necessary to have an idle boiler standing full of water ready to be put on range, then it is essential that two conditions be maintained:

- The boiler water should have a pH value of 11+.
- There should be a sulphite reserve in the water of not less than 30 parts per million.

If the water is not correctly treated it is possible to experience as much corrosion in an idle boiler in a matter of a month or so as would have taken place in many years of normal steaming.

(iv)

IN this equipment review we take a look at new developments in the fields covered by the foregoing special review. (All claims are those of the manufacturers).

by such boilers, even of a small size, is often underestimated with serious effects. Rather than add substances to the water, Messrs. Christ prefer not to regard the boiler itself as a water softener and recommend the removal of all impurities before the water enters the boiler.

Details on demineralisers down to a very small portable size, which are kept in the Dublin stock of Quadrant Engineers, 167 Strand Road, Sandymount, Dublin 4, sole agents for Messrs. Christ, are available.

* * *

"DARVIC" offers engineers, designers and architects a new and versatile material with excellent corrosion resistant properties, which give permanent protection in severe conditions, and once installed, requires no further maintenance. It can be installed where metal and other materials are prohibited because of their weight.

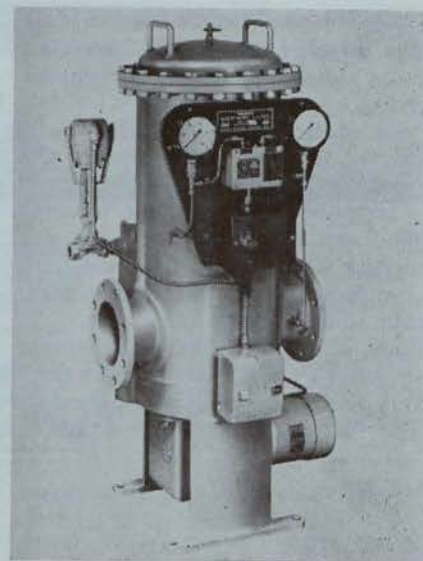
A lightweight material and extremely tough, "Darvic" will give complete protection against hazardous fumes and chemicals—it can be heat formed, welded and cemented to itself. Easy to fabricate, it can be sawn, guillotined, blanked, drilled and screwed, using normal techniques.

"Darvic" is an unplasticised, rigid P.B.C. sheet, combining outstanding chemical resistance with excellent mechanical strength. An attractive range of colours makes it an ideal material to use where good design is matched with first-class performance.

Leaflets, booklets and full particulars of "Darvic" are available from Imperial Chemical Industries (Export) Ltd., 3 South Frederick Street, Dublin.

* * *

THE VOKES Microwire filter is a fully motorised self-cleaning filter in which a proportion of the main flow is back-flushed through the element and either taken to waste or through a secondary plate-type Microdisc filter and returned to the main system. It



The Vokes Microwire filter.

is particularly suitable for water and aqueous solutions, or oils to maximum viscosity of 500 Redwood No. 1.

The filter element consists of a hollow cylindrical former, having longitudinal ribs with solid rings at the ends and centre which is screw cut and wound with a circular section wire producing a filtering mesh. This mesh can be varied by adjustment of the pitch of the thread and diameter of the wire to produce different degrees of filtration.

A specially shaped hollow scraper tube having a vertical slot and a synthetic rubber face is springloaded against the outside of the element. The duct so formed is brought through the body and can be opened to atmosphere by means of the reverse flow valve. A range of hand operated models is also available for applications with low dirt loading or where motor operation is impracticable.

The Vokes Microdisc filter is an edge-type filter which can be cleaned without any dismantling or interruption of flow simply by turning the handle. Irish agents are Leinster Engineering Ltd.

* * *

BRITISH PAINTS (Ireland) Ltd., 65 North Wall, Dublin, are manufacturing at their Arklow factory their Apexior No. 1 and No. 3. "Apexior" No. 1 is an inert chemically stable

Continued opposite page

and insoluble protective coating, indestructible under steam raising conditions above 170 degrees F. The base is extremely pure Amorphous Carbon which is combined with a neutral organic vehicle. The dry film is heat and electrically conducting.

Apexior No. 1 prevents corrosion, checks it if already rife and duly eliminates it. It simplifies the removal of scale and other water deposits. This is accomplished by preventing contact between the water and the metal. Being an inert coating, corrosion inducing influences cannot pass through it. It presents a surface to which deposits do not easily attach; any which do form can be more readily removed than those bonded to bar metal.

The National Physical Laboratory has tested Apexior No. 1 up to 1004 degrees F., without any effect upon the coating.

"Apexior" No. 3 is an inert, electrically insulating preservative coating which is particularly effective on metal surfaces in contact with fresh or salt water or moisture at any temperature below 125 degrees F. or with dry heat, dry air or gases at any temperature below 450 degrees F. It has a bituminous base combined with a quick drying solvent.

PRODUCT REVIEW

from previous page

Its main purpose is the prevention of corrosion (galvanic or oxygen), and resisting acid fumes and low alkaline concentration.

* * *

GLOPANE stainless steel fortified topcoat is an ideal coating to protect iron and steel, non-ferrous metals and many other materials. It resists all adverse weather conditions in all climates, hot or cold. It with stands water and seawater hot or cold; and it can be used in dry heat up to 300 degrees C. and continuously at 220 degrees C.

The topcoat withstands most mineral and organic acids. It withstands alkalis and all caustic solutions. Most solvents, most chemicals, fats, vegetable oils, detergents, mineral oils and greases have no effect on it. The final coating is in a lustrous silver grey with a gloss and ceramic hardness. It does not harbour or retain dust and is easy to clean.

Applied by a brush or spray, the thickness of the coat at a single brush application can be from double to five times a normal paint coat. The time

of application and the cost of labour involved is substantially lower than usual. It is now universally accepted that long term protection is related to thickness of coating so that further coats obviously offer advantages in this respect.

The manufacturers are Corrosion Limited, Warsash Road, Warsash, Southampton. The Irish agents are Messrs. L. R. Wood Ltd.

* * *

"DINITROL" is a penetrating rust preventing fluid developed in Sweden and distributed in Ireland by L. R. Wood Ltd., Pearse Street, Dublin, which industry in general has found valuable for protection of machines, machine parts or iron or steel during transportation and storage.

Dinitrol 33 B sprays in a fine mist and is easy to apply and is economical in use. It creeps into joints where rust starts—stops existing rust from spreading and has water displacing properties. It is sold in 16oz. Aerosols, 1qt. cans, ½-gallon cans, 1 gallon cans, and also in 21-gallon and 42-gallon barrels.

No preparation of surfaces is needed because Dinitrol 33B will even penetrate existing dirt and rust and displace water.

***For any problem connected with treatment of
water for steam raising, cooling systems, etc.
consult—***

IRISH FEEDWATER SPECIALISTS CO. LTD.

**16-17 O'Connell St.
DUBLIN, 1**

Phone 48638.

**MANUFACTURERS OF CHEMICAL TREATMENTS AND WATER
SOFTENING PLANTS**

Nineteen

BAHCO LTD., a member of the Bahco International Group, announce the introduction of a new air curtain unit. This Cold Air curtain (type DRK, Patent pending), produces a horizontal airstream which withstands considerable wind pressure from outside the building and thus

seals off industrial door openings and prevents warm air from escaping when the doors are opened. Employing unheated air, the unit is only needed when the doors are open and so operating costs are very low. It is manufactured in modules so that the number of fan units employed may be varied. This arrangement ensures that a constant air velocity is



MORRIS FURNACES

- Furnace Builders and Refractory Specialists.
- Manufacturers of Furnace Refractories and Boiler Combustion Linings.

Enquiries to:

89 Blarney Park, Kimmage, Dublin, 12. Tel. 976360.
Works: 126 James' Street, Dublin.

maintained irrespective of the height of the doorway. Furthermore, the fans being mounted outside the building, no factory space is lost.

A special two fan demonstration unit has been prepared and is available for testing under site conditions in Britain. A spokesman for Bahco said that if the response to the unit justified they would arrange a demonstration visit to Ireland in the Spring. Irish agents: Technical Sales Co., 79 Lower Leeson St., Dublin.

* * *

● HEATING Controls and Devices Limited have moved to a new factory and all their departments in Belfast are now under one address. This has brought about the streamlining of their control panel production, and deliveries have been expedited. The new address is Carrowreagh Road, Dundonald, Belfast.



Blow by blow

Blow hot, blow cold, blow high and low . . . whenever there's a need for air to keep moving in industry (especially if it's air that needs filtering, heating, cooling, de-humidifying or otherwise adjusting) Davidson can strike a blow for you. Our engineers have 80 years of expertise in all the techniques your problem involves. Call in Davidson for consultation—they'll be glad to advise you.

FANS FOR HANDLING AIR AND OTHER GASES
HEATING AND VENTILATING OR COMPLETE AIR
CONDITIONING · FUME AND VAPOUR REMOVAL · DUST
COLLECTION · PNEUMATIC CONVEYANCE
AIR PRE-HEATERS.



Sirocco Engineering Works, Belfast,
Northern Ireland.

Eire Representative:
E. C. Hancock Ltd., Hancock House, 17 Fleet St., Dublin 2.

ALSO AT: MANCHESTER · GLASGOW · BIRMINGHAM · CARDIFF · NEWCASTLE-ON-TYNE · LEEDS.

Reporting HOW RETURNED CONDENSATE ACHIEVED GOOD HEAT SAVINGS

HERE is a useful report on how returned condensate achieved worthwhile heat savings at a new steel works. To obtain these considerable savings in heat and in water treatment cost in the boiler plant of the new Spencer Works of Richard Thomas & Baldwins Ltd., at Newport, two Girdlestone condensate recovery units of unusually large size have been installed. It is expected that when the steam plant is fully operational over 200,000 lb. of steam per hour will be returned as condensate to the boiler plant via these recovery units.

Steam is required at Spencer Works to drive three turbo-blowers and two 10,000 Kw. pass-out turbo-alternators which supply electricity for mills and which will also act as an emergency supply for essential services. The pass-out steam from the turbines is used for space heating, process work, heating of oil tanks, purging of gas lines, etc.

The steam is produced in the main

boiler plant at 650 lb. pressure superheated to 850°F. Steam also passes to this system from the waste heat boiler units. It is then fed to both the turbo-blowers and the pass-out turbo-alternators. Steam from the latter is at 175 p.s.i.g. and at temperatures variable from 550°F. to 650°F., and is desuperheated to approximately 500°F. before it enters the 24" spinal steam main which extends the complete length of the works, some 2½ miles.

THE steam is withdrawn at various points for the services, and the condensate passes to two Girdlestone condensate recovery units, the first located 8,000 ft. from the boiler house and the second 6,000 ft. beyond.

The first recovery unit comprises a 1,500-gallon galvanized steel tank fitted with four Ronald Trist Mobrey level controls and a KDG hydrostatic gauge, and three cast-iron condensate extraction centrifugal pumps fitted

with gunmetal impellers, direct-coupled to 15 h.p. weather-proofed 1,460 r.p.m. motors with class "B" insulation. The return rate of this unit is 20,000 g.p.h. (Max.) at 212°F. The continuous pumping rate is 400 g.p.m. at a total head of 95 ft. Two pumps work at this output at 200 g.p.m. each, and the third is a standby. The second recovery unit has a 1,000 gallon tank with similar fittings and pumps. The return rate is 13,000 g.p.h. (Max.) and the continuous pumping rate is 330 g.p.m. at a delivery head of 93 ft.

The pumps on these units are so arranged that when only a small quantity of condensate is being returned, only one pump operates. As the rate increases the second pump automatically cuts in, the combined output of the two being greater than the maximum possible return rate.

The second recovery unit at the end of the steam main collects condensate from the surrounding area and passes

Continued overleaf

Instantaneous HOT WATER from steam—without storage

Cox Steam and Water Mixers deliver from 50 to 24,000 gallons per hour.

They operate with the highest efficiency at all pressures. Silent, efficient, compact and easy to install, replacing bulky and costly calorifiers.

MODELS:

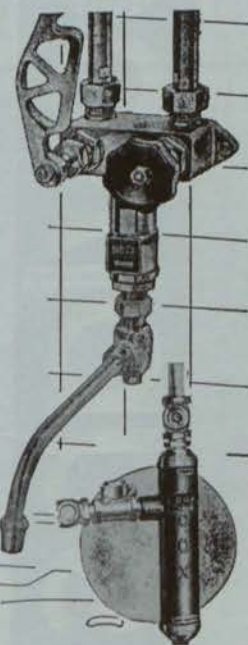
- ★ (1) BABY COX (¼") for wash-basins, sinks, etc.
- ★ (2) JUNIOR COX 1—5 (¾"—2") for process work, vats and general purposes.
- ★ (3) SENIOR COX (2½"—8") for large volumes of hot water for process hot water supplies.

**NO TIME LAG - NO STORAGE - NO STEAM TRAPS
NO LOSS OF CONDENSATION - NO MOVING
PARTS TO GO WRONG**

COX WATER HEATERS

Manufactured by COX ENGINEERING CO. LTD.
Dept. 1P.14, 14 Park Lane, Sheffield 10.
Tel.: 62483. Telegrams: "Heaters Sheffield"

Agents:
Halpin & Hayward Ltd., Unity Buildings, 16-17 Lower O'Connell St., DUBLIN. Tel. 43270.
Bedford Buildings, 7 Bedford St., BELFAST. Tel. 26343.



Agent Required In Eire

To handle a London Manufacturer's products closely associated with the Heating and Ventilating Industry. Write in first instance, giving full details of facilities for selling to the heating trade and for getting these products specified by Consultants. When replying, please submit a comprehensive description of previous experience as an agent and state number of agencies held at present. Replies to:

BOX I.P.H.39

13/15 DAME ST., DUBLIN, 2.

The Irish Plumbing and Heating Engineer.

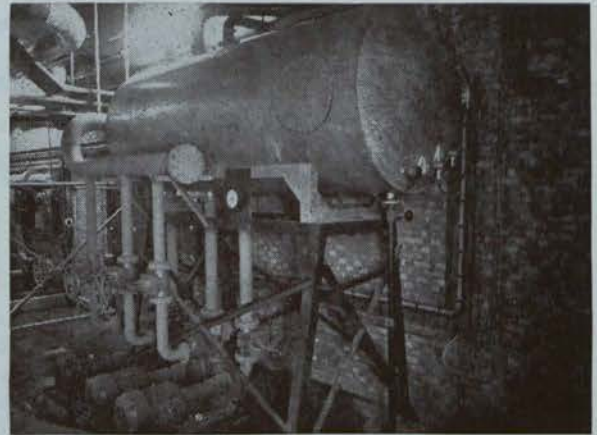
from previous page

it to the first unit. At this the local condensate supplies are also being collected and the pumps return the total amount back to the boiler-house via two high-level de-aerators mounted on the roof of part of the boiler-house.

By this means a considerable economy in heat is effected as well as the provision of water that requires no treatment, and when the whole plant is fully operational it is anticipated that over 200,000 lb. per hour of condensate will be returned to the boiler-house, the hot condensate having approximately $180^{\circ} - 50^{\circ} = 130$ degrees of heat already in the water when it reaches the boiler.

The condensate recovery units are manufactured by Girdlestone Pumps Ltd., of Woodbridge, Suffolk.

The No. 1 Girdlestone condensate recovery unit, capacity 1,500 gallons, with a return rate of 20,000 g.p.h., installed at the new Spencer Works of Richard Thomas & Baldwins Ltd. The Mobrey level controls can be seen at right on the tank end.



**ATTENTION
MANUFACTURERS,
SUPPLIERS!**

Each month The Irish Plumbing and Heating Engineer will contain a comprehensive survey of the month's trade news under the "Trade Topics" heading.

We invite contributions to this column by way of news of new product introductions, of product promotions, of developments within your organisations and of appointments, to list a few.

But we must have your details in good time. For inclusion in the following month's issue we must have your material in hand during the second week of the month previous.

We like to have good notice of trade functions, too.

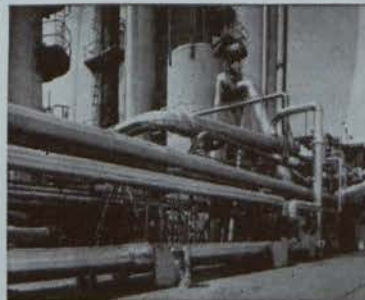
["Trade Topics" is compiled from material submitted to us and all claims made there are those of the manufacturers.]

The same general rules apply to the series of Special Survey features which appear each month.

In this case, too, we stress the need for early despatch of material for inclusion in these features.

MEN IN THE BUSINESS KNOW

**boy
OF HARCOURT STREET
lans**



Boylans of Harcourt Street are sole agents for the insulation products of the Cape Asbestos Group of Companies.

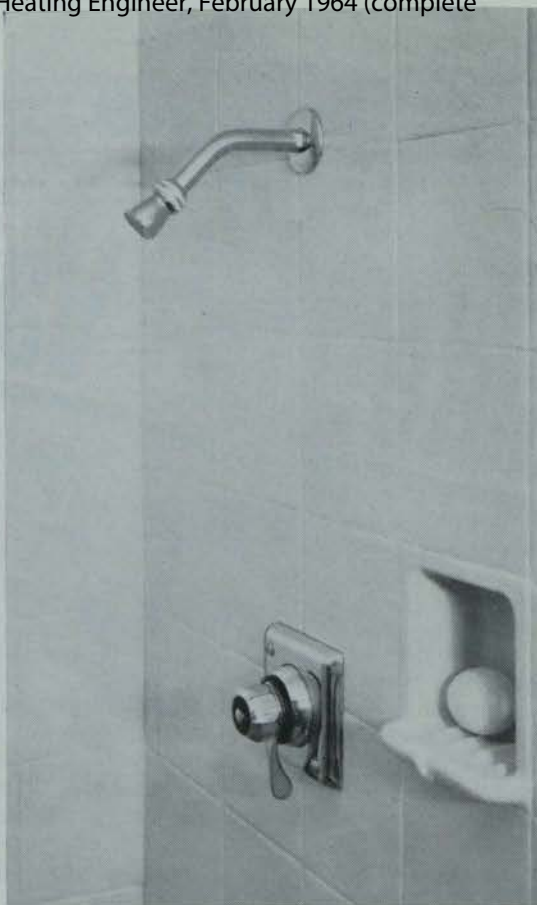
The range of products includes: Rocksil and Rocksil-K rockwool materials, Caposite Asbestos Materials, Caposil HT and Caposil 1400 Calcium Silicate Materials, Asbestos Compositions, Rope Lagging and Cloth, Asbestolux Insulating Board. Consult us with your insulation problems.

M. A. Boylan Ltd
50a Harcourt Street · Dublin · Tel: 55408

A member of the Cape Asbestos Group of Companies

TW494

The Leonard 72B
was the only sanitary fitting awarded a design prize in the 1963 Hanover International Fair.



for single showers
The Leonard 72 is the most attractive and efficient control available for showers, shampoos, etc. It combines in one body, temperature and flow control handles; does not require outlet stopcocks, non-return valves, etc.

For larger uses
There are six basic sizes of Leonard valves, ranging from $\frac{1}{2}$ " to 2" outlets, from 1 to 104 gallons capacity. They are used for grouped showers, grouped basins, many hospital uses, and in all types of industry where large quantities of temperature-controlled water are needed.

hot and cold water economically and safely controlled by Leonard thermostatic mixing valves



Little girls are always washing; look after them with a Leonard.



This baby has high-praise for his Leonard controlled bath water. Not a murmur!



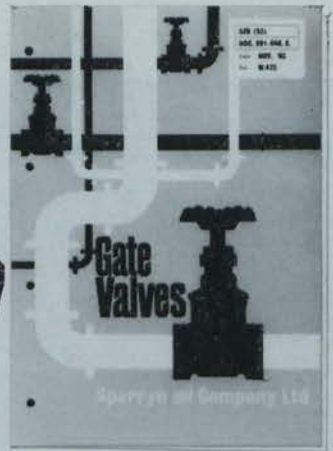
Some boys like to get into hot water! Make sure it's controlled by a Leonard.

All enquiries, please, to your local Heating Engineer or Builders' Merchant. In case of difficulty, write or 'phone
MODERN PLANT LTD., CRUMLIN ROAD, DUBLIN (Phone 51049)

Gate
SPERRYN



Valves →



A comprehensive range of Sperryn Gate Valves from 1/2" to 4" B.S.P. are fully described in a new brochure recently released to the trade. If you have not received a copy, drop us a postcard today.

Brochure Ref. 473



SPERRYN & COMPANY LIMITED, Moorsom Street, Birmingham, 6.

Telephone: ASTON 4011
(6 lines). Telex: 33724.

Agent for the Republic of Ireland: C. B. Sheridan, 10 Herbert Place, Dublin, 2. Tel.: 66283.

JOSAM

THE MOST COMPREHENSIVE RANGE OF ROOF OUTLETS, FLOOR DRAINS, ANTI-FLOODING VALVES, OIL AND GREASE INTERCEPTORS AVAILABLE IN EUROPE

Roof Outlets from as little as — 99/9

Sole Agents for the Republic of Ireland:

THOMAS DOCKRELL, SONS & CO. LTD.

SOUTH GREAT GEORGE'S STREET, DUBLIN. 'Phone 76871.

THE BROADSTONE Ballvalve is designed to give improved performance on existing types of ballvalves. The revolutionary features incorporated are fully patented and have been accepted by the B.W.A. and other Leading Water Authorities all over Britain.

The valve, as approved, is of particular interest to Maintenance Engineers, hotel and boarding house owners, and all institutions where it is not always desirable to isolate the supply of the W.C. cistern without affecting the rest of the building.

The ballvalve offers an instantly detachable clip for ease of maintenance, and a combined shut-off so that the water supply need not be turned off when detaching. Another feature is interchangeable seatings so that the valve can be quickly converted to high, medium or low pressure. A double anti-syphonage device guards against back flow.

Maintenance can be carried out at leisure without depriving the rest of the household of water. The Broadstone Ballvalve Co. Ltd., Hudson's Drive, Cotteridge, Birmingham 30, will be pleased to receive enquiries for large or small quantities. Samples and prices will be forwarded on application.



This special Review article was compiled by A. L. Townsend.

from page eleven

bath-shower sets, James Barwell Ltd. have produced a new idea in taps and shower spray arrangement made to fit flush on the roll of the bath. The spray is adjustable for hair spray or standing shower use. It is so arranged that its accidental dangling into contaminated bath water is avoided. The control taps are positioned to one side of the assembly (right or left hand, as required) and this adds considerably to the user's convenience, especially in bath filling.

These are but a few of the many pleasing developments in tap design. Along with others they will be more fully described in the accompanying survey, which commends close attention if readers are to stay "with it" so far as modern taps and valves are concerned.

IN this equipment review
we take a look at new
developments in the fields
covered by the foregoing
special review. (All claims are
those of the manufacturers).



FROM THE vast range of tap fittings and controls from Ideal-Standard Ltd., Ideal Works, Hull, we illustrate here a selection from the firm's Kingston fitting range. They are (from left) the $\frac{1}{2}$ " EB. 5201 "Kingston" pillar taps for lavatories; the $\frac{1}{2}$ " EB. 5202 "Kingston" pillar taps (high neck) for lavatories; and the $\frac{1}{2}$ " EB. 5067 "Kingston" pillar taps for baths.



THE RANGE from Rennert & Co., Gmbh, Dusseldorf, Benzenbergstr, 38-32, covers all types of chromium plated taps for baths, wash basins and sinks, mixer fittings for baths with a variety of hand spray attachments. A recent addition to this is one with a wall rail on which the spray head is clipped, and this means that the spray head can be adjusted in many directions, and can be raised or lowered to suit users of all heights.

The agents for the Company in Ireland, G. F. Morley Ltd., 45 Quinns Lane, Fitzwilliam Square, Dublin, inform us that all the taps and mixers incorporate the non-rising spindle design, which means that no matter how much the tap is opened, the head stays at the same height, and no spindle is exposed to view.

All Rennert taps on sale in this market also incorporate the raised nose design, now recognised generally by health authorities as the best answer to hand contamination. The Temperfix thermostatically controlled mixing valve can be supplied in models to suit baths, independent shower cubicles, shampoo basins, and sinks.

Setting the temperature simply means turning the knob, and the water is then delivered at the required heat. Should the cold supply fail, the valve closes immediately and scalding is impossible.



BARKING Brassware Co. Ltd., River Road, Barking, Essex, have recently introduced a redesigned range of concealed fittings. The latest addition is their basin-set for a 3-hole wash basin. Design No. 6860 incorporates a pop-up waste, while No. 6870 is a basin set without the pop-up waste. All the supply pipes are hidden under the basin, and there is therefore less to clean in addition to the advantage of a neat appearance. All the fittings incorporate the B.B.C.'s new easy to clean Crystal crosstop.

The Barking No. 6960 $\frac{1}{2}$ " B.S. 1010 chromium plated bidet set with pop-up waste, comprises $\frac{1}{2}$ " hot and cold taps with diverting valves for rim and spray, which also regulates the height of the spray. There is also a spray tube with a built-in volume control. The pop-up waste is $1\frac{1}{4}$ " and the B.S.P. male inlets are $\frac{1}{2}$ " (illustrated).

A single control shampoo basin set, No. 5213/59, fitted with patent temperature limit device, provides temperature controlled water. When required to spray the hair the attractive nylon handspray with C.P. flexible tube is easily lifted from the basin socket. When resting in the socket, as illustrated, it is used to fill the basin for normal washing purposes. Hence, only a slight hole in the basin is necessary. The C.P. spray disc is easily removed from the handspray for cleaning purposes.



THE "LEONARD 72," dual control thermostatic mixing valve for showers and similar purposes, can now be used on systems with pressure conditions as low as 3ft. "head," instead of being limited to a minimum head of 5ft. as stated when the valve was first introduced a year ago.

Continued overleaf

Twenty-five

The Irish Plumbing and Heating Engineer.

PRODUCT REVIEW

from previous page

The manufacturers, Walker Crossweller & Co. Ltd., Cheltenham, say that practical installation experience and recent factory tests show that the valve performs satisfactorily at the lower pressure. This represents a remarkable technical advance in shower controllers as minimum head or static pressure is the prime factor governing their use in any particular dwelling.

This development coincides with a major domestic shower campaign by Walker Crossweller to promote its "Mira" mechanical mixing tap through its subsidiary, Miraflo Ltd. The "Mira" also incorporates the dual control feature and operates under a 3ft. head but is non-thermostatic.



The "Leonard" thermostatic, dual-control, shower valve in use. Shown here is the recessed version for concealed plumbing but a surface mounting type is also available.

The firm is also marketing a range of "run-through" shower fittings for use with the company's Leonard thermostatic mixing valves in schools, municipal, military or other multiple shower rooms. The fittings enable several shower roses to be plumbed easily, in series, along the outlet pipe. Two sizes are available, for 1in. or 1½in. feeds.

Irish agents are Modern Plant Ltd., Crumlin Road, Dublin.

* * *

SHANKS & CO. Ltd., Tubal Works, Barrhead, Glasgow, have introduced a number of recently designed taps. The No. 62/86, ½" chromium plated screw-down pillar tap with jam nut, and inlet screwed ½" B.S., and male pipe is one of the new designs

(illustrated). The No. 62/86, ½", is a chromium plated screw-down pillar tap with jam nut, inlet screwed ½" B.S. pipe male. "Esco" compression nut and ring for B.S. 659 copper tube may be supplied as an extra. The hot taps have red discs and the cold taps are supplied with blue discs.

Other taps in the Shanks' range include the No. 63/17 ½" chromium plated screw-down inclined pillar tap with jam nuts, inlet screwed ½" B.S. pipe male; No. 63/12, ½" chromium plated screwed-down inclined pillar tap with extended inlet, sheath and jam nut, inlet screwed ½" B.S. pipe male; and the No. 62/97, ½" chromium plated screwed-down inclined pillar tap with extended inlet and jam nut, inlet screwed ½" B.S. pipe male.

* * *

TWO PRINCIPAL introductions from F. H. Bourner & Co. (Engineers) Ltd., Manor Royal, Crawley, Sussex, include the Temperfix thermostatically controlled mixing valve and the new SPA bath mixer.

The Temperfix thermostatically controlled mixing valves for shower baths, hospitals, etc., give accurate temperature control under all conditions. They will compensate not only for variations in temperature but also for variations in pressure at the inlets.

In the event of failure of either the hot or the cold supply, the opposite supply will automatically turn itself off, so that there is no danger of scalding or of receiving a shock from a warm shower suddenly turning to cold without warning.

The Spa bath mixer is a luxury fitting at a competitive price. The mixer can be supplied with or without chromium plated flexible tube and hand spray, or alternatively, with a fixed shower tube. The mixer can be either a pillar or a wall fitting as required, and the centres are adjustable from 6—9".

* * *

SPERRYN & Co. Ltd., Moorsom Street Works, Birmingham, England, manufacture a comprehensive range of water taps, gate valves, stop valves, non return valves, radiator valves, ball valves, globe valves, pressure relief valves and plumbers' brass fittings.

New items in the range, however, include the 2496 deck pattern pillar taps (illustrated here) and the 2495



bath mixer fitting with shower attachment.

The standard range of thermomagnetic flame protective valves, gas thermostats, and central heating controls has been increased by the following types: G880 Composite Control; G845, a very compact thermomagnetic flame protection valve for use in pilot lines or small consumption appliances in sizes ½" and ¾" B.S.P.; and G.840/2 ¾" B.S.P. Thermomagnetic Valve with push button operated ignition switch.

Also available is the T.R. 552—Flexible and dismantable Gas Thermostat with capillary type sensing element. This thermostat, complying with B.S. 2518, has been designed for industrial equipment and is especially suited to catering ovens and fish fryers. Most gas valves are available for liquid petroleum gases as well as town's gas. The Irish agent is Mr. C. B. Sheridan, 10 Herbert Place, Dublin 2.

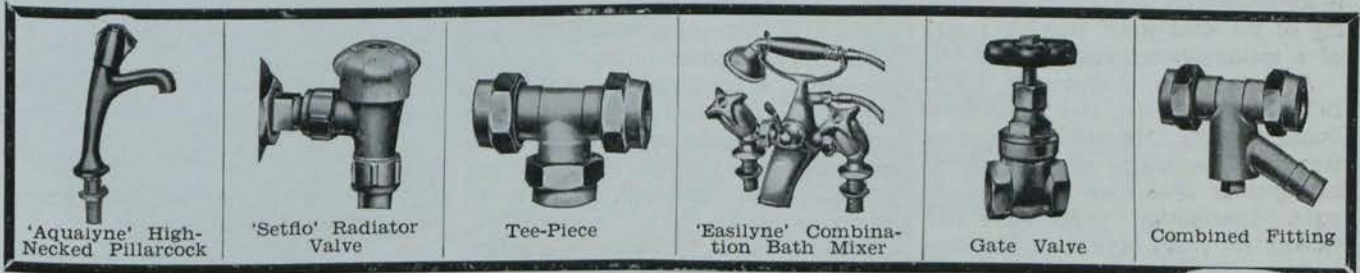
Continued page twenty-eight

See **Sanbra Fyffe** first

FOR ALL REQUIREMENTS IN PLUMBING AND HEATING SERVICES

THE SANBRA FYFFE RANGE INCLUDES:—

- CONEX - INSTANTOR Compression Joints and Fittings for Copper Tube.
- Valves, Stopcocks and Drawn Copper Traps.
- SANBRA FYFFE Brassware—including the renowned 'Easilyne' and 'Aqualyne' Luxury Taps and Fittings—as well as Pillarcocks, Bibcocks, Wastes, Plugcocks, etc.



SANBRA FYFFE products are approved by the leading Architects, Surveyors, Plumbers, Contractors, Government Departments, Municipal Authorities and Water Works throughout Ireland.



SANBRA FYFFE LIMITED, CONEX WORKS, SANTRY AVENUE, DUBLIN, 9.

Telephone: Dublin 375131 (5 lines).

Telegrams: SANBRA, DUBLIN.

Telex: 5325.

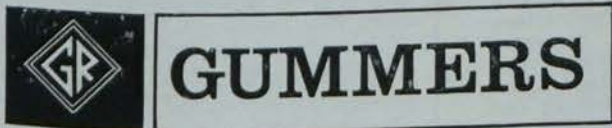
1. R.9011 Raised nose Pillar Tap.

2. R.9265 Nilkon Pillar Tap with press down operation and raised nose.

3. R.9359 A new Deck Sink Mixer by Gummers of Rotherham, fitted with divided flow swivel nozzle.

4. R.9361 The completely new Thermostatic Mixing Valve with Swan Neck Riser and Spray Rose.

Gummers of Rotherham produce a range of fittings which are both tasteful in design and reliable in operation.



Gummers Limited, Effingham Valve Works, Rotherham.
Tel.: 4865/6/7.



The Irish Plumbing and Heating Engineer.

A FEATURE which is claimed to be unique in the design of thermostatic hot and cold water mixing valves has recently been introduced to the "Meynelmix" range, with automatic safety device, manufactured by Meynell & Sons Ltd., brassfounders and engineers, Montrose Street, Wolverhampton.

The feature is designed to give an added safety factor to the thermostatic system, whereby in the unlikely event of the system breaking, there is an immediate and automatic opening of the cold water port by means of a spring loaded piston.

A new Gate Valve—the B.S.C. 1952/Class 125—has also been introduced to the Meynell range. It features a non-rising spindle and the handgrip is of a cool grip, non-slip style. Thermostatic temperature controllers for small bore central heating systems are also manufactured by Meynell. They enable the radiator supply to be kept at a lower tempera-

PRODUCT REVIEW

from page twenty-six

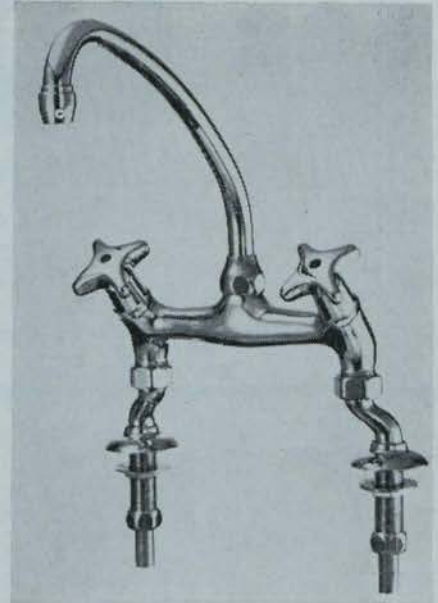
ture than the domestic supply when both are off the same system.

Stockists and distributors in Ireland are Quadrant Engineers, 167 Strand Road, Sandymount, Dublin 4; and in Northern Ireland, Messrs. C. G. Williamson, 21 Mayfair, Arthur Square, Belfast 1.

* * *

GUMMERS Limited, Effingham Vale Works, Rotherham, have recently developed a completely new thermostatically controlled shower mixing valve which can be supplied for either concealed or surface fixing as required. For concealed fixing, a removable panel plate is provided. Surface fixing is by means of a single screw, which is concealed inside the back plate.

Maintenance on the valve—the



From the Rennert range we show here their sink mixer No. 262 NMG ½ in. with nozzle No. 254/200 mm. (See Product Review page 25)

INDEX TO ADVERTISERS

Asbestos Cement Ltd.	Cover ii
Biddle, F. H., Ltd.	16
Boylan, M. A., Ltd.	22
Broadstone Ballvalve Co. Ltd., The	29
B.S.A. Harford Pumps Ltd.	6
Carthorn (1949) Ltd.	14
Chatwin, Thomas, & Co., Ltd.	3
Cox Engineering Co., Ltd.	21
Crowe, W. & L., Ltd.	Cover iii
Davidson & Co., Ltd.	20
Dockrell, Thos., Sons & Co., Ltd.	24
Doherty, J. J., Ltd.	10
Du Bois Co. Ltd., The	1
Evode Industries Ltd.	2
Fry's Metal Foundries Ltd.	33
Gambles (Belfast) Ltd.	18
Gummers Ltd.	27
Heating Controls & Devices Ltd.	3
Ideal-Standard Ltd.	4-5
Industrial Exhibitions Ltd.	30
Industrial Gases (I.F.S.) Ltd.	17
Irish Feedwater Specialists Ltd.	19
Irish Shell & B.P. Ltd.	Cover i
Johnson & Slater Ltd.	Cover iii
Lincoln Furnaces Ltd.	Centre ii
Manotherm Ltd.	15
McMullans Kosangas Ltd.	34
McNeill (Engineering) Ltd.	11
Monsell, Mitchell & Co. Ltd.	1
Morris Furnaces	20
Pickup, H., Ltd.	35
Sanbra Fyffe Ltd.	27
Satchwell Controls Ltd.	Cover iv
Special Notice (Agent Required in Eire)	21
Sperryn & Co., Ltd.	24
Walker Crossweller & Co. Ltd.	23
Willis, Wm., & Co., Ltd.	32

Circulation embraces: (i) Plumbing and Domestic Heating—Plumbing Contractors, Heating Contractors and Installers, Electrical Contractors, Builders' Providers and Merchants, Manufacturers, Agents, Representatives and Distributors of fittings and equipment to the trades; (ii) Industrial Heating, Air Conditioning and Ventilating—Architects, Consulting Engineers, Corporation and Co. Council Engineers, Heating and Plant Engineers, Building Contractors, Insulation & Ventilation Engineers.

"Security" type R.9361—is reduced to a minimum by the small number of component parts which can be removed in one unit. Some of the main features offered by the valve include: a single control operating both shut-off and temperature control; the valve is supplied complete with combined isolating and non-return valves at no extra cost; and a built-in safety feature ensures there is a minimum shut-off should the cold water supply fail or the bellows fracture.

Some details on the capacity of the valve: up to 8ft. head—one R.7572 Spray; one handspray or 2" Rose; not less than 12ft. head—two R.7572; two "Minisprays"; two handsprays or 2" Roses. The maximum capacity is 4 sprays or 2" roses. Minispray fittings will not work successfully below 8ft. head. The Irish agents are Irish Development Supply Co., Victoria Lane, Rathgar, Dublin.

* * *

THE IRISH agents for the Allied Ironfounders Ltd. Leisure Shower Cubicle are R. T. Large & Son, Stephen's Place, rere 47 Merrion Square, Dublin. Solidly constructed, the Leisure shower cubicle can be supplied either undrilled (Mark IV.) or complete with mixer fitting, feed spray and holder (Mark V.).

The mixer-valve is anti-scald and works at a minimum pressure of 2½ lbs. per sq. in. (equivalent to a 5ft. head of water). The water (cold) supply must be from a tank and not from the mains.

OUT WITH A FLICK!



BROADSTONE

THE DETACHABLE BALL VALVE

**B
R
O
A
D
S
T
O
N
E**

BETTER DESIGN

REDUCES MAINTENANCE COSTS

ONLY BALL VALVE WITH AUTOMATIC WATER SHUT OFF

ALTERNATIVE SEATINGS EASILY FITTED

DOUBLE ANTI-SYPHON-AGE PROTECTION

SIMPLE TO DETACH AND ASSEMBLE

TIME AND TEMPER SAVED WHEN MAINTAINING

ONE HAND OPERATION

NYLON SEATING PREVENTS CORROSION

EXCELLENT RATE OF WATER SUPPLY

★ Approved by the B.W.A. and leading Water Authorities.

The Ultimate Design

MANUFACTURED BY

BROADSTONE BALLVALVE CO. LTD.

HUDSON'S DRIVE • COTTERIDGE • BIRMINGHAM 30

TELEPHONE: KINGS NORTON 1156 STD 021

Twenty-nine

The Irish Plumbing and Heating Engineer.



A. L. TOWNSEND
M.R.P., M.R.S.H.

The author, a lecturer at Oxford College of Technology, continues the first part of a four stage course on plumbing.

Hot water supplies

CONCLUDED

THE THIRD INTERNATIONAL



HEATING VENTILATING AND AIR CONDITIONING EXHIBITION



OLYMPIA · LONDON
15-24 APRIL 1964

Two hundred and fifty firms from 10 countries, occupying an area of 200,000 square feet, will be showing all aspects of domestic and industrial heating, ventilating and air conditioning, including air handling and treatment, dust and fume collection, mechanical draught, process heating, refrigeration, and all allied and ancillary processes and equipment.

Times: 10 a.m.—6 p.m. daily, except Sunday. Close at 4 p.m. on final day. *Late Evenings*: Open until 9 p.m. on Thursdays, 16th and 23rd April. *Admission*: 3/6, or by ticket obtainable only from exhibitors. Overseas visitors free.

An **IEI** Exhibition

INDUSTRIAL EXHIBITIONS LIMITED 9 ARGYLL STREET LONDON W1

The **Pipework** consists of: the cold feed pipe; the primary circulating pipes; the vent pipe; and the hot water supply pipes.

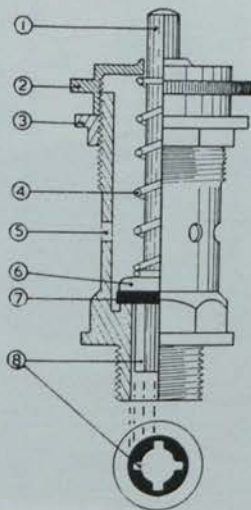
The **Cold Feed pipe**, which feeds cold water to the system by way of a connection near the bottom of the cylinder, should be 1" in diameter. Its inlet end to the cold feed cistern should stand at least 1" above the cistern bottom. The pipe should be fitted with a fullway gate valve which makes it easier to washer taps, descale the boiler (in hard water districts) or do any other repairs without having to wastefully drain down the entire content of the cold feed cistern. The cold feed must feed the hot water system only.

The **Primary Circulating Pipes** which connect the boiler and hot store, form a circuit round which heated water moves, or circulates. The reason for this circulatory movement of heated water has already been fully described.

The cooler, denser water in the system falls by gravity down the pipe from the bottom of the cylinder to the boiler. It "returns" down this pipe to the boiler, where it is reheated; hence this pipe is called the **return pipe**.

THE dropping return water pushes the heated water out of the boiler and makes it "flow" up the pipe which rises off the top of the boiler and joins the cylinder near the top; hence this pipe is called the **flow pipe**.

Flow and return pipes should not be less than 1" bore, and for "hard" water districts where the bore is likely to be reduced by deposits of furr, 1½" bore pipes are to be recommended. They must be carefully ar-



Safety valve: 1, Spindle; 2, adjustment; 3, lock nut; 4, compression spring; 5, pressure escape hole; 6, valve plate; 7, vulcanised rubber valve washer; 8, valve guide.

ranged with a continual rise from the boiler to the cylinder so that airlocks are avoided.

THE vent pipe is fitted to rise continually and without dips from the crown at the topmost point of the cylinder. It finishes over the cold feed cistern. It must rise by $\frac{1}{2}$ " for each foot of "head" on the system, plus about six inches just to be on the safe side, above the working water level of the cistern. This is clearly shown in the diagram of the system. The additional weight of vent pipe is intended to accommodate the increased height of lighter hot water column that can be supported by the heavier cold feed and return water columns.

The end of the vent pipe should not dip below the top edge of the feed cistern. There have been cases where this rule has been ignored, causing considerable trouble and expense, and even an element of danger. If the end of the vent pipe dips into the water, or the water level rises to cover it, and the water surface in the cistern freezes over, as sometimes happens when cisterns are fixed with no proper regard for frost damage, the vent becomes "sealed" and cannot serve its prime function—the release of air from the system. Neither can it allow air to enter the system, and as will be shown in a later issue, this can contribute to the collapse of a cylinder in certain circumstances.

Discharge of water from this vent pipe is most unlikely in a properly

designed, installed, and operated system. A small hole in the cistern lid is quite satisfactory, especially if it is provided with an easily made sheet copper tunnel beneath the vent pipe end.

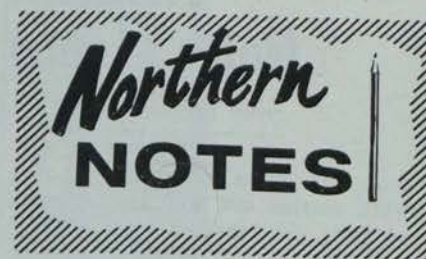
Hot Water Supply Pipes to the bath, basin and sink taps are taken from the vent pipe just above the crown of the cylinder. Our illustration show a typical arrangement. Note carefully the recommended pipe sizes indicated. In all normal circumstances these will ensure a good outflow at all taps, even if they are all in use at the same time. The undersizing of pipework is a common fault which gives rise to many complaints of inefficiency in hot water systems and inadequate flows at taps. Pipesizing by informed technical methods is not difficult, and it is infinitely more satisfactory than guesswork. All plumbers should learn how to pipesize, and this again will be dealt with in a later issue.

Boiler Mountings: These are the accessories fitted to, or mounted on, the boiler, which ensure the safe and efficient working of the hot water system.

They may include a thermometer which shows the temperature of the hot water; a safety valve (shown here) which will "lift" or "blow off" to relieve any pressure in the system greater than that it is designed to withstand; and a drain down cock which will empty the system when it is to be repaired, the boiler is to be cleaned, or as a commonsense precaution against frost damage where a system is to be left for some time in an unheated or unoccupied house during periods of severe cold weather.

THE more expensive modern boilers will have some form of thermostatic control. This is usually arranged to operate under the influence of the different rates of expansion of two strips of different metals. If these are rigidly fixed together throughout their length they will "bow" because of the greater rate of expansion of one strip to the other. This "bowing" heat movement of the bi-metal strip moves a plate to or from an air supply hole to the boiler firebed.

Most boilers which have no inbuilt thermostat can be fitted with a thermostatic draught regulator at a small cost that is quickly repaid by the saving in fuel and the improved efficiency of the system.



CLEAN AIR BILL IN STORMONT

A BILL designed to reduce air pollution was tabled at Stormont last month.

In two main sections, part one of the Bill makes provisions relating to dark smoke, the installation of new furnaces, grit and dust, height of chimneys and general smoke nuisances.

The second provides—at the discretion of local authorities—for the introduction of special measures of control for areas to be designated "smoke control areas."

Grants to owners or occupiers of private dwellings who incur expenditure in adapting their heating or cooking arrangements are also provided for in the Bill.

* * *

FOLLOWING negotiations with the Northern Ireland Ministry of Commerce, which have been taking place over the past few months, it has been announced that Gambles (Belfast) Ltd. are to commence the second stage of their major expansion programme, introduced in 1960.

Plans being prepared at present will give a total floor area of 48,000 sq. ft., a working area which will eventually provide employment for 250.

Gambles, who were first established in Belfast over 100 years ago, are a completely locally owned firm whose interests are solely connected with steel.

When the proposed new production shops become available practically all types of sheet metal fabrications will be increased in output, among them air-conditioning and ventilating plant, which Gambles ship to customers all over Britain and Ireland. Centrifugal

NORTHERN NOTES are
continued overleaf

Northern Notes (Cont.)

from previous page

fans also form a large part of the work carried out while half-a-million of their dustbins are already in circulation.

The fact that unbroken, regular overtime has been worked in the fabrication shops for the past eleven years and a night shift operating in the stockyards for over twelve months, illustrates the prospects of this go-ahead concern—one of the few local firms to expand in recent years.

The present expansion programme, which was carefully planned to operate over a five year period, was initiated with the growth and development of the steel stockholding division in 1960.

One of the largest steel stockholders in the country, Gambles moved recently to Lisburn—a further stage in the expansion of the company.

The new premises at Knockmore, on the main Dublin line, are particularly suitable as far as trade with the South is concerned. Regular deliveries leaves the works on the twice weekly, cross-border run with Dublin, Limerick, Carlow, a few of the main centres.

* * *

ALTHOUGH he was not in favour of the complete abolition of the open coal fire, Mr. D. G. Barrett, manager of the Coal Advisory Service, told



A twenty ton load of plain structural steel beams being prepared for shipment to Dublin on Gambles weekly delivery service.

members of the Belfast and District Consumers' Group that it was a fact that most of the heat went up the chimney.

"Almost 15s. worth of fuel in the £ goes up the chimney," he said. "not a heart-warming thought with the price of coal as it is."

Mr. Barrett stated that since the advisory service was set up, over 15,000 inquiries had been dealt with, many regarding the installation of central heating. Certainly a good omen for the trade!

* * *

ASSOCIATED Electrical Industries Ltd. has received instructions from International Combustion Group Pur-

"Men only" tradition smashed!

IT was just another meeting of the Belfast Association of Engineers in the northern capital last month. But it was one which most certainly will go down in history.

For among the 120 or so who attended the meeting in the David Keir's building of Queen's University, almost half were women.

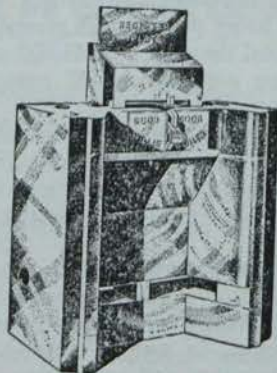
Because of the interesting and non-technical nature of the programme it was decided to break the 73-year-old tradition of "men only" and invite members to bring their wives and girl friends.

They obliged and the ladies were treated to a colour film of the building of the Canberra as well as an enlightening talk on domestic central heating given by Mr. T. S. Green, a member of the committee.

CENTRAL HEATING

WITH THE FAMOUS

'All-Around' Grate Boiler



The Willis "All-Around" grate boiler is the most powerful grate boiler on the market—proof of this claim is to examine the design—the boiler fits "All-Around" any open fire, giving a larger heating surface than any 'Back' boiler—ask your merchant, he knows.

HEATS 3-4 RADIATORS PLUS PLENTY OF HOT WATER—FROM ONE OPEN FIRE.

Made in Belfast by WILLIS, the Name Famous for 40 years in Open Fire Heating.

Write now for details to: Wm. Willis & Co. Ltd., 23/9 Dublin Road, Belfast, 2.

chasing Ltd. to supply a total of 68 squirrel cage induction motors for driving boiler auxiliaries at the Central Electricity Board's new 2,000 power station near Warrington in England.

The order, worth £350,000, will be a duplication of that at present being supplied to the Board's West Burton plant and will include eight 2,600 h.p. two speed induced-draught fan motors and eight 1,300 h.p. forced draught fan motors—all of which will be manufactured by A.E.I.'s heavy plant division at Rugby.

● A.E.I. Turbine-Generator division announces the appointment of 38-year-old Mr. Robert Meikle as superintendent of its Larne factory.

at



modern laboratories

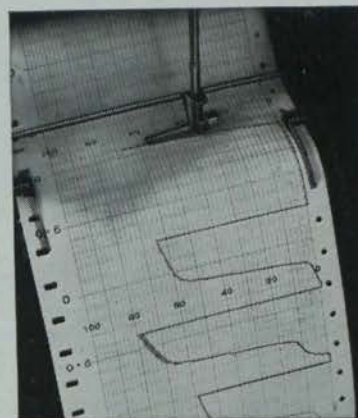
Up-to-date and modern in equipment. Staffed by expert analytical chemists and research workers who carry out thousands of scientific tests each year on products associated with Solders and Fluxes, as they pass through the works.

... and this kind of instrument ...

which makes use of the characteristic decomposition potential of metal to determine the amount of an element present in the alloy.

Precise instruments like this one, used in modern laboratories, enable Fry's to ...

guarantee you fast, effective soldering whatever the job.



FRY'S set the pace
by using science in quality control.

Fry's Metal Foundries Ltd., 197 Pearse Street, Dublin.
Tel.: Dublin 70336, and at:—
LONDON, MANCHESTER, KIDDERMINSTER and GLASGOW.

MRP/63/2

Thirty-three

The Irish Plumbing and Heating Engineer.

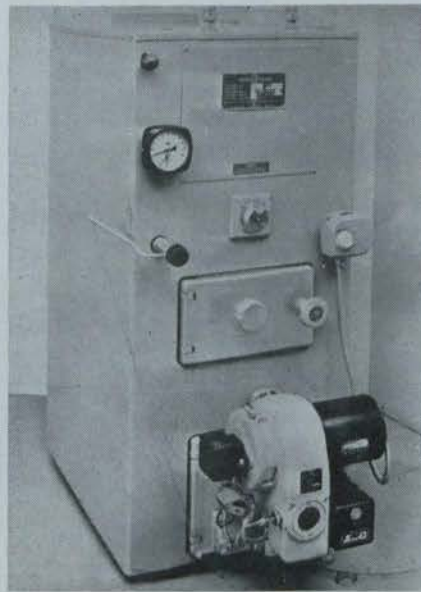
THE LATEST addition to the CTC range of Double-Duty boilers—available from CTC

ADDITIONS TO CTC RANGE Heat (London) Ltd., 17, Sloane Street, London, S.W.1, is the

Series 170, with an output of 70,000 B.Th.U. per hour. It is designed to provide full central heating, plus all domestic hot water requirements, in the average 3/4-bedroomed house. The rectangular-shaped combustion chamber is so constructed that operation can be either by oil-firing or coke-firing.

Developed in Scandinavia, where over 200,000 Double-Duty boilers have now been sold, and proved by many years of practical use, the series 170 boiler incorporates a built-in galvanised or copper-lined indirect cylinder, manually-controlled mixing valve, and oil burner complete with burner controls and boiler thermostat.

With the conventional boiler, the size of the indirect cylinder installed is sufficient to provide for the maximum domestic hot water requirements of the household. When this capacity is not fully used, there is a considerable



A CTC series 170 boiler.

wastage of heat output, with the result that the cost of heating the water actually used is disproportionately high.

With the CTC Series 170—and, in fact, with all CTC Double-Duty

trade Topics

boilers—the size of the cylinder is related to the total heat output of the boiler. The method of heating domestic water is such that, under normal working conditions, recovery to the required water temperature is effected within only 30 minutes and, accordingly, a cylinder of smaller storage capacity can be used.

CTC Heat are seeking Irish agents and invite enquiries to their above address.

* * *

“RAST” expanders, which expand copper tubing from within by means

of a collet inserted in the end of the tube, enable parallel joints and reduction joints sufficiently strong to

withstand the vibration suffered by refrigeration and air-conditioning plant to be made without the use of expensive fittings. They can also be used for flaring.

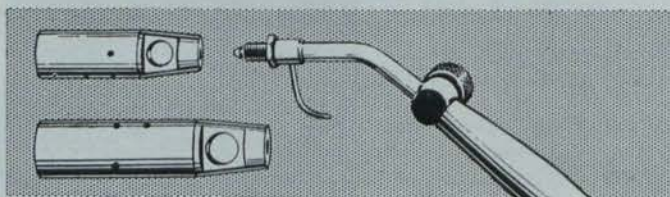
These hand tools, which are made in Australia by Sampson Engineering Co. Ltd., are now sold in the rest of the world by J. C. Neville Ltd., of 34 Priests Bridge, London, S.W. 14.

Two models cover tubing from $\frac{1}{8}$ inch to 4 inches (9.5 to 102 mm.) inside diameter. The tube is annealed by heating with a circular blowpipe. The collet is then inserted to the required depth, and is expanded by driving a hardened steel taper plug down a tapered shaft within the jaws. In the Model “E” this is accomplished by bringing two handles, like those of a pair of shears, together; in the Model “A” by rotating a T-shaped handle. In both cases the tool in its fully opened position automatically regulates the internal diameter of the expanded part of the tube to a few thousandths of an inch (about 0.08 mm.) over the external diameter of the unexpanded part. The two tubes are then brazed together.

Since there is only one joint, half as much silver alloy is needed as when a separate coupling piece is used; and on vertical tubes the awkward upward joint can be avoided.

Kosangas Blow-Torches

for every plumbing job!



There's a wide range of Kosangas blow-torches, for all types of plumbing work. They're far more efficient than the conventional types.

The Kosangas TH3 and TH4 high pressure blow-torches are specially designed for *paint-burning, pre-heating and soldering.*

The Bullfinch Mark II has a full range of heads, including soldering attachment. Use Kosangas blow-torches, with the small Kosangas portable cylinder, also for *roof-felting, jointing of plastic pipes, and other heating needs.*

A plumber's portable furnace with wind protected burner is available.

Send for details to: McMullans Kosangas Ltd., Connell St., Dublin. Tel: Dublin 40761-4.

Continued from page fourteen

rooms so as to avoid unnecessary cutting of joists when setting out the circuit. As mentioned earlier, the pipes will be run under the floors, and the heat loss will not help in room warming. In other jobs, however, it is often the policy to clip them to the skirting boards where they provide heat emission with consequent reduction in radiator size. This again is a matter for consultation with the client.

In the plan, the positions of the radiators are fixed, and it is obvious that two separate circuits would be the most suitable way of connecting them. The main point we must watch is that each should balance and be as short as possible.

As we are using a single pipe system (generally recommended for small bore jobs) the load on each circuit is the total water flow through the radiators and pipes on that circuit. Unlike the two-pipe system, the circuit in this case carries the full load throughout its length, and so our pipe sizing is simplified.

WE will call the ground floor Circuit A, and the first floor Circuit B. To clarify our ideas, the preparation of an isometric drawing (Fig. 2) is helpful. This will be of assistance in taking off quantities, and will also make clear to the client what we propose to do.

To Circuit A we have four radiators with a combined output of 17,900 B.t.u. which requires the circulation of 100 gallons of water per hour. The actual length of the circuit is 91ft. and from our calculator it will be seen that a $\frac{1}{4}$ -in. bore copper pipe, or $\frac{1}{4}$ -in. mild steel tube, is adequate to carry this. However, we will check this in a moment. A $\frac{1}{4}$ -in. mild steel tube could also carry the load, but the pressure loss would be high, and this point would have to be considered when selecting the pump.

In Circuit B we have four radiators plus a towel rail with radiator insert. The full heat requirements here are 14,000 B.t.u. with a flow of 81 gallons per hour. This again, on reference to the calculator, reveals that $\frac{1}{2}$ -in. copper tube is just a bit too small, so we will have to again use $\frac{1}{2}$ -in. Likewise, $\frac{1}{2}$ -in. mild steel tube would do the job, but with a high pressure drop as in Circuit A.

We can now prove that our pipe

Small bore heating

sizes are correct by the calculator as follows:—

Circuit A—Total Flow, 100 gallons per hour. Actual pipe length, 91ft. plus 30% for friction loss=118ft. Using $\frac{1}{4}$ -in. copper pipe, the pressure loss in inches water gauge is 20, which is satisfactory.

Circuit B—Total Flow, 81 gallons per hour. Actual pipe length, 107ft. plus 30%=140ft. Using $\frac{1}{2}$ -in. copper pipe, the pressure loss is 17in. W.G.

The total pressure loss from the two circuits is 37in. and the total water flow is 181 gal./hr.=2.66 gal./min.

Therefore, the system will require a pump delivering 2.66 gallons per minute against a 37in. head.

The pipe sizing can also be checked by ordinary methods without the use of the calculator.

The total heat load of 32,000 B.t.u. represents 32,000 lbs. which converted into gallons (10lbs. gal.) equals 3,200 gal./hr.

ALLOWING for the usual standard drop of 20° (180° flow and 160° F. return), this gives us 3,200 ÷ 20 = 160 gal./hr. or 2.66 gallons per minute.

Main Circuit A, which is the index circuit, is 118ft. long. The friction loss for $\frac{1}{4}$ -in. copper tube, which can be obtained from tables in most text books, shows that for each 10ft. it is 3.2 inches, therefore the total friction loss for the circuit is:


$$\frac{3.2 \times 118}{10} = 37.3 \text{ which bears out}$$

the figure obtained from our calculator.

This concludes the design—we have our radiator sizes, our pipe size (with $\frac{1}{2}$ -in. connections through sweep tees to the radiators) and our pump capacity.

Now, suppose our client demands automatic control and requests that a mixing valve be fitted so that variations in outside temperatures be

Continued overleaf



SEALLED
WHILST
YOU
SIT
BACK

Pour OXYPIC, the **guaranteed** leak repair preparation, into a hot water installation and seal leaks, no matter where they are, in **30 minutes!**

Faulty fittings, bad threads, sand holes, any leak through any cause is sealed economically and quickly. No dismantling needed; no patches or welding; no need to even **find** the leak; no trouble at all! *Oxyptic prevents rust and scale. It can also be used as an active leak preventive.

N.B.—Unsuitable for domestic or draw off systems. Retail Price £1 per tin C.O.D., money refunded if not satisfied.

Full details from:

H. Pickup Ltd.

Dept. I.P.C.3, Roscoe Works,
Scarborough. Tel. 4997/8/9.
6 Charlton St., York. Tel. 24611
Established 1892.

Supplies obtainable from:

K. W. Talbot

Builders' Merchant,
43 Charlemont Street,
Dublin, 2.

The Irish Plumbing and Heating Engineer.

from previous page

allowed for. Here we run into difficulties because the motive power necessary to operate the valve is derived from the pressure differential across the pump, and our total pressure loss—due to the use of $\frac{3}{4}$ -in. pipes—is only 37in., which is insufficient. Most mixing valves demand a minimum of 4ft. head loss across the pump.

There are various methods of dealing with this difficulty, but the most satisfactory, and most economical, is to sub-divide the two circuits and make four (Fig. 3). Now $\frac{1}{2}$ -in. pipes can be used with a $\frac{3}{4}$ " main flow and return. The radiator sizes will, of course, be the same, but due to the smaller number in each circuit, the $\frac{1}{2}$ -in. bore pipe will be large enough, and the extra friction head on the pump will provide the required motive power for the mixing valve. This three-way valve is fitted to the flow pipe from the boiler and a by-pass connects it to the main return pipe. The controller, a temperature-sensitive bulb, is fitted outside the house, and a capillary tube run from it to the mixing valve, which in turn opens or closes conversely with outside temperature variations, so maintaining, within limits, the house temperature.

IN our original design (Fig. 2) a three-way by-pass valve connected between the flow and return mains and manually operated by the householder, could be installed, but in my experience more often than not, the valve is never touched!

In this article, the main factors involved in working out a typical pipe layout have been considered, firstly, where a simple two circuit installation, with clear-cut pipe runs and **without** automatic control will suffice, and secondly, where the layout is divided into four circuits using mainly $\frac{1}{2}$ -in. pipe (truly "small bore") and with sufficient pressure differential across the pump to allow for automatic control.

It will be noted that the domestic hot-water pipe layout is not included on the drawings. It was thought advisable to omit them in order to concentrate on the heating circuits only. Most contractors will be quite familiar with this side of the system, separate tappings being provided on the boiler to connect the flow and return pipes of the indirect cylinder.

1964 DIRECTORY of MANUFACTURERS, AGENTS, REPRESENTATIVES and DISTRIBUTORS

★ The June 1964 Register of Manufacturers, Agents, Representatives and Distributors of Domestic and Industrial Plumbing, Heating, Air Conditioning, Ventilation and Insulation equipment and materials available in the Republic of Ireland and Northern Ireland is now being prepared. The Directory this year will again be enlarged to accommodate the many additional entries under the industrial heading.

If you come under the heading of any of the categories listed here and have not supplied information already, or wish to make amendments or alterations to last year's entries, we would ask you to do so without delay. Names and addresses of Agents and/or Representatives should be included with all entries. If you require an Agent, please indicate accordingly.

Please Note!

CLOSING DATE
Saturday,
2nd May, 1964

**Please Check
This List
Of Categories**

— LIST NO. 2 —

- Economisers, Fuel
- Ejectors, Steam
- Electric Heating Elements
- Electric Heating Equipment
- Electric Heating Tape
- Expansion Joints
- Extractors & Ventilation Fans
- Fan Speed Regulators
- Fixing Tools and Bolt Driving Guns
- Filters, Air
- Filters, Liquid, Oil, Water, etc.
- Flame Failure and Protection Devices
- Floodlighting Equipment (Portable)
- Floor Heating Installations
- Flue-Gas Corrosion Protection
- Fuel Additives
- Fuel, Ash and Clinker Conveying Plant
- Fume Removal Equipment
- Gauges, Air, Pressure, Vacuum, etc.
- Gauges, Liquid
- Gauges, Liquid Level
- Generators (Steam)
- Grilles, Louvres, etc.
- Grit Arresters
- Headers
- Heaters, Air
- Heaters, Water
- Heating Equipment Supplies
- Heat Exchangers
- Heating, Storage
- Hospital Equipment
- Humidifiers
- Humidity Controllers, Indicators, Recorders, etc.



SANITARY WARE IN WHITE AND COLOUR

(Colours to match Irish Foundries Ltd.)

Agent:

C. B. SHERIDAN
10 HERBERT PLACE
DUBLIN.
Phone 66283.

Illustrating
"THE WALDORF SUITE"

JOHNSON AND SLATER

(VITREOUS CHINA)

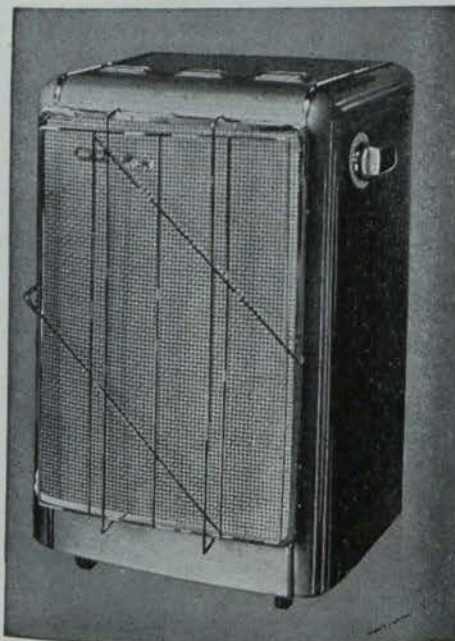
(SANITARY FIRECLAY)

ALFRED JOHNSON & SON LTD.,
QUEENBOROUGH, KENT.

JOHN SLATER (STOKE) LTD.,
BERRY HILL, STOKE-ON-TRENT.

THIS IS FLAMELESS HEAT

CATALOR LIQUID-GAS thermo-reactor for domestic, office or industrial heating.

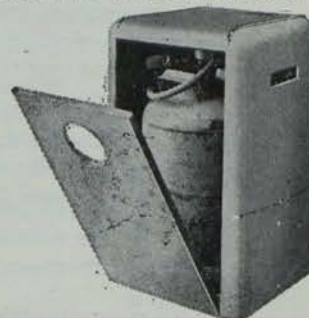


"Catalytic Heating"—What It Means And How It Works. When liquid propane or butane meet a pre-heated platinised "catalyst" they are oxydised into carbon dioxide and steam; heat is generated in the process, and the (patent) "CATALOR" heater gives off this heat as 46 per cent. radiation and 54 per cent. convection. The heating element does not ignite or glow; it simply pours out penetrating heat which is healthy, clean and SAFE. Even a naked flame held near the CATALOR element is extinguished. The larger models need only a few minutes of electric pre-heating; then an automatic cut-out switches off the current as the element grows hotter.

Left: Model 6035 CATALOR
'Housemaster' Domestic Heater, £25-12-0.

NO PIPES OR WIRES

CATALOR Heater is self-contained,
holds butane or propane bottle, runs
on smooth castors.



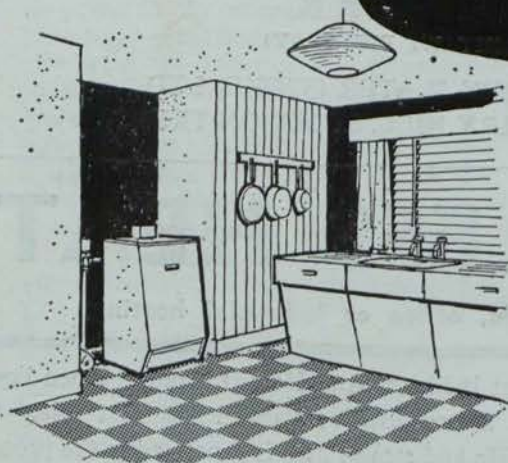
W. & L. CROWE LTD.

East Wall,
Dublin, 3.
Phone 43101.

Sole Distributors of CATALOR (Patent) Liquid-Gas Heaters throughout Ireland.

Of Course I fit AUTOMATIC CONTROLS —and I fit Satchwell

here's
why -



- * Central heating systems fitted with Satchwell automatic controls save fuel and trouble, keeping inside temperatures constant, regardless of outside conditions. This means a more efficient system, with no time-wasting adjustments for you to make after installation.
- * There are Satchwell controls for every type of central heating system—small-bore or gravity flow—oil, gas-fired or solid fuel.
- * Because Satchwell controls only take up such a small proportion of the total installation cost, they are easy to sell, and present an excellent opportunity for making an extra profit.
- * Systems fitted with Satchwell controls build goodwill, because they are automatic, efficient and save fuel. This means satisfied customers—and that's good for business.

Write for full details of the Satchwell range of automatic controls and a supply of our booklet "Forget the Weather" for your customers.



Satchwell Controls Ltd

Slough · Buckinghamshire · Tel Slough 23961

 A Member of the Elliott-Automation Group