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### The Irish Plumbing and Heating Engineer, August 1965 (complete issue)

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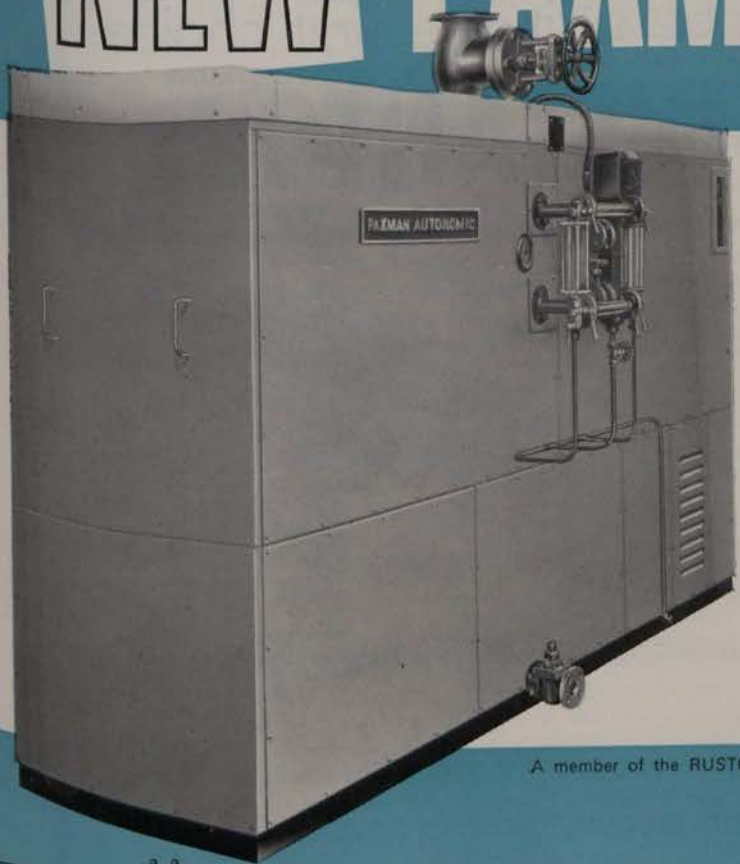
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# IRISH PLUMBING & HEATING ENGINEER

et al: The Irish Plumbing and Heating Engineer, August 1965 (complete is



## NEW PAXMAN AUTONOMIC STEAM BOILER & WATER HEATER

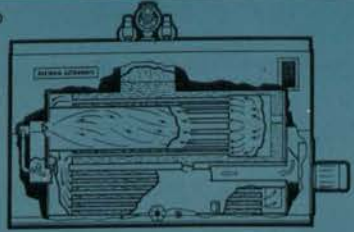


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AUGUST 1965

Published by ARROW@TU Dublin, 1965  
Vol. 3 No. 5

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# See **Sanbra Fyffe** first

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## CONEX-INSTANTOR



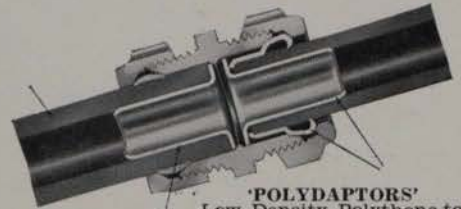
### CONEXCEL ADAPTORS

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### COMPRESSION COUPLINGS

For use with Irish Domestic Copper Pipe and Polythene Tubes: Low Density to B.S. 1972, and High Density to B.S. 3284.



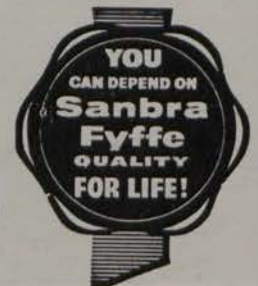
### 'POLYDAPTORS'

Low Density Polythene to B.S. 1972 and High Density Tube to B.S. 3284 are easily and quickly jointed by replacing the compression ring with the 'Polydaptor' and using the flanged insert appropriate to the tube being used.

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# trade Topics

STEWARTS & LLOYDS LIMITED and George Fischer A.G. of Schaffhausen, Switzerland, are forming a

**S. and L. IN** joint company in the U.K. for the manufacture of PVC fittings. **PVC DEVELOPMENT** Lloyds, through their subsidiary company, **Stewarts & Lloyds Plastics Ltd.**, manufacture PVC and polyethylene pipe. **Georg Fischer** are one of the leading European manufacturers of malleable iron fittings and PVC fittings for pressure pipe.

The proposed name of the company is **George Fischer Plastics Limited** and it is intended to establish it at **Huntingdon** where the building of a new factory will start as soon as possible; it is expected to be in production by next summer.

The authorised share capital will be £250,000 of which **Georg Fischer** will hold 51 per cent and **Stewarts and Lloyds** 49 per cent; **Georg Fischer** will be responsible for the management of the works. The initial programme calls for the expenditure of well over half a million pounds.

**THOMAS POTTERTON LIMITED** has introduced a completely new range of **Diplomat** gas-fired boilers. The existing domestic gas-fired range of three units has been replaced by five new, "range-rated" appliances with outputs from 30,000 to 80,000 Btu/h, giving complete coverage of the main consumer central heating market.

## POTTERTON NEW BOILER RANGE

Not only are there more units to choose from, but each appliance has the facility of "range-rating" which

## Monsell Mitchell arrange September caravan tour

A MOBILE exhibition of equipment available to the heating trade in the Republic of Ireland from **Monsell Mitchell and Co. Ltd.**, will visit five main centres during a two-week period commencing **Monday, September 6, 1965**. The tour itinerary includes **Cork, Limerick, Galway, Athlone and Dundalk** and installers will be invited to attend a special reception in the respective areas.

The focal point of the exhibition will be the new range of capital radiators and the new thermopak **AI Accelerator** manufactured by **International Boilers and Radiators Ltd.** Also on display will be **Sigmund Pulsometer** heating pumps, 'Fibreglass' insulation materials and 'Quick-Fix' double glazing.

allows the installer to regulate the output of the boiler so that it more exactly meets the designed heating load. In some sizes this allowance is as much as 10,000 Btu/h.

When a boiler is range-rated, correctly, it works on a more continuous cycle without incessantly cutting in and out on the thermostat, thereby improving the effective efficiency of the unit (an important factor in keeping fuel bills to a minimum). This range-rating feature is unique and these new units are the first of their kind to appear on the gas central heating scene.

In addition to this innovation, the boilers—cartoned so that they arrive in the home in the best possible condition—are supplied with new casings all 36" high, the same height as the standard kitchen unit. The new boilers also provide warmth into the kitchen itself (in the largest sizes, as much as 4,000 Btu/h is dispersed as direct heat).

- New exhibitors at the Building Centre (Dublin) include **Thermolag Ltd.** and **Sterling Heating Systems Ltd.**

## IRISH PLUMBING & HEATING

# ENGINEER

Vol. 5. No. 5. AUGUST, 1965

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

This month IPHE readers are introduced to two important new series.

Overleaf we begin serialisation of **A. L. Townsend's Plumbing—second stage**. This follows on where our earlier series, under the "Plumbing" title left off some time ago.

Also new in this issue is a monthly column from **W. J. R. (Bob) Couchman**. In this new feature, **Bob Couchman**, author of our recently concluded series, **The Seven Deadly Sins of Domestic Heating Installation**, will "Talk Shop" with IPHE readers in a well informed, chatty column.

●  
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Phone: 643095.

## WHAT'S GOING ON DOWN THERE?



Turn to page four and see for yourself

# plumbing

We continue here  
the serialisation of

the author's four-stage work under the general title of

plumbing THIS MONTH:  
LEADBURNING

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

**L** EADBURNING techniques have been improved in recent years. They have been simplified and made quicker and more effective. In sheet lead roofwork, leadburning can be used with advantage to make details such as chimney back gutters, front aprons, and the lead slates which are used to weather places where soil pipes and so on penetrate the roof. It is more convenient to prefabricate such details in a properly fitted workshop. Sizes and angles can be measured and noted from the actual building detail, and from these notes and sketches the job can be developed, cut to size, folded, and leadburned in the workshop. The finished details can then be taken to be finally fixed on the job.

In this way work can go ahead even when bad weather makes it difficult to work on the open roof; and it also means that the plumber can get on with his own work even when the other builder's work such as chimney stacks, tiling and so on is not quite ready to receive the finished details. Leadburning is also helpful for prefabricating lead soil and waste pipework.

**T** HE burning gases used for fuel may be hydrogen (in red cylinders labelled 'hydrogen'); coal gas direct from the town supply or in red cylinders labelled 'coal gas'; propane gas which, now that purpose designed leadburning torches are made for it, is being more used; and, for reasons given below, dissolved acetylene (in a maroon coloured cylinder) (Fig. 1).

The temperature of the flames (as used with oxygen) are as follows:  
oxy-acetylene 3,200°C  
oxy-hydrogen 2,200°C  
oxy-coal 2,000°C

Dissolved acetylene, commonly known as D.A., is the most popular fuel gas for leadburning because it

produces the hottest, cleanest flame. These properties are very important since the joint area must be clean before and during the leadburning process. D.A. has the added advantage that, with a suitable blowpipe, it can also be used for bronze-welding copper sheet and tube, and for welding mild steel tubes. For these reasons, and since there is little difference in operating costs between the various gases, oxy-acetylene equipment is now generally regarded as an essential item of a plumber's workshop equipment.

Acetylene gas is highly inflammable, and is explosive when mixed with air.

This must always be remembered, and the gas should be handled confidently but with respect. However, if the proper precautions are taken acetylene gas is quite safe to store and use.

**A** CETYLENE gas is unstable when subjected to pressure—it is liable to explode—and cannot therefore be compressed into cylinders in its gaseous form. The problem is overcome by first dissolving it in acetone—a liquid which will accept it readily—and then compressing the gas laden acetone. This is why the fuel is known as dissolved acetylene.

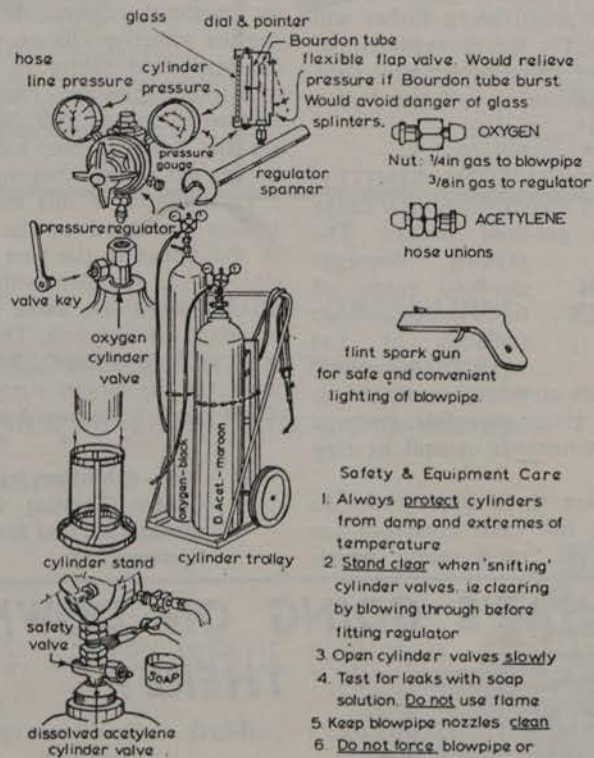


FIG. 1

Oxy-Acet Equipment

**Safety & Equipment Care**

1. Always protect cylinders from damp and extremes of temperature
2. Stand clear when 'sniffing' cylinder valves, i.e. clearing by blowing through before fitting regulator
3. Open cylinder valves slowly
4. Test for leaks with soap solution. Do not use flame
5. Keep blowpipe nozzles clean
6. Do not force blowpipe or cylinder valves

**Acetone** will dissolve about twenty-five times its own volume of acetylene gas at ordinary atmospheric pressure—that is, at a pressure of 1 atmosphere (14.7 lb./sq. in.). The cylinders are usually charged to 15 atmospheres or 267 lb./sq. in. At this pressure acetone will dissolve 375 times its own volume of acetylene gas. When the valve of a connected blowpipe is opened, the pressure in the cylinder is reduced very slightly, and some of the acetylene escapes from the acetone to flow in gaseous form to the blowpipe nozzle where it may be ignited.

The distinctive, maroon steel cylinder is specially designed with a concave base so that it can be stood upright while it is being used. This is to prevent the liquid acetone from spilling out and along the hose to the blowpipe, as it could if the cylinder were used whilst laid on its side. This would not only waste costly acetone, but would also spoil the character of the flame. It could also lead to 'lighting back', with a grave risk of fire and, possibly, cylinder explosion.

**I**F the cylinder chanced to be seriously overheated, as it could be if heat were applied by accident to any part of it, instantaneous combustion might occur within it. As a safety precaution against this happening, the dissolved acetylene is divided into a multitude of tiny compartments. This is done by filling the inside of the cylinder with a porous mass such as kapok. The tiny pores accept the acetylene laden acetone, which is thus split up in near separate compartments. This simple device reduces the risk of the whole content catching fire at once. It also delays the spread of any internal fire and gives time to remove the cylinder to a safe place in an emergency. This usually involves taking the cylinder outside, opening the cylinder valve to release the internal pressures generated by the heat, and spraying the cylinder liberally with water in order to cool it.

A supply of **oxygen** is also needed for leadburning, and this is stored in special cylinders painted black (Fig. 1). These may have concave bottoms so that they will stand upright, but some may have hemispherical, convex bottoms. They used always be convex because this shape was considered best able to withstand the very high pressures to which fully charged oxygen cylinders are subject—about 2,000 lb./sq. in. However, the modern concave base is equally strong and is tending to replace the older shape of cylinder. Since there is no risk of oxygen burning, the oxygen bottle is

# PLUMBING

from previous page

not filled with kapok, but is simply a hollow shell.

Oxygen will not burn; its purpose is to support the combustion of the fuel gas. By carefully regulating the amounts of acetylene and oxygen, the flame can be brought to the required temperature and form.

It is important to be able to distinguish easily and quickly between apparatus used for acetylene and that used for oxygen. To help this, all painted parts of acetylene equipment are maroon coloured while those of oxygen are black. Since it is difficult to see colours in a bad light, extra identification is provided in the form of small machined notches or 'kerfs' on the hexagonal union nuts of acetylene equipment: unions for oxygen apparatus are quite smooth (see Fig. 1). This means that when you cannot tell cylinders and so on apart by sight, you can do so by rubbing your fingernail along a union nut.

**T**HE threads on all fuel gas connections are **left-handed**, whereas those for oxygen equipment are **right-handed**. This is another safety measure to prevent wrongful connection of oxygen equipment to the fuel gas cylinder, and vice versa.

**Safety valves** are fitted to D.A. cylinders, one in the concave base, and one in its 'neck' opposite the control valve. No safety valves are provided on compressed oxygen cylinders (see Fig. 1).

**Pressure regulators** are fixed on both D.A. and oxygen cylinders in order to regulate the outlet pressures from the cylinders to the hoses and blowpipes. They first reduce the high pressure within the cylinder to the relatively low pressure at which the blowpipe works, and they then regulate the pressure to keep it steady while gas is being used up at the nozzle. When the blowpipe shuts off, the regulator automatically adjusts itself against the pressure in the cylinder so that the pressure in the hose line to the blowpipe cannot exceed that for which the regulator has been set.

**M**OST modern regulators work in two stages; that is, they have two stages of pressure reduction. The first stage brings the very high cylinder pressure down to about 100 lb./sq. in. and the second reduces this down to the low pressure at which the blow pipe works. For most leadburning jobs this would be about 2 lb./sq. in.

The regulator works on the principle of Boyle's Law for gases. This states that 'The pressure of an enclosed mass of gas varies in inverse (opposite) proportion to its volume'. To be strictly accurate, 'the temperature of the gas

*Continued overleaf*

### BOYLE'S LAW

The pressure of an enclosed mass of gas varies inversely [opposite] to its volume (its temperature remaining the same)

diagrammatic representation:  $\text{Volume} \times \text{Pressure} = \text{Constant.}$   
(always the same)

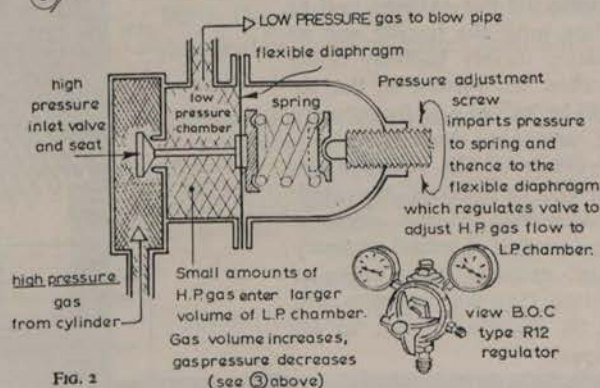
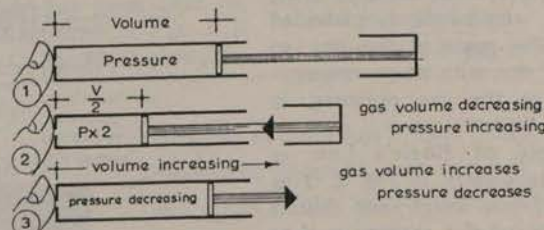


FIG. 2

Principles and Operation—Gas Pressure Regulator

The Irish Plumbing and Heating Engineer.

# NEW ASBESTOS PIPES RANGE DEMONSTRATED

**T**HE FACTORY at Greenhills, Drogheda, of Asbestos Cement Pipes Ltd. is now in full production with Turnall Asbestos cement pipes for sewerage and drainage. These pipes take the place of the traditional short concrete sewer pipe which is often laid on an expensive concrete bed with numerous cemented joints.

The Turnall pipe is made four times as long with simple handmounted flexible couplings. The great strength of the Asbestos cement pipe, from one and a half to over three times the strength of the concrete sewer pipe, makes the use of concrete beds in normal circumstances unnecessary, thus saving considerable expense.

The smooth bore of the pipes and the freedom from leakage over long periods of the flexible joints made for economies in the design and cost of the sewerage system and for savings in subsequent maintenance expenses.



● Mr. W. L. Chadwick, Senior Service Engineer, Turners Asbestos Cement, Manchester, demonstrating the laying of Turnall pipes for sewerage and drainage.

The suitability of Asbestos cement pipes for use underground has already been proved by the Everite Asbestos cement pressure pipe which has been in use in this country for over thirty years. Turnall pipes are manufactured in sizes

from 4 ins. to 18 ins. at the Drogheda factory using a large proportion of home-produced raw material with a range of accessories. Accessories of the types normally required for sewerage work are available from the factory.

## PLUMBING

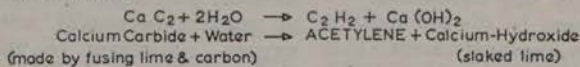
From previous page remaining constant' should be added, since gases increase 1/273 in volume as their temperature goes up each 1°F, and thus increases their pressure against their container. This explains why safety valves have to be fitted to D.A. cylinders, and why kapok is provided to break up the mass of the gas, so that the risk of fire, with its accompanying increase in the gas pressure, is reduced.

The principle of Boyle's Law is illustrated quite clearly in Fig. 2. You can see that if you keep your thumb over the outlet of the syringe and at the same time push the handle end so that the piston travels halfway down the barrel, then the volume of the air enclosed will be halved and its pressure doubled. If you now draw the piston back, the volume of the enclosed gas is increased and its pressure decreased.

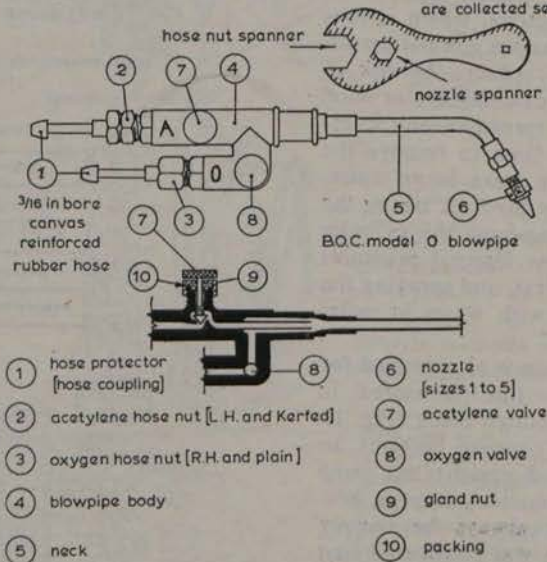
In the same way, if the pressure regulator passes just a small quantity of gas at high pressure into a space of greater volume, then the pressure will be reduced as the gas diffuses to fill the larger space.

This, very briefly, is the principle on which a regulator operates. When you screw in the control handle, the flexible, spring loaded diaphragm...  
Continued opposite Four

### Gas Production



atmospheric air compressed and cooled to 183°C liquefies. → OXYGEN (nitrogen, argon etc) evaporate at different temperatures are collected separately



Job	Lead substance	suggested nozzle size
flat butt or lapped seam	3 to 6 lb sheet	2
ditto	6 to 10 lb sheet	4
upright seam	3 to 6 lb sheet	1
ditto	6 to 10 lb sheet	3
inclined seam and brass to lead on soil or wastepipe	6 to 10 lb sheet or equal in pipe	4

} for Oxy-Acet gases

FIG. 3 Leadburning - The Blowpipe & Nozzles

# PLUMBING

from previous page

high-pressure valve off its seating to admit a small amount of gas at a high pressure to the large, low-pressure outlet space from which it will flow on to the nozzle. If the blowpipe valve is shut off, then the trapped low-pressure gas acts back against the low-pressure side of the diaphragm and helps the spring to close off the high-pressure inlet valve. As soon as the blowpipe valve is opened again the hose-line pressure drops, the pressure on the diaphragm drops, and a little more high-pressure gas escapes to the low-pressure side of the valve. When the blowpipe is in use, the valve 'beats'—that is, it moves continuously back and forth—to meet any variation in the demand for gas on the low-pressure side.

the blowpipe. These are identified by their colour and hose union design (page 18) and are made of tough, canvas reinforced rubber. The standard hose length is 15 ft., although it is possible to obtain shorter and longer lengths, within limits.

**Flash-back arresters**, sometimes called hose protectors, are now fitted to all fuel and oxygen hoses as standard items. These are simple, non-return valves designed to admit gases to the blowpipe, but to snap shut and prevent flame or abnormal pressure from damaging the hose should an accidental 'backfire' occur at the blowpipe.

**I**T is worth noting that the larger bore hoses sometimes used for mild steel welding have the same size unions at both ends. It is therefore possible to connect the hose either way round. If the hose protector union is wrongly fitted to the regulator, then naturally its non-return action stops the gas from flowing into the hose-line. This has puzzled many people, who have set up their equipment wrongly by mistake. Always make sure that the **hose protector is at the blowpipe end** of the hose.

The **blowpipe**, or torch, is the business end of the oxy-acetylene equipment. A good deal of the skill of leadburning lies on being able to adjust and manipulate this to suit the job in hand.

A blowpipe that has been used for many years is illustrated in Fig. 3. It is called the B.O.C. **Model O** blowpipe,

and is produced by the British Oxygen Company. A blowpipe of this type is supplied with five interchangeable nozzles—numbered 1-5 in order of size—to give a variety of flames to suit different lead thicknesses and styles of leadburning. The blowpipe, together with pressure regulators, 3/16 in. bore hoses, clear goggles, spark lighter, kit spanners and so on all ready for use, costs about £30. This outlay can soon be recovered by the speed and efficiency with which it will, in the hands of a skilled plumber, joint sheet lead roof details and lead waste and soil pipes.

## SETTING UP THE EQUIPMENT

1. Stand both cylinders upright, and check that surfaces to be coupled are free of oil and grease (If oxygen should leak, any oil or grease present would rapidly oxidize, and in this chemical change heat would be generated. This could cause a fire, so watch this point carefully).
2. Insert the cylinder valve key, turn your eyes away, and without using undue force, open the valve for an instant. This is to ensure that any dirt collected in the valve will be blown clear, and will not get into the equipment. Do the same for the other cylinder.
3. Screw the regulators firmly into place in the cylinder outlets. Remember—the maroon, left-hand threaded regulator must be put into the D.A. cylinder, and the black, right-hand threaded one into the oxygen cylinder.
4. Couple the hoses to the pressure regulator outlets. Remember—the maroon one is for acetylene and the black for oxygen; and hose protectors must be at the blowpipe end in both cases.

*Continued page forty-four*

**W**ITH most pressure regulators, two pressure gauges are provided. One of these gives a direct reading of cylinder pressure, and is therefore useful since it indicates how much gas there is in the cylinder. The other will show the pressure to which gas is regulated on the lowpressure side of the regulator. This is helpful, although not essential for adjusting the hose-line pressures for the job in hand (See Fig. 1).

Hoses will be needed to convey the low-pressure fuel and oxygen gases to

**cold houses**

**& hot houses**

**AEROBORD**

An igloo or mud hut? Not likely. But in case the impossible happens, you can rely on Aerobord to turn client's folly into a haven of comfort. Aerobord, the **versatile** featherlight insulating material that makes civilised places habitable. And clients happy.

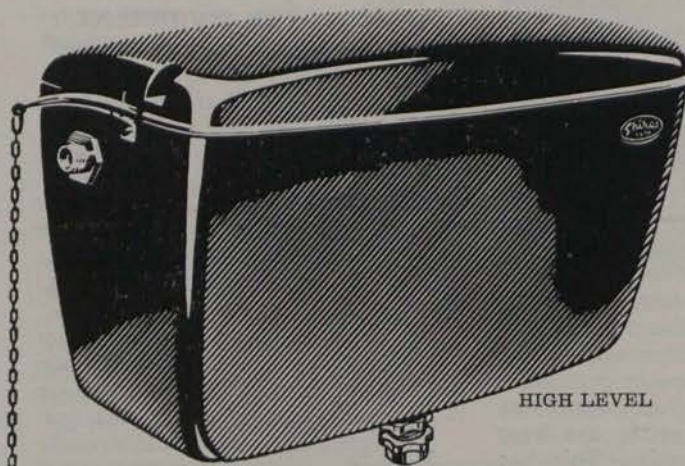
**FACTS ABOUT AEROBORD:** As thermal insulation 1" thickness of Aerobord is equivalent to: 1.2" glass wool, 1.25" cork slab, 1.5" mineral wool, 1.8" softboard, 2.25" vermiculite, 2.5" wood wool cement slab, 3" strawboard, 3.5" asbestos insulating board, 6" vermiculite plaster, 40" brickwork, 50" concrete.

Manufactured in Ireland by

**SOUTHERN CHEMICALS LIMITED, ASKEATON**



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Lynx high and low level cisterns are made of tough durable black Duranite that won't craze, is non-corrosive. The Kingfisher siphon mechanism, made of polythene, gives a powerful flush, is non-corrosive, unbreakable. It can be used in both hard and soft water areas. The Lynx conforms to BSS 1125 and Water Works specifications.

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The Lynx is the easiest to install; the concealed fitting is neat and simple.

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Discreetly quiet with the most dependable mechanism ever.



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# SPECIAL REVIEW

**THIS MONTH**

Domestic, industrial, commercial and hospital sanitaryware.

## Continued product development

THE "Oxford", a new medical washbasin in vitreous china, is the latest addition to Twyford's extensive range of sanitaryware. Measuring 28" x 16" overall, it embodies features new to this type of washbasin to comply with the performance specification prepared by the Hospital Inter-Board Study Group on behalf of the British Ministry of Health.

A grid waste replaces the more familiar standing-waste and there is no overflow. The deep bowl acts as an efficient anti-splash device, and all internal horizontal surfaces are sloped sufficiently to ensure adequate drainage into the bowl. All measurements are to the 4" module.

The Albany luxury washbasin in vitreous china is also new to the Twyford range. Measuring 28" x 16" overall, and with plumbing measurements based on the 4" module, it incorporates a right-hand shelf of generous proportions. The rear upstand, when flush to the wall, is high enough to prevent water seepage between wall and basin, while the deep bowl acts as an efficient anti-splash device.

Usually fitted on specially designed completely concealed brackets, the Albany can be supported, if required, on chrome legs with side rails for towel-hanging.

A new range of sanitaryware by Twyford's has been specially designed and manufactured to reduce the possibility of vandalistic damage to a minimum. In both Ceramant vitreous china and Adamant glazed fireclay, the range comprises washbasins, w.c. suites and urinals, and in each case full use has been made of every modern techniques of protective installations, combined with fool-proof fittings.

\* \* \*

IDEAL-STANDARD Ltd. (Ideal Works, Hull, Yorkshire) have advised of a new bathroom suite which they have introduced. Catalogued under the name the Lincoln, the new

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

suite has many interesting features which include a number of points usually only found in luxury products.

The suite closet is close-coupled to save space. The closet has a siphonic flush system and projects only 25 inches from the wall.

\* \* \*

AN innovation in washbasin design by Armitage Ware Ltd. is the V4156L Myrel, made of virtually indestructible Armitage genuine vitreous china and incorporating a slim-line Centrepod leg which supports a modern oval-shaped bowl, generously proportioned for a maximum water content. Anti-splash ledges are incorporated to protect walls and floors.

Fittings available from Armitage Nuastyle range are attractive, chunky pillar taps at maximum 6" centres, or the G1060 series of centre mixer fittings with pop-up or chain waste. Armitage C724 concealed hangers, together with Centrepod leg, support the washbasin. The size is 20" x 16".

A recent addition to the Armitage Ware Hospital range of equipment is the F882 Revolving Post Mortem Table. A special valve allows the unit to be revolved through 360 degrees, while an integral waste channel at the foot of the table support pedestal ensures sufficient drainage in any position.

A new conception in baby baths—the Armitage F810 Teviot—is manufactured in Armitage Excelsior

Glazed Ware and is guaranteed non-crazing, burn, stain and scratch-proof, and non-fading.

We note that the address of Mr. F. N. S. Ahern, agent in the Republic of Ireland for Armitage Ware Ltd., has been changed to 43 Charlemont St., Dublin, 2.

\* \* \*

W. & G. Sissons Ltd. (St. Mary's Road, Sheffield) produce a standard range of catering stainless steel sinks which are of interest to industrial concerns, commercial catering companies and hospitals. Some of the standard sinks can be supplied with

*Continued overleaf*



### New attachment

**A** NEW hand spray attachment by Armitage Ware Ltd., Armitage, Staffordshire, supplied complete with wall hook, for use with the Armitage Nuastyle G1050 (as shown) and G1150 pop-up or chain-waste mixer fittings.

A special design enables the hand spray to be fitted quickly and without threading the mixer tap nozzle.

The rubber plug fitment at the end of the flexible spray hose is inserted into the tap nozzle and expanded by turning the 1½" diameter rotating wheel underneath to give a firm, leak-proof grip.

The new fitting completely eliminates any possibility of "locking" the hand spray into the tap nozzle through stripping or forcing the threads.

*The Irish Plumbing and Heating Engineer.*

heating arrangements to one bowl so that the sink becomes a sterilising unit. This does not mean, however, a hospital equipment sterilising unit, but a sink designed for pot wash and crockery wash, with one bowl so heated that the crockery, etc., has to be introduced to the bowl by means of nylon baskets. Any germs on the crockery are killed by the temperature of the water, which is rarely less than 185 degrees F.

All Sissons' sinks are made from sold, heavy-gauge Sheffield stainless steel. Usual features are splash-back and anti-drip mould; strengthened sound deadened drainers; radiused corners to bowls, etc. The under-structure is of tubular mild steel or stainless steel. The mild steel under-structure can be galvanised or enamelled. The sinks can be fitted on stainless steel or stove enamelled cabinets.

\* \* \*

THE latest version of the first white plastic cistern which was introduced in 1957 by Fordham Pressing Ltd., Wolverhampton, is being marketed by the same firm. It is the Eterna—a perfect low level cistern, manufactured from Styrene. It has an extremely narrow projec-

## PRODUCT REVIEW

*from previous page*

tion, measuring only 7" from the back wall, and this enables it to be fitted where space is limited. It also makes it suitable for duct fitting.

Fitted with the Acquaflot polythene ballfloat and Fordham plastic syphon, the Eterna will operate in all conditions of water, even where sea water is used. The Fabula is a high level version of the Eterna. It can be supplied complete with a four-piece plastic flushpipe which packs inside the cistern. The Eterna Presto is a streamlined version of the standard Eterna with a special top-press action. It is extremely easy to operate, due to the reduction of friction to an absolute minimum.

Fordhams also offer their Uniterna—a distinctive close coupled suite incorporating the Eterna Presto cistern and the Ace plastic seat. It is stylish and compact, the overall length of the suite being only 26" from the back wall.

The Acquasave Mk.2 is a new ballvalve from Fordhams made en-



● The new Lincoln bathroom suite by Ideal-Standard (see review)

tirely from Delrin (see Trade Topics). Fordhams are represented in the Republic of Ireland by R. T. Large, Stephen's Place, Rere 47, Merrion Square, Dublin, and in Northern Ireland by J. G. Linton, 8 Corporation Street, Belfast.

\* \* \*

SHIRES Ltd., Guiseley, Leeds, have extended their activities into the sanitary pottery field, following the entry of Heathcote Ceramics Ltd., Longton, Stoke-on-Trent, into the Chloride Group, of which Shires have been a member for the last

*Continued page ten.*



INSTALLATION AT HYDE PARK CORNER, LONDON

## JOHNSON & SLATER LIMITED

(Vitreous China Division)

ALFRED JOHNSON & SON LTD.  
QUEENBOROUGH - KENT

(Sanitary Fireclay Division)

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

Agent:

C. BRINSLEY SHERIDAN

10, HERBERT PLACE, DUBLIN, 2.

TELEPHONE: 66283.

## WESTWOOD

Vitreous Enamelled  
SANITARY FIRECLAYWARE

for


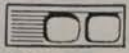
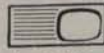
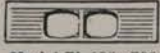

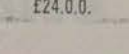
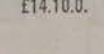


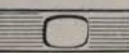

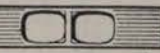
Houses, Hospitals, Schools, Public Buildings,  
Canteens and Factories

In addition to White can also be supplied in  
the following pastel shades:

PRIMROSE	BLACK
TURQUOISE	GREY
SKY BLUE	CORAL PINK
LIGHT GREEN	IVORY

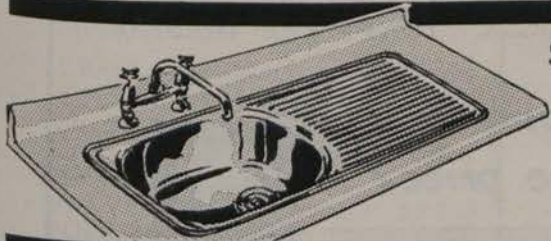
# WHATEVER SIZE & TYPE OF SINK YOU WANT **FISHOLOW** MAKE IT!

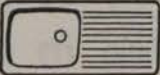
## STAINLESS STEEL MULTI-FLUTED SINKS


 <b>Model L</b> 18" x 36" £12.0.0.	 <b>Model DL</b> 18" x 54" £24.0.0.	 <b>Model N</b> 18" x 42" £14.10.0.	 <b>Model TL</b> 18" x 72" £29.0.0.
 <b>Model W</b> 21" x 42" £16.10.0.	 <b>Model WL</b> 18" x 54" £19.10.0.	 <b>Model DN</b> 18" x 63" £20.0.0.	 <b>Model TN</b> 18" x 84" £30.0.0.
 <b>Model WW</b> 21" x 63" £24.0.0.	 <b>Model WN</b> 18" x 63" £21.0.0.	 <b>Model DW</b> 21" x 63" £21.10.0.	 <b>Model TW</b> 21" x 84" £35.0.0.

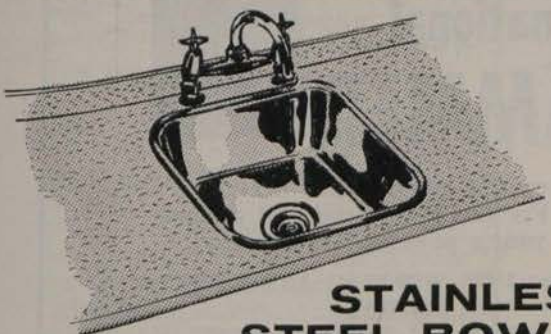


## STAINLESS STEEL INSET SINKS



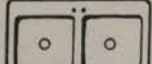
 **Model FL**  
16" x 36" x 7" deep  
£15.10.0.


 **Model FDL**  
16" x 54" x 7" deep  
£25.0.0.




## STAINLESS STEEL BOWLS

  
**Model X** 18" x 16" x 7" deep  
£7.10.0.

  
**Model WXX** 31" x 21" x 7" deep  
£17.0.0.


  
**Model WZZ** 19" x 35" x 7" deep  
£18.10.0.

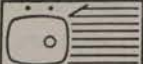
  
**Model X** 18" x 16" x 7" deep  
£7.10.0.

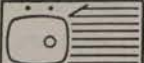
  
**Model XX** 31" x 18" x 7" deep  
£15.10.0.

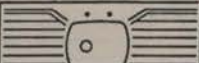
  
**Model ZZ** 16" x 35" x 7" deep  
£17.10.0.

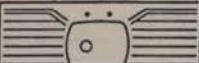
## VITREOUS ENAMEL SINKS

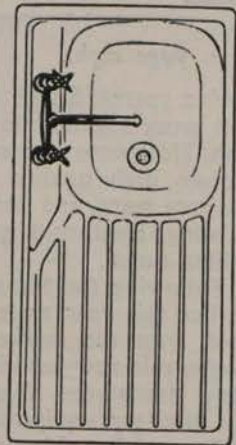
  
**Model VA** 18½" x 36" £5.10.9.

  
**Model VN** 18" x 42" £5.16.0.

  
**Model VB** 18½" x 36" £5.19.0.

  
**Model VW** 21" x 42" £6.17.6.

  
**Model V2**  
21" x 63" £9.15.0.



## VANITORY BASINS



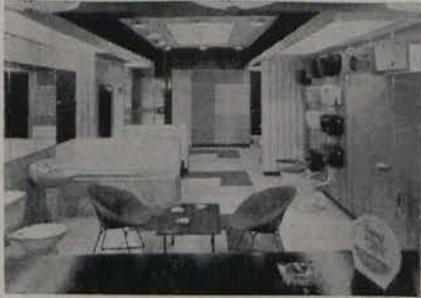
**Standard** 15½" x 24½" £5.15.0.  
**Ultra** 17½" x 24½" £7.18.0.

Taps and waste fittings extra

FISHER & LUDLOW LTD (Department T.S.V.) BIRMINGHAM 24



*For Life*



### Shires range

OUR pictures give an indication of the range from Shires Limited. The view shows a new Shires showroom. Prominently displayed, in bathroom settings, are Shires 'Naiad' suite, with its 'Perspex' bath, matching wash basin and Uni-Lynx close-coupled toilet. Also on show are the Robin 'Perspex' baths, for which Shires now have marketing responsibility.

High and low level Lynx cisterns, in colour and black; the New Duranite and Hippo cisterns, both in black, are all displayed. Cutaway cisterns, including a glass fibre Polyflush flushing trough, show the working parts of these Shires units. A special display shows how Shires remote flushing control operates a concealed cistern, and the Company's range of seats and accessories can also be seen.

*from page eight.*

twelve years. Shires and Heathcote will work together in close association, Heathcote continuing to manufacture high quality vitreous china sanitary ware, and Shires adding the existing Heathcote products to its selling range.

Following the arrangements made earlier this year under which Shires took over the marketing of Robin baths, this new association considerably strengthens Shires' position in the sanitary equipment field. They will now be able to offer all the equipment for a modern bathroom in a wide variety of designs, both for new building and for replacements.

● The Albany luxury washbasin by Twy-fords.



Ten

YOU GET SOME VERY GOOD PROGRAMMES ON THE

# DELSTAR

## New Automatic Wallflame Oil-fired Boiler

ALL THE ADVANTAGES OF AUTOMATIC OIL-FIRED HEATING.

ALL THE ADVANTAGES OF THE WALLFLAME BURNER SYSTEM.

PLUS THE SLIMMEST, NEATEST, NICEST-LOOKING CABINET YOU'VE SEEN. THAT'S THE DELSTAR.

*And the Programmer is included in the price!*



### • New International PROGRAMMER

This up-to-the-minute control programmes heating and hot water separately. For the user, wonderful economy and convenience. For you, a powerful selling story.

Here are the programmes: 1 ON MORNING AND EVENING  
2 ON ALL DAY  
3 ON ALL DAY AND NIGHT  
4 OFF

Available from stock at the Sole Agents:

## MONSELL, MITCHELL & CO. LTD.

HEATING AND INSULATION DIVISION

67-73 Townsend St., Dublin, 2

TELEPHONE: 76282.

# WE TAKE OFF THE WRAPPER!



**WE'VE** seen how the installer can now fit the new range of capital radiators from International Boilers and Radiators Ltd. still in its packing. Now we look under the wrapping at one of these new rads finished in a warm white matt primer and featuring concealed brackets.

## trade **Topics**

A BALL valve which eliminates the risk of an overflowing water tank has been introduced by Fordham Pressings Ltd., of Wolverhampton. Moulded in several component parts from Delrin acetal resin, the patented valve mechanism will neither corrode nor stick, has very low moisture absorption and is silent in operation.

### **NEW BALL VALVE BY FORDHAM**

The Mark 2 Acquasave ball valve is the successor to the Mark I which has been used extensively for some years. It can be installed in any standard half-inch water supply system with high, low or medium pressures and in flushing systems or water tanks.


An advantage of the Acquasave is the ease of adjustability of the valve arm by means of a screw.

A ONE-DAY congress on domestic heating is being held in conjunction with the 5th National Domestic Heating and Insulation-in-the-Home Exhibition (organised by Clarke & Rhodes Limited), which takes place at the Free Trade Hall, Manchester, from September 14-18. The one-day congress is being held in the Lesser Free Trade Hall on Wednesday, September 15, and will be attended by installers of central heating.

'If you are looking for pumps', they said

'You are most likely to get the ones you need from Worthington-Simpson', they said

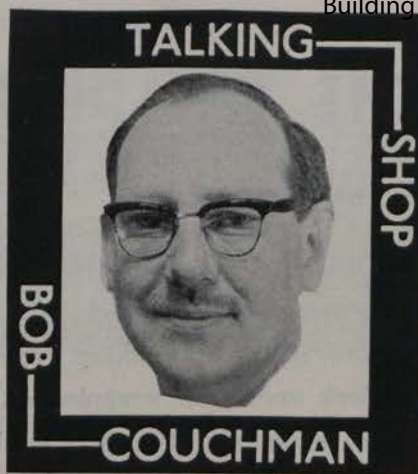


**Worthington - Simpson Ltd** 

6 WATERLOO ROAD, DUBLIN 4.

MAKERS OF THE LARGEST RANGE OF PUMPS IN THE COUNTRY

*Eleven*



## Take a deep breath and . . .

SOMEBODY once told me that if you are giving a talk or writing an article the thing to do was to make an impressive start and to have a good closing sentence or paragraph. Given these two essentials nobody would notice the bits in between. This is probably true but how does one set about making an impressive start? In

any case when you are starting a series, as I hope this will be, does the impressive start go as far as the first paragraph or does the first article have to be impressive? It is all very difficult and I think that all I can do is to meander on as usual.

Domestic heating is not entirely a matter of precision, slide rules and earnest expressions. A little meandering may be a very good thing. Putting it another way, the design of domestic heating systems is not a science, it is an art based, if you like, on a science but still an art. This does not mean that I believe in long hair, studios and a general Bohemian outlook. What I am really trying to say is that I believe that domestic heating is so closely concerned with people that the human element becomes of prime importance.

HERE IPHE meet W. J. R. (Bob) Couchman in a new monthly column—Talking Shop. Bob, who recently contributed our Seven Deadly Sins of Domestic Heating Installation, is now based here following his appointment as Technical Officer, Domestic Heating Department, with Irish Shell and BP Ltd.

I DO not remember ever hearing anyone defend the dignity of the trade but one can think of relatively few more useful or important occupations than giving people their own private climate inside their front door. Most thinking people agree, although it is perhaps old fashion to say so, that the most important thing in anyone's life is their home.

The most important thing of all, of course, is "Home" in the sense of people; one's wife, one's children and generally the people around whom one's life revolves. But all this living has to be carried out in an appropriate setting and although the family circle around the open fire can be very pleasant, particularly at times like Christmas, in

*Continued page twenty-seven.*

## The New THERMOPAK AI Accelerator

**Suitable for all domestic closed circuit heating installations from 15,000 Btu/hr. to 150,000 Btu/hr.**

★ The main features which make the THERMOPAK AI a really outstanding pump:—

- High power-to-size ratio.
- Wide range of performance.
- Operational in any vertical or horizontal plane.
- Silent throughout entire output range.
- Measures only 7½" in length; weight 10lb. 8¼ oz.
- Two-year guarantee.

Available from stock at the sole agents:

**MONSELL, MITCHELL & CO. LTD.**

Heating and Insulation Division.  
67/73 Townsend St., Dublin, 2. Tel. 76282.



# trade Topics

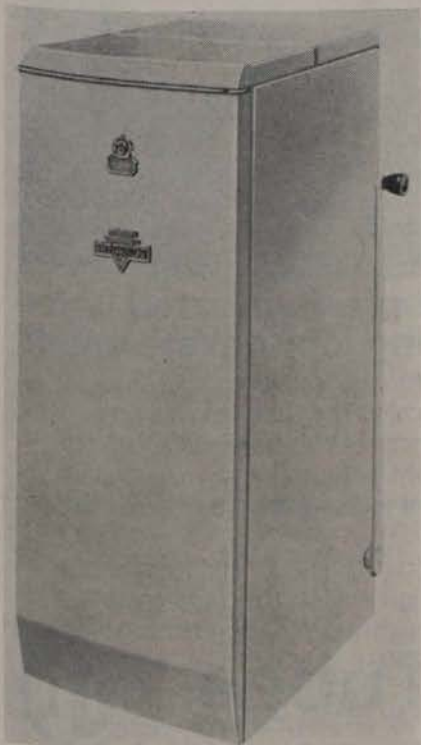
THE new Trianco SF.60 solid fuel gravity fed domestic boiler, rated at 60,000 Btu/h is the newest, most streamlined boiler Trianco have produced, setting a new high standard in home heating. The SF.60

## A NEW TRIANCO BOILER

has been designed to live happily in a modern house. This compact model requires a headroom of only 5' and a floorspace of 22" x 19" and the rear fitted flow and return pipes simplify installation. The large capacity hopper holds 100 lb. of anthracite grains and can be adjusted to use peas or beans—thus cutting down refuelling to a minimum. Cleaning is easy and infrequent.

Special Trianco features include: large hopper, variable output forced-draught fan, induced secondary air for improved combustion and efficiency, fan unit fitted in front of boiler and behind door for easy access and adjustment to blast control.

The SF.60 Boiler, having achieved



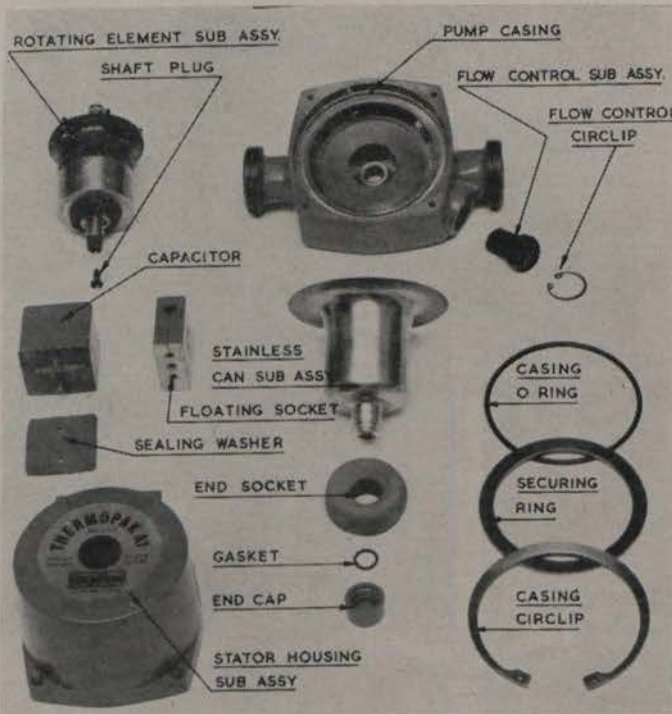
high solid fuel combustion efficiency in stringent tests, is the result of a long-term research and development programme. The adjustable electrically driven fan controlled by a thermostat supplies the correct amount of air to the firebed to suit individual fuels at low pressure, for rapid, smokeless combustion.

- A NEW sixteen-page full colour brochure packed with ideas and advice on bathroom equipment and planning is now available from Shires Limited, the sanitary equipment manufacturers.

## FOR YOUR DIARY

THE growing interest in home heating is emphasised by the subjects to be dealt with by speakers at the Third Plumbing and Central Heating Conference to be held on 7 and 8 October, 1965, at Alexandra Palace, London, in conjunction with the first International Plumbing & Central Heating Exhibition.

Two speakers from the Heating Centre, London, will deal with "The Domestic Heating Industry" and "Space Heating" whilst other experts will discuss oil, gas, solid fuel and electricity as means of heating.



## Inside Story

THE exploded picture of the International Boilers new accelerator, the Thermopak A 1, shows its deceptive simplicity. Suitable for all closed circuit domestic heating systems up to 150,000 Btu/h, the A 1 has an extremely high size-to-power ratio.

## 'P' BRAND TESTED MALLEABLE IRON TUBE FITTINGS 1865-1965

Made in all British Standard sizes, 1/2"–6" inclusive, thus eliminating the necessity for bushes.

**G. B. Parkes**  
Limited

Crown Works,  
Halesowen, Birmingham,  
England.



Agents in Republic of Ireland:

**W. Finucane & Co.** 5 Upper Pembroke St., Dublin, 2.





**'Yes  
pitch fibre  
was  
specified'**

**The Temple System  
offers**

**Building Tolerance**  
The 'O' ring joint allows for  
plus or minus 1½"

**Heating Resistance**  
Withstands continuous discharge  
of boiling water

**Speed**  
Light weight and fabricated units  
speed up installation

**Efficiency**  
Pitch fibre pipe; Polypropylene  
fittings: both non-corrodible and  
non-electrolytic

**'of course, Temple pre-fabricated units  
with the new 'O' ring joints were used'**

The Temple system for multi-storey 6" soil pipes speeds up the building operation dramatically. The Neoprene 'O' ring joint allows for building tolerances of plus or minus 1½". Pitch fibre pipes are exceptionally light, and can be sawn, drilled or grooved on site using only hand tools—more speed, less cost, fewer labour charges.

Write to Temple Tubes for technical literature and learn about the unique fabrication and design service, the Neoprene 'O' ring joint and the Temple 'push-on' W.C. connector

**Temple Tubes**  
Limited

Temple Mill · Passfield · Liphook · Hants · Tel: Passfield 281



# industrial heating & ventilating

## IN IRELAND



### trade Topics

A THERMO-FLO Balancer specially designed for balancing multi-circuit or zoned forced circulation heating and cooling systems, is now being manufactured by Bell & Gossett Ltd., Works Road, Letchworth, Herts.

The balancer is a direct reading device and is calibrated in gallons per minute with a corresponding scale in litres per minute. A stainless steel spring indicator gives a positive indication of flow rate.

A special feature is the simplicity of the flow regulation. The unit is compact and can be installed in horizontal or vertical pipelines. Calibration limits are from 2 to 8 gallons, per minute, with  $\frac{1}{4}$  in. and 1 in. B.S.P. connections. The maximum operating pressure is 125 p.s.i. and maximum temperature 250 deg. F. For larger applications the range of Thermo-Flo Indicators is available in sizes  $\frac{1}{4}$  in. to 8 in.

\* \* \*

WAVERLEY Engineering Company Limited, Hyde St., Winchester, Hampshire, offering an Oil Powered Water Heater with a recovery rate four times faster than the much publicised 'high-speed' gas and even eight times faster than

MEN IN THE BUSINESS KNOW

# boyans

OF HARCOURT STREET



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

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

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

A member of the Cape Asbestos Group of Companies

TW494

Continued overleaf



from previous page

electricity. The operating costs work out at just a little under one gallon of gas oil per one hundred gallons of hot water.

The unit is good looking and well finished; it is completely automatic and is supplied in three sizes. The integral automatic in operation and is supplied in three sizes. The integral storage tank can be either glass lined or copper lined. The recovery rates range from 100 to 150 gallons per hour.

All glass lined models are equipped with a magnesium anode. Tanks are of heavy gauge steel, hydrostatically tested to 300 lbs. p.s.i., all fittings are of copper or brass. In copper lined models, the copper lining is encased in a heavy gauge high strength steel tank, forming an integral assembly. Water only comes in contact with copper, and flue gases only with steel. The unit is hydrostatically tested to 450 lb.s p.s.i.

\* \* \*

TEMPAIR Limited, the Rootes Group air conditioning equipment manufacturers, announced the release to the home market of the new Pacific 102 wall/window mounting unit air conditioner.

An entirely new self-contained cooling and heating unit, the Pacific 102, with its classically simple styling, offers new standards of performance and efficiency in air conditioning at a very competitive price.

Of 1 h.p. 8,000 B.t.u./hr., capacity, the unit measures 26" wide and 16½" high, with a depth of only 17". The absence of side grilles permits installation flush with the outside wall if required.

One of its outstanding features is the option of either front or top air discharge of the conditioned air within the room. This ensures draught free, perfect circulation of air whether the unit is mounted at high or low level. Agents: L. Sterene & Co. Ltd.

## Instantaneous HOT WATER from steam—without storage

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

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

### MODELS:

- ★ (1) BABY COX (½") for wash-basins, sinks, etc.
- ★ (2) JUNIOR COX 1—5 (¾"—2") for process work, vats and general purposes.
- ★ (3) SENIOR COX (2½"—8") for large volumes of hot water for process hot water supplies.

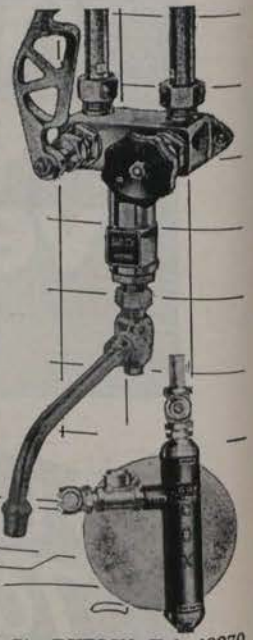
**NO TIME LAG - NO STORAGE - NO STEAM TRAPS  
NO LOSS OF CONDENSATION - NO MOVING  
PARTS TO GO WRONG**

## COX WATER HEATERS

Manufactured by COX ENGINEERING CO. LTD.  
Dept. IP19, 14 Park Lane, Sheffield 10.  
Tel.: 62483. Telegrams: "Heaters Sheffield"

### Agents:

Halpin & Hayward Ltd., Unity Buildings, 16-17 Lower O'Connell St., DUBLIN. Tel. 43270.  
589, Upper Newtownards Road, Knock, Belfast. Tel. Dundonald 3218.



# FLOATSWITCHES

for

controlling electrically driven pumps  
Limit switches  
Liquid level alarms  
Motorised valve controls  
etc., etc.

MERCURY TUBE and SILVER CONTACT types. Indestructible polystyrene floats. Floatgear also in stainless steel, copper, mild steel and polythene. Deliveries ex stock.

Generous discounts to the trade.

Stocked by most Electrical Wholesalers

Available from the Manufacturers



**GIRDLESTONE PUMPS LTD.**

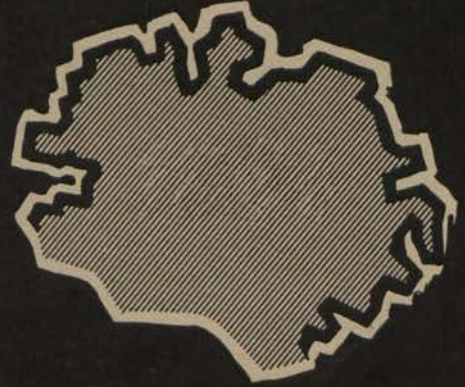
WOODBRIDGE, SUFFOLK, ENGLAND

Tel.: WOODBRIDGE 660.

**INDUSTRIAL SECTION  
CONTINUED PAGE 29**



# Northern Ireland monthly review



# Oil

*The  
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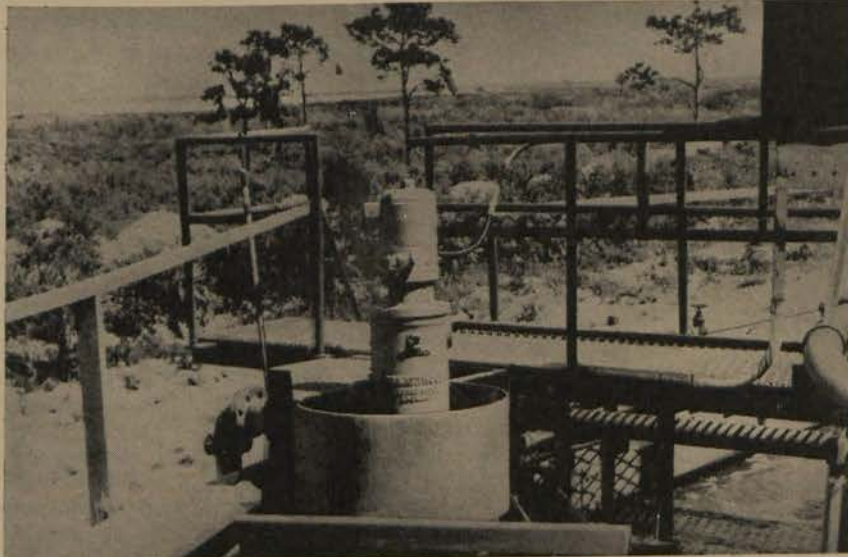
*If you would like a copy of our new Leaflet of Kosangas Industrial Applications please telephone our Industrial Sales Dept: Belfast 33221 or Dublin 74774*

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*Eighteen*

# SEWAGE SCREENS THAT NEED NO CLEANING NEAR CAPE KENNEDY

When you want  
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This  $\frac{1}{2}$  h.p. 10 R. Comminutor, built in England by Jones & Attwood Ltd., is installed on the inlet chamber of a field erected sewage treatment plant at India Harbour Beach near Cape Kennedy, Florida, U.S.A.

## JONES & ATTWOOD LTD.

STOURBRIDGE, WORCESTERSHIRE, ENGLAND

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*The  
Comminutor  
People*

**SMALL Bore Heating Systems** Ltd., the servicing subsidiary of International Boilers & Radiators Ltd., have announced improvements in their "National Service Scheme for

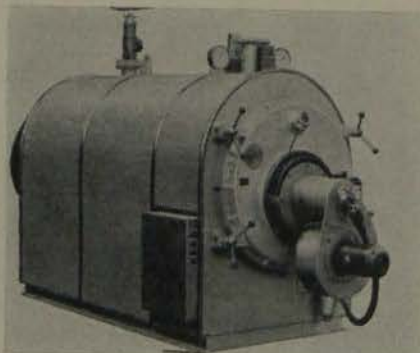
**PUMPS SERVICE IMPROVED** Pumps," which is operated as a service to installers and distributors handling International's pumps. The company claims that this is now the finest scheme ever offered by any manufacturer.

The main highlights of the improved scheme are: Pumps under guarantee found to be faulty or misused will be replaced by International with new pumps of the same type; pumps, under guarantee, which have collected dirt or residue from the circuit will be replaced with a new pump of the same type absolutely free of charge.

In order to ensure fairness to all concerned, the automatic labour allowance at present operating for the replacement of faulty pumps will be discontinued and each case will be dealt with separately on its merits; guarantees have now been increased so that each new or reconditioned pump will carry the unexpired portion of any guarantee outstanding on the pump it replaces, or a period of one year, whichever is longest.

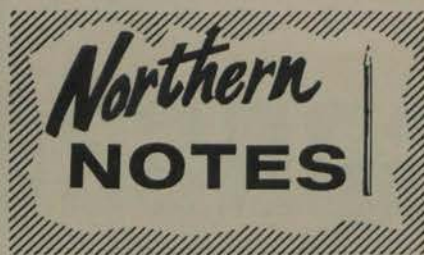
This move to make International's service scheme outstanding in the country coincides with the launch of the Thermopak A1 and is part of the company's general expansion programme.

## Additions to boiler range



● One of the additions to the Allen Ygnis range of recently introduced packaged hot water boilers.

<https://arrow.tudublin.ie/bsn/vol5/iss5/1>  
DOI: 10.21427/D7ZM6C



Concealed fixing brackets and a new, slimmer look are two main features of the latest Stelrad radiator, made by Steel Radiators Ltd. O.B.C. Limited of Droitwich as main distributors, have comprehensive stocks here.

**RADS HAVE HIDDEN BRACKETS**  
The new slimmer radiator is attractively finished as standard in warm white stoved primer and is wrapped in protective covering for delivery. The new radiator is available in four heights, 12", 17", 23" and 29", and from 12 to 80 sections, giving lengths from 18 $\frac{1}{2}$ " to 126". Sections now go up in multiples of four as against two previously.

The radiator will have four  $\frac{1}{2}$ " tapings, except on the larger double panel radiators when the tapings will be  $\frac{3}{4}$ ".

\* \* \*

A NEW product from the Plumbing Division of The Marley Tile Company is announced for immediate availability

## MARLEY PLASTIC CISTERNS

—Marley Polythene cold water cisterns. This new cold water storage cistern is being made in three sizes, 4 gallons (actual capacity) 25 and 50 gallons (both actual). The cistern is made from black polythene and is circular in shape.

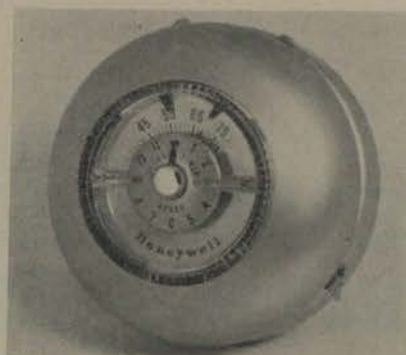
The 4 gallon topping cistern is intended for use as a central heating expansion unit. The 25 and 50 gallon cisterns are for conventional use.

The latest recruit to the increasing range of Marley plumbing products is, like all plastic products, designed to last a life time. Polythene is tough, light in weight and cannot incur rust and corrosion usually associated with cisterns of this type. Rotational moulding enables the cistern to be made in one piece with no joints or seams.

An optional extra for the Marley cistern is a circular insulating lid in expanded polystyrene.

\* \* \*

ALLEN YGNIS Boilers Limited announce important additions to their



● The new Honeywell control.

## New control

NEW from Honeywell is a completely automatic control system for all types of domestic central heating. Ideal for gas-fired, oil-fired or fan assisted solid fuel boilers, it comprises an Aquastat which is fitted in or near the boiler, and an elegantly designed low voltage room thermostat.

The temperature of the boiler water is continuously adjusted by the Aquastat to ensure that it is never hotter than necessary to satisfy the demand for both domestic hot water and central heating. In summer the water is kept at a temperature just sufficient to serve domestic needs.

A selection of room thermostats are available. One of these, the Day/Nite round, obviates the need for a time switch and is extremely flexible. The system can be switched off or turned to a lower setting at any time of day or night simply and quickly. The setback period can be up to ten hours.

range of recently introduced packaged hot water boilers—the Ygnette oil or gas fired boiler has now been increased in output to 3,500,000Btu/h. and is fitted with a Nu-Way P-Pac oil burner, or alternatively an Elco 'U.D.' burner.

## ADDITIONS TO BOILER RANGE

The Ygnette is now manufactured in nine sizes covering outputs from 400,000 to 3,500,000 Btu/h. and is offered for 65, 100 or 150 p.s.i. working pressure. Each boiler being self-contained with its own oil burner, side mounted control panel, and all boiler mountings, including safety valve. The boiler shell is insulated and then finished in a stove enamelled dove grey casing.

Additions have also been made to the 'Pyrotherm' range by extending to include 12 sizes up to 16,000,000 Btus/h. They have also announced a new range of steam boilers up to and including 5,000 lbs./hr. Irish agents: W. H. Leich and Son.

# SPECIAL REVIEW

**THIS MONTH**Sewage treatment  
and disposal

## SEWAGE DISPOSAL AND PURIFICATION

**S**INCE the last war there has grown a new awareness to the problem of sewage disposal and purification, and perhaps this has revealed itself more in rural than urban areas. Standards have been improved and public health and river authorities backed by Government legislation have been calling for improved effluents, and stricter control of pollution. Sewage authorities have

By

**I. N. L. JONES, Esq., B.A., B.A.I.,  
A.M.I.C.E., A.M.I.Mun.E.,  
A.M.I.W.E., A.M.I.C.E.(I).**

**Deputy Engineer Armagh Rural  
District Council, Armagh.**

been forced to add equipment to their plants, such as Micro-wire strainers to polish the final effluent, because further down the river, water is being abstracted for drinking purposes. Certain industries are being compelled to pay the local sewage authority a fee for accepting their sewage, or to install pre-treatment works.

In Ireland, particularly Northern Ireland, developments in this field have brought many changes. After the war, there was a building boom, and many houses built in rural areas, were without water-borne sanitation. Now the recent distribution of piped water has opened up large areas to housing and industry. Many villages which owe their existence to port or present industries, are situated beside rivers and so adequate dilution is available for the effluent from their purification works. Yet in other areas watercourses running full in winter, dry up in summer, and farmers are becoming very sensitive about pollution and odour on their land, because Ministry of Agriculture regulations are being very stringently enforced regarding the keeping of livestock.

No longer can a septic tank become

a forgotten hole in the ground, but they are now being constructed to definite sizes, needing to be regularly de-sludged. Filters with proper distributing apparatus are also a necessity and in some areas sub-soil irrigation is essential. Modern detergents also present a difficulty, because they impede the work of the anaerobic bacteria, and their presence in sullage water can become a nuisance

Nevertheless a real effort is being made

today to preserve the amenities of the rural area. Local authority officials are keeping a very close control on the siting of all new buildings. The design and construction of their disposal works are being carefully supervised.

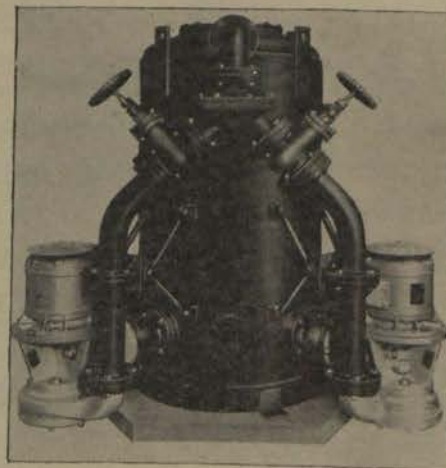
The last few years have seen the development of a new (to this country) type of pre-packed sewage works which seems to be an answer to sewage purification and has been used in both north and south. The manufacturers claim a Royal Commission standard of effluent and this type of works is particularly applicable to areas where dilution is inadequate.

It consists of a 'horizontal flow' tank containing crude sewage, into which

*Continued page twenty-four*

## SPP CHOSEN BY BUILDERS

SPP Package Sewage Diverters play a vital part in sewage disposal in a variety of building projects. SPP specialists, with their extensive experience, can provide you with details of units suitable for every application.

**SPP**

**SIGMUND PULSOMETER PUMPS**  
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**FOR ALL  
CLOSED-CIRCUIT HEATING**

**NEW  
GECAL**

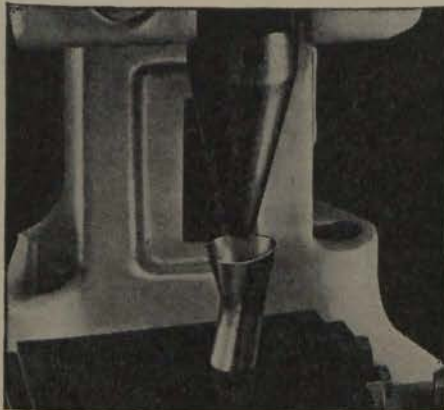
**beats copper  
all the way**

EVERY FOOT  
TESTED TO  
200 P.S.I.

**New Gecal** is a special grade of cold-reduced close-grain steel tube, phosphated by a new I.C.I. process against rust and corrosion. It's as good as copper – and better. It's also cheaper. **New Gecal** comes in two grades – Metallized and Plastic Coated. *Every single foot is water tested to a pressure of 200 p.s.i.* It can be bent as easily as copper – connected with compression or capillary fittings in exactly the same way as copper. It is fully interchangeable with copper pipe, but lighter and easier to handle and transport. *Supplies are assured, and prices stable.* **New Gecal** Metallized grade is just over *half the price of copper* – even when copper is at its lowest price. The Plastic Coated grade is only *two thirds the price of copper* – and, because it needs no lagging, can make a big reduction in installation costs. In fact, installation costs can be cut by as much as 42%.

*Twenty-two*

## MALLEABILITY PROVED BY 'IMPOSSIBLE' TESTS



NEW GECAL is welded in long lengths by a new process - high radio frequency welding. Because the weld is *continuous*, it can be bent to the maximum without leaking. Even under heavy hammering and the grossest mechanical distortion, NEW GECAL remains water-tight. When NEW GECAL is 'belled' on a press until it splits, the tear is always away from the weld. *The weld is actually stronger than the tube.*



## EASY TO USE

NEW GECAL can be bent as easily as copper and used with *any* copper fitting - capillary or compression - and used in *every* case where copper tube would be. When NEW GECAL plastic coated is used with capillary fittings the plastic sleeve should be cut longitudinally along the tube for about 4". After jointing the sleeve can be replaced and secured by adhesive.



**THE ORIENTAL TUBE COMPANY LIMITED**

(a wholly owned subsidiary of The General Electric Company Limited)

**CHURCH LANE, WEST BROMWICH STAFFORDSHIRE**

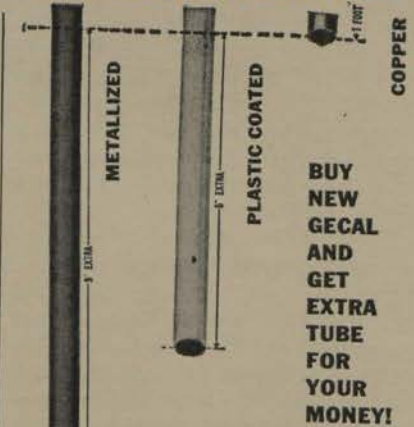
**Tele: West Bromwich 0044**

## SAVE OVER £15 ON AN AVERAGE INSTALLATION

In a typical 3-bedroomed semi-detached house, you can save 42% of the cost of installing copper, with NEW GECAL Metallized. And 34% by using NEW GECAL Plastic Coated - which also saves the time and cost of lagging.

A rough indication of costs:

Copper £37.9.8  
New Gecal Metallized £21.17.6  
New Gecal Plastic Coated £24.15.10



With NEW GECAL you get far more tube for your money. Buy a foot of  $\frac{1}{2}$ " copper and then spend the same money on buying NEW GECAL - and just look at the difference in lengths! NEW GECAL  $\frac{1}{2}$ " Metallized gives you nearly 9" extra - 21" in all. NEW GECAL  $\frac{1}{2}$ " Plastic Coated - over 6" extra (18" in all). Savings for  $\frac{3}{4}$ " tube are just as great. (Based on average price of  $\frac{1}{2}$ " copper pipe between June 1964 and May 1965).

## SPECIFICATIONS

### NEW GECAL METALLIZED

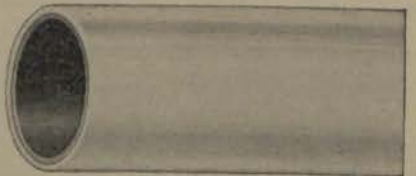
NEW GECAL Metallized Grade is a steel tube, phosphated by a specially developed I.C.I. process for rust resistance, and sprayed with a metal paint to give an attractive finish. It is fully interchangeable with copper pipe and satisfies all the physical and dimensional requirements of BSS 659.

Net Prices to Installer .....  $\frac{1}{2}$ " nom. bore 9½d per foot  
.....  $\frac{3}{4}$ " nom. bore 1/0d per foot

### NEW GECAL PLASTIC COATED

NEW GECAL Plastic Coated Grade is a rust and corrosion resistant phosphated steel tube, sheathed in an ivory coloured plastic which makes lagging unnecessary when the pipe is used beneath floors or in roof spaces. It is fully interchangeable with copper pipe and satisfies all the physical and dimensional requirements of BSS 659. No painting is necessary - although the plastic coat is an excellent base when painting is desired.

Net Prices to Installer .....  $\frac{1}{2}$ " nom. bore 10½d per foot  
.....  $\frac{3}{4}$ " nom. bore 1/2d per foot



## TAKE ADVANTAGE NOW OF THIS SAMPLE OFFER

- Please send me literature with full details of NEW GECAL
- Please send me at a special discount a Sample Pack (200 ft - 20 ft x 10) of ONE ONLY of the following:  
New Gecal Metallized  $\frac{1}{2}$ " for £7 .....  
(normal price £7.18.4)  
New Gecal Metallized  $\frac{3}{4}$ " for £9 .....  
(normal price £10)  
New Gecal Plastic Coated  $\frac{1}{2}$ " for £8 .....  
(normal price £8.15)  
New Gecal Plastic Coated  $\frac{3}{4}$ " for £10 .....  
(normal price £11.13.4)  
OR  
(400 ft. New Gecal Plastic Coated  $\frac{1}{2}$ " } for £26  
(200 ft. New Gecal Plastic Coated  $\frac{3}{4}$ " } (normal price .....  
£29.3.4)

Put ticks in the appropriate boxes. Send this Coupon to the address below.

NAME .....

NAME OF COMPANY .....

ADDRESS .....

NAME OF USUAL MERCHANT .....

L

**A** PROBLEM often facing builders or land developers is the one of sewage treatment and disposal. To find the cheapest and best, most reliable and nuisance-free, and yet a plant which will do the job properly, is a difficulty about which there is little guidance available. The author, in making a comparison between the two basic systems available is drawing upon up-to-date technical information from the various pertinent journals, and on considerable first hand experience.

Generally speaking there are two systems of small sewage treatment plants available, namely the biological filter method and the extended aeration process. The former is well tried and established, and the latter is a development of the activated sludge treatment method, and is sometimes referred to as a 'packaged plant'.

Firstly, it must be decided to what degree of purification the liquid sewage must be treated. A lot will depend on how it is to be finally disposed of, and information should be sought on this point from the local authority concerned, or the River Authority covering the area of the proposed installation. This purity value is given in terms of residual oxygen demand (usually the five day Biochemical Oxygen Demand, BOD for short) and the quantity of suspended solids, usually abbreviated to SS. Both these values are given as parts per million (ppm).

In the U.K. the generally accepted criterion is the Royal Commission Standard, which lays down that the final effluent to be discharged shall not have a BOD in excess of 20ppm and an SS figure not in excess of 30ppm. Even

## SEWAGE DISPOSAL

*from page twenty-one*

compressed air is blown to oxygenate the sewage. Not only is this unit used for domestic purposes, but in industry it has recently dealt effectively with milk and fruit canning wastes. At present they are more expensive than traditional works but since their head loss is small, their use can eliminate pumping where fall is at a premium. There is, however, a considerable electrical consumption, which when capitalised adds to the cost.

In conclusion there is no doubt that more research in this field is needed, although much is being done at present. Nevertheless, if the growing problems of pollution and sewage disposal are to be overcome, government sponsorship will be necessary.

*Twenty-four*

# SMALL SEWAGE DISPOSAL PLANTS

An appraisal by **B. E. Hackley,**  
**M.I.Prod.E., M.R.S.H., A.I.S.P.**

so, the present trend in many cases is now to specify a much better effluent, for instance as low as '10-10' is sometimes demanded where a River Authority have perhaps a small volume fishing stream into which this effluent will be discharged.

If we are thinking in terms even as generous at R.C. Standard, it is important to obtain some form of assurance particularly from manufacturers of extended aeration plants, that under all conditions their plant will produce a satisfactory final effluent.

The biological filtration system is basically a septic tank into which the crude sewage flows. The solids and finely suspended sludges settle onto the sloping floor, the liquid weiring from the top of the tank to the revolving distributor is evenly spread onto the media surface, and in percolating through, it becomes oxidised by the live bacteria. It now flows through a small humus collecting chamber and is then often ready for final discharge to the stream or onto a grassland surface. One firm is now offering a special device to fit into the humus tank which they call a U.C.F. clarifier, and the use of this ensures a final effluent much superior to the R.C. Standard.

In most cases no power is needed on these plants, because usually they can be so sited that the sewage will flow by gravitation completely through. Even where the terrain does not permit of a gravity scheme, an extremely reliable automatically controlled electric pump raises the tank effluent to the filter distributor. The pump operation is governed by the level of liquid in the pump well, consequently it only runs for a total of an hour or two each day. Being only a 3/4 HP motor, the running cost is negligible. The smallest plant manufactured is for one house

(of 4 persons), and the largest generally for 140 houses.

The extended aeration plant is a factory prefabricated complete unit in a steel tank. The crude sewage on entry usually passes through an electrically driven cutting machine. A compressor supplies a continuous air bubble feed to the sewage mixing chamber, and the treated mixture weirs into an adjoining compartment where the suspended sludge settles to the bottom, and the liquid again weirs off for discharge. These plants rely on an accurate assessment of the sewage volume to be treated, and no manufacturer will offer a plant for less than 10 houses. The reason for this is to ensure some buffering of incoming sewage with a reasonable volume of partly treated material.

A criticism against these plants is their constant need for power. A good feature of the extended aeration plant is the little site work involved. Usually only a good concrete base is required, the whole plant being placed in situ in a short time.

One manufacturer of filter plants produces a superior type of distributor called the Monojet. It has been extensively tested by the Ministry of Works, who confirmed its advantages over many distributors as regards unchokeability and the little attention required. This is important because if some of the nozzles become clogged, part of the filter bed is not being utilized, and the remainder is being overloaded, with a consequent deterioration in effluent quality. These Monojets enjoy an excellent reputation, and are no more expensive.

**In conjunction with this review we now take a look at equipment available in this field (All claims made are those of the manufacturers).**

**P**UBLIC Works Services (Ireland) Ltd., Merchants' Quay, Newry, Northern Ireland, act as agents in Ireland for Messrs. Eimco (G.B.) Ltd. of Gateshead, who are associated with the Eimco Corporation of the United States in the field of Aerobic Digestion Process of Sewage Purification.

The increasing costs, both capital and maintenance, of conventional sewage plants has rendered the alternative of Eimco-type packaged digestion plants particularly attractive for rural areas. These plants are now available in sizes capable of

handling from 850 to 160,000 gallons, and suitable for domestic sewage flows from communities of 24 to 4,800 persons.

All share the advantage of very small size relative to the community served and total odour-free operation. As a result, plants may be installed close to houses without detracting from amenities. Perhaps the most important advantage offered by packaged aerobic digestion plants is speed of installation. Small units can be delivered to the site, installed and commissioned in a single working day.

The plants operate as follows: In an aerobic digestion plant organic stabilisation and sludge digestion is carried out in a single unit. Incoming raw sewage is agitated and aerated by compressed air fed from diffusers at the bottom of the aeration compartment.

Sewage is retained in this compartment for approximately 24 hours, at the end of which time the raw sewage has been oxidised by aerobic organisms to a stable ash, carbon dioxide and water. Treated sewage flows into the settlement compartment of the tank, where sludge settles out and a clear, biologically inert

## SPECIAL REVIEW

from previous page

effluent is discharged. Settled sludge is of a humus-like nature, odour-free, and can be easily disposed of over agricultural land.

The only attention required by the plant is desludging at approximately four months intervals, coupled with a brief daily visit by an attendant in order to ensure that the plant is operating correctly.

Public Works Services has installed a number of these plants in Ireland to treat a comprehensive variety of wastes from Caravan Parks, Hotels and Housing Estates to wastes from Creameries.

A WIDE variety of sewage pumps is included in the very comprehensive pump range available from Sigmund Pulsometer Pumps, who have offices at Great Victoria Street, Belfast. The sewage pumps included in this range vary from massive axial and mixed flow units (8-42 inches, up to 55,000 g.p.m. and 100 ft. heads) to Package Sewage Diverters.

The Diverters are available with inflows up to 125 g.p.m. and dis-

charge heads up to 115 ft. They have been designed to cut building costs, and are used in a wide variety of municipal developments and large and small building projects. For installation in a simple underground chamber no superstructure is required, and they are delivered as complete units for immediate installation.

The diverter is now well established, being used by public authorities, factories, schools and for sports grounds and hotels. They provide the answer to problems which frequently arise when small flows of unscreened sewage or other waste matter have to be pumped into an existing gravity sewer or sewage treatment plant.

Another 'package' plant supplied by SPP is the Water Booster unit. Capacities are up to 60 g.p.m., with larger installations also available. A simple connection to the main water supply, an electrical connection, and the unit is installed, ready to master water pressure problems in the tallest multi-storey building.

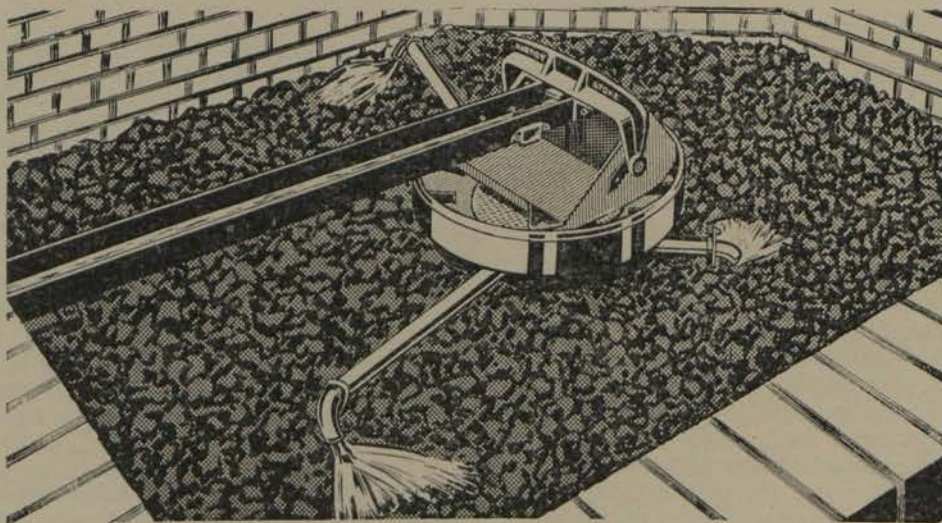
This plant caters for all water requirements and demand fluctuations, without the need for high level storage. The basic tank sizes are 250 and 450 gallons.

# MONOJET

## Sewage Plant

For Schools, Housing Estates, Hotels, Hospitals, Factories, Camps, Trade Wastes, etc.

**MAXIMUM  
PURITY  
MINIMUM  
MAINTENANCE**



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Hartleys (Stoke-on-Trent) Ltd.

Sewage Plant Manufacturers

Hartleys (Stoke-on-Trent) Ltd., Stoke-on-Trent.

Tel: 48627

# The storage of fuel oil explained



**F**UEL oil marketing and distribution is now big business and in addition to the major fuel oil companies, there have arisen various firms who act as agents and distributors for the foregoing major companies.

The research which has gone into the handling and storage of fuel oil has been such that in the case of the latter, if the oil companies' recommendations are followed, there is no reason whatsoever for any breakdown or deterioration in quality of fuel oil when in store. In addition the development of road tankers and rail cars has now reached a point where one would be tempted to conclude that no further development was possible.

As it can be practically assumed that all fuel oil used for domestic and industrial purposes is delivered to the customer by road, let us examine first the sizes of road tankers.

The standard road vehicles vary in capacity from 2,000 to 4,000 gallons and, of course, the size of the vehicle varies as to the chassis manufacturer.

The main tank is divided into 500 gallon compartments though often in the case of the heavier fuel oils, the tanker carries its total capacity of this fuel. With lighter oils, such as domestic fuel oil, loads of less than 500 gallons are quite usual.

**F**ILL PIPES—Fuel oils are not subject to the same restrictions as is Petrol, due to the fact that they have flash points not less than 150°F.; however many Local Authorities, in conjunction with their respective Fire Authority, have laid down certain rules regarding their storage and it is advisable that the comments of these bodies be acquired before an installation is commenced.

The size of the fill pipe is, of course, dependant on the installation and the vehicle usually carries adaptors which will fit between their hose and the fill pipe. The following materials should not be used for fill pipes, galvanised

pipe, yellow brass, natural rubber or lead and zinc.

**Capacity.**—The amount of oil which should be stored relative to consumption is a subject on which there are many varied opinions as certain people are of the opinion that it should not be necessary to tie up capital in tanks and oil which is not to be used.

It is, however, recognised by most authorities that the storage should be equal to a weekly consumption plus ten days to a fortnight's oil in storage. If it is necessary for this purpose to install more than one tank, each tank should be interconnected and have a common filling and discharge pipe.

**I**F, of course, different grades of oil are stored then separate fill and discharge pipes should be installed.

Below will be found a table which gives approximate sizes of horizontal cylindrical storage tanks.

Nominal Capacity: Gallons.	Approximate Dimensions: Diameter x Length.
750	.. 4' 6" x 8' 3"
1000	.. 4' 6" x 11' 0"
2000	.. 6' 6" x 10' 10"
3000	.. 7' 0" x 13' 9"
5000	.. 7' 0" x 21' 11"
7500	.. 9' 0" x 20' 3"
9000	.. 9' 0" x 24' 1"
12000	.. 9' 0" x 31' 9"

For domestic use mostly rectangular tanks are used and these are sized as follows:—

150	.. 4' x 4' x 1' 6"
250	.. 4' 9" x 3' x 3'
500	.. 6' x 4' x 4' 0"

If weight has to be taken into consideration the following table will give

an indication of the approximate weight in pounds of the various fuel oils.

**Approximate Weight in Pounds:**

At 60° Fahr.	Heavy	Medium	Light	Gas
1 Imp. Gallon	9.8	9.5	9.4	8.3
1 Cub. Foot	61.0	59.0	58.5	52.0
1 Cub. Yard	1648	1592	1581	1405
Imp. Gallons per ton				
@ 60°F. . .	228	236	238	270

Large tanks should be installed on cradles or reinforced brick piers with a downward slope of ¼" to the foot length away from the draw off point.

The tank should not sit direct on either metal or piers but instead there should be inserted between the tank and support hardwood battens or strips of bitumised felt.

In the construction of tanks there are three provisions to be made; first, the provision of a manhole so that if at any time the tank has to be internally examined this can be done. A Sludge Cock should be provided and when the tank is in its final position this cock should be about 2' 0" from ground level. Provision should be made for the fitting of an oil level indicator and also provision for dipping the tank with a dipstick. There has been a tendency of late to exclude the last two items in the matter of economy, particularly on small installations but the writer is of the opinion that this practice is misguided.

**A** VENT pipe must be fitted to all storage tanks and where possible this pipe should finish in a position whereby if the tank is being filled and there is an overflow through the vent pipe, oil will not spill over anything.

The vent pipe should be of a larger diameter than the filling pipe and it should be free from bends.

If the foregoing suggestions are carried out they should go a long way towards ensuring that the basic requirements regarding fuel oil storage have been carried out.

**THERMAL Efficiency Ltd.** (Northern  
berland House, 303/306 High Hol-  
born, London,

**NEW THERMAL SPACE HEATER**

W.C.1) announce the addition of a 1,650,000 B.t.u./hr. unit to their range of Liescotherm space heaters. The unit is designed to provide a 90°F. air temperature rise with a maximum air leaving temperature of 200°F.

The unit consists of three separate assemblies—fan chamber, heating section and outlet section. The fan chamber has two centrifugal fans of 22" diameter providing an air volume of 19,000 c.f.m. at resistances of up to 1.75" w.g. The side panels are removable for maintenance access to the electric motors and "V" belt drive adjustment. The fans are Silent Bloc mounted.

The heating section includes a stainless steel double pass combustion chamber with accessible heat exchange tubes above. The outlet section has six double bladed adjustable outlet grilles to provide infinite directional

● The new plastic cistern by Morley (see report in this section).



**TALKING SHOP**

from page twelve.

practice it is a very good idea to be able to live in all the house at once.

If you live in one room then there is a constant clash between T.V. and homework. The pained expression on the children's faces when some guest enters and sheer good manners means that "box" must be turned off; and even the fact that you are paying rent or mortgage on a 1,000 sq. ft. of floor space and living in about 20 sq. ft. of floor space can become very irksome. All this may sound a bit impractical and not very down to earth but it is an established fact that once anyone has lived in a decently heated home they will not live in any other way.

**O**F course it should not be necessary in a journal like this, which is devoted to plumbing and heating, to underline the importance of the job we do, but it is so easy to get immersed in nuts, bolts and pipework that I think once in a while it is a good idea to stand back and see what the job is really about. There is a story which may illustrate my point: it seems that

etal - The Irish Plumbing and Heating Engineer, August 1965 (complete is

**Trane appoint N.I. representatives**

P. and D. Macfarlane Ltd., 53 Ridgeway St., Belfast 9, have been appointed Northern Ireland representatives for Trane Limited, manufacturers of Air Conditioning, Heating, Ventilating and Heat Transfer equipment.

control of the warm air from the heater outlet.

The new Liescotherm Space Heater can be fired on 35 seconds oil, 200 seconds oil or most forms of gas. Efficiencies of 80 per cent. are normally attained and a fuel consumption of 11.8 gallons per hour at maximum demand can be expected.

TWO NEW polypropylene fittings have been introduced by The Key Engineering Co. Ltd. (Larkfield, Kent). They are the 104 degree 4-inch branch junction and the 4-inch x 95 degree, 9-inch mean radius bend.

**TWO NEW FITTINGS BY KEY**

The new fittings extended the company's range of precision injection moulded fittings for pitch fibre pipe drainage systems. They combine great structural strength with resilience, will accept discharges at 100 deg. C and are virtually chemically inert. They are obtainable from all Key stockists and delivery is ex-stock.

VAN den Bosch Ltd. (of Europair



● The new 104 degree four inch equal branch junction by Key Engineering Co. Ltd.

House, Alexandra Road, Wimbledon, S.W.19), sole agents for the Tuttle & Bailey range of air diffusion equipment, announce the introduction of the T.M.U. constant volume high pressure mixing unit.

**AIR MIX UNIT IS INTRODUCED**

The unit is manufactured in a range of sizes handling 2,000—8,500 c.f.m. and features a pneumatic volume control and pressure selector to provide a constant total flow at all times. Thorough mixing of air streams is assured by the use of a cyclonic mixing baffle that counter-rotates to blend opposing hot and cold air streams. Inlet dampers are used to modulate hot and cold air and control air flow. These dampers are directly connected to individual pneumatic motors of the sequencing type with spring ranges of hot—8 to 13 lbs., and cold—3 to 8 lbs.

way back in history when a cathedral was being built, a celebrated architect wandered round the site taking to stone masons who were working away with mallets and chisels dressing stones. When the first man was asked what he was doing he looked around with a pained expression and said: "Well you can see what I am doing. I am dressing a stone". The second man was a bit more forthcoming; he knew where the particular stone he was dressing was going and was able to say so. The third man, no doubt the happiest one of the lot, simply said: "I am building a beautiful cathedral".

Talking of architects, whose "image" in our trade could perhaps be improved at times, there is a story of Sir Christopher Wren that happens to be quite true and bears repeating. In seems that he was called upon to build a Guild Hall in a certain town West of London and when he submitted his designs the Mayor and Corporation noticed that there was an extremely long span of roof over the main chamber. Wren, of course, knew exactly what he was doing but the powers that be, who, after all, were finding the money, were quite sure that this arrangement would collapse in time and that a neat row of supporting

pillars down the middle were essential. Of course they had their own way and the pillars were duly built. It was not until this century that it was discovered that all of the pillars ended a fraction of an inch short of the ceiling they were supposed to support!

**I** DO not know what the equivalent of that sort of action would be in modern heating practice. Generally one finds that adequate support is one of the things that gets pretty badly overlooked at times. Not long ago I remember a heating installer complaining bitterly because he was asked to refix a radiator after a child had been swinging on it. This comes right back to my earlier point about a heating system being a collection of machinery to be used in a home. Where there is a home there is usually children, and children will swing on radiators, doors, gates or anything else that provides support. In fact in my own home I have to be pretty careful about the way I fix the curtains. One of the few arguments I can think of in favour of the use of black iron rather than copper for small domestic systems is that it makes a rather stronger climbing frame. Cheerio until next month.

Twenty-seven



# GAS OR ELECTRIC? WELDING OF COURSE!



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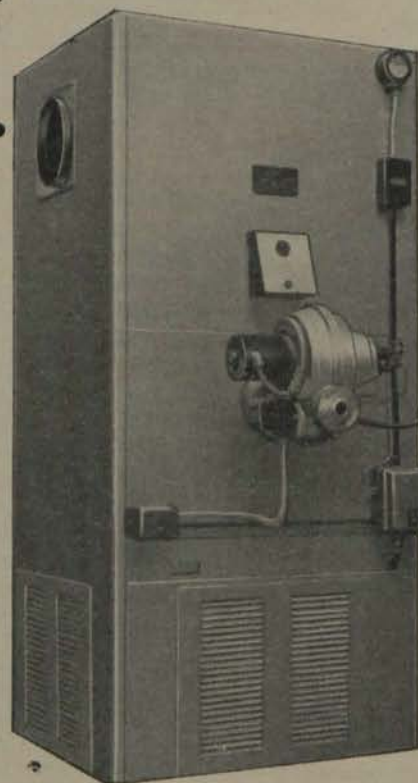
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Twenty-eight

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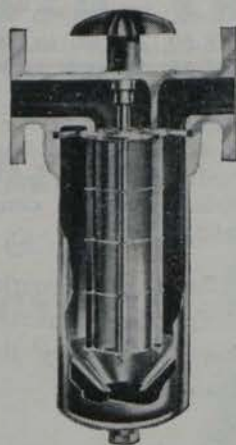
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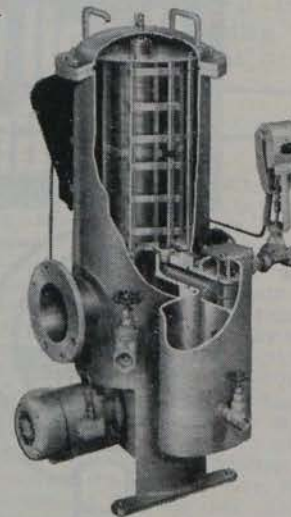
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THE Wanson Company Ltd. (Borehamwood, Herts) have long been established as manu-

**THERMOBLOC HOT WATER BOILER** factors of Thermobloc air heaters. It is of interest,

therefore, to announce a further expansion in their range of products with the Thermobloc hot water boiler.

This unit has been highly developed over many years and is widely used in Europe. Designed specifically for industrial central heating systems, it can equally well be used for supplying hot water in factories, canteens, cloakrooms, or for any installation requiring a constant supply of hot water.

Four basic sizes are available: GR.40, 120,000 to 200,000 B.t.u./h.; G.R.60, 200,000 to 280,000 B.t.u./hr.; G.R.80, 280,000 to 360,000 B.t.u./h.; and GR.125, rated at 500,000 B.t.u./h. Overall height of the smallest model is 49 in. and 78 in. for the largest model, so it can be seen that these boilers are very compact for their rating.

Based on a vertical smoke tube design, the Thermobloc Water Boiler has a refractory lined combustion chamber.

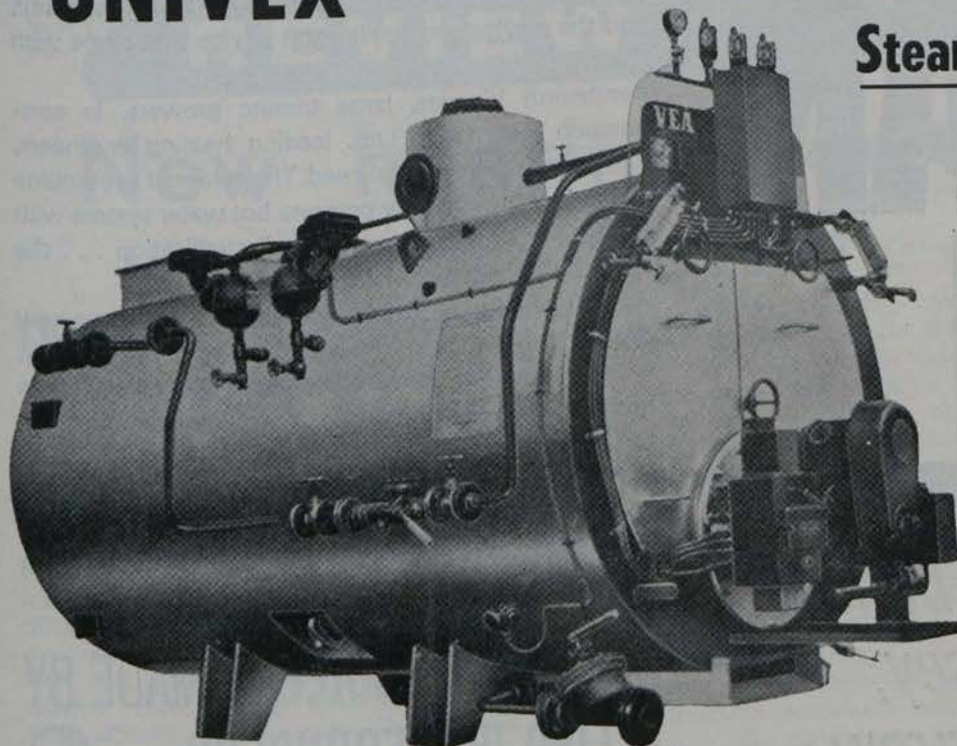
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**A COMPLETE range of compact air-conditioning units designed for application either singly or in batches to all types of buildings where there are heating and cooling requirements, are now available from the Searle Manufacturing Company Limited, of Fareham, Hants. The units, called Comfort Conditioners (CC Units), are manufactured in six models with an overlapping range of air deliveries from 600 cfm. to 4,800 cfm. Each heater battery and/or cooling coil, a filter section with cleanable or throw-away type filters is fitted.**

Thirty

# 'UNIVEX' PACKAGE BOILER

## Steam or Hot Water



- ★ "Packaged" Unit. Simplified installation.
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Central Heating  
Installations.

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*which  
came  
first?*



WHO KNOWS? We don't, and frankly we haven't much time to think about it. Here at Davidson's we're much more concerned with other problems — moving air and other gases, for example. For over 80 years we have been thinking about the problems involved and solving them by designing and making fans and ancillary equipment exactly fitted to requirements. Whether it's heating and ventilating, air conditioning, fume or vapour removal, dust collection, air preheating or the pneumatic conveying of bulk material, Davidson's have the right equipment for the job. You'll find our products in thousands of British factories, in many British coal mines, in most British power stations, and in industrial establishments throughout the world. Our extensive range of technical literature is freely available on request.



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*Thirty-one*

*The Irish Plumbing and Heating Engineer.*

# CLEAN SOIL

*(or how Allied boilers  
went to Guernsey,  
and helped to grow  
more tomatoes)*

Most Growers who choose Allied boilers like their economic running costs, the vast 46-boiler selection, and the service and application advice that come with them.

Kenilworth Vineries, large tomato growers, in conjunction with Leale Ltd., leading heating engineers, had a rather more special need. They wanted to combine a standard 2-boiler low pressure hot water system with the facility to raise steam for soil sterilisation . . . the latter for a short period annually.

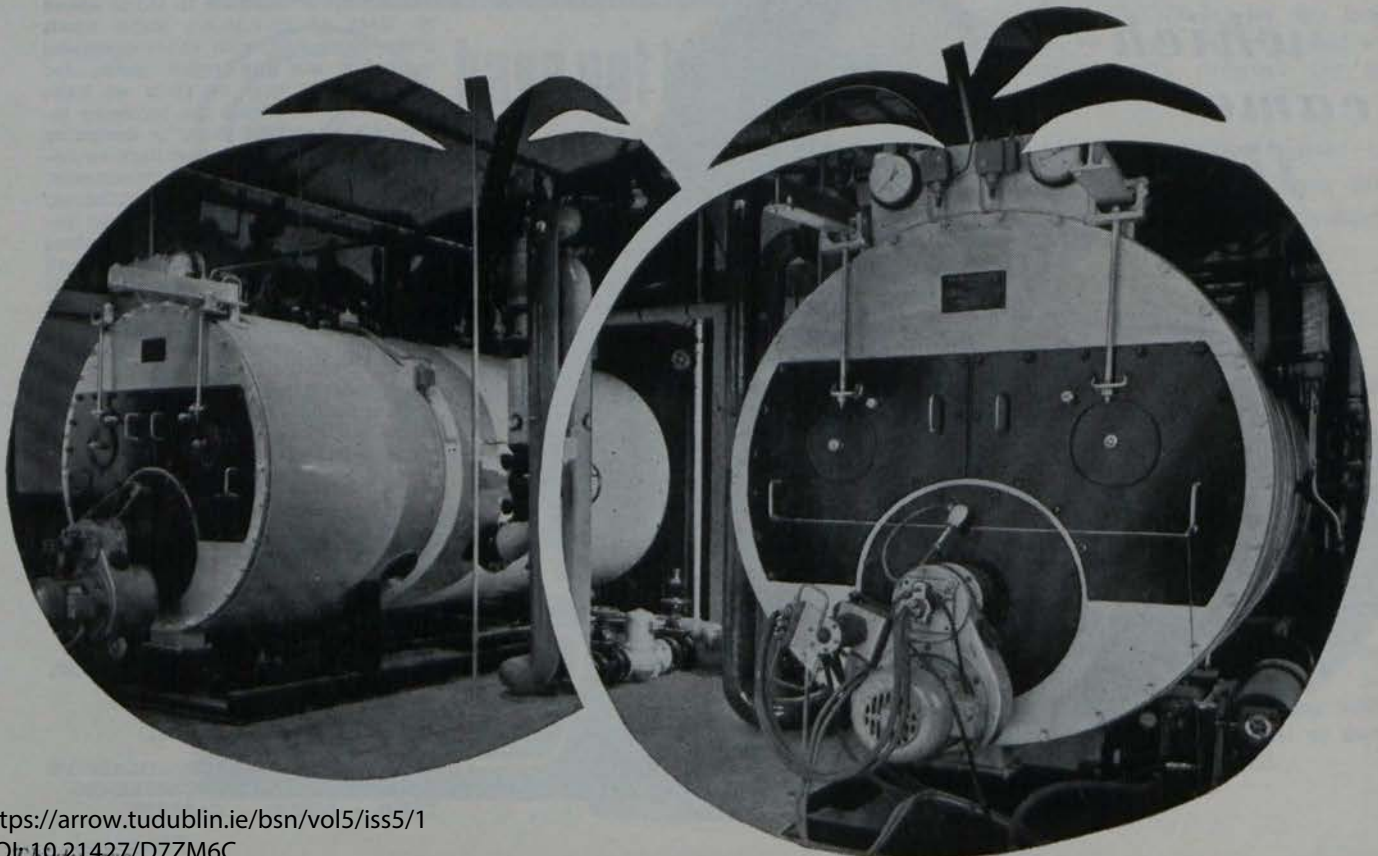
**Allied solution:** a simple modification on the two new Class 1 boilers that, with a minimum of make-ready, delivers exactly the right amount of live steam when needed. The result has been a considerable saving in heating costs.

Call in Allied yourself, if you're considering new boilers for your glasshouses. This kind of special help comes as a matter of course—and with it the best possible heating installation for your specific need.

**INDUSTRIAL BOILERS MADE BY  
ALLIED IRONFOUNDERS**



Allied Ironfounders Ltd. Industrial Heating Division,  
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## MONTHLY SPECIAL REVIEW

Boilers, Boiler Fittings,  
Water Heaters, and  
Heat Exchangers

# New heating techniques were predicted . . . but

**DURING** the past ten years there has been many predictions concerning new heating techniques. We have been told that there are new revolutionary units on the market, such as boilers, atomic and solar.

In fact only a few minor changes have occurred on the heating front. Most of the later developments have been limited to improving liquid fuel installations and increasing their efficiency. There are some minor developments as well in improving solid fuel installations. Better control systems, better safety systems and better efficiency have been provided.

With the expansion of the heating industry the range and types of equipment is becoming increasingly large and complex. In addition, with the increase in size and complexity of engineering services installation in industrial buildings, increasing attention to being paid to the performance of such plant in service to see whether or not it lives up to the manufacturer's claims.

**SO** the purchaser or engineer or specifier is sometimes at a loss when faced with the selection of the most appropriate equipment. The information offered him at times may not always be as clear as he would have liked it to be. On the other hand, if the purchaser or specifier is not conversant with new makes and he is forced through economy to install a new unit, he has only to wait the results from the operation of the plant.

Generally manufacturers do not try to deceive their clients, but information on the true performance of plant and equipment is sometimes, lacking often because the manufacturer himself has not the real data—or at least has not the data to present on a comparable basis with similar equipment of another make.

So this point bears out the impor-

tance of test codes and test facilities. In the domestic field the solid fuel gas and electricity industries have established very good facilities for both testing and approving equipment. When it comes to industrial equipment, such as large boilers, the initial capital and outlay for such testing and approving facilities is very vast. At the present time very few independent test facilities exist. It may be of interest to our readers to point out that British standards test codes are not available for all types of equipment. Though, just over two years ago the Heating and Ventilating Research Association in conjunction with the Cast Iron Boiler and Radiator Manufacturers' Association made a start by setting up a test room, primarily for testing radiators and connections.

The purchaser or specifier is faced with a very heavy decision to select his boiler plant and designing an arrangement which will function properly and efficiently, provide convenience from an operating view point and fit in as a co-ordinated part of the plant. The over expanding industrial and institutional requirements for heat are providing a growing demand for low and medium pressure processes and space heating steam that can be more economically and efficiently satisfied by a packaged automatic boiler.

The modern packaged boiler is designed specifically to satisfy industrial requirements, for a compact, efficient safe and fully automatic unit that can be installed in a relatively

small area. The packaged boiler which is today the standard unit in industrial and commercial buildings is a complete self-contained boiler burner unit. The unit is completely factory assembled and fine tested. It is ready to generate steam or hot water after its fuel supply, electrical supply, steam lines, condensate return lines, feed lines, blow down lines and flue gas outlet have been connected. The reason for specifying packaged units today, even for domestic purposes, is that the overall cost is much cheaper and the purchaser has a better unit which has been factory tested. Further more the packaged unit takes up less space, is more compact and neat in appearance. In this modern age of 'packaged goods' the packaged boiler burner unit has been given a very prominent place.

**SELECTION of equipment:** (a) The selection of boiler is generally easy to decide, despite what has been said above. What the purchaser is really concerned with is trouble free operation. It is only to be expected to have minor breakdowns, stoppages, etc. So a deciding factor in the selection of equipment is after sales spares and service. This is the most important factor to be kept in mind, for if the unit breaks down in a busy industry, where production ceases due to loss of steam, (e.g. glass house heating, a whole crop may be lost due to heavy frost; bottling plants, loss of steam prevents bottling, etc.), great losses may be encountered. Basically there is very little difference in packaged boilers of the same design. Controls, burners, size, weight, etc. differ whether wet back or dry back; (b) Select a boiler-burner unit that has proved itself over the years both in operation and efficiency. Select a boiler most suitable for the application.

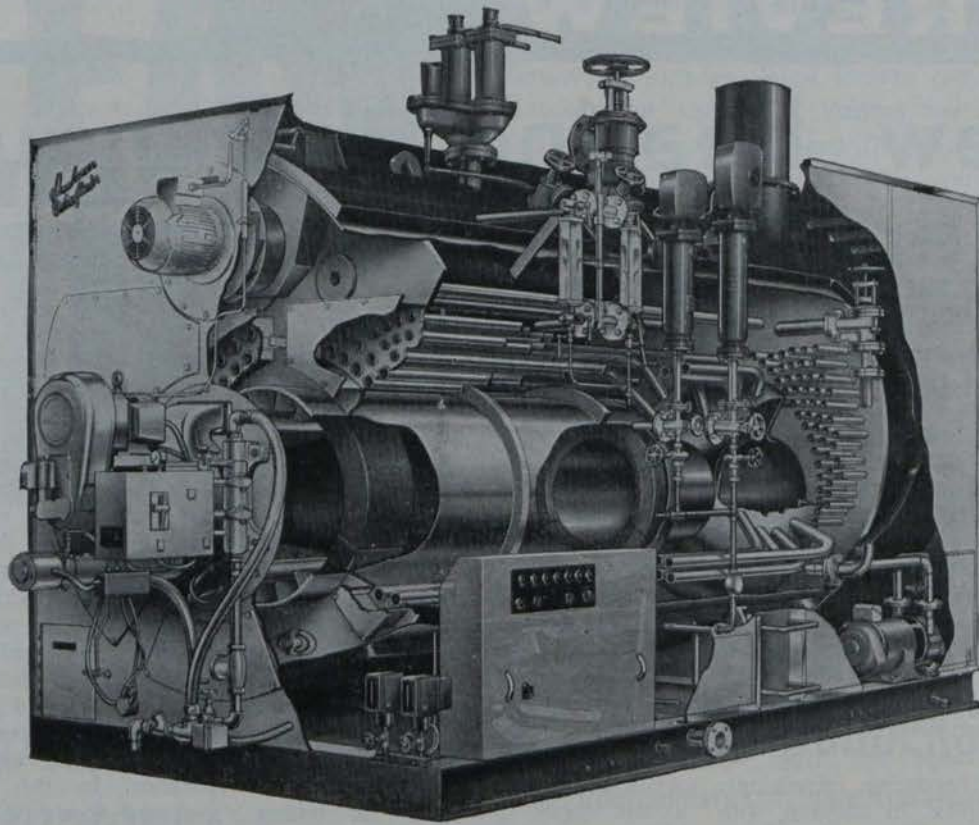
**Types:** Heating boilers are classified

*Continued page thirty-five*

*Thirty-three*



This special Review  
article was compiled  
by J. L. Fitzgerald.



## What's so special about the Chieftain?

Plenty. It is, for instance, exceptionally quiet in operation, cool running and most economical in floor space. It ranks as an outstanding 3-pass, oil-fired boiler. It is fully automatic with optional superheaters. It offers excellent internal accessibility. And that's not all. Dominating other important advantages is its performance—rated at 85% gross c.v. efficiency. Small wonder, then, that demand runs high for the Chieftain—the finest boiler of its type available in Europe today. Write now for details to **Cochran & Co. Annan Limited**, Annan, Dumfriesshire, Scotland. Agents: S. W. Carty & Son, 12 Lower Mount Street, Dublin 2. Southern Engineering Co. Ltd., Parnall Place, Cork. W. H. Scott & Son, Ann Street, Belfast.

# COCHRAN CHIEFTAIN BOILER

in a number of different ways, such as:

- (1) according to materials or construction these are steel or cast iron,
- (2) according to the fuel for which the boilers are designed. These are coal-fired, hand-fired or stoker fed, oil or gas fires,
- (3) according to the specific purpose or application for which the boiler is used e.g. space heating or domestic hot water supply,
- (4) according to the design of the boiler, such as sectional round, fire tube, water tube, etc. The other technical factors to be considered by the specifier are:
  - (a) the maximum load or gross load, on the boiler,
  - (b) design load—i.e. radiation load, the estimated heat emission in B.T.U. per hour of the connected radiation (direct or indirect or forced convection coils) to be installed, hot water supply and piping tax, i.e. heat losses, etc.
  - (c) the efficiency of coal, peat, gas or oil,
  - (d) grate area with hand fire boilers or fuel burning grate with stokers or oil or gas,
  - (e) combustion space, in the furnace,

from page thirty-three

## HEAVY DECISION IN MAKING PLANT SELECTION

- (f) type heat liberation, whether continuous or intermittent or a combination of both,
- (g) convenience in firing, cleaning or maintenance,
- (h) adaptability to changes in fuel, e.g. oil fired boilers can use either 200, 950, 3,500 sec. oil with only minor adjustments such as oil temperature and pressure,
- (i) height of water line,
- (j) draft control or special flues required, head room required, front and back room required for servicing, and maintenance.

**Water heaters:** Two systems are generally in use for the supply of domestic hot water. **Direct:** A boiler specially designed for water heating is usually treated internally to prevent discolouration or becoming contaminated. Such boilers are treated, and are lined for this purpose, e.g. Bower-Barfield. In this case the boiler is the

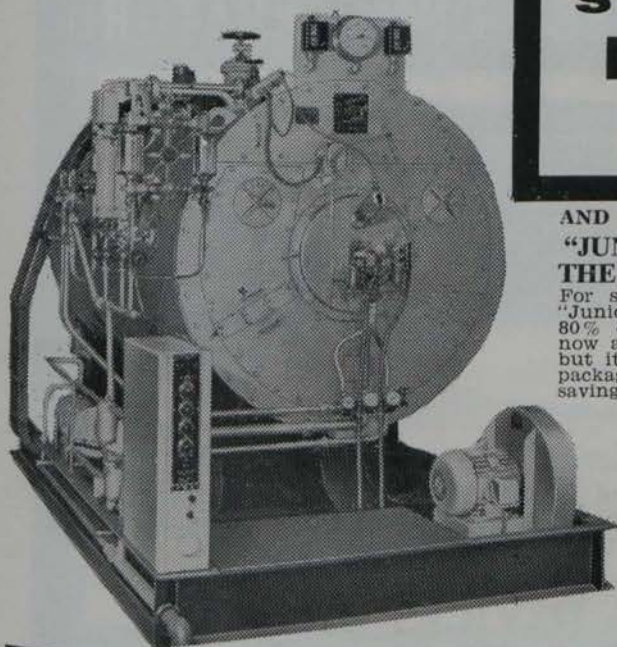
medium for heating the water directly and a flow and return pipe is connected to the storage vessel. If a central heating boiler is used for the purposes of heating and domestic hot water supply, whether it be a steam boiler or hot water boiler, the Indirect system must be used to supply hot water, i.e. a Calorifier or indirect cylinder.

**Heat exchangers:** The principles of heat recovery in a wider sense may be called the principles of fuel economy. Heat not usefully employed for its original purpose can be recovered in many ways, e.g. (a) heat in flue gases from boilers, etc. and furnaces; (b) heat in warm air from driers; (c) calorifiers etc. may be classed also as heat exchangers.

Heat exchangers transfer the heat from the hot liquid or gases to the cold medium. Just as in man the lungs and stomach are used to transfer the energy

*Continued overleaf*

# NON-STOP RELIABILITY



# Cradley

## STEAMPACKET package boilers

Install efficiency and economy — cut fuel bills — invest in the Cradley 'Steampacket' Package Boiler. It operates without constant staff supervision. The time - proven, smokeless oil - fired boiler gives larger evaporation and is over 80% efficient.

AND NOW—

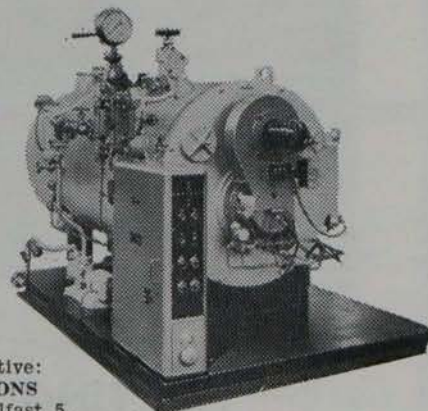
### "JUNIOR-STEAMPACKET" THE NEW SMALL BOILER

For small requirements the new "Junior-Steampacket" range of over 80% efficient Packaged Boilers is now available. The cost is lower, but it enables everyone to obtain packaged efficiency and space saving.

**THE CRADLEY BOILER COMPANY LTD.**

Cradley Heath, Staffs  
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Tel. 57823.



R.74

*Thirty-five*

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

from previous page

to the blood, the heat exchanger is used to transfer the heat to another energy.

A typical example will illustrate our point quite clearly. 'Green's Fuel Economiser'. In steam boiler plants the escape up the chimney of high temperature flue gases is often a source of waste energy that may be considerably reduced by the installation of an economiser or heat exchanger, the function of which is to abstract heat from the waste gases and impart it to the boiler feed water before it is delivered to the boiler. By this means the evaporation of the plant for a given oil or peat consumption is increased or in other words it obtained by less fuel. Furthermore less chemicals are required for treatment of the water to prevent scale and corrosion inside the boiler, thus resulting in more savings and better economy.

IDEAL - STANDARD, the Hull manufacturers of central heating and bathroom equipment, have announced a new addition to their industrial boiler range which the company is launching this month. The new product is the No. 4 Vanguard oil-fired cast-iron boiler.

Available in seven sizes, from 390,000 Btu/h to 750,000 Btu/h, the No. 4 series is to be supplied with pre-wired, pre-set pressure jet burners to simplify installation and at the same time to give a high standard of combustion. In this regard, tests have shown that the overall thermal efficiency is in excess of 80 per cent.

In addition, a restyling of section design has been incorporated to improve both ease of assembly and of maintenance. The list prices in Britain for the range are between £420 and £666. With the pre-set air-fuel ratio the combustion air control is set to give the correct air delivery according to the size of the boiler. Similarly, the oil nozzle is selected and fitted at the factory and pump pressure is set to provide the appro-

prate oil delivery.

A combined relief door and draught stabiliser is incorporated in the smoke hood, which is designed to give top or back outlet. Commenting on these features, Mr. R. H. Doyle, general manager, Sales, at Ideal-Standard, said: "These design elements are to ensure a really high standard of performance and a minimum of site adjustment, so that we are virtually offering the heating engineer a packaged deal to save time and money."

Camron or Selectos burners can be supplied with the new No. 4 Vanguard.

\* \* \*

THE Allied Ironfounders Steam Boiler type NSB.25 from the company's comprehensive industrial range is a high pressure (150lbs. per sq. in. design) steam boiler rated at 2,500lbs. per hour evaporation from and at 212° F.

The Allied packaged boiler is a horizontal three-pass semi-wet back smoketube unit of welded construction designed to give long trouble-free service. The semi-wet back design eliminates the need for refractory arches and a rear combustion chamber water wall with its consequent restricted access.

The refractory lined combustion

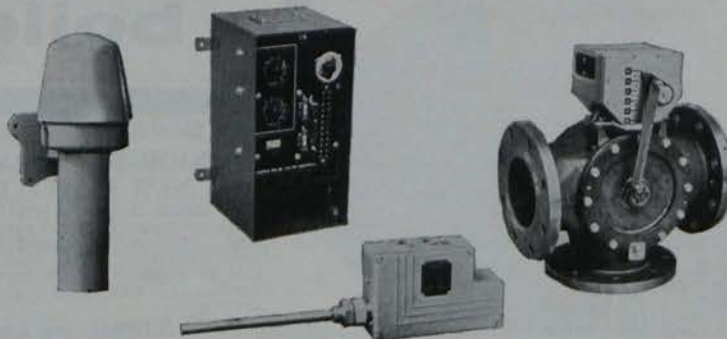
Continued page thirty-nine



**SUPPLIERS OF ALL TYPES OF HEATING EQUIPMENT, MIXING VALVES, COMPENSATORS**



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# Harper

## oil-fired boilers installed for long life, reliability & efficiency

*A Harper Meehanite 300,000 Oil-fired boiler is now heating Ballygowran House, Maynooth, Co. Kildare.*



This installation is one more illustration of the growing popularity of Harper Meehanite Boilers with heating engineers all over Europe. To the many advantages of Harper Meehanite boilers the following are now added.

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Every section is guaranteed for five years.

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**Harper**

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for the world of today

The hand of an artist  
designed this tap... but  
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chamber door is of very robust construction and equipment is provided for its easy removal, giving full access to the combustion chamber. For routine inspection and maintenance an easily removed small door is provided, and hinged doors of convenient size are fitted to the front smoke box to facilitate cleaning. Furnace tubes are corrugated for at least one-third of their length, when the length of the tube and the pressure rating specified by the relevant British Standard require it. All boilers are constructed to the appropriate British Standards and to the latest requirements of the leading British Insurance companies.

Our illustration (see this page) shows a 2,500lbs. per hour high pressure steam boiler fitted with the Allied Ironfounders M.R.S. E type gas burner.

This unit is a nozzle mixing tunnel burner as developed by the Gas Council Midland Research Station. Air pressures range from 10" to 15" W.G. at the burner head according to the size of the unit, these pressures give an adequate turndown on boilers. Air control is effected by means of a motorised butterfly valve.

\* \* \*

A RESEARCH and development programme has just been completed by Cochran and Co., Annan Ltd. (Drumfrieshire, Scotland) to provide a superheater to work automatically with shell boilers. Further details of the unit are to be announced later.

The Company's Research and Development Department was founded at a time when it was evident that the firm must enter the field of automatic factory assembled oil-fired boilers. As a first step, the Cochran Series 11, a vertical boiler, was developed for the standard Cochran boiler, and three tube passes were provided to bring the efficiency up to over 82 per cent. on the gross calorific value of the fuel.

This was closely followed by the development of the Sinupac, a horizontal two-pass boiler, in which the efficiency was increased to about 84 per cent. by using smaller bore tubes. Both boilers are suitable for solid or liquid fuel firing and gas firing. During this time basic research work was undertaken to provide the design data for a horizontal three-pass boiler. A great deal of original thought was put into this problem and the Chieftain was evolved.

A shell boiler is necessarily cylindrical and the Chieftain is no exception. However, the boiler is enclosed

## PRODUCT REVIEW

from page thirty-six

within a rectangular casing which is another special feature of this range. In addition to improving the appearance, the casing also provides ducting for combustion air which becomes preheated by the heat usually lost from a boiler's exposed surfaces. In this way, the boiler shows a two per cent. gain in efficiency at full load, and very much more at part load.

Cochran and Co. are represented in the Republic of Ireland by S. W. Carty and Son, 12 Lower Mount St., Dublin, and the Southern Engineering Co., Parnell Place, Cork, and in Northern Ireland by W. H. Scott & Sons, 93 Anne Street, Belfast.

\* \* \*

THE LATEST development from the Marshall and Anderson organisation (Manse Road, Motherwell, Lanarkshire) is their Compak packaged boilerhouse, which has been developed to fire turf and is known as the Turfpak. Details of this unit are not being released at present by the company.

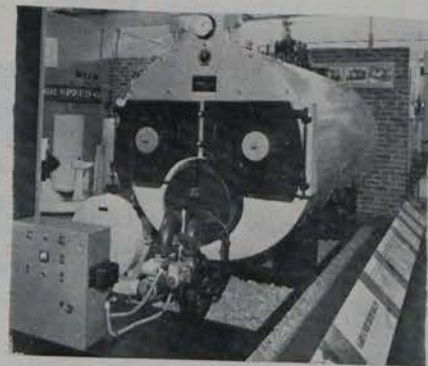
The Compak is a fully integrated portable unit, including the boiler complete with safety and operating ancillary equipment. Coloured in attractive shades with side walls in profiled aluminium or protective coated steel casing, as required, it is installed with ease on a site that requires the minimum of preparation, and because no site assembly is necessary it is ready for immediate operation as soon as the service connections are completed.

The boiler is of the multi-pass, wet back, horizontal economic type, complete with withdrawable fully corrugated furnace, and has a wholly immersed wet back combustion chamber.

For the firing equipment, various degrees of automatic equipment in accordance with prevailing conditions and requirements are available to suit the following fuels—oil, gas, C.T.F. and coal.

\* \* \*

TRANE LTD. (Dunfermline, Fife, Scotland) have a new Torrivent line—for heating and ventilating large areas such as school auditoriums, gymnasiums, commercial and industrial buildings. It now includes 102 standard units. Extension of the Torrivent line, to 17 basic sizes with



● This is a 2,500 lbs. per hour high pressure steam boiler fitted with the Allied Ironfounders R.M.S. type burner (see review).

heating capacities from 20,000 to 3,800,000 Btu/h and air capacities from 600 to 54,000 cfm., has made it the largest line of its kind in the industry, the manufacturers claim.

Six models—horizontal ceiling, horizontal floor, vertical floor, vertical wall, inverted ceiling and inverted wall—allow the Torrivent to be adapted to a greater number of installation sites throughout the building. Sectional construction makes possible a step-by-step selection of procedure of casing and fan section; steam or hot water coils; and accessories.

The new Trane Model S horizontal unit heater is a highly efficient and attractively styled hot water or steam unit that incorporates Trane's exclusive Sigma-Flo fin configuration on its heat transfer coil. The unique one row single tube serpentine heating coil with oversize 1" tubes and the high performance Sigma-Flo fins result in extraordinary performance for such a compact unit.

\* \* \*

MARSHALL Sons and Co. Ltd. (Gainsborough, Linc.) manufacture a range of automatic fire-tube boilers with ratings from 520 to 32,500lb. steam/hour and equivalent Btu outputs (from and at 212 degrees F.). The CB range of boilers are four pass horizontal fire tube units with a single furnace flue at the bottom of the boiler forming the first pass, and the other three passes above and at the side of the flue. A reduction in the cross sectional area of each pass maintains a high flue gas velocity, which promotes optimum heat transfer and minimises soot deposits.

A forced draught design eliminates the necessity for tall expensive chim-

Continued page forty-one

Thirty-nine

Featured on this page are some of the Trane Products manufactured in Scotland. For details on the complete range of Trane heating, Air Conditioning and Refrigeration equipment, contact your local office whose address is listed below.



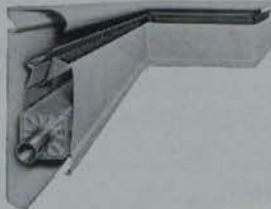
**WALLFIN**  
Continuous fin-tube radiation with the modern slim silhouette.



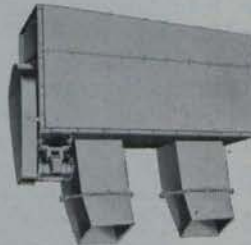
**UNIT HEATER**  
Propeller-fan space heaters for steam or hot water operation.



**CONVECTOR**  
Available in a wide choice of cabinet styles and sizes.



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Skirting Heating with the "snap fit" installation.



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Central Station heating and ventilating unit. Many accessories available.



**CLIMATE CHANGER**  
Central Station heating, ventilating and air conditioning unit.

## TRANE FOR TECHNICAL SERVICE & QUALITY EQUIPMENT



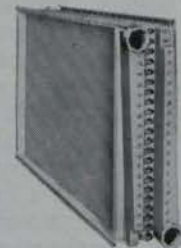
**CABINET UNIT HEATER**  
Fan Convector with maximum efficiency heating element.



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Fan Coil Units for multi-room air conditioning.



**INDUCTION UNITRANE**  
Induction Units — concealed model or with attractive skyline casing.



**COILS**  
For use with steam, hot or cold water, or refrigerant. Featuring exclusive Sigma-Flo fins.

When next you tackle a heating or air conditioning problem — talk to Trane!

# TRANE LIMITED

**HEATING AND AIR CONDITIONING**  
Manufacturing engineers of air conditioning, heating, ventilating and heat transfer equipment.

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14 Castlewood Park,  
Rathmines, DUBLIN, 6,  
Eire.  
Telephone: Dublin 63470.

P. & D. Macfarlane Ltd.,  
53 Ridgway Street, BELFAST, 9,  
Northern Ireland.  
Telephone: Belfast 667968/9.

## PRODUCT REVIEW

from page thirty-nine

neys, and a low noise level is maintained by the caseless fan and air compressor operating from the same motor. Both front and rear doors are either hinged or davited to swing open, exposing tubes and fire-side surfaces. Under normal operating conditions fire-tubes only require cleaning once a year. The controls are contained in a dust-proof cabinet, and fully automatic safety controls—including electronic flame scanner—ensure complete protection under all operating conditions.

The Marshall M type boilers are similar in design to the CB range and have ratings from 520 to 1,380lb. steam/hour, whilst the P type is the hot water equivalent, with outputs from 500,000 to 1,340,000 Btu/h. With the problems of frequent high temperatures in mind, extensive research was carried out on the flow and return connections of Marshall's hot water CB and P type boilers. Tests proved that the most favourable conditions occurred with the hot water outlet situated on top of the boiler near the rear, with the return water inlet located in front of the outlet.

The return water connection is fitted with a specially designed inlet nozzle which increases the return velocity and provides rapid and com-

plete mixing with the hottest water on top of the boiler. The return water is therefore tempered before it comes into contact with the heating surfaces. The high velocity flow is in the same direction and pattern as the normal thermal circulation within the boiler and this arrangement keeps temperature gradients to a minimum, reduces stress and completely eliminates thermal shock.

Marshalls are represented in the Republic of Ireland by Thermal (Ireland) Ltd., 85 Lower Baggot St., Dublin, 2, and in Northern Ireland by Samuel Stewart (Thermal Engineering) Ltd., 26 Neill's Hill Park, Belfast, 5.

\* \* \*

● Davey, Paxman and Co. Ltd. recently introduced their successful Autonomic boiler range at receptions in Dublin and Belfast (IPHE, July). Since our review of the range last month we learn that upper range of the heaters has been extended from 5,000,000 to 6,000,000 Btu/h.

\* \* \*

BASTIAN and Allen high voltage electrode boilers are designed for the supply of central heating with or

without thermal storage, and for large hot water supply systems and industrial processes where heated water is required. They offer efficiency up to 98 per cent., rapid response in heating up, take less space than the conventional solid fuel or oil fired boilers, fuel stores, chimney or flue are not required, and they involve no smoke, no ash, or dust. They are fully automatic.

The major advantage of the B and A design of high tension electrode hot water boiler control is that it may operate on widely varying waters, although some treatment may be required to ensure the optimum operating conditions. Boilers are operating with water conductivity between 100 and 1,200 micro-mhos per centimetre cube at 20 degrees C., but to ensure that possible water treatment is considered at an early stage, it is important that analysis be made of the water to be supplied to the system.

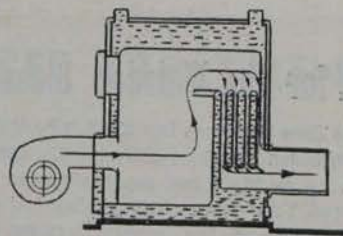
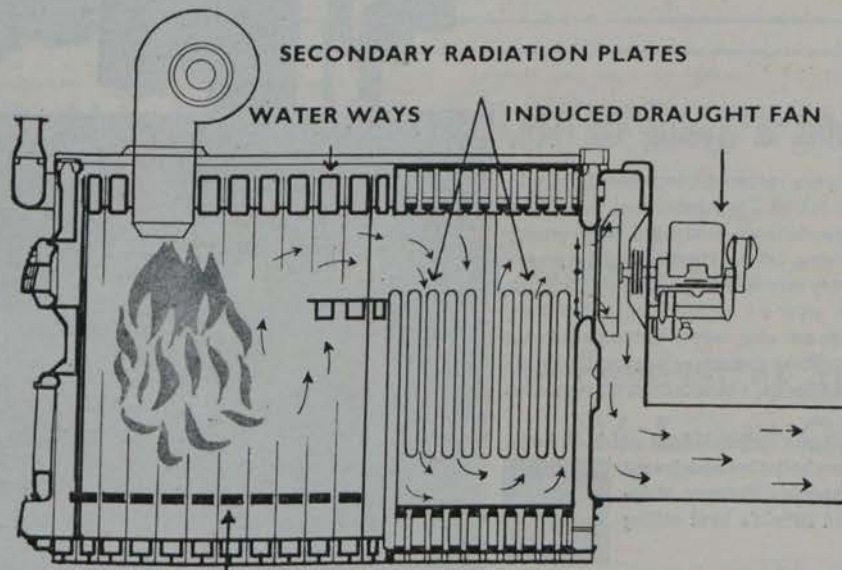
The electrodes are carried by bushing insulators which pass through and are supported at the top of the boiler. The electrodes are located within, or partially within, the jet tube insulators, and load insulators provide load adjustment when moved up or down. When in the fully lowered position, minimum load is obtained,

Continued page forty-three

## DRAUGHT AND FLUE TROUBLE?

These are non-existent with the installation of a NORAH UEG boiler. Induced draught fan built into the back section encased in a water-cooled jacket. Designed and developed by the one manufacturer, no improvisation but a properly balanced unit. Boilers obtainable with top-mounted and front-mounted burners, under-feed stokers, dual purpose, etc. A versatile boiler in capacities up to 10,000,000 BTU's/hr.

### How the UEG works

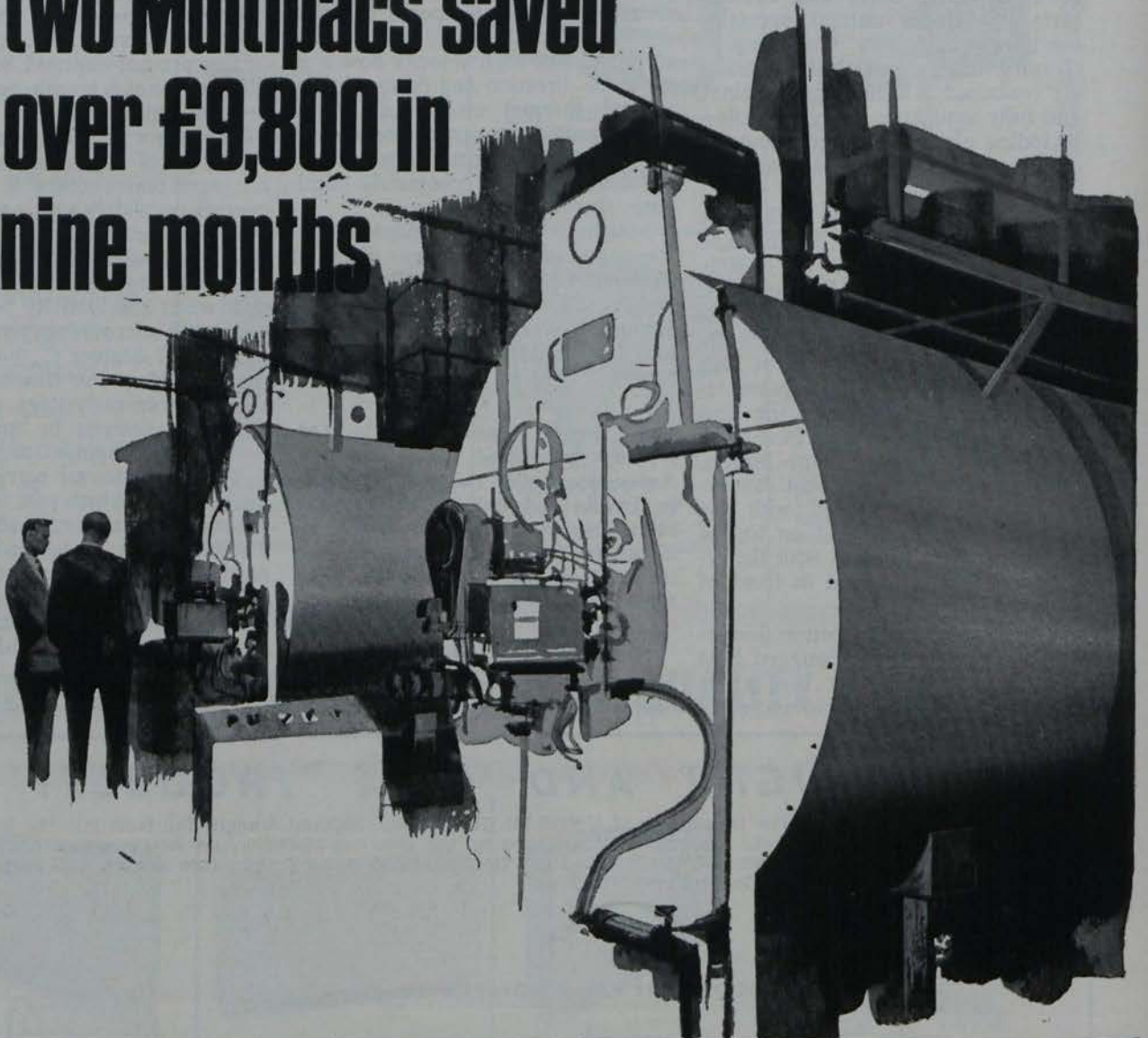


Front mounted burner, standard convection sections, normal efficiency boiler.

IRCO TRADING COMPANY LTD., 9 EDEN QUAY, DUBLIN, 1.

Telephone 48277.

# How two Multipacs saved over £9,800 in nine months



## ... for the Walsden Bleaching & Dyeing Co. Ltd.

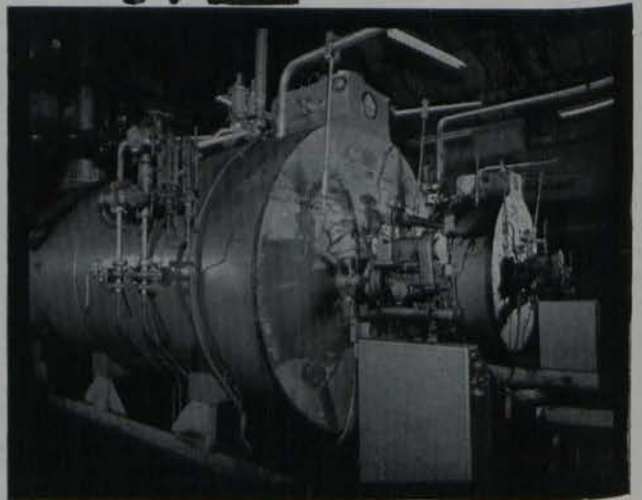
Since June 1963 when two 10,500 lb/hr Multipacs replaced Lancashire boilers in the Walsden Bleaching & Dyeing Co. Ltd's mill at Todmorden fuel costs have been cut by 38.4% and supervision and maintenance time have been greatly reduced. Total economies including fuel saving, labour charges and increased steam raising efficiency amount to £9,856. Early evidence that substantial savings were being made prompted the company to order a third Multipac, 16,500 lb/hr, for their nearby Jubilee Mill. These Multipacs are now supplying the flexible but 100% reliable steam that is vital for textile finishing processes, just as Multipacs are supplying the steam requirements of refineries, chemical works, breweries and all kinds of industry the world over.

The Multipac is a completely packaged, fully automatic oil-fired wet-back boiler available in sizes from 2,000 to 50,000 lb/hr. Every boiler is steam tested before despatch and is backed by the nation-wide Multipac Maintenance Service. Want to know more about Britain's best selling package boiler? Just write



JOHN THOMPSON PACKAGE BOILER DIVISION, LILYBANK WORKS, LONDON ROAD, GLASGOW, E.1.

G184



as the current path is of maximum resistance, and vice versa.

The boilers require a minimum size of shell for the electrical path through the water and therefore the smallest practicable boiler shell is for loads up to 2,000 Kk. It is rated for 1,000 to 2,000 Kw., as the controls can be set for any maximum load between these figures. In special cases the maximum load can be reduced still further, but usually for such loads a transformer and a B. and A. medium voltage electrode hot water boiler makes a better installation.

Bastian and Allen Ltd.—a member of the Parkinson Cowan Group—are at Ferndale Terrace, Harrow, Middlesex.

\* \* \*

A COMPREHENSIVE range of cast-iron sectional boilers is available from Hartley & Sugden Ltd. (Halifax) and these include the White Rose series A1 and B2 for water. The A1 series can be supplied up to 16 sections — 1,640,000 Btu/h — for oil fuel or mechanical stoking. The standard unit includes six 4-in. pipe connections up to 609 and eight 4-in. 610 to 613. Connections up to and including 5" diameter can be supplied. Flows can be fitted on any section

## PRODUCT REVIEW

from page forty-one

except front and back, and returns on any section except back. The series B2 can be supplied up to 14 sections (960,000 Btu/h) for oil fuel or mechanical stoking.

Also from the range of Hartley and Sugden is the new Colifax steel fire tube boiler with a high thermal efficiency and conservatively rated. Designed to take advantage of the growing use of coal in effective and economical installations, they are eminently suitable for matched use with leading makes of automatic underfeed coal stokers or suitable chain grate stokers. Flexible construction methods enable the larger sizes to be provided with openings for various means of ash removal.

The Oilex boiler—also from Hartley and Sugden—has undergone important design changes, as a result of recent developments and advances in combustion engineering. Foremost among these is a radical re-appraisal of the mass flow rates of flue gases through the fire tubes. The re-



● Our picture shows the Marshall and Anderson packaged boiler house beside the brick boiler house it replaced in a recent installation (see review).

sult has been an enhanced ability to take advantage of modern combustion techniques, compact design and high efficiency.

The series 9 Oilex can be fired by any high quality oil burner unit and is inherently capable of utilising the burner to its highest potential combustion efficiency. Most installations are commissioned at 83 per cent.

# Scale? Corrosion?

FOR ALL PROBLEMS RELATING TO WATER TREATMENT

LIME SODA PLANTS  
ION EXCHANGE PLANTS  
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CHEMICAL TREATMENTS  
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Forty-three

**in brief...**

**RADIATION Gas Fires Limited, Radiation House, Nth. Circular Road, London, N.W.10., manufacturers of "Satellite" overhead radiant gas heaters, have recently issued in booklet form a paper given to Industrial Engineers of the South Western Gas Board earlier this year by Mr. H. Watts, M.Inst. Gas.E., Development Manager of Radiation Gas Fires Limited. The paper deals with the issues to be considered in calculating the heating required for various buildings, and the methods by which this can be done.**

A NEW addition to the Keith

Blackman Ltd. range of air filters for heating, ventilating and air conditioning purposes is the Conominor. It is on a smaller scale than, and is supplementary to, the Conomat-X type introduced last year and is suited to both horizontal and vertical mounting. Offering low cost filtration for capacities from 2,000 to 7,200 cubic feet/minute the Conominor employs a new long-life filter medium.

**Van den Bosch Ltd. (Europair House, Alexandra Road, Wimbledon, S.W.19) have introduced the Tuttle and Bailey Type P3 Adjustable Pattern Ceiling Diffuser. The Type P3 is a three-cone circular diffuser in**

which the air distribution pattern may be varied from horizontal to vertical and, once set, systematic pressure or vibration will not affect the setting. There is a minimum amount of effective area change when the air pattern is regulated.

UNDER the headings "Refractories" and "Refractory linings" on Page 68 of our June 1965 Directory issue we inadvertently quoted the agents in the Republic Of Ireland for A. P. Green Refractories Ltd. as Mr. S. Murphy. We now understand that the agents for the Republic are Messrs. Brooks, Thomas and Co. Ltd., 4 Sackville Place, Dublin 1.

**PLUMBING**

from page five.

5. Connect the hoses to the blowpipe. Again remember, maroon to acetylene and black to oxygen. It is a good plan to blow air (not oxygen) through hoses before coupling them up. This ensures that they are clear of dirt which could clog the narrow gas passages in the blowpipe.
6. Choose the size of blowpipe nozzle suited to the job and your style of leadburning, and fit it to the blowpipe outlet. The nozzle size will vary according to the thickness of lead to be joined and the type of joint to be made. For example, a number 4 nozzle might be used for flat-butt leadburning on 6 lb. lead sheet, whereas for a thinner sheet a number 2 or 3 might be adequate. For upright leadburning joints on 5 lb. lead a number 3 nozzle will generally do very well, although a slower leadburner might prefer the smaller flame of a number 2. You will see therefore that there is no hard-and-fast rule about nozzle sizes for any given job. As a general rule, it is better to use the hottest flame that you can control.

**TURNING ON THE GASES**

When your equipment is set up, it should look something like that in Fig. 1 (but without the trolley perhaps), and you will be able to turn on the gases.

1. Insert the cylinder valve key into one of the cylinders and gently open the valve. Do not open it suddenly, since this would impose a shock on the pressure regulator

and gauges which might damage them. Gauge glasses have been known to shatter and seriously injure the operator because of this. Modern oxy-acetylene gauges are fitted with thin, pliable brass backs so that if the gauge bursts, the back will blow open and relieve the pressure. This device is shown in Fig. 1. It protects the operator—but you still have to be careful about opening the cylinder.

2. Open the valve until the valve spindle has made one complete turn. The high-pressure gauge on the regulator will now register the pressure of gas in the cylinder. If there is no obvious leak—which you could detect because it makes a hissing sound and, in the case of acetylene, a distinctive smell—open the valve of the other cylinder in the same way.
3. When both valves are open, the pressure regulators have to be adjusted so that the right amount of low-pressure gas is admitted into the hoses. This is done by turning the capstan-headed regulating screw clockwise, so that it pushes against the spring-loaded diaphragm and moves the high-pressure valve off its seating as shown in Fig. 2. The low-pressure or hose gauge will now register the pressure passing to the blowpipe. For leadburning this should be about 2 lb./sq. in. on both acetylene and oxygen hoses.
4. You must now check that the equipment is gas-tight. Never use a naked flame for this since, you will remember, acetylene gas is highly inflammable. The test can be made with a soap solution, which you should always have handy. If you apply soap solution round every

joint with a clean paint brush, any leaking gas will show itself by blowing bubbles through the soapy water (This is shown, together with other useful ideas, in Fig. 1).

**LIGHTING THE BLOWLAMP**

When you have made sure that all is in order: that there are no leaks in the equipment, and that there is no risk of the blowpipe accidentally setting nearby materials on fire—you can proceed to light up and begin the important business of adjusting the flame.

One method of doing this is first to open both the oxygen and the acetylene pressure regulators until just enough gas can pass through to ignite at the blowpipe tip when its control valves are fully open. After this you can adjust the flame by manipulating the regulators almost as if they were the blowpipe control valves. The advantage of the method is that when you have finished with the blow pipe and shut it off by closing its control valves, you can quickly bring back the correct flame simply by turn the blowpipe valves full on again.

This method, however, is only satisfactory where a single blowpipe is being fed from the equipment. If several blowpipes are being supplied, then the gas flow would fluctuate seriously as the various operators opened and closed their individual blowpipe controls. As a rule, then, it is better to adjust the regulators to pass low-pressure gases at about 2 lb./sq. in. and then to make local adjustments of the flame by manipulating the blowpipe controls. To do this you would first open the acetylene control to pass fuel gas to the blowpipe tip where it can be ignited, preferably by a spark gun.

(To be continued)

Forty-four

**A NEW  
PRODUCT**

# "THE DUBOIS PLASTIC TRAP" (Regd.)

**A NEW  
PRODUCT**

Provn. Pat. No. 38070/60.

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



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



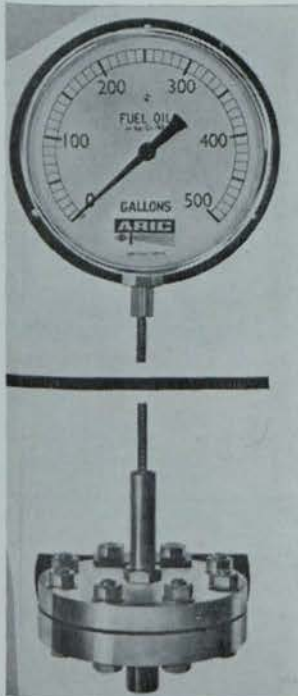
Manufactured by:—

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

Telephone No.: TERminus 6624-5.

Telegraphic Address: "Bleitrap, London."

**NEW ARIC TANK CON-  
TENTS GAUGE WITH  
REMOTE READING UP  
TO 100 FT.**



**ARIC TRANSMITTING PRESSURE  
GAUGE WITH STAINLESS STEEL  
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★ **YOU HAVE INSTRUMENTATION  
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cover all types of measurement and  
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★ **YOU HAVE INSTRUMENTS FOR  
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Why not call in ARIC and make use of  
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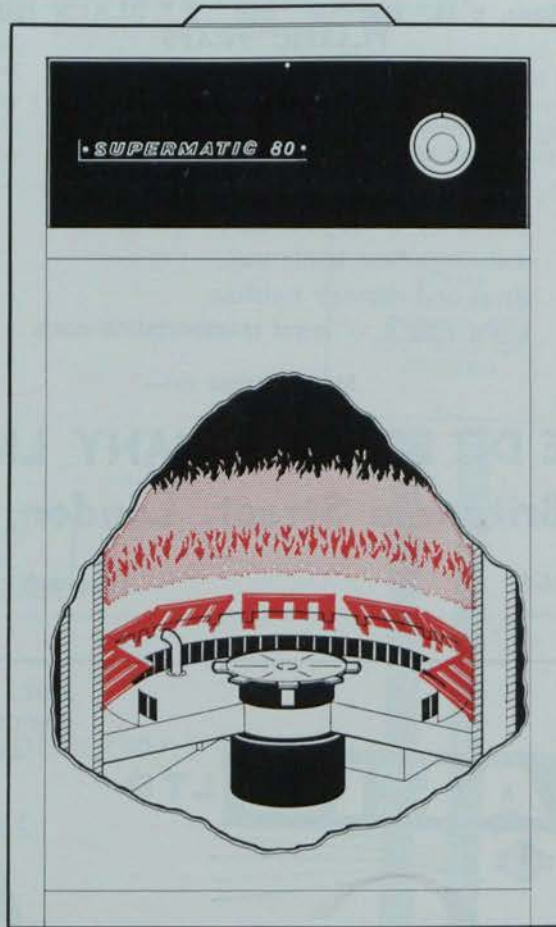
★ **YOU HAVE INSTRUMENTS ON  
SITE THAT REQUIRE MAIN-  
TENANCE ?**

Our highly skilled outside maintenance  
unit can repair on site.

**ARIC (IRELAND) LTD., 6 MONTAGUE STREET, DUBLIN 2. TEL.: 53821/55510**



# Supermatic... or how 25% less for the oil companies can mean 33% more for you!



The guts of the Supermatic is the incredible Wall Flame Burner—incredible because it gives more heat, has a longer service-free life and has only one moving part—but incredible most of all because it burns 25% LESS FUEL than the standard pressure jet type burner. Yes! 25% LESS FUEL—The public are becoming increasingly aware that the Supermatic saves them *big* money every month. So, they're buying Supermatic more and more. Last year Supermatic stockists had on average a 33% increase in Supermatic sales. Supermatic are special in other ways too! You never have any wait for the Supermatic your customer wants—it's on its way to you within hours of your order arriving, and there are 18 different models to choose from, 44,000 to 300,000 BTU's.

**So buy, stock, sell Supermatic... for your pocket's sake!**

... and they don't only make the world's best boiler!



The Supermatic Skirting Radiator



The Supermatic Air Conditioner



The Supermatic Hot Water Convecter



The Supermatic Gyro-Jet Boiler



The Supermatic Gyro-Jet Air-beater and Hot Water Unit



The Supermatic Warm Air and Domestic Hot Water Unit



The Supermatic Industrial Warm Air Heater