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The Irish Plumber and Heating Contractor, July 1963 (complete issue)

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THE IRISH PLUMBER & HEATING CONTRACTOR



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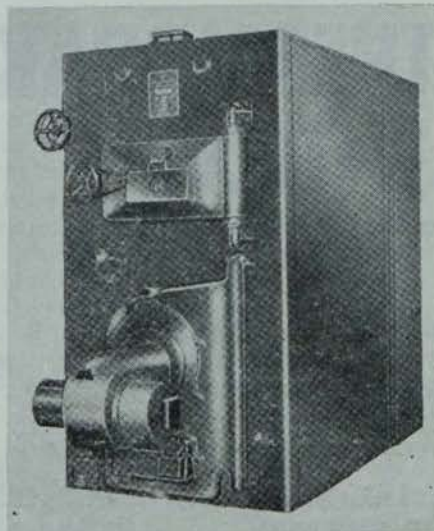
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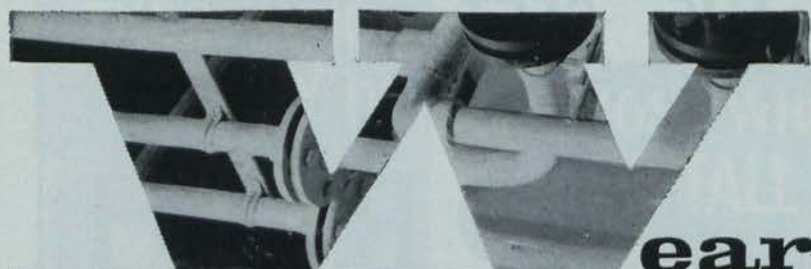
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THE IRISH PLUMBER & HEATING CONTRACTOR



Vol. 3. No. 4

The only publication in Ireland for the craftsman plumber and contractor, the heating, ventilation, insulation, air conditioning and refrigeration engineer and contractor, the electrical contractor, supplier, manufacturer and wholesaler of fittings and equipment for the trades.

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JULY, 1963.



IN THIS ISSUE

Irish apprentices scored heavily in the recent international trade competitions held in Dublin	4
Installation is the aspect of domestic water supply discussed this month by A. L. Townsend, M.R.S.H., M.I.P.	8
An interesting Malahide installation of warm air perimeter heating is reported on page	11
High density polythene is the heading of W. J. Woolgar's contribution to the Plastics in Plumbing series	12
Northern Notes from Allen McDowell are on page	14
Corrosion control in plumbing is the topic taken this month by John G. Bolton ..	16
Questions Answered are on pages thirty-five and thirty-six.	
SPECIAL SURVEY: Review of air-conditioning, ventilation and refrigeration beginning on page twenty-one.	
SPECIAL SURVEY: Review of insulation materials beginning on page twenty-nine.	

INDEX TO ADVERTISERS

Afos Ltd.	20	McMullans Kosangas Ltd.	9
Biddle, F. H., Ltd.	17	Mono Pumps Ltd.	15
Boylan, M. A., Ltd.	33	Monsell Mitchell & Co. Ltd.	2
Calume! Trading Co. Ltd.	30	National Apprenticeship Board	34
Carthorn (1949) Ltd.	Cover iii	O.B.C. Ltd.	Cover iv
Chatwin, Thos., & Co. Ltd.	7	Shires & Co. (Ireland) Ltd.	Cover ii
Davidson & Co. Ltd.	26	Sperryn & Co. Ltd.	15
Dockrell, Thos, Sons & Co. Ltd.	5	Stewarts & Lloyds of Ireland Ltd.	Cover i
Du Bois Co. Ltd., The	33	Trianco Ltd.	18
Fibreglass Ltd.	31	Unidare Ltd.	10
Fry's Metal Foundries Ltd.	7	Virax Outillage	28
Greenwood's & Airvac Ventilating Co. Ltd.	22	Waterloo Grille Co. (Great Britain) Ltd.	25
Hilmor Ltd.	36	Wavin Pipes Ltd.	2
IRCO Trading Co. Ltd.	1	Worthington-Simpson Ltd.	5
M.A.B. Insulations Ltd.	32		
Manotherm Ltd.	13		

The Irish Plumber and Heating Contractor.

IRISH COMPETITORS SCORE IN INTERNATIONAL COMPETITIONS

IRISH competitors scored remarkable successes in the International trade competitions for apprentices held in Dublin from July 8 to 13.

In the Plumbing (category A section) William Thomas Jackson of 15 Mountpleasant Terrace, Ranelagh, Dublin, who is employed by Messrs. A. Guinness, Son & Co. (Dublin) Ltd., won a silver medal. In category B, the gold medal went to Patrick Higgins of 29 Stanhope Terrace, Grangegorman, Dublin, who is on the staff of H. A. O'Neil, Ltd., 162 Lower Rathmines Road, Dublin.

In the Electric Welding section, Category B, Patrick Anthony Sands, of 31 Annadale Drive, Marino, Dublin, who is employed by Smith & Pearson, Ossory Road, won the gold medal.

The competitions, which covered many branches of industry—brick laying, cabinet making, carpentry, foundry moulding, fitting, domestic electric wiring, industrial electric wiring, industrial forging, joinery, jewellery, panel beating, pattern-making, plumbing, engineering drawing, milling (tool-room), silversmith work, metal plate work, stone cutting, structural steel work, turning, welding (oxy-acetylene, Argon-Arc and electric) and wrought iron work, attracted a team of 32 Irish apprentices—all aged between 18 and 21. They competed against more than 250 apprentices from 13 countries in the 32 industrial competitions.

Machinery and equipment worth thousands of pounds was installed in the College of Technology in Bolton Street, Dublin, and a special service of simultaneous translation by more than 30 interpreters was available during the competitions.

Irish industry contributed more than £25,000 towards the cost of the competitions with contributions, sub-

scriptions and sponsorship received from 200 Irish industrial organisations and companies.

The Irish National Organising Committee, with the City of Dublin Vocational Education Committee, had worked on the organisation and programme planning for the event since last autumn.

In addition to Ireland, countries represented were Austria, Belgium, Gt. Britain, West Germany, Italy, Denmark, Japan, Luxembourg, The Netherlands, Portugal, Switzerland and Spain. The competing teams were accompanied by about 150 technical officials and representatives of the participating countries, together with teams of observers from Sweden and the U.S.

The competitions began as a national competition in Spain in 1947 and became international in 1950 when a contest was arranged between teams from Spain and Portugal. In 1953 the organisers in Spain invited other European countries to join.

Since then the competitions have continued to grow, both in the number of participating countries and in the variety of skills involved. The competitions which have just closed in Dublin are the largest ever to have been organised.

Government representatives, members of the Diplomatic Corps of the competing countries, and members of civic authorities, industry and trade unions, visited Bolton Street during the competitions.

President de Valera presented the prizes won in the competitions at a function held in St. Patrick's Hall, Dublin Castle, on July 18, and the same evening a closing banquet was held in the Intercontinental Hotel, when the guest of honour was An Taoiseach, Mr. Lemass.

TRADE

TOPICS



This is the No. 2417 Deck Pattern sink mixer fitting with detachable soap tray, a product of Sperryn & Co. Ltd. of Birmingham. This attractive fitting conforms to BS.1010 specification and is provided with a divided flow nozzle, thus preventing the mixing of the hot and cold water until point of actual discharge, in accordance with the Dublin and Cork Water Authority requirements. The headwork is inclined forwards and sideways, ensuring easy operation.

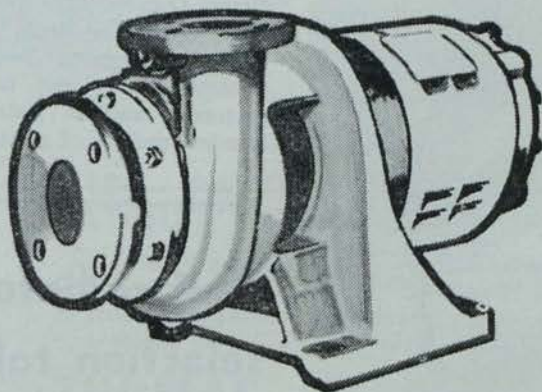
The tap heads are of the firm's bold Star design and incorporate red and blue buttons marked "H" and "C". The fitting is fully approved by the British Standards Institution, British Water Works Association and other leading authorities.

The high waisted sink pillar tap, No. 2499H4, by Sperryn & Co., is also in accordance with BS.1010 requirements and fitted with the same bold Star type head as the mixer. The raised nose measures 4" from the top of the sink to the outlet and has a 3.7/8" projection centre to centre. The inclination of the body ensures ease of operation and ample finger clearance when fitted on a sink top with a small ledge adjacent to a wall. The outlet is fitted with a specially formed insert to ensure a smooth, non-splashing flow of water and is formed suitably for the push-on type of rubber hose used for filling washing machines.

Irish agent: Mr. C. B. Sheridan, 10 Herbert Place, Dublin 2.

● A picture report of the trade competitions has been held over until next month.

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they said

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* Full details and a guide to pump selection in leaflet W.S.5179

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Basins, Toilet Sets, Shower Fittings - Mixer Fittings - Stain
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TRADE ENQUIRIES INVITED.

The Irish Plumber and Heating Contractor.

NEW SANBRA LUXURY TAPS

THE NEW Sanbra "Aqualyne" luxury taps and fittings incorporate the best features of the Sanbra "Easi-lyne" range with new developments and refinements.

Features include: modern styling; distinctive easy-turn grip; high lustre chrome plated finish to B.S. 1224; attractive metallised red and blue indicator buttons, H. and C.; all enclosed headwork; flush-fitting bases; raised nose with anti-splash insert to B.S.S. 1010/1959. A complete range is available for basins, sinks, baths and bidets.

The "Deck Fitting" raised swivel nose sink mixer, 5545T $\frac{1}{2}$ " size only, has divided waterways and 7" fixed inlet centres. There are no dirt traps. The new raised swivel nozzle provides greater clearance when filling buckets, etc.

Dublin headquarters of Sanbra Fyffe Ltd., Concor Works, Santry Ave., Dublin.

Hull Radiator Selection Tables

HULL STEEL RADIATORS Ltd. announce the publication of their new Radiator Selection Tables.

This represents a completely new approach by a pressed steel radiator manufacturer to provide designers and heating engineers with technical information and, at the same time, to considerably reduce the time now taken in selecting radiators for any particular installation.

The tables reduce the selection of radiator types and sizes to the simplest possible terms. They are compiled on the basis of listing the B.T.U. output for every type, height and size of radiator. At the same time they indicate the number of sections of each size of radiator which can be installed in any given space. The booklet is comprehensive and reference to other publications will not normally be required in designing installations.

The booklet is available free of charge to anyone concerned with the design and installation of heating systems, on request direct to Hull Steel Radiators Ltd., 1515 Hedon Road, Hull.

TRADE

TOPICS



Now available in Ireland, the R.C.P. "Kinetic" water ram, outstandingly successful in America and Britain, looks like the answer to many maintenance problems.

Basically a seamless cylinder of polished brass, housing a manually charged compressor unit, the Kinetic ram is a precision built instrument, tested to withstand 600 lb. pressure. A rubber sealing cone (from various sizes available) is fitted to the base of the ram, and this is pressed into the drain to be cleared. A water supply hose, connected to the cylinder, is now attached to the nearest water tap, and the tap turned on for some 10-20 seconds to fill the space between the pipe and the piston. The trigger is then pressed quickly, and the impact of the pressure-wave clears the blockage. The "Kinetic" ram, therefore, does not work by gradually built-up pressure, but by split-second impact. It is this impact against a column of "solid" water that transforms the static water into waves of "kinetic energy" travelling at the speed of sound (4,700 feet per second), and exerting its force 98 per cent. forward and only 2 per cent. outwards. This factor is important, and answers any fears that the force of the ram might cause blocked pipes to burst.

In use, the "Kinetic" ram is always brought to bear behind the blockage. Any plumber will be able to detect at once where the pipe is blocked, and from the known layout of the system he will be able to get behind the blockage, where the "Kinetic" ram operates to its full effect. The compressor can be pumped up to a maximum pressure of 160 lb. and its effect will travel through 100 feet of coiled or straight pipe.

Photographs shows the "Kinetic" water ram in position for clearing a blocked wash-basin pipe, and the diagram shows two alternative positions for clearing a blocked sink.

Sole distributors for the R.C.P. "Kinetic" water ram (which is made by Rigby Chemical Products Ltd.) are W. & L. Crowe Ltd., East Wall, Dublin 3.

Bech, Neale Appoint Agent

IRCO TRADING Co., Ltd., 9 Eden Quay, Dublin, have been appointed Irish agents for Bech, Neale & Co., Ltd., the famous Swedish firm of domestic boiler and radiator manufacturers, and B. Palm & Co., of Sweden, makers of electro-oil burners.

Hull radiator selection tables

A NEW boiler for domestic hot water supply has been introduced by Ideal-Standard Ltd. of Hull. The boiler is a neat design with smart modern lines. It burns clean, inexpensive coke (or the solid smokeless fuels). Fingertip control is given by a thermostat, with a control knob on the front of the boiler. The boiler is suitable for use with hot water storage tanks of 25-40 gallon capacity and, if the demand for hot water is not excessive, it will heat a radiator or towel rail.

There is a special opening for a gas poker for easy lighting. Riddling is made simple and clean by a rocking grate, easily operated with the tool provided. The rocking grate includes a device for dumping into the ashpan any accumulation of shale or clinker, etc.

Irish agent: Mr. E. J. Cocker, Stonegate, Granville Road, Blackrock, Co. Dublin.

● THE National Coal Board, in conjunction with the Coal Utilisation Council, again selected Supataps—the taps with the 30-second washer change—for their Showhouse at Sandal, Nr. Wakefield.



MR. J. M. HACKETT, who was recently appointed branch manager in Dublin by Heating Controls and Devices Ltd., 227 Bearsbridge Road, Belfast. Heating Controls and Devices Ltd. is a subsidiary of

Clyde Fuel Systems Ltd., Hillington, Glasgow, S.W.2.

*Quick automatic
change*

FROM HALF-CUT
TO FULL-CUT



**" 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
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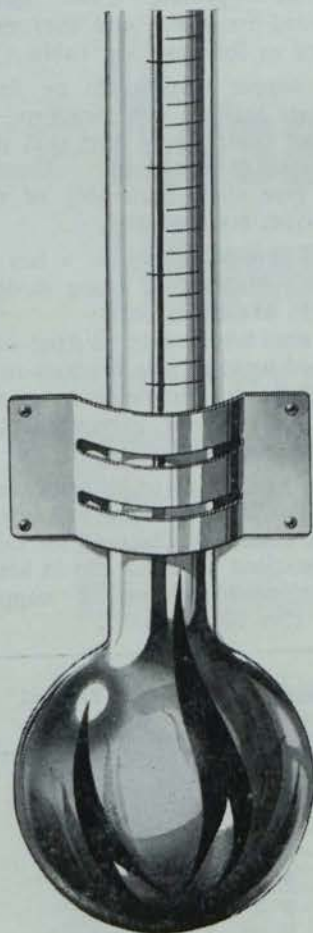
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MR/63/5
Seven

The Irish Plumber and Heating Contractor.



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.

- THE SUPPORT AND FIXING OF WATER SERVICE PIPES.
- THE ARRANGEMENT OF PIPES.

DOMESTIC WATER SUPPLY (contd.)

THIS MONTH: INSTALLATION

REGULATIONS require that pipes shall be fixed so that they have sufficient support to prevent sagging, vibration, or mechanical damage, and in such a way that airlocks, which could diminish or stop the water flow, cannot occur.

Airlocks, as you will remember, happen because air is matter and occupies space. Since no two amounts of water can be in the same space at the same time, it follows that if a pipe is run so that air accumulates at a high point without means of escape, then water will not be able to flow through this "airlock."

Airlocks do not give much trouble in pipes which carry water at supply mains pressure, for this pressure is generally so great that it is able to force the air out of the nearest tap. But if the water is supplied to the taps from a storage cistern inside the building, then the pressure might not be great enough to move the air.

Domestic hot water systems with a boiler and hot store tank or cylinder are always fed from a cold feed cistern inside the building in order that there should be a reserve of water should the mains supply be temporarily shut down.

Authorities

SOME of the authorities insist that all **cold taps** must be fed from a cold storage cistern within the building; all taps, that is, except one which is taken off the rising service main to provide a pure supply of drinking water.

In such cases it is vital that the

plumber should fix the pipes so that air can escape easily and quickly. In the case of hot water systems, all pipes must rise to the air vent pipe, which leaves the top of the cylinder or hot store tank.

Where cold taps are fed with water through distribution pipes from a storage cistern, pipes must rise from the taps to the connection at the cold storage cistern. Air can then rise up these pipes and escape through the water in the cistern. Any accumulation of air in the short risers to bath and basin taps will quickly vent itself as soon as the taps are opened.

PIPE FIXINGS.

If pipes are not sufficiently supported or fixed, mechanical damage may occur.

Lead is relatively soft, heavy, and of low tensile strength. If fixing clips are too far apart the lead between them will sag. This will "drag" on the clips, making them cut into and damage the pipe walls.

Ideal

TINNED fixing clips for lead pipes should not be further apart than 2' 0" in the horizontal direction nor

more than 2' 6" in the vertical direction. Wherever possible, continuous support for lead pipes is the ideal. The illustration shows some typical fixings for lead service pipes.

Light gauge copper tubes and **mild steel tubes** are rigid and, to a great extent, self supporting. Fewer fixings are needed for these, and they may be spaced as follows. (See Table A).

L.G. copper tube might be fixed with brass build-in pipe brackets, or something of the same sort that can be screwed to woodwork. Usually copper pipe clips, preferably of the spacer type, are used.

The illustration illustrates a few of the many copper tube fixing devices which are available.

Mild steel tubes could be fixed with galvanised build-in pipe brackets or a similar type for screwing to woodwork. Alternatively, galvanised pipe clips could be used.

Where pipes have to be suspended, for example from a ceiling, galvanised ring-type clips could be used for mild steel tubes, and a similar clip in brass could be used to suspend copper tubes. (See illustration).

TABLE A.

Tube	Nominal Bore	Horizontal spacings	Vertical spacings
Light Gauge Copper.	½"	4' 0"	6' 0"
	¾"	6' 0"	8' 0"
	1"	6' 0"	8' 0"
Mild Steel Tube.	½"	6' 0"	8' 0"
	¾"	8' 0"	10' 0"
	1"	8' 0"	10' 0"

from previous page

POLYTHENE TUBES need much the same care in fixing as do lead pipes, not because polythene is heavy but because of its low mechanical strength and its high co-efficient of expansion. This will cause unsightly sagging or deviation from the straight unless the tube is fixed with clips at intervals not exceeding twelve times the outside diameter of the tube for horizontal runs, and 24 times the outside diameter of the tube for vertical runs. The O.D. of $\frac{1}{2}$ " heavy gauge polythene tube is 0.84 inches. This tube would therefore need clips about 10" on the horizontal, and 1' 8" on the vertical. (See illustration).

Noise transmission

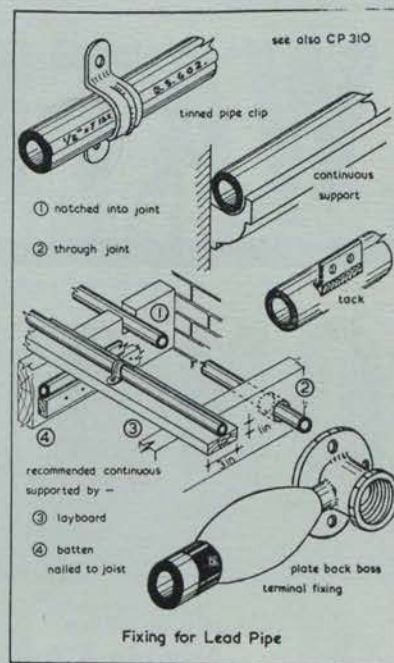
THE rigidity of L.G. copper tubes and mild steel tubes makes them much easier to fix and support than the more flexible lead and polythene pipe materials. Rigid tubes are, however, more liable to carry noise and so copper and steel tubes must be fixed with care in order that annoying transmission of sound may be avoided or reduced as much as possible.

One common source of noise in rigid pipes is the rubbing of tubes against clips or brackets, caused by the movement of thermal expansion. If pipes are not properly supported, they may vibrate at the clips or brackets, and this can also cause a noise.

"**Water Hammer**" is a common source of annoying noise in water pipes. It is that peculiar banging which sometimes occurs in water pipes with startling, and often damaging results. It is generally caused by the sudden stoppage of water flow along a pipe.

Water flowing along a pipe gains a form of energy, or ability to do work. You know that water tissues from a fire hose nozzle with such force of energy that it can knock down brick walls. If water flowing at high speed is suddenly stopped, its newly gained energy will be trapped and will seek an outlet in some form of activity.

When this sudden stoppage of water is caused by a tap being abruptly shut off, the trapped water energy will seek to expand itself by exerting pressure on the pipe walls. The pipes may be made to vibrate vigorously, and



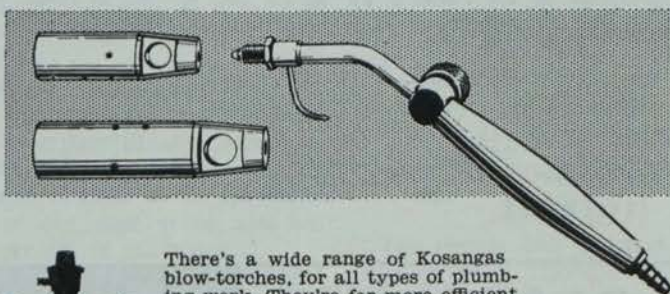
in extreme cases the momentary increase in water pressure might even burst the pipe. The cause and prevention of this will be dealt with in a later issue.

Pipe Protection

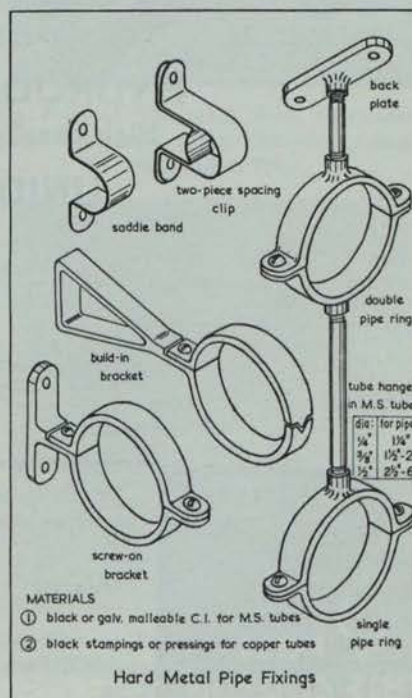
THE Bye-Laws require that pipes buried under the ground shall be reasonably protected from corrosion and risk of mechanical damage.

Continued page twenty-seven

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.



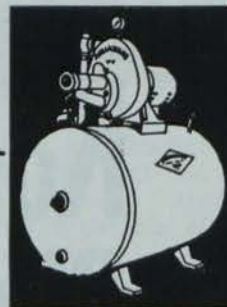
WATER ON TAP

ACT NOW— AND DISCOVER HOW LITTLE IT COSTS!

Aquadare Automatic Pumps are fully automatic and give water more pressure at all outlets. No attention or lubrication required. Satisfaction guaranteed. Hydrodare Polythene tubing is manufactured to B.S. 1972/1953 and is thus approved for all Grant-aided water schemes.



AQUADARE PUMPS HYDRODARE TUBING



Low density Polythene. BS.1972/1953. 500 ft. coils.

HYDRODARE H.D. Classes B, C, & D.

High density Polythene. BS.3284/1961. 500 ft. coils.

UNIDARE HARD P.V.C. PIPE Classes B, C, & D.

Dept. Local Gov. prov. Spec. June '58. 2" to 6".

bring it home to you!

Without obligation, please send me illustrated Brochure/Price Lists on Aquadare Pumps, Hydrodare Tubing.

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MALAHIDE INSTALLATION

GENERATES GREAT INTEREST

THE system of Warm Air Perimeter Heating incorporating continuous air circulation, by which the new houses at Yellow Walls, Malahide, are heated is considered by authoritative heating engineers to be among the most efficient and economical forms of heating available to-day. While comparatively new on this side of the Atlantic it has been in use in America and Canada for many years.

BY

A Contractor Reporter

It is interesting to note that 90% of the new buildings erected in these countries during the past 16 years have incorporated this form of central heating.

The theory of perimeter heating is to replace the heat that is lost at the point where it is lost, as fast as it is lost. To do this, air is warmed by the oil-fired furnace and passed through mild steel ducting and released through registers positioned where the heat loss is greatest, e.g., windows, doors, etc. These registers incorporate veins which give the warm air a fan-like pattern, thus blanketing the outer walls of the building with a curtain of warm air. These registers may be positioned at either floor or ceiling level delivering the warm air at predetermined velocity and volume.

Air Returns

The air returns to the heater through a grille or grilles usually placed at floor level, passing through a filter which removes most of the air-borne particles of dirt, dust, grime, and lint that are present in the house.

After being cleaned the air returns through this oil fired furnace and back through the ducts to the registers. Even with all windows and doors closed this continuous air circulation will give two and a half changes per hour.

The degree of heat is controlled by a thermostat which is placed in the

WARM AIR PERIMETER HEATING

living room. Individual control of each room can be had by adjusting of the registers. The heater itself is fitted with the famous Kresky burner and is ignited electrically. The humidity may be controlled by the fitting of a humidifier, but such a step is rarely necessary in this climate.

Ventilation

A further advantage of the system is that the unit may be used in summertime to ventilate the house.

The efficiency of the system may be judged from the following data:—

- (1) Floor surface temperatures can be maintained at up to 70° F. + 2° in all usable areas.
- (2) Temperature gradients from floor to sitting level (30") can be maintained at less than 2° F.
- (3) Temperature gradients from floor to ceiling level can be maintained at less than 8° F.
- (4) Floor and air temperature variations from outside wall areas to centre of rooms can be maintained at less than 2° F.
- (5) Temperature variations between rooms can be maintained at less than 3° F.

Design

The system was designed and supplied by W. J. Thompson Ltd., Heating Engineers, Shortcastle, Mallow.

Installation was by Messrs. J. H. Jones & Sons Ltd., heating engineers, St. Brigids, Clonskeagh, Dublin.

Irish Shell & B.P. Limited were instrumental in the adoption of this type of heating at the Yellow Walls Estate.



● This picture, taken on the site at Malahide, shows part of the main duct being laid in concrete slab with Aeroboard insulation.



● Part of the main duct (insulated) with branch pipes running under suspended floor.



● This is another view of duct run with side take offs. (See also pictures on Page Thirty-four).

The Irish Plumber and Heating Contractor.

ONE type of polyethylene, made by the Ziegler low pressure process, is more rigid than the conventional material and can be installed in situations where the flexibility of normal polythene would be a disadvantage. It is also rather stronger and can be used for the pressures quoted for heavy gauge pipe. The tensile strength at 73°C. is approximately 2,700lb./sq. in., compared with 14000 lb./sq. in. for ordinary polythene tubes to B.S. 1972. It may be continuously used at temperatures of up to 50°C. (120°F.), and for short periods at temperatures up to 100°C. (212°F.). Like ordinary polythene, it is resistant to acids, alkalis, and most chemicals, and it is quite unaffected by corrosive waters and soils. It is not recommended, however, for use with hydrocarbons.

High density polythene tubes are made in diameters from 1/4 in. to 12 in. They are supplied in the form of coils or in straight lengths, depending on their diameter, on the way in which the tube is to be used and, to a certain extent, on the position in which it is to be fixed. For example, in positions where it matters that the tube should be neat, straight lengths would be used.

Coiled Piping

COILED piping should be fixed in the way described earlier. It is better to support the pipe along its entire length with a plain or moulded batten. If this is not possible, standard pipe clips should be used. Because the pipe is more rigid than that referred to in B.S. 1972, the clips can be spaced at double the intervals recommended there.

This type is not heated sufficiently by being immersed in boiling water to

Continued opposite page

High density Polythene

Typical Properties of High Density Polythene

		Test method
Melt index	0.02 g/10 min	B.S. 1973: 1953
Specific gravity	0.95	
Yield stress (10 in/min)	3200 lb/sq in	B.S. 903: 1950
Ultimate stress (10 in/min)	> 5000 lb/sq in	"
Elongation at yield (10 in/min)	25%	"
Ultimate elongation	> 800%	"
Modulus of elasticity	0°C	} Calculated from elongation after loading time of 10 s
	25°C	
	50°C	
	75°C	
	100°C	
Impact strength (Izod)	3.2 ft lb/in notch	B.S. 903: 1950
Brittleness temperature	Below -70°C	
Hardness	70	Shore D
Taber abrasion resistance	10 mg/100 rev	
Vicat softening point	124°C	
Softening temperature (30° deflection)	110°C	B.S. 1493: 1948
	(60° deflection) 124°C	
Specific heat (solid)	0.59 cal/g/°C	
Thermal conductivity (solid)	0.25 K cal/m²/h/°C	
Coefficient of linear expansion	1.2 × 10⁻³ cm/cm/°C	
Volume resistivity	> 10¹⁶ ohm cm	ASTM D257-54T
Dielectric constant	2.35	ASTM D150-47T
Power factor 10⁶ c.p.s.	5 × 10⁻³	ASTM D150-47T

PLASTICS IN PLUMBING

3

W. J. WOOLGAR
 F.R.S.H., A.M.I.P.H.E., F.I.O.P., R.P.,
 a former lecturer in charge of sanitation and plumbing courses at the Northern Polytechnic.

PLASTICS

from previous page

allow metal sleeves for compression joints to be inserted. It should therefore be carefully heated with a blow-lamp.

As has already been said, due allowance must be made for the material's high coefficient of expansion. For this reason, the tube should not be fixed in contact with hot and cold pipes and surfaces where this can be avoided. Also, expansion joints must be inserted wherever necessary.

It should be remembered that although high density polythene is more rigid and hard than low density polythene, it is no more brittle, and will remain pliable at temperatures below freezing point.

High density polythene pipe is bent by the methods described for normal polythene pipe but the rigidity of the tube means that acute bends cannot be formed while the material is cold. The minimum radius at which bends can be made while the polythene is cold should be not less than from ten to twelve times the external diameter of the tube. When the pipe is heated,



AT MALAHIDE SHOWING OF NEW HEATING INSTALLATION

Pictured at the recent reception given in conjunction with Irish Shell and B.P. by Dermot Moore to mark the opening of their show house at Yellow Walls Estate, Malahide, were (from left): Mr. John McSweeney, Mr. Jack Jones, Mr. Basil Carr (Irish Shell), and Mr. V. Aubrey Thompson. The new houses feature warm air perimeter heating. A full report appears on page eleven.

bends to a radius of six times the external diameter can be made.

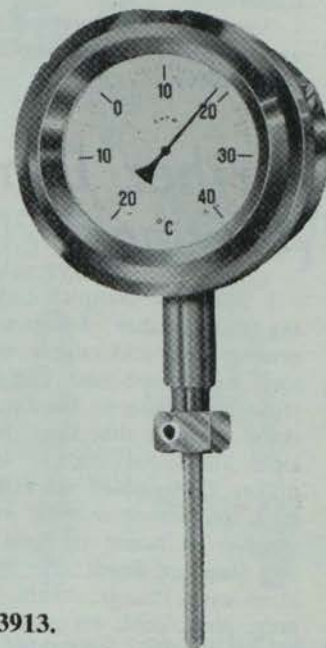
Methods of jointing high density polythene tube are very much on the same lines as those for ordinary polythene, and include the fusion or heat

welding process, polythene and metal compression fittings, and threaded joints. Combined threading and special welding techniques are sometimes recommended for 3-in., 4-in., and 6-in. tubes.



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NORTHERN
FROM
ALLEN MCDOWELL
NOTES

DEATH OF WELL-KNOWN TRADE FIGURE

WE are sorry to have to record the death of Mr. David Walker Grainger, owner and director of the firm of Andrew Grainger & Son, Donaghadee, Co. Down.

Besides being well known in the plumbing and heating trade he also had distinction of being an inventor of considerable note.

Probably his most successful invention was the "Delta-wing" patent back boiler, an idea bought and still marketed by the Rother Boiler Co., Ltd., England. Designed for strength and efficiency, the "Delta-wing" is unique in that it can be fixed without removing the tile surround and has no less than five contacts with the fire.

Among Mr. Grainger's other accepted prototypes was the "Dual" block boiler as well as many clips and ramps used in Meccano, Hornby and Dublo construction sets.

Aged 56, he is survived by his wife and son, David, at present in the Merchant Navy.

* * *

Further Dimplex Advances

I SEE that Dimplex Ltd. are making still further advances in their pressed steel and copper water radiator line. Last year they introduced stove enameling to the range and the latest news is that they have added eight additional sizes. In all this makes 25 standard sizes in nine colours to harmonize with any decor—whether at home or "on location." The standard finish is in bronze while at no extra charge, cream, white, light grey, pink, gold, turquoise blue, eaudenil or red is available.

The manufacturers stress the fact

that the pressed steel radiators are only intended for use on an indirect system. "They should never be connected direct to a domestic hot water system. The reason for this is that there are corrosive elements present in most hot water supplies which, if continually re-introduced into the circuit (as in a direct system) could damage the radiator."

The units are also suitable for double banking—a boon where space is restricted. All air tested under water to 50lbs. per square inch; the recommended working pressure is 50 feet head.

An attractive little booklet (D.W. 340) illustrating and suggesting the uses of the system, is available from the Northern Ireland agents, B. J. Caraher (Distributors) Ltd., Alfred Street, Belfast. Agents in the South are A. Bell & Sons, of Glasnevin.

* * *

New Plumbers' Officers

Mr. W. JEFFERSON (Wm. Coates & Son) was elected President of the Northern Ireland Master Plumbers' Association at the annual meeting in the International Hotel, Belfast, in succession to Mr. G. M. Kennedy. He was invested with his chain of office by Ald. W. J. Lawther. Messrs. J. A. Willis (Willis Heating and Plumbing) and R. J. Brennan (Wm. Brennan & Sons) were elected vice-chairmen, and Ald. Lawther was re-elected honorary treasurer. The Committee elected were Messrs. G. M. Kennedy, W. N. Allen, J. Cumming, J. Johnston, M. H. Boyce and F. Watson.

* * *

Bathroom Plumbing

A NEW and revolutionary idea in bathroom plumbing is now available in the North. It is the Broadstone Ballvalve and according to reports is designed to give improved performance on existing types on the market.

One point on which the new valve should have a consumer appeal is its quietness of action. Near enough silent to make no difference, the Broadstone ballvalve has nylon seating and jumper for long wear while the whole unit is detachable for easy



● The late Mr. David Walker Grainger
(see column one).

maintenance—without depriving the household of water. The seatings are also interchangeable so that the valve can be converted to high, medium or low pressure.

There are other features incorporated, all fully patented and accepted by the B.W.A. Leading water authorities throughout Britain have also taken to the idea.

Manufactured by the Broadstone Ballvalve Co. Ltd., of Birmingham, the unit is available through the Northern Irish agents, Stevenson & Turner, West St. and Millfield, Belfast.

Letter to the Editor

Sir—Having read your excellent article on the pump circulating system (April issue) I must, however, take issue on one point made, namely, that he states 'in selecting a pump, having done the necessary calculations and discovered the head and quantity of water required, an additional 20 per cent should be added to the calculated pump duty'.

This is totally and absolutely incorrect as the figures for the different resistances include allowances for rougher surfaced pipes and fittings than are now generally used and, if anything, the figures obtained will be fractionally more than the duty actually required.

If the pump makers' pumps produce what their literature states, there is no requirement for an additional 20 per cent and, in fact, this is extremely liable to produce water noise due to increased flow velocities through the pipes.

Hearty congratulations on an otherwise excellent article.

Yours faithfully,
W. L. G. Nicoll,
Rotherhams Ltd.

CESSPOOL SUPERNATANT WATER

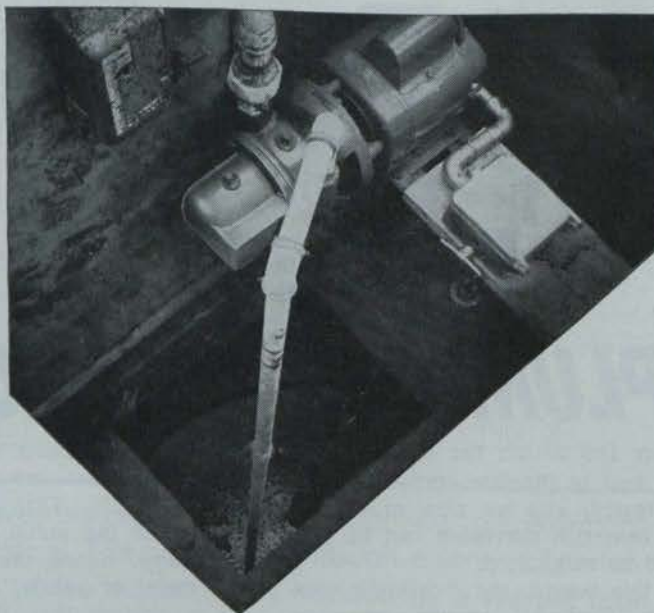
Because of its trouble-free performance and simple operation, the 'M' Mono Pump is a popular unit for small installations handling cesspool supernatant water. Offensive operating tasks are eliminated by reason of its single rotating part and the fact that it will operate without attention for long periods. There are no valves or glands to adjust. The unit is ideal for automatic control and its compact dimensions assist installation in any small garden structure or outhouse. The pump is moderately priced and the range will amply cover requirements for country houses, licensed premises, small housing estates and caravan sites.

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the
author

John G. Bolton

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

PLUMBING: CORROSION CONTROL

IN my last article the causes likely to lead to pipeline corrosion were investigated, and we now must consider how this corrosion can be prevented or minimised.

In this regard, the "cathodic protection method" against corrosion attack is sometimes recommended. It will be recalled, that in previous articles in this series, it was demonstrated that when two different metals came in contact in the presence of moisture, or were immersed in an acid or salt-water solution, an electric current would be generated and in time would cause one of the metals (the "anode") to be eaten away by the other (the "cathode"). The scientific explanation of this action is very complex, and requires a knowledge of "ion" flow to explain it, but for our purpose, it is sufficient to simplify the corrosive effect to the example above.

From this, it will be evident that if we can arrange for the metal pipe to be the cathode, it will not corrode. This is done by connecting it to another piece of a different metal which then becomes the "sacrificial" away but the metal pipe is unharmed! In other words it is eaten harmed.

This method is often used to protect a metal pipeline where severe corrosive soil conditions exist. For instance, in Scotland, a long distance underground oil pipeline has been successfully protected from corrosion by using this method.

The working technique is as follows:—A metal block—usually of aluminium, magnesium, zinc, or similar "base" metal—is buried in the ground about 8 to 10 feet from the pipeline, and covered with a clinker or breeze surround to provide good electrical contact with the earth. The metal block is then connected by an insulated cable to the pipe, so that

any electrical currents which are generated will flow through the metal block to earth. This action will, in time, cause the metal block to corrode away, hence the term "sacrificial metal or anode." (Fig. 1).

It is obvious that the block will have to be renewed from time to time—depending on the electrical flow generated. In this respect, it is usual to use about 6 to 12 anode blocks per mile under average conditions for a main of 3" dia. or so, but soil conditions and other factors relating to the electrical build-up must be taken into account when deciding on the exact number required. It is important to remember that, with this method, it is the outside of the underground pipe that is protected; the interior surface is still open to pitting and other corrosive effects arising from the liquid flowing through the pipeline.

To avoid the necessity for regular re-placing of the anode blocks, permanent, non-corrodible anodes can be fitted, but then an electric current (D.C.) has to be provided from an external source through a transformer and rectifier. The negative side of the D.C. supply is connected to the pipe line, and the positive to an electrode (carbon rod, etc.) buried in the earth—a clay-breeze surround is excellent as a covering. This electrical circuit results in the soil having a higher potential than the pipe, and so corrosion is minimised or prevented. (Fig. 2).

Before considering the "cathodic protection method," an electrical survey of the ground is called for, otherwise more harm than good may result. It could happen that the pipeline would corrode faster if a reversal of current should take place through a faulty installation—again, it might also happen that, while protecting one pipe, stray currents would flow to neigh-

bouring installations, thereby causing further electrolytic corrosion. It is of interest to note that cathodic protection is sometimes used for the protection of water tanks and cisterns under conditions where corrosion is severe. The usual procedure is to hang a magnesium or zinc anode in the tank.

ANTI-CORROSIVE PIPE

WRAPPINGS

A short walk through any city street where excavations are in progress will soon convince one of the vast improvement in pipe protection methods.

On one hand can be seen the rusty, corroded, water and gas pipes—some a mere shell of their former selves, and on the other hand, the new pipes being installed are pre-coated with a heavy bitumen layer and each socket or screwed joint covered with an open weave cotton tape, impregnated and coated on both sides with a neutral compound based on petrolatum. A well known tape of this type is the "Denso." With this is supplied a special paste which is first applied to the pipe to act as a primer and to displace moisture. The tape is then wrapped around the joint or pipe surface keeping a firm tension and with an overlap of at least $\frac{1}{2}$ " on each successive spiral.

It is recommended that the width of the tape should not exceed the diameter of the pipe being wrapped. When finished, the whole wrapping should then be smoothed over by hand with special care at joints or flanges to prevent ingress of moisture.

Other forms of tapes on the market are the pressure-sensitive adhesive P.V.C. tapes. These depend for their success on being applied to a dry grease-free surface, and for that

from previous page

reason are generally applied to newly manufactured pipes only. Where large numbers of pipe-lines have to be protected by taping, special wrapping machines are available to speed the work.

NON-FERROUS CORROSION

UP to this point, we have been dealing with iron and steel pipes, but it is often overlooked that corrosion can just as easily occur to copper, brass, aluminium and lead pipes. In the case of copper—especially on new work—a green staining is often reported on wash-basins, baths, etc., just under the taps.

This is due to small particles of the copper tube being absorbed by the water, and later deposited on the bath, etc., as a blue-green copper salt. In most cases, the trouble ends after a few months when a protective skin forms inside the copper tube, but, as happened in some districts in Dublin a few years ago, it may reach serious proportions, with the pipe completely choking up with a green salt formation.

In the case mentioned, the trouble was traced to the use of copper tube in which carbon pick-up had occurred during manufacture—the lubrication of the dies during drawing was, I believe, the cause. This problem is now a thing of the past with the adoption of cleaning procedures by the manufacturers to ensure that any corrosive elements are removed before dispatch, but with older copper tubes already in service, cases may now and then still come to light.

I'm sure we all, at some time or other, have experienced the failure of the household aluminium kettle through a small hole or pit forming in the base! Well, this again, can be traced in many cases to the presence of copper particles in the household water supply. In fact, it only needs a minute pick-up—too small even to produce staining—to cause the trouble, and is, of course, a clear example of galvanic action between dissimilar metals.

CONDENSE CORROSION IN

STEAM SYSTEMS

THIS is mostly confined to the condense return pipes, and if it occurs, is usually of a severe nature gougeing of the pipe walls. It is due to the release of highly corrosive

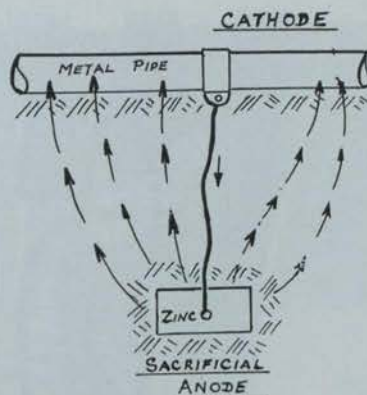


FIG. 1

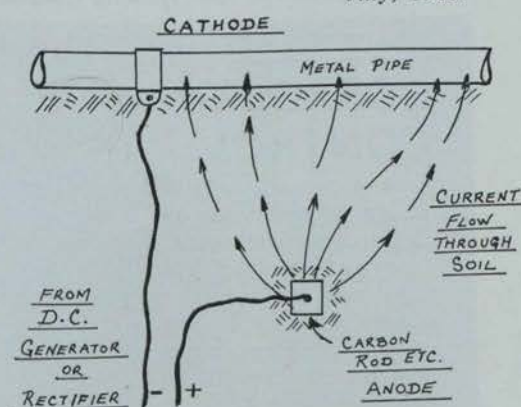


FIG. 2

THE way we make heating and cooling coils is unconventional. The tubes pass through a series of perforated plates mechanically bonded by a special tube expansion process. Result—a perfect metal to metal contact that no amount of expansion or contraction can affect. Also, a more than usually efficient and uniform distribution of heat from a more durable unit. The choice of tube metal, of size and capacity, is up to you. There is, of course, a standard range and it is a very extensive one. For details please write or 'phone any of the addresses below, Dept. 1P3.

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The Irish Plumber and Heating Contractor.

from previous page

CORROSION CONTROL

gases, such as dissolved carbon dioxide and oxygen, from the condensate. This trouble will occur with almost any type of metal pipe, mild steel, galvanised steel, and copper being equally attacked by the acid nature of the condense water, particularly if it should stagnate through a sluggish flow or dip in the condense return line. Pre-treatment of the boiler-feed water will help to prevent acid conditions arising, and indeed, this is a subject on which much development work has been carried out in recent years.

With steam or hot water pipes, and indeed cold water pipes, another form of corrosion, or more correctly, "erosion," sometimes occurs. It is termed "wire drawing" and results from a high velocity flow of the steam or water at the point where it passes through an obstruction or valve on the pipe-line.

IMPINGEMENT ATTACK

THIS, again, is the result of fast flowing water in a pipeline having to suddenly change direction—for instance, at an elbow—or, in the case of a heating system, where circulation speed is excessive through the use of an over-large pump. The turbulence caused in this way allows gas oxygenated bubbles to hit or "impinge" continuously on the pipe wall, and so gradually gouge out channels of a semi-circular or spiral shape, which, in time, becomes so deep as to penetrate the pipe wall. In order to prevent this type of trouble, the use of sharp elbows or offsets should be avoided. Likewise, excessive pump speeds should be reduced, so as to allow the water to flow easily without turbulence.

In conclusion, it is obvious that we have only touched the fringe of the many and varied corrosion problems encountered in plumbing and heating work. It will be noted that such common forms as lead corroding in contact with oak roofing timber, copper turning green on exposure to the air, etc., were not mentioned, as they are quite familiar problems to those in the trade, but it is hoped that some insight was given as to the many difficulties likely to arise in our efforts to minimise or prevent the corrosion problems of our everyday work.

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MANY NEW PRODUCTS

SEEN ON TRADE STANDS

WITH the 1963 Directory of Manufacturers, Agents and Representatives occupying the June issue, this picture report of the R.D.S. Spring Show has been held over until now.

FIRST COLUMN (from top): at the Mono Pumps Ltd. Stand are (from left): G. F. Farrell, Technical Rep., Mono Ltd.; J. Mooney, Ballingarry Collieries; J. Fay; P. Mooney, Woodroffe Estate, Clonmel.

At the Auto-Combustion stand was J. Fogarty, B.E., Technical Sales Manager, with the Wade-Mini pump. The Sanbra-Fyffe Ltd. stand: pic-

tured are P. F. McDonagh and Brendan C. Byrne. On the stand was shown a standard plumbing installation with back-boiler water heating but with slipper bath and shower.

CENTRE COLUMN (from top): At the Stewart & Lloyd stand were T. P. Gibbons, Technical Rep., Plastics, and E. Howard, exhibition staff.

At the Asbestos Cement Ltd. stand were Mr. J. Leeson and Mr. W. Keyes, with the Astolite roof sheeting exhibition.

At the H. R. Holfeld Ltd. stand Mr. Donal McGonnell (right) deals with an inquiry.

THIRD COLUMN (from top): At the Weldryte Ltd. stand were (from left): Gordon Brickenden, Managing Director; Vincent Hendley; David C. Mercier, Mercier Sales (Ireland).

At the Wavin Pipes Stand are (left): S. A. Kennedy, demonstrator, and F. Mulvin.

Our final picture shows the Colt Ventilation and Heating Ltd. stand.

Also seen at the show was a demonstration of practical training of building trade apprentices which featured apprentices' work from the Plumbing Department of the College of Technology, Bolton St.

The Irish Plumber and Heating Contractor.

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CONDITIONING, REFRIGERATION

AIR CONDITIONS FOR FACTORY, OFFICE, HOME

DOMESTIC refrigerators, once a status symbol possessed by few, are now recognised as essential items of universal kitchen equipment.

Central heating, also a status symbol not so very long ago, is well within the reach of all, and many homes are being generally improved by a new heating installation of one kind or another. It becomes a real selling point for new houses, and so, before very long, this too will be universally accepted as an essential aid to modern living.

Yet, creative comfort and welcome as warmth is, is it not strange that this attracts more attention at present than does the purity of the air we breathe—and what is more important to living than clean, life sustaining air.

Air Conditioning.—True air conditioning involves equipment which will clean air, temper its humidity to within fine limits, warm or cool air according to season or purpose of the installation and, finally, distribute the conditioned air to where it will be most advantageously used.

Such equipment is not new, it has been extensively used in larger buildings of all kinds for many years, and a list of manufacturers and variations on the basic items of equipment would fill volumes. What is new, is a growing awareness of the real need for conditioning, either full or in part, of the air circulated in the humbler confines—the home and the office.

Cleanliness of air has psychological as well as physiological significance. Dirt laden air can depress the senses as well as irritate the mucous membranes of the nose and throat. Dirt

laden air, its obvious pathogenic dangers apart, can obscure vision and lead to eye strain.

Dirt and dust is an enemy of hygiene—and the housewife who perpetually wields a duster in ineffectual battle against it.

Fumes clearly indicate unclean air in another form. Tobacco fumes, cooking smells, body odours, all these add to the enervating effect of some laden atmosphere, be they in vast auditoria or in the front parlour of the meanest home.

Filtration can take care of dirty air and ensure that only clean air passes on. Filters can be of the simple "throw away" type in absorbent paper; washable, as in the viscous oil coated types; or electrostatic, which is something really of this day and age.

Air distribution has an important bearing on comfort conditions, whether it be in factory, shop, office or home. Distribution must be adequate to ensure complete infiltration to all parts, yet not too fast or draughts will be complained of. Considerable "know-how" in distribution duct design and register placings are essential to good distribution in large schemes. Distribution in domestic warm air heating jobs demands every bit as much care, if not so much design skill.

Since ventilation is a very subjective sensation—no two people will generally agree at one situation that the ventilation is just right. It will be right for one but not so for the other. Adjustable register outlets are therefore helpful, especially in domestic

work, so that the householder can at least endeavour to make some local adjustment to suit the majority of his household.

Humidity is another important factor in true air conditioning. It is a factor seldom considered in space heating—possibly because it has, in the past, demanded such complicated equipment to control it. The moisture content of air—that's what humidity is—affects one's reaction to warmth, or lack of warmth. In relative humidities of about 50% natural evaporative losses by perspiration from body surfaces will help to keep one cool in an otherwise over-warm atmosphere. If the humidity increases then evaporation rate falls off and, since it cannot then lose heat so fast, the body overheats and a decided feeling of discomfort results.

One of the most recent developments in full air conditioning, and a most welcome one, is the small unit conditioner suitable to deal with the air in one room only. These, in neat cabinet style, will accept outside air, filter it, warm or cool it according to need, humidity or de-humidity, again according to need, and distribute the conditioned air throughout the room.

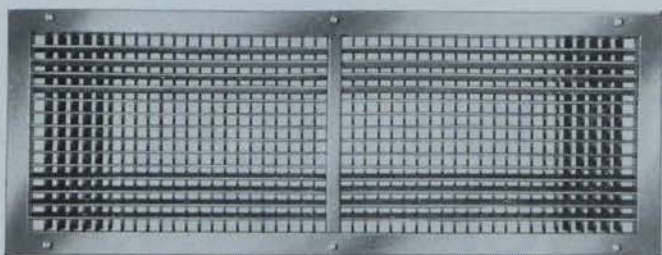
This is indeed the status symbol of to-day. Moreover, it becomes increasingly used as more and more people come to realise the availability of these small but highly efficient items of modern home and office equipment.

Temperature of air is something which everyone understands and the relative ease with which air can be

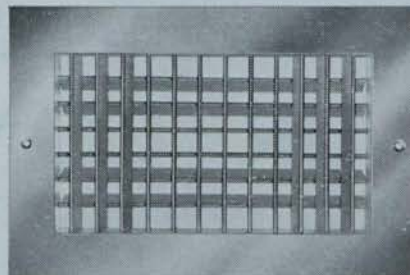
Continued page twenty-three

GREENWOOD'S 'LLOYDAIRE' REGISTERS AND GRILLES

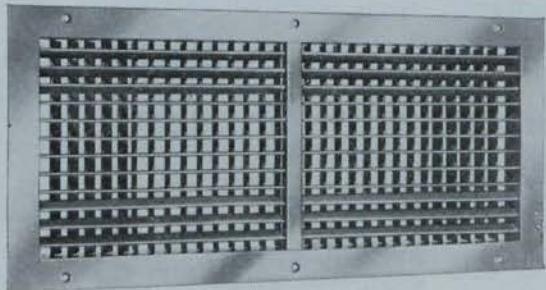
EXTRUDED ALUMINIUM — CLEAR LACQUER FINISH



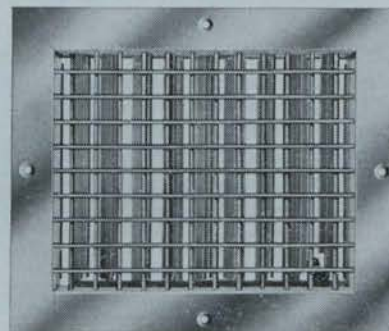
L.55 36" x 12" Double-deflection supply grille—horizontal face blades and vertical rear blades.



L.64 12" x 6" Double-deflection supply grille—vertical face blades and horizontal rear blades.



L.55 24" x 10" Double-deflection supply grille—horizontal face blades and vertical rear blades.



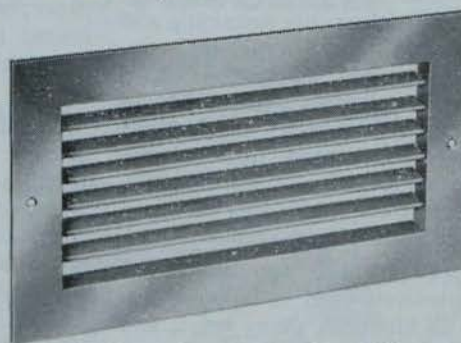
L.557 12" x 10" Double-deflection supply register — horizontal face blades, vertical rear blades—opposed blade damper.

"Greenwood's Lloydair" Registers and Grilles provide a highly flexible means of air distribution for modern heating and air conditioning schemes in commercial and industrial buildings.

Supplied as standard in brushed extruded aluminium with clear lacquer coated finish, "Greenwood's Lloydair" Registers and Grilles are available in a fully comprehensive range of sizes and arrangements to suit current architectural and engineering specifications.

Combining elegance with efficiency, they are light, robust and strongly resistant to corrosion.

Write today for literature on Greenwood's "Lloydair" range of Registers and Grilles.



L.70 12" x 6" Return Air Grille—horizontal face blades set straight.

Greenwood Airvac ventilation

GREENWOOD'S AND AIRVAC VENTILATING COMPANY LTD
ESTABLISHED 1879

PATENTEES, DESIGNERS AND MANUFACTURERS OF
NATURAL AND MECHANICAL VENTILATING EQUIPMENT



BEACON HOUSE, KINGSWAY, LONDON, W.C.2.
CHANCERY 8135 (4 lines). 'Grams: 'AIRVAC', LONDON

Agents and Distributors for Registers & Grilles

TECHNICAL SALES COMPANY 79 Lower Leeson Street, Dublin. Telephone: 61662.



This special survey—another in a series on important aspects of the plumbing and heating trades—has been compiled by technical expert A. L. Townsend, M.R.S.H., M.I.P.

from page twenty-one

warmed and distributed throughout a room or space, has really caught the public imagination.

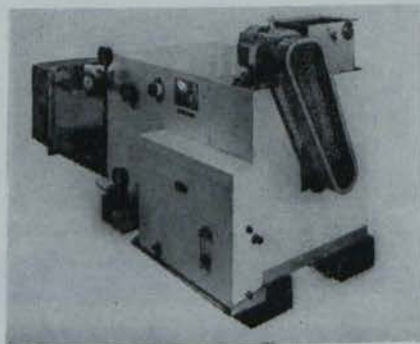
Its flexibility in use, response to control, and because of this, the economy of warm air heating, has given tremendous impetus to this branch of the domestic heating field. Such work cannot be regarded as full air conditioning but in most cases it takes

SINCE it was shown at the H.E.V.A.C. exhibition in London, last year, the Sirocco Dry Air Conditioning Unit, by Davidson of Belfast, has attracted wide interest among hospital engineers.

The unit, now in quantity production at the Company's Belfast works, is designed primarily for use in hospital operating theatres to meet the demand for full scale air conditioning without the use of water sprays and tank, which, under certain conditions, can become liable to bacterial contamination. It can also be applied to general industrial use.

The new unit provides full scale air conditioning, the air being filtered, cooled, heated, humidified, or de-humidified, and special care has been taken to prevent the infiltration of untreated or contaminated air.

In the humidity section, fresh steam, at about atmospheric pressure, is introduced into the fan eye via a



The Sirocco Dry Air Conditioning Unit

care of temperature movement of air. Many packaged units now contain filters so that cleanliness of air is dealt with too. Humidity control is not so easily arranged but, as previously mentioned, this too is provided now in portable units, so that no home or office, pub-cellar, meeting room, need suffer the vagaries of unpredictable, dirt laden air of our natural climate.

In conjunction with this special survey we review products from the leading ranges.

All claims made are those of the manufacturers.

short tube led from the "Calomax" steam generator fitted external to the unit. The generator has a chamber in which is housed a water-submerged steam coil, producing the low pressure fresh steam, and is directly connected to a small water reservoir fitted with a regulating ball-cock and water level sight glass.

The standard unit is fitted with a fresh steam generator and finned tube heater, both designed to operate on steam. Alternatively, both sections can be arranged to utilise electric supply or high pressure hot water.

The cooler, or de-humidifier, is similarly versatile in design, using either a chilled water coil, or direct expansion chilling coil, according to specification.

Typical duty for single operating theatre. 2,500 c.f.m. 100 lb./hour steam evaporated. Maintained theatre conditions 70 degrees F, dry-bulb and 60% RH.

The new unit is produced in four standard sizes. Special sizes can be supplied to meet specific requirements.

* * *

MESSRS. MARELLI Aerotechnica, Milan, have had a long experience in the field of air conditioning and their products have been used on many im-

portant installations in various parts of the world. Air conditioning is good, it is good business too. Why not look up a few addresses of manufacturers—the June issue, with its Directory of Manufacturers, will be a great help to you here—and send off for some instructive literature. In this way you can prepare to lead the field. Get in there, and condition your clients to air conditioning—before some competitor does so.

The heart of each Marelli humidifier is the patented centrifugal atomizer. It is electric motor driven and develops a very fine water vapour without heat or pressure other than that generated by centrifugal force. The atomizer is carefully balanced for quiet, dependable, continuous performance. This one moving part assembly rests in a small reservoir which includes float type water regulator ready for ¼" feed line and occasionally an overflow connection. All humidifiers are supplied for 220 V, 50 cycles, 1 phase, A.C. A humidostat—available as an accessory—will provide automatic operation to maintain any desirable room condition.

Irish agent: Mr. L. J. Keogh, 6 Herbert Place, Dublin 2.

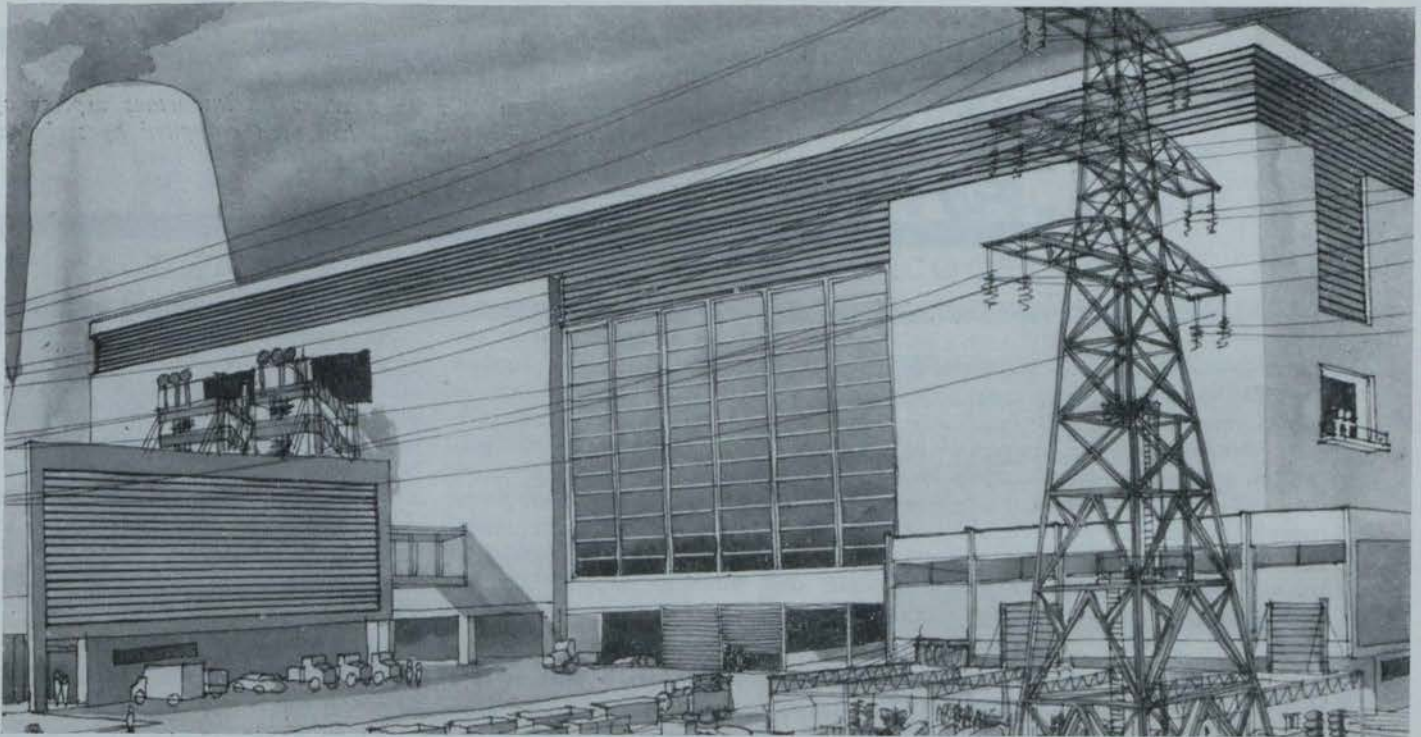
* * *

SINCE ITS introduction to the market the Negative Ions/ozone unit, a product of Tack Industries Ltd., London, has attracted considerable attention. These Nu Aire conditioners reduce infection risks, kill odours and eliminate lethargy. Models are the Alpine (capacity 7,000-30,000 c.u. feet), Everest (capacity 3,500-15,000 c.u. feet), Snowdon (capacity up to 3,000 cubic feet), and Cotswold (capacity up to 1,500 cubic feet), all according to conditions.

Irish agent: Pan-Aer Sales Ltd., 12 Lr. Mount St., Dublin.

Continued overleaf

Twenty-three



PRODUCT REVIEW

from previous page

SINCE ITS introduction at the 1961 H.E.V.A.C. Exhibition the Directional Grille, with differential air control for ventilation and air conditioning plants, produced by Supervents Ltd., has been taking a prominent place with consulting engineers.

The differential air controller comprises a series of tamper-proof V-shaped vanes. These control uneven flow of air and direct it in the correct proportions to the louvres of the grille to produce the desired speed and direction of the air entering the ventilated space.

A range of models is available with double or single way deflecting louvres spaced to suit industrial, commercial or residential applications. In addition, single or double deflection grilles with fixed front vanes are produced. The company also manufactures many types of ventilating units.

Irish agents: Celtic Engineering Co., Ltd., 25 Great Strand St., Dublin.

* * *

WATERLOO GRILLES and registers are attractively designed and supplied with various border styles, fixings and finishes. A range of aluminium domestic grilles and registers has been introduced to meet demand for higher class domestic products at a competitive price. Directional ceiling diff-

Twenty-four

users manufactured from aluminium extrusion to match grilles are now available. Diffusers whose cores are interchangeable lend themselves to use with mobile office partitioning and convenient ceiling positioning without loss of efficiency. Waterloo grilles have been used extensively in the new Clyde Tunnel.

Irish agent: Peter MacFarlane & Son, Ltd., 23/27 Cupar St., Belfast 13.

* * *

GREENWOODS Patent "Difusex" wall ventilators provide continuously a draughtless, diffused supply of fresh air. They are manufactured in four types, two without shutters, Types D.H.1 and D.H.3., and two with shutters, Types D.H.2 and D.H.4, in order that the degree of ventilation may be regulated to suit individual needs. They all feature deflector-baffle plates, which in conjunction with the grille front apertures softly diffuse incoming air, besides screening these apertures to ensure privacy and checking the entry of dust. Several other types of ventilators are also produced.

Irish agents: Technical Sales Co., 79 Lower Leeson St., Dublin.

* * *

THE BIDDLE Dehumidifier defeats conditions even in very bad cases of dampness, bad ventilation and high humidity. A portable unit,

Continued opposite page

NEW LOUVRE DEVELOPMENT FROM COLT

THE PURPOSE of the new Colt Continuous Horizontal Louvre is to give the architect complete freedom in his treatment of the wall-fascia, for it releases him from the limitation of having to fit wall-openings into his design. The opening for air-inlet or extraction can be sited at the most logical points for economy and then the wall can be treated as one unit, by covering it wholly or partly with Colt Continuous Louvre. The result is a completely weathered opening for air, with the great advantage that the openings are completely screened and so are invisible. Bold treatment with aluminium in this way also gives a building a style that is distinctive and modern. (See picture above).

The Colt Continuous Horizontal Louvre is a fixed louvre with an integral mullion. It is available in 8ft. units which are butt-jointed to form a wall-feature of any length desired by the architect, and by placing the continuous louvres above each other any height of cladding may be obtained.

Irish agent: Mr. F. W. Norman, 5 Newcourt Ave., Bray, Co. Wicklow.

July, 1963.

it is supplied ready to provide an instant and continuous supply of relatively moisture-free air in unventilated spaces of up to 10,000 cubic feet in temperatures from 55° to 90° F. It is housed in a walnut cabinet for domestic use. For industrial application a sturdy steel cabinet may be provided. Two types are available for either single phase A.C. or D.C. supply.

Irish agents: Quadrant Engineers, 167 Strand Road, Sandymount, Dublin; Mr. D. H. Butler, 7 Blackwood Crescent, Helen's Bay, Belfast.

* * *

MIN-EX extractor fans are designed and made in England by Jones & Stevens Ltd. of Littlemore, Oxford. The Mixa Flow offers all the advantages of thoroughly efficient, powerful and positive ventilation with a high degree of versatility and ease of installation. Its performance is quiet, reliable and really powerful. It is designed to facilitate quick, easy cleaning. It can be recommended for various parts of the house, bathrooms, kitchens, living rooms. It has an attractive white finish which blends with any surroundings or decoration scheme. There are other models.

PRODUCT REVIEW

from previous page

Irish agents: Technical Sales Co., 79 Lower Leeson, St., Dublin.

* * *

ROOTES TEMPAIR packaged "5000" air conditioner air or water cooler is a compact unit (only 21" deep) and is acoustically treated throughout for quiet operation.

Its features include:—Double nylon filters (standard)—efficient, easily cleaned and trouble-free. High efficiency frame filters available as optional extra for special applications. Infinitely variable fan speeds from 820 to 12000 r.p.m. facilitate positive matching to air-duct requirements. Alternative condenser fan speeds available for optimum performance in low ambients. Generously rated aluminium-finned, four-bank, staggered copper-tube evaporator coil of more than 5 sq. ft. (0.46 sq. m.) face area. Louvred plenum supplied extra, gives wide-angle air distribution for free-standing employment. Front panel gives complete maintenance access for recessed installations.

Irish agents: L. Sterne & Co. (Ire-

land) Ltd., 2 Hanover St., Dublin; Gambles (Belfast) Ltd., Donegall Ave., Belfast 12.

* * *

THE TERRAIN P.V.C. ventilation system is produced from thin rigid sheets of P.V.C. and is fabricated by using cold solvent welding techniques. This results in efficient installations at a cost comparable with similar installations in metal.

This use of P.V.C. with its lightness, corrosion resistance, reduction of noise or "drumming," reduced friction losses and improved insulation, represents a considerable advance in the techniques of ventilation.

Terrain systems are based on the use of unmodified, unplasticised P.V.C. supplied by I.C.I. From Unidare Ltd., Finglas, Dublin.

* * *

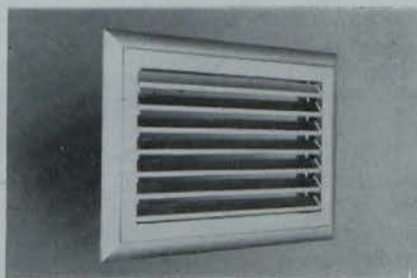
ACE REGISTERS and grilles, made by Air Conditioning and Engineering (N.I.) Ltd., are well known products on the market. Types "H" and "V" grilles form the basis of an attractive and popularly priced range of grilles and registers. They may be used by themselves as simple air supply or extract grilles giving a choice

Continued overleaf

WATERLOO GRILLES, REGISTERS and DIFFUSERS

adjustable supply
return air
airline linear
airline floor
door and no-site
darkroom
domestic warmair
directional diffusers
controls

all aluminium grilles



type RC/3HF

(PATENT NO. 910-912)

Return air grille with
fixed 45 louvres and fitted
into removable core frame.



Waterloo Grille Co. (GREAT BRITAIN) Ltd.

23, Jacob St., London, S.E.1

BERmondsey 2858

The Irish Plumber and Heating Contractor.

of variable planes of deflection but not giving air volume control.

Agents for the Republic: James Hogan, Ltd., 8 Swan Place, Morehampton Road, Donnybrook, Dublin 4.

* * *

WHEN SPACE is a problem air conditioning with the Bahco unit plant saves more than 50 per cent. in space with the added advantage of ceiling, wall or floor fixing. Its unit principle provides for any heating, cooling or humidifying requirement and plants are available from 750-17,000 cubic feet min. capacity. A further advantage is that Bahco unit plants can be ranked together one above the other or dispersed throughout a building as desired. They are made by Bahco Ltd., of London.

Irish agents: Technical Sales Co., 79 Lower Leeson St., Dublin.

* * *

COLT VENTILATION & HEATING Ltd. have added to their mechanical range of fresh air units a new 30" model. The unit is intended primarily for steelworks and chemical plants, where central areas and areas of intense process heat emission are frequently far removed from windows and doors in the external walls, and require a positive means of ensuring a regular supply of fresh

PRODUCT REVIEW

from previous page

air in the working zones.

This new ventilator is fitted with a multi-bladed 30" diameter impeller in integral cast aluminum, direct driven by a 2.5 h.p. induction motor. The fan can be run at two speeds: at 700 r.p.m., when this unit delivers 7,500 cubic ft. of fresh air per minute to the working area, or at 930 r.p.m., when air at the rate of 10,000 c.f.m. is delivery.

Irish agent: Mr. F. W. Norman, 5 Newcourt Ave., Bray, Co. Wicklow.

* * *

THE DECORVENT warm air heating supply grille, a product of R.C.M. (Air Distribution) Ltd., has been designed to meet the requirements of architects, engineers and contractors and to fulfil the need for an economical yet functional unit embodying the characteristics necessary for the simpler and smaller type warm air heating system as applied to domestic heating.

Special consideration has been given to the combination of air volume and directional control embodied in a minimum of housing depth which



from the rear of the fixing flange in the fully open position is only $\frac{1}{8}$ " maximum.

Bearing in mind the limited air pressures available in this type of system the "Decorvent" has been designed to offer the minimum resistance to air flow while retaining the necessary characteristics. The control knob, located on the vertical flange of the grille, is rotated to open up or close off the air supply.

Irish agent: Heatovent Supply Co., 5 Upper Fitzwilliam St., Dublin 2.

PRODUCT REVIEW continued on page thirty-four

'SIROCCO'

The unit has been designed primarily to meet the demand for air conditioning which avoids the use of water sprays and tanks by the use of a patented indirect steam humidifier.

The "Sirocco" Dry Unit provides full scale air conditioning, the air being filtered, cooled, heated, humidified, or dehumidified.

Compact, neat design, overall dimensions (including air filter): 8' 6" long, 4' 0" wide, 4' 6" high, for up to 2,500 c.f.m.—other duties available up to 8,000 c.f.m.

The resources of our Design, Research and Testing Departments are available at all times to advise on the best and most economical approach to customers' individual needs.

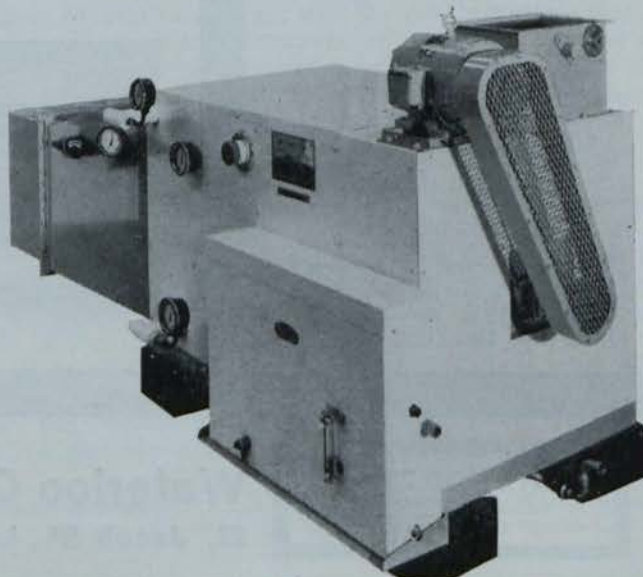


DAVIDSON & CO. LTD.

For complete illustrated literature write to—
Davidson & Company Limited
Sirocco Engineering Works, Belfast, 5,
N. Ireland.

DRYTYPE air conditioning

SPECIAL PURPOSE EQUIPMENT—NOW AVAILABLE FOR GENERAL INDUSTRIAL USE



Precautions against corrosion.—

Corrosion, you will remember, is the destruction of a metal by chemical attack. The rusting of iron in a damp atmosphere is one example of this. Other forms of corrosion include electrolytic corrosion, which has already been mentioned; bacterial corrosion, which is caused by the activities of certain minute organisms found in some soils, particularly clays; and corrosion by chemical compounds, usually acid in nature, which may be found in the soil.

The last form of corrosion is to

from page nine

been embedded in bitumen. A simple trough of boards nailed together to form a "V" is placed beneath the pipe and then filled with hot run bitumen so that the pipe is completely surrounded. This method is rather messy, and its success depends upon the continuity of the bitumen and the absence of cracks through which corrosive water could attack the pipe-line.

Pipes may be wrapped in specially prepared anti-corrosive bandages of protective material. This is very often done since it is a relatively cheap,

the pipe. These could cut holes in the pipe if driven into it by the weight of the soil above. All pipes buried in the ground must be protected against this form of damage with sand, or at least with carefully selected fine soil, which is laid under the pipes and around them to a depth of 6" before the ordinary soil is back-filled in.

Sinking ground, or ground subsidence, could be caused by the natural movement of the earth, or it could be caused by earth settling in a deeper

DOMESTIC WATER SUPPLY

be expected in ground where ashes have been dumped in order to bring up to level. Ashes contain sulphur which dissolves in rainwater, and thus makes a dilute or weak sulphurous acid. It then seeps into the ground. Sulphuric acid is, of course, extremely corrosive and diluted sulphurous acids can be just as effective even though they need longer to take effect.

Lead and copper pipes are more resistant to corrosion than mild steel pipes, and polythene is known to be very resistant to corrosive attack, but all pipes must at all times be protected against corrosion and physical damage.

Wise precaution

It is sometimes suggested that pipes to be buried in corrosive soils should be laid on, and surrounded by 6" of sand. This is all very well, but the acidic ground water could still seep through the sand and attack the pipes.

If it is possible, it is a wise precaution to prepare the pipe trench to a greater depth than is necessary, and fill the bottom 6" with large stones or similar material which will collect ground water and drain it away from the pipe. On the top of this under-drainage of stones, finer stones could be laid, and on the top of these the 6" sand bed for the pipe. When the pipe has been laid and covered with sand, the trench could be filled with limestone chippings. These chippings, being alkaline, would neutralise or cancel out the acidity of any ground water which did stray towards the pipes.

In some severe cases, pipes have

quick and effective way of permanently protecting pipes from corrosive conditions.

Protective wrappings are generally made from hessian or cotton bandages soaked in petroleum jelly. In certain soils, however, where corrosive bacteria are known to exist, then materials are useless since the bacteria will actually feed on them. In such cases the protective wrapping should be specified as being made of glass fibre bandage, since the bacteria cannot thrive on this.

Mechanical damage

CARELESS backfilling of pipe trenches might result in sharp stones or flints falling directly on to

trench running at an angle across the shallower pipe trench. In either case, the subsidence could impose a severe strain on the buried pipe and its joints.

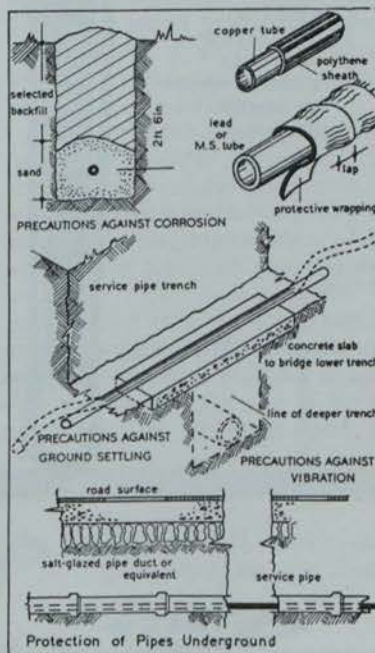
In the first case, where a general settling might be expected, the pipe should be laid on, and surrounded by sand. This will allow the pipe to move slightly and adjust itself to any ground movement. If the pipe is laid not dead straight, but in a series of smooth curves, any strain on the pipe can be taken up by the spare pipe in the curves, and thus accommodated or smoothed out.

In the case of local settling of a lower trench, the easiest answer is to lay a concrete slab to "bridge the gap." The service pipe can then lie over this "bridge" and be fully supported even though the soil below might continue to sink a little.

Pipe damage

SHRINKAGE in clay soil is a common cause of underground pipe damage. Damp clay is, of course, sticky stuff that can be moulded easily. A pipe laid in clay will become moulded into the solidifying clay, which will hold it in a vice-like grip. When clay soil dries out in hot weather, it shrinks. You will have noticed the cracks caused by such shrinkage in summertime. The cracks, often 1" or more across at the top, extend downward into the ground

Continued overleaf



The Irish Plumber and Heating Contractor.

from previous page

WATER SUPPLY

for 5' or 6'. A pipe firmly embedded in the clay will be severely stretched if a clay shrinkage crack runs directly across it.

Many cases of burst underground pipes have been found to have been caused by lack of understanding of the behaviour and extent of clay soil shrinkage. All pipes laid in clay should first be encased in sand, whether they are wrapped against corrosion or not.

Pipes can be damaged by the **vibration on roads** caused by traffic. A form of work-hardening occurs, brought about by the constant "hammering" of the ground under the wheels of heavy traffic.

In severe cases, the service pipes should be threaded through specially laid conduits of stoneware pipes, which will protect the service pipe from the shocks from vibration. The illustration illustrates these various precautions.

Frost Damage

A pipe blocked with ice cannot deliver water. If only for this reason, frost damage is a great nuisance to the householder, and in some circumstances, indeed, the stoppage of the water supply to domestic hot water appliances could be quite dangerous.

When water pipes freeze they almost always burst because of the expansion which occurs when water becomes ice. This expansion is quite irresistible—something has to give. Sometimes the ice formation can expand along the length of the pipe, but this is seldom possible and the whole expansive force is usually directed outwards against the pipe walls. Polythene pipes can stretch to accommodate this pressure, but metal pipes split. When the pipe does burst, no water will pour out at the time because the pipe is full of ice. It is not until the thaw comes and the ice melts that the water will flood out, damaging both building structure and furnishings.

For the time being it is enough to realise the wasteful and damaging effects of frozen pipes; to remember that water pipes can freeze only when exposed to air temperatures of 32° F. or less. (To be continued).



TOOLS WELL ADAPTED TO YOUR JOB

For you, in Ireland, as well as throughout the world, VIRAX proposes a complete range of strong tools making use of the latest techniques.

Your superiority

Your superiority is your skill, but for you, as well as for all specialists, in and throughout the world, it's the satisfaction of having a good tool well adapted to your job, a VIRAX tool.

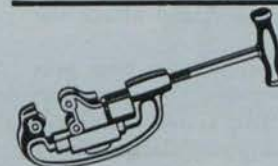
Pipe wrench
Vanalite
in a special alloy
interchangeable
jaws
Extra-light
Much lighter with
the same capacity.
Super capacity
Capacity much
greater with
the same number.
Super resistance
owing to :
the « special »
form of its
patented handle
its treated
steel jaws.



Stillson wrench



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REVIEW OF INSULATION MATERIALS

INSULATION: SOMETHING ALL CAN UNDERSTAND

FUEL costs are high and most of us view with alarm the way in which the cost climbs still higher and higher. Very soon we shall not need to add fuel to the central heating—it will be sufficient to contemplate its cost and then we shall all be quite hot enough—under the collar.

Fuel costs, high as they are, and they will go higher, are here to stay. They are an offshoot of our higher standards of living. We cannot warm our homes without using fuel, and that's that. We cannot eliminate winter fuel bills, or summer hot water bills, but we can, and indeed should in the national as well as personal interest, do all possible to conserve fuel.

Fuel conservation simply means using it wisely and using it well. Good system design is a pre-requisite to successful fuel conservation.

Temperatures will be kept down to reasonable level to reduce standing losses in D.H.W. systems.

Exclusion

Draught exclusion at windows and doors will be rigorously attended to so as to reduce the house warming costs.

Above all, the avoidance of wasteful heat losses must be vigorously pursued. This means sensible use of thermal insulation.

Why allow heat to escape from un-

lagged pipes, cylinders and boilers? Heat costs money and heat saved means hard cash saved.

A cylinder jacket will cost about £4 in good quality material. On average it will save something like 7/- per week in an electrically heated installation maintained all the time at around 140° F.

The advantages, economically, of this £4 investment in thermal insulation is something which every householder can understand.

In fact he will quickly realise that he cannot afford to be without it—if you take the trouble to tell him about it.

Simple example

This is a simple example which so clearly illustrates the remarkable benefits which sound insulation techniques offer. There is no mystery about it, and no great technical skills are needed to take advantage of it.

Just one more simple domestic example. For £10, perhaps less, the entire above ceiling space of a domestic dwelling can be thermally insulated to give an improvement of 500% on the heat retention property of the ceilings. The fuel savings here, strange as it may seem, are not quite so staggering as in the example above, but even so, very reasonable savings can be made and the cost of the work recovered over no more than three

heating seasons—through heat saved. Thereafter it's all savings in the householder's pocket.

Insurance

Insurance?—a grand business—not that we can all get into it, leastways not where the profits are doled out, but we can offer our clients insurance against costly heat losses—simply by selling them the idea of internal insulation.

Have a close look at the advertisements in this issue, and also the list of insulation manufacturers and their Irish distributors, in the very comprehensive Directory published in the June issue of this Journal. Then, once more, get cracking, sell insulation before your competitors wake up to the fact that it is not only a rewarding service, but one which will enhance your reputation with clients wise enough to accept your advice and do something to stop that expensive heat leak.

PRODUCT REVIEW

A comprehensive review of products from the leading manufacturers' ranges appear on the following pages in connection with this special survey.



This special survey—another in a series on important aspects of the plumbing and heating trades—has been compiled by technical expert A. L. Townsend, M.R.S.H., M.I.P.

The Irish Plumber and Heating Contractor.

ROCKWOOL

for insulation

against cold, heat, fire, sound

★ As the name implies Rockwool is manufactured from rock. Initially the rock is melted down in large furnaces and then it is transformed into millions of fine fibres—no more than five thousands of a millimeter in diameter. During the whole process an accurate check is kept on the product by the latest scientific methods and to the natural properties inherent in stone, others are added artificially.



★ The rock material, however, constitutes no more than two per cent of the light porous insulating material, the remainder being air—between the fibres. This, of course, is how high insulating properties are achieved, quiescent air, as is well known, being one of the poorest heat conductors.



★ Like all stone, Rockwool is inorganic, thus it cannot rot, or be damaged by dampness, but at all times keeps its form unchanged and in this way retains its properties. ROCKWOOL, of course, cannot burn and has a melting point of, approximately, 1,200° C. (2,200°F.). When the Rockwool, however, is not impregnated it can be used in temperatures to, approximately, 800° C. (1,475°F.).

The world of Rockwool insulations covers every possible application from standard Rockwool products where insulation against cold, heat, fire, and sound is concerned.

IRISH AGENTS:
CALUMET TRADING COMPANY LTD.,
74 NORTHUMBERLAND ROAD, DUBLIN 4.

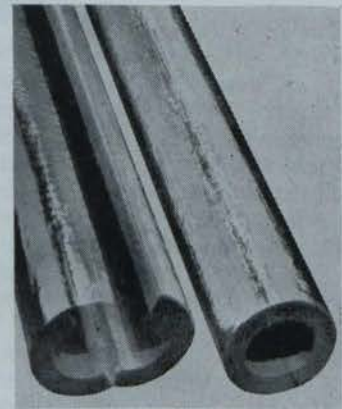
Telephone—65971/5.

PRODUCT

REVIEW

FIBREGLOSS LTD. produce the well-known fibreglass foil-faced rigid sections and the Superfine B material. This latter material is available either plain, neoprene or P.V.C.-faced. Neoprene and P.V.C. faced superfine are normally recommended for external ducting insulation.

The density of the Crown Rigid sections, foil faced, is between 5-7 lb./c.u. ft. designed to provide the optimum product in terms of robustness, ease and speed of handling and thermal insulation value.



These foil-faced rigid sections are from Fibreglass Ltd.

Description—Preformed sections of long, fine Crown glass fibres, strong and free from shot or coarse fibres, easy to handle, cut and fit. Covered with glass reinforced aluminium foil paper laminate which provides a clean, attractive surface with excellent vapour sealing properties.

Fibreglass, Superfine B.—Applications include thermal insulation, sound proofing and panel damping in road and rail transport, especially in cars and commercial vehicles, engine bulk-head, roof and body insulation, thermal insulation and sound proofing in ships, particularly for insulating the boundaries of accommodation spaces, partitions and air conditioning trunking; thermal insulation and sound absorption in air conditioning units and duct systems.

Dublin office: 21 Merrion Square North, Dublin 2.

★ ★ ★

VERSIL structural insulation consists of fine and flexible glass fibres made by an entirely new process,

closely intermeshed and synthetically bonded into a light, resilient mat having a low density of only 1 lb. per cubic foot. This mat, white as snow, has a consistent thickness of 1" and is free from "shot" or fall out particles. It is very clean in use, pleasant and soft to handle and easy to cut and lay. It will neither silt nor shake down under continuous vibration.

The glass fibre structural insulation is supplied in rolls each 10 yds. long by 48" wide by 1" thick (120 sq. ft. per roll). The special glass fibre "Roofrap" pack measures 18" in diameter by 17" high and can be carried easily through the average ceiling trapdoor into the roof space.

Each "Roofrap" pack contains a roll 22' 6" long by 16" wide by 1" thick (30 sq. ft. per roll). Versil glass fibre domestic pipe bandage is supplied in rolls 12' long by 3" wide by 1/4" thick for spiral wrapping of pipes.

Irish agent: G. C. Pillinger & Co. (Ireland) Ltd., 20 Sycamore St., Dublin 2, and 35 South Terrace, Cork.

★ ★ ★

ENTERING the consumer insulation trade for the first time are the famous industrial insulation firm of Newalls Insulation Co. Ltd., Washington, Co. Durham, who are members of the Turner & Newall Group. They make their entry with a brand new home insulation material—Interlay—which will be available from builders' merchants and distributors throughout the country.

Interlay Super Glass Loft Insulation consists of a heat insulating mat of fine glass fibres bonded into rolls 25 ft. long by 16 in. wide by a one inch nominal thickness. Rotproof, fireproof and virtually everlasting, Interlay is supplied in polypacks conveniently sized to pass through a normal trap door.

Latest development in calcium silicate insulating products is announced by Newalls Insulation Co. Ltd. of Washington, Co. Durham—members of the Turner & Newall group.

Known as Newtherm Extra, the new product is an all-purpose insulant which supersedes the existing Newtherm by virtue of its higher temperature limit of 1850° F., improved thermal efficiency and unusually low shrinkage factor.

Strong and rigid in construction, Newtherm Extra retains the remarkably light density of 12/14 lbs. per cubic foot, and it is claimed is the only high temperature insulant to

PRODUCT REVIEW

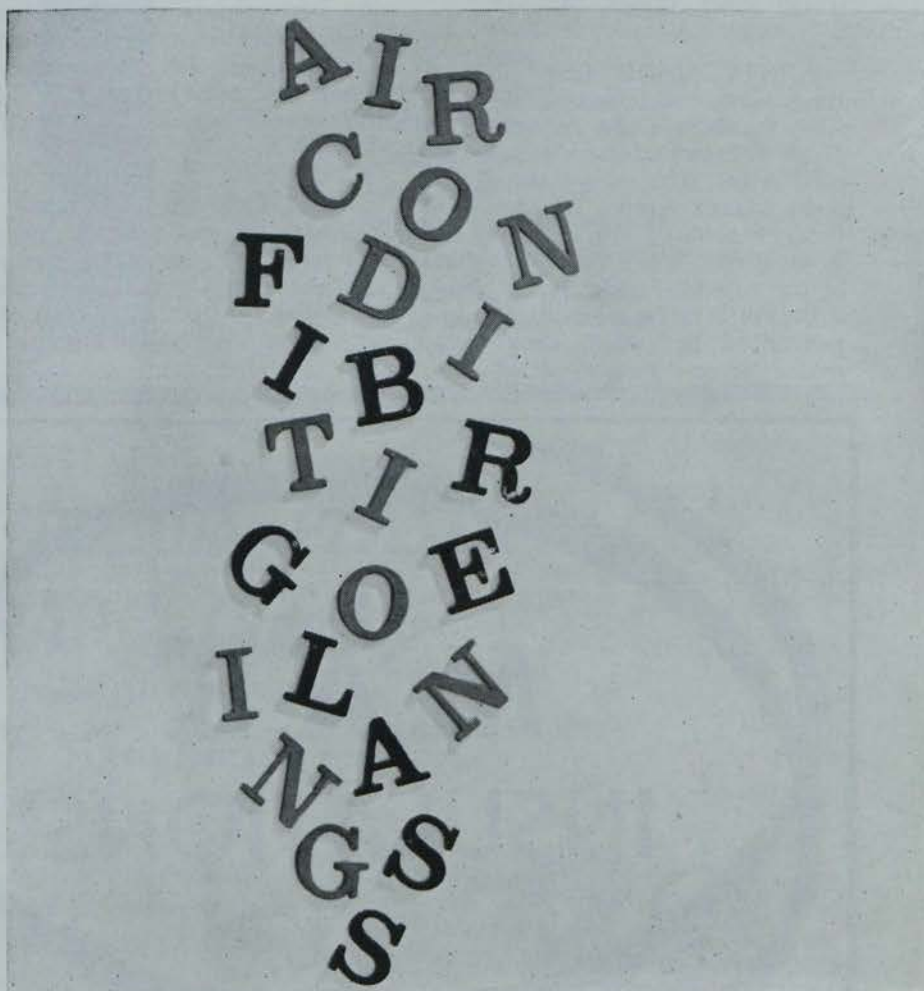
low density. It is capable of withstanding rough handling during transit and erection.

Irish offices: Rossmere House, Baily, Howth, Co. Dublin, and at 200 Agnes St., Belfast.

PRODUCT REVIEW continued on following page



The Esso petro-chemical plant goes on steam at Stenungsund, Sweden. The insulation of the refrigeration system was carried out with Newallite Polyurethane.



Fibreglass is a name found mixed up in the whole field of air-conditioning and heating. This is only to be expected: Fibreglass has been of inestimable value in providing the new forms of thermal and acoustic insulation that help to make modern air-conditioning so silent and efficient. The most recent advances are based on Fibreglass Superfine wool, a material far finer and more consistently fine than any previously available. It is used in many types of external and internal duct insulation. Fibreglass Rigid Sections for hot and chilled water lines are highly efficient and cheap to install; and Fibreglass air filters are probably more widely used than any.

MONSELL MITCHELL & CO. LTD.
Sole distributors of
Fibreglass heat insulation products
in the Republic of Ireland

JAMES RYAN (DUBLIN) & CO. LTD.
Sole stockists of
Fibreglass Air Filters
in the Republic of Ireland

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Limited**

FIBREGLASS LTD · 21 MERRION SQUARE NORTH · DUBLIN · TEL: DUBLIN 67060

Thirty-one

The Irish Plumber and Heating Contractor.

THE THERMAL conductivity of normal quality Ferroklith has been found to equal 0.57 B.T.U.'s per square foot, per hour, per 1" thickness, per 1° F. difference in temperature. The thermal insulation of 1" thickness of Ferroklith is equivalent to approximately 14" of brickwork. This highly efficient insulating material is made from compressed petrified wood-wool fibres bound with cement. It has considerable structural strength—a pressure of about 20lb./sq. ft. is necessary to compress Ferroklith to half its thickness. For particulars apply to:—

Gypsum Industries Ltd., Clonskeagh Road, Dublin 14.

* * *

POINTS MADE from Rocksil Housewarm, manufactured by The Cape Insulation and Asbestos Products, Ltd., are that it insulates for ever, is fire safe, cannot corrode, is proof against vermin, is white and fleecy, is perfectly safe to handle and is odourless. It is a rock wool made in big rolls, 16" wide and 25" long.

Rocksil blankets, when fixed to the surface to be treated, considerably reduce the reverberation period of an office or auditorium.

PRODUCT REVIEW

from previous page

Irish agent: M. A. Boylan, Ltd., 50A Harcourt St., Dublin.

* * *

THE NEW P.H. Pipewrap, made by Thermal Products, Ltd., Baildon, Yorkshire, in addition to being featherweight, resilient and of high efficiency, has extra strength to withstand handling on site. It is ideal for pipework below floors, across roof spaces, etc.; also for frost protection of cold water pipes. It consists of 1" thickness fibreglass and is supplied in rolls 3" wide, 12' long. For applications requiring a washable surface, P.H. Pipewrap can be supplied backed with white P.V.C.

* * *

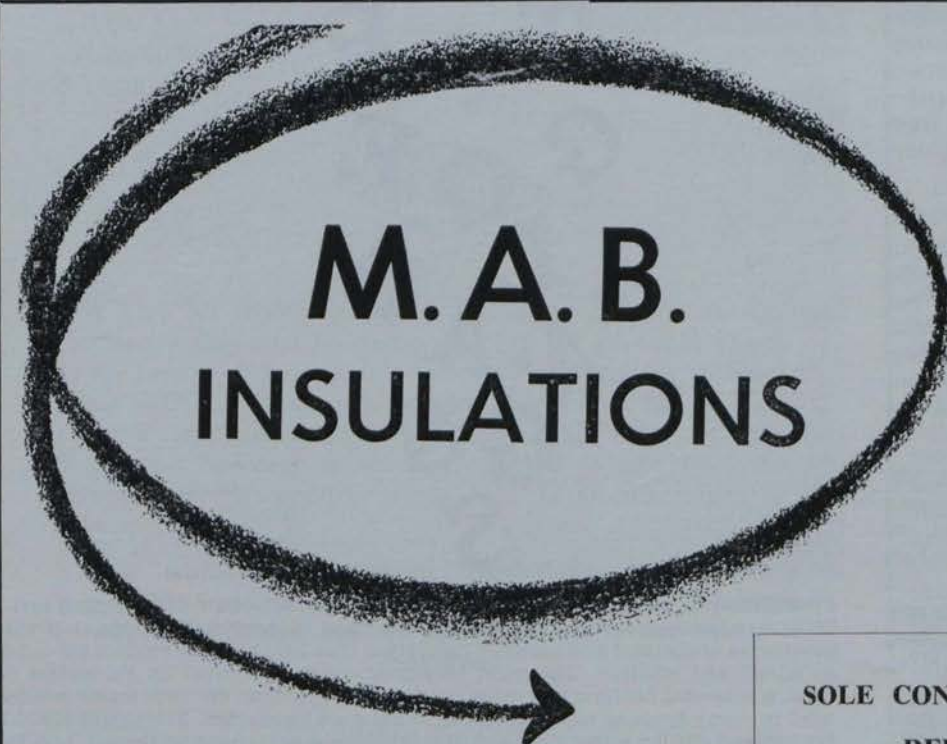
STILLITE Products Ltd., of 15 Whitehall, London, S.W.1, announce their range of home insulation materials for the 1963-1964 winter season. These include (loft insulation) J.B. Pelleted Mineral Wool—a loose fill attic insulation material which is simply poured in between joists.

Supplied in 28lb. paper sacks, each sack will cover 50 sq. ft. of loft space. An average sized house can be insulated with a 1½in. layer with 10 bags of incombustible J.B. Pelleted Mineral Wool.

Roof-Lag—An incombustible mineral wool insulating mat to be unrolled between the joists in the roof space. The standard lin. thick roll is available in poly-packs containing 22ft. 6in. of either 14in. or 16in. wide insulation. Also available is a special 2in. thick mat for insulating centrally-heated houses and this is marketed in packs containing 12ft. of 16in. wide insulation.

Pipe Insulation.— Pipe-Lag — a P.V.C.-backed mineral wool pipe lagging strip of nominal lin. thickness supplied in rolls 12ft. long by 3in. wide. Consisting of a rotproof mineral wool strip with a smooth plastic backing. Pipe-Lag has only to be wound round a pipe spiral fashion to provide modern hygienic insulation.

Irish agents: Structural Waterproofing Co. (Ireland), 7 Upper Fitzwilliam St., Dublin 2.



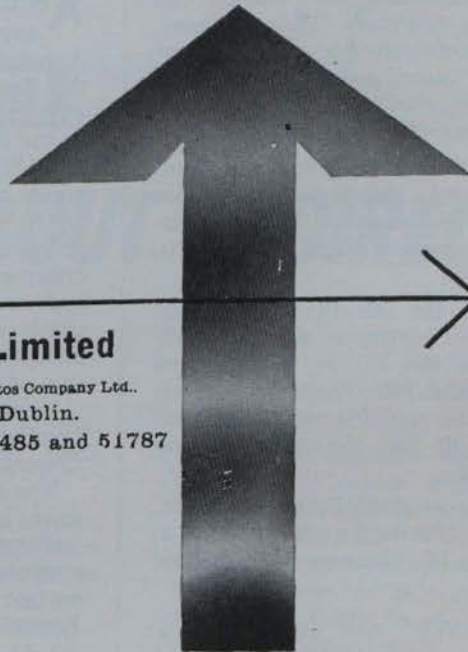
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Thermal Insulation



M. A. Boylan Limited

A subsidiary of The Cape Asbestos Company Ltd..
50a Harcourt Street, Dublin.
Telephone: 52397, 54485 and 51787



We are the foremost insulation specialists in the country with many important insulation contracts to our credit. The huge Oil Refinery at Whitegate and the Derrinlough Briquette factory are recent examples. If you have any heat-loss problem, discuss it with our highly experienced technical staff. Our recommendations are offered free and without obligation.

Sole agents and stockists for:

'Rocksil' rock wool

Rigid Sections

Flexible Sections

Blankets

Mattresses (wire-mesh-backed)

Loose Wool

'Caposite' amosite asbestos

moulded blocks and pipe sections

Also full range of plastic materials and hard-setting compositions.

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PRODUCT

"THE DUBOIS PLASTIC TRAP" (Regd.)

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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



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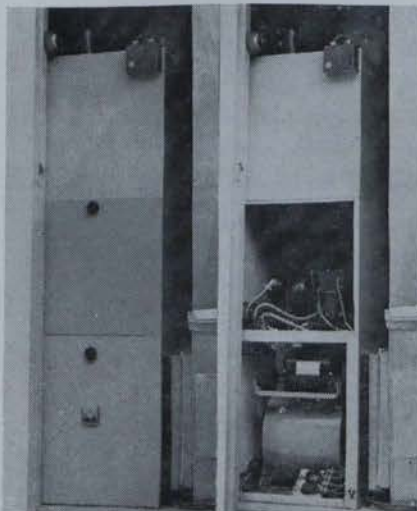
Manufactured by:—

THE DU BOIS COMPANY LIMITED
15 Britannia Street, London, W.C.1

Telephone No.: TERminus 6624-5.

Telegraphic Address: "Bleitrap, London."

The Irish Plumber and Heating Contractor.



Shown here is the C55 Hiboy, fully automatic Kresky-fired warm air heater, and below is one of the low wall return air grilles featured in the Malahide installation reported on page eleven.



PRODUCT REVIEW

We continue here the review of products, which begins on page twenty-three.

THE CYCLONE copper filled tube air heater is designed for numerous applications. It is suitable for warming air for air conditioning installations, plenum heating and ventilation, drying plants, steam absorption and all such uses where a large volume of hot air is required. They give a high efficiency and will stand high steam pressures. They can also be used with hot water. Heaters can be supplied with supporting feet for self-support or, alternatively, without feet for bolting direct on to the ends of an air washer, drying cabinet or ducting, etc. A variety of sizes is manufactured and heaters may be supplied with one, two or three rows of tubes. When necessary they can be bolted together to form batteries having any number of rows of tubes.

The manufacturers, Matthews & Yates, Ltd., are specialists in the design, construction and application of fans and fan equipment.

Irish agents: Heatovent Supply Co.,
5 Upper Fitzwilliam St., Dublin 2.

* * *

FENTON BYRN & CO. Ltd., fan manufacturers and heating and ventilating engineers, West Molesey, Surrey, manufacture a wide range of ring and centrifugal fans, wall and ceiling fans, motorised roof cowls and forced convection heaters.

Their products have domestic, commercial and industrial applications and a comprehensive catalogue, covering the complete range of products, is available.

New in the last 12 months: surrounds in a variety of polished hardwoods for the VL 20, VL 30, and VL 40 slim-line forced convection heaters, and glass-fibre motorised roof cowls to fit flat, sloping and corrugated roofs.

Irish agents: W. Finucane & Co.,
5 Upper Pembroke St., Dublin 2;
McGregor & Manning Ltd., Belfast.

* * *

DOMESTIC AIR conditioning at low cost can be had with Kildraft ventilators produced by Hall Smith Ltd., of Perivale, Middlesex. A chimney exerts considerable pull upon the air supply which must be continuously replaced in the room, and it can come only from ill-fitting doors and windows. Kildraft ventilators deliver most of the air required by the chimney at each side of the fireplace from underneath the floor, or if the floor is solid from hollow walls or "built-in" floor ducts when available. These ventilators can be reversed by a turn of the hand and the room cleared of stuffy air in a few moments, or they may be shut off.

Irish agents: R. T. Large & Son,
Stephen's Place, near 47 Merrion
Square, Dublin.

in brief . . .

THE CALUMET Trading Co., Ltd., 74 Northumberland Road, Dublin 4, and 3-5 Commercial Court, Belfast, are sole representatives for the Twenty-Six Counties and Northern Ireland for Hilti, of Switzerland.

The Calumet Company was incorrectly described in the Directory of Manufacturers, Agents, Representatives and Distributors in our June issue as being an associate company of Ucan Developments Ltd., London.

AN CHEARD-CHOMHAIRLE (NATIONAL APPRENTICESHIP BOARD)

Vacancy for Supervisor (Engineering and Metal Trades)

AN Cheard Chomhairle proposes to appoint a Supervisor under the Apprenticeship Act, 1959, to assist in the development of a sound system of apprentice training for the trades in the ENGINEERING and METAL INDUSTRIES. The post will be whole time and the main duties will be to advise in the preparation of progressive programmes for the recruitment and training of apprentices and to secure, in co-operation with employers, trade unions and vocational education authorities, the implementation of the programmes decided upon.

Further particulars of the duties involved can be obtained from An Cheard Chomhairle on request.

The trades to be dealt with include fitter, turner, toolmaker, brassfinisher, boilermaker, sheet metal worker, coppersmith, blacksmith, moulder, pattern-maker and coremaker.

Essential Qualifications:

- At least 10 years' practical experience in the engineering and/or metal industries (preferably including a formal apprenticeship in one of the trades mentioned above).
- Experience in a supervisory, managerial or educational capacity in the industry.
- Possession of a relevant professional or technical qualification.

Desirable Qualification:

Experience in the organisation of apprentice training schemes.

The salary, which will be attractive, will depend on the qualifications and experience of the selected candidate and will be agreed with him before his appointment. The man being sought would probably be earning not less than £1,250 a year in his present position.

Supervisors are based at the Office of An Cheard-Chomhairle in Dublin but their duties require them to travel extensively throughout the State.

Candidates may be called for interview by a selection board.

Application Forms can be secured from the Secretary, An Cheard-Chomhairle, 21, Fitzwilliam Square, Dublin, 2. The closing date for completed application is 10th August, 1963.

Applications will be treated as confidential.

MICHAEL SCANLON, Secretary.

Questions

Answers

● A query from a Clones, Co. Monaghan, reader brought this reply. He asked: "Please send me diagram for an indirect cylinder. Also advise on size of storage tank necessary to feed soft water cylinder and how the tank should be fed."

ALL ABOUT INDIRECT CYLINDERS

INDIRECT cylinders are recommended for use in D.H.W. systems in the following circumstances:—

(a) When it is required to provide space heating and D.H.W. from the same boiler.

The heater element of the indirect cylinder is supplied with water from the primary circuit, i.e., the one from which no water is drawn for D.H.W. or other purposes. Using a modern thermostatically controlled boiler, the temperature in this circuit would be in the order of 180°F flow and 140°F return—a mean temperature in the "immersion" annular inner cylinder heating element of 160°F.

Conducted and convected heat transfer from this element heats the secondary or draw off water for D.H.W. supply.

In such circumstances any radiators connected to the system are unaffected by variation in D.H.W. storage temperature due to withdrawal of hot and its replenishment by cold water from the cold feed cistern.

A separate feed-expansion cistern is needed with B.S. indirect cylinders and this should be of such capacity that it would hold about 3 gallons of water above the cold feed to the primary system, plus about 1-25th of the water capacity of that system.

For small domestic systems a nominal 15-gallon cistern is usually found quite adequate.

The cold feed cistern supplying the D.H.W. system would be sized according to type of supply system (constant or intermittent) to the demands likely to be made upon it, and according to whether it supplied cold water fittings as well.

Generally, a nominal 40-gallon capacity cistern is found satisfactory in a constant supply system where only D.H.W. supply is fed.

(b) An indirect cylinder would be used in soft water districts to reduce rust discoloured water emission from hot water taps. In such cases the cylinder and pipework would be of copper and the cistern might be of asbestos cement or fibreglass.

Any rust formation in the cast-iron boiler would be retained in the closed primary circuit.

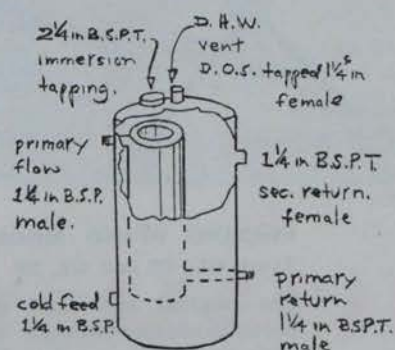
(c) Paradoxically, an indirect cylinder is well used in hard water districts. In this case, the aim is to avoid change of water in the primary system and so prevent progressive "furring" of boiler and primary circuit water ways.

Note that "furring" will occur in the secondary or draw off part of the indirect system in a hard water district. For this reason it is important to specify an indirect cylinder with adequate access for descaling. The author prefers a galvanised one with a bolted top in such situations. Further, he recommends all connections thereto be by union and not long-screw connector.

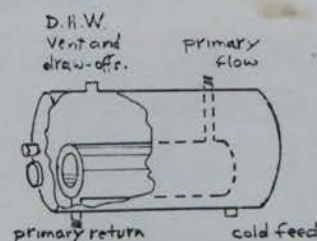
The unions permit quick and easy disconnection to facilitate complete removal of the cylinder to some well-lit outside place for descaling.

This facility in conjunction with the removable bolted top, ensures an easy, clean, and complete descaling service as this becomes necessary.

Galvanized indirect cylinders of the



Note for 32 gal. cylinder all tappings 1 1/4 in.
Fig. 1. for 27 gal ditto all tapping 1 in.



Indirect cylinder used horizontally Fig. 2.
Note position of annular.

Suggested layout for a small indirect DHW system. (If 27 gal. cylinder used was 1 inch primary F. and R. pipes).

Continued overleaf

annular type to B.S. 1565 are made in two patterns. One is for acceptance of a vertically mounted electric immersion heater for summer use. The other pattern has a shortened inner annular cylinder to admit a low level, horizontal entry electric immersion heater—or to provide M.H. cover and access for fur removal.

In both cases, the inner heating cylinder connections are identified by their male B.S.P.T. tappings. All their tappings, vent, cold feed, and secondary return, are female tapped B.S.P.T.

The flow connection to the inner annular heater cylinder is always that

QUESTIONS ANSWERED

from previous page

male one nearest the crown of the cylinder when stood on its base.

Copper indirect cylinders to B.S. 1566 follow much the same pattern as for the M.S. ones outlined above.

The diagram (1) illustrates these basic design arrangements.

Important note: If the cylinder is to be used in the horizontal,

then do make sure that the eccentrically placed inner annular cylinder is at the **bottom** of the horizontally placed vessel.

The "return" then becomes the flow, and the "flow" connection, the return. See diagram (2).

Failure to observe this rule will result in only half the storage vessel being effectively heated.

As simple as this is, when one reflects upon it, it is surprising how many indirect cylinders are incorrectly fitted, to the annoyance of householders, many of whom do not complain because they assume that the installation is correctly installed and that they have to put up with it.

Querist seeks a tubing diagram and a design, including recommended pipe sizes as provided for a system suited to a three or four-person household and providing indirect hot water supply only, as given in Diagram 3.

PORTABLE TUBE BENDERS



LIGHTWEIGHT BENDING TOOLS

Types GL.O and GL.Minor

Compact machines to produce good quality sets, compound bends, etc., in non-ferrous tube. Robustly built, they can be carried in tool bag and are particularly suitable for small bore heating and similar types of installation.

CAPACITY: GL. O— $\frac{1}{2}$ ", $\frac{3}{4}$ " and $\frac{1}{2}$ " dia. copper tube.
GL. Minor— $\frac{1}{2}$ " and $\frac{3}{4}$ " dia. copper tube.

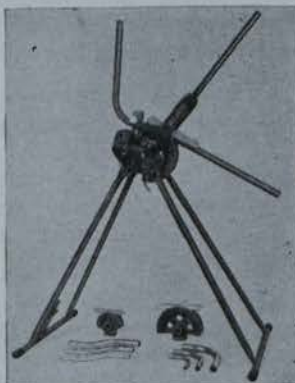
FOLDING STAND MODELS

Types GL. 2B and GL. 3B

The original and most efficient portable benders made for bending light gauge copper tube. Require no fixing or bolting down and produce good quality bends, cold and unfilled, to exact measurement on standard radii.

CAPACITY: GL. 2B— $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1" dia. copper tube.

GL. 3B— $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ " and 1 $\frac{1}{2}$ " dia. copper tube.



EASY-WORK RATCHET BENDER

Type RP. 5B

A machine of new design with a rotary bending action through a powerful ratchet operated screw. Completely portable, produces good quality bends speedily, accurately and with minimum of manual effort.

CAPACITY: $\frac{1}{2}$ " to 2" dia. copper tube.
 $\frac{1}{2}$ " to 1 $\frac{1}{4}$ " o.d. conduit.
 $\frac{1}{2}$ " to 1" nom. bore gas and steam.



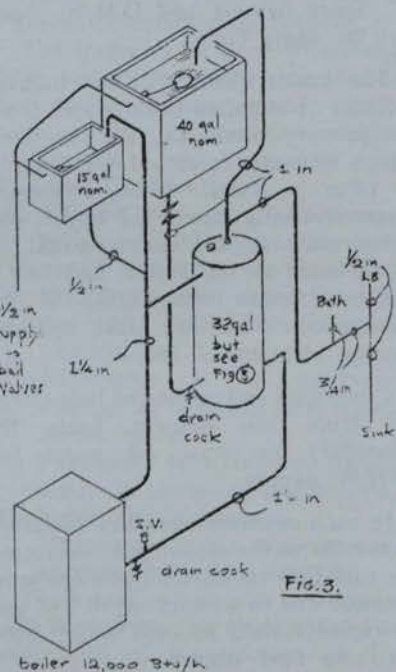
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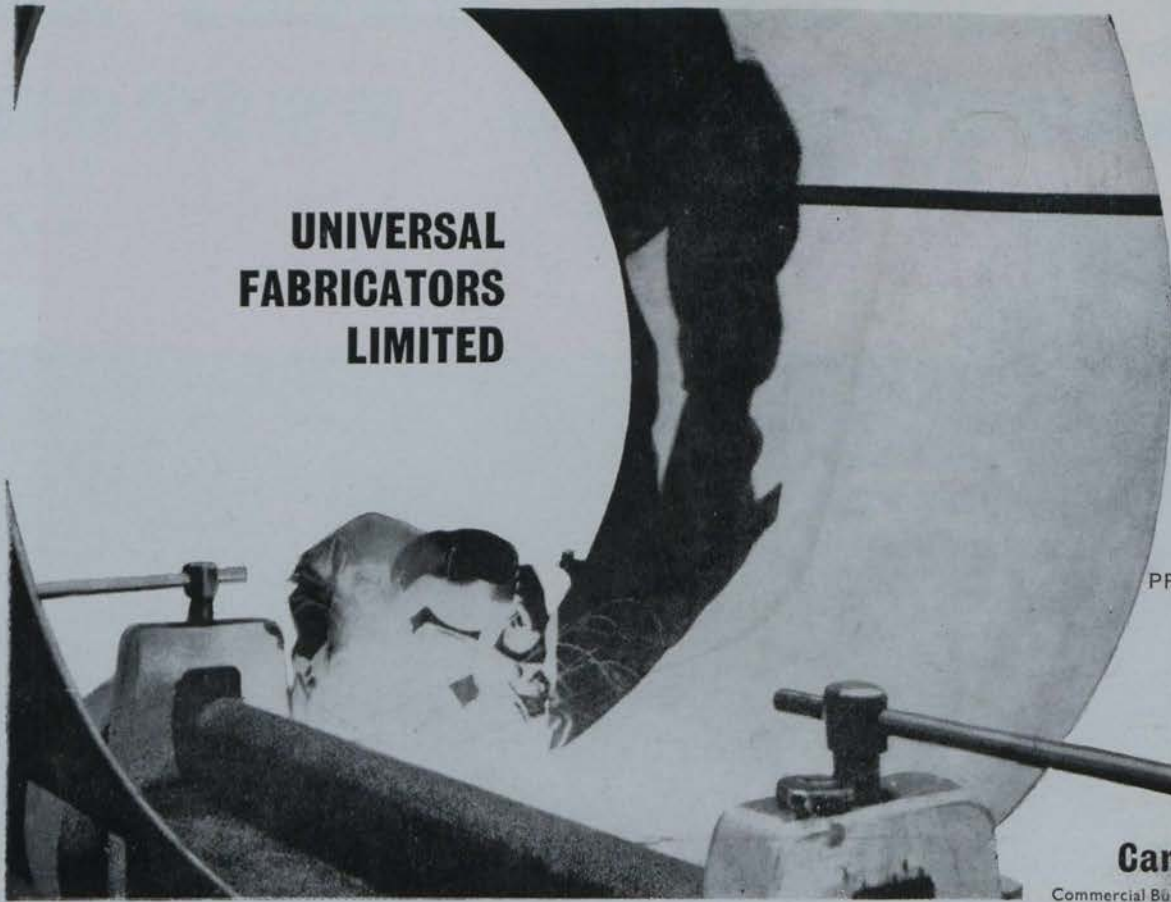
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For details of range of hand-operated, hydraulic and motorised machines handling up to 8" dia. tube, apply to local stockist or write to:—
Dept. F, HILMOR LTD. (Sales and Service), CAXTON WAY, STEVENAGE, HERTS.



He may wish to consider using one or other of the proprietary indirect cylinders like the "Primatic." These use an air lock to separate the primary and draw off waters and so eliminate need of separate feed cisterns. Some economy is thus suggested. Comparisons of costs show this not to be great but very many of these vessels are in use and appear to give satisfactory service.

But note: if these are for use on a combined system, i.e., D.H.W. and central heating (small bore, for example), then do specify a proprietary cylinder of suitable design—e.g., "Primatic" S.B.1 or S.B.2. The former is suitable to systems of up to 45,000 B.t.u. capacity and the latter up to 70,000 B.t.u.



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