DEVELOPMENT OF DOMESTIC COAL BURNING APPLIANCES

- Hydraulic Ram
- New Stanley Super 80
- CIBS News
- Infrared Gas Heating-Zone
Electricity

Come off that peak and save money

The period of peak demand for electricity at present is between 5 p.m. and 7 p.m. daily. If you can alter your use of electricity to times outside this period, you can avail of non-peak rates and save money. These non-peak rates are (a) night rate and (b) off-peak day rate.

Saving with Night Rate
The night-rate offers cost-saving advantages where storage type heaters are suitable. Storage type heaters take in heat at night when cheap electricity is available and release it when needed during the day. Storage heating is, in fact, the ideal choice for commercial premises. It is cheap to install; clean in operation and requires no space for fuel storage. The night-rate also applies to insulated water storage cylinders and other electrical services.

Saving with off-peak space heating rate.
You can benefit from this specially reduced rate if your premises are heated by any type of electric heaters other than storage radiators. This rate is specially suitable for premises where supply interruption during peak hours (at present 5 p.m. to 7 p.m. in winter time) is acceptable. If your premises are used on an occasional or casual basis then this rate may be right for you.

Saving with off-peak waterheating rate.
Another cost-cutting rate is that which covers waterheating. This rate is particularly suitable where a peak time interruption of electricity supply (at present 5 p.m. to 7 p.m. in winter time) would not affect productivity.

Advice and literature available at E.S.B. Service Centres.

Non-peak rates are cheaper because when customers switch from peak time demand E.S.B. production costs are reduced. The resulting savings are passed on to customers in the form of cheaper non-peak rates.
PRODUCT REVIEW

Domestic Boilers

Coal in its simple unprocessed state is likely to be a keen contender for the domestic market in the future and the mining industry, coal distributors and suppliers as well as appliance manufacturers can look forward to prosperity if the potential is dealt with in a responsible manner.

NEWSDESK

PAGE 2
Instaheat launch new Parkray and fuel; Armitage Shanks launch new Dublin sales centre; Royal Doulton have recently appointed Manning and Usher agents, details of their trade show in this issue; Hoffelds held an open day recently, H&V looks at Hoffelds and their new premises; CIBS news, details of the coming years programme and CIBS/ASHRAE conference; Merchant Warehousing the large publicly quoted company buys into Consumer Services; Dublin Gas Co. - what really matters.

THE HYDRAULIC RAM

PAGE 36
A look at the history of a very interesting piece of energy saving technology.

PRODUCT REVIEW

Domestic Boilers

PAGE 15
H&V takes a look at the domestic boiler scene, recent developments and a list of "who's who" in the industry.

ULSTER NEWS

PAGE 39

NEW PRODUCTS

PAGE 41
The up-dated and increased output of the new Stanley Super 80 makes a big impact on the cooker market; Hunter extends range of traps; Unicorn auto burner from M.C.W.

ZONE

PAGE 48
Gas infrared heating has become very important in recent years due to the nature of direct heating.

Cover courtesy of C&F Ltd - Glow-Worm.
Instaheat Launch
New Parkrays
and New Fuel

Instaheat Ltd, have announced details of a new range of Parkray room-heaters with re-styled appearance and an extended range of colours. The main change in appearance is that the lines of the heaters are less acute and corners are rounded giving a more up-dated appearance to the unit. The outputs remain the same as the older range but the new model references are GL, G, GF and 111GL, G and GF.

To ensure that there will be enough of the right fuel available for Parkrays, Instaheat are also stocking a smokeless processed coal called Rexco. This is a well known fuel in the UK and is very suitable for roomheaters but can also be burned in cookers, boilers and open fires. The fuel will be distributed through approved dealers throughout Ireland or direct from Instaheat.

To back up the launch of these new products Instaheat will be advertising or national and local radio and promotions will be carried out through distributors with the aid of new literature display cards and Parkray Star stickers. Another new product from Instaheat will feature strongly on television advertising and that is the New World Q4 LP Gas cooker. This cooker will be available from the LP Gas companies.

NEW SALES CENTRE FOR ARMITAGE

"During the last year our capital expenditure in Arklow was £200,000 and a further £100,000 will be spent during the current year. In 1981 we will invest a further £200,000. This expresses our belief in the future. Armitage Shanks Group have been market leaders for a long time now and it is the excellence of these products which have ensured our successful operation in Ireland," said Mr. Michael Egan, Director and General Manager of Armitage Shanks (Ireland) Ltd. of Arklow at the opening of their new Sales Centre and warehouse at Cookstown Industrial Estate, Tallaght, Dublin on September 25, 1980. The ceremony was performed by Mr Raphael Burke, T.D., Minister of State at the Department of Industry, Commerce and Tourism.

"When sales of a particular product allow economical production, it is Group policy to undertake production at our factory in Arklow. This spurs us to greater endeavours in marketing and services to our customers. Our efforts, however, are limited by the willingness to buy Irish products."

"For every container of sanitaryware imported unnecessarily into this country, we could employ 20 people in manufacturing an equivalent quantity, and the £1m. spent on imports during the first six months of 1980 represent jobs lost. We are determined to bite into these imports and the opening of a Dublin Sales Centre/Warehouse in Cookstown Industrial Estate is a measure of our confidence in our ability to do that."

"We should remember that when the building industry was booming abroad, merchants had to wait over 52 weeks for deliveries of imported vitreous ware, but now, because of abundance in the U.K., these products are swamping our market.

"In endeavouring to manufacture economically and competitively, we encounter certain obstacles which frustrate our efforts. The duty on Butane Gas was increased in the last Budget, and duty now costs us £15,000 per annum. Not a great lot of money but butane now costs us 30% more than it costs a U.K. company (allowing for differences in currency), and this imbalance in costs amounts to £35,000 annually at today's rates. Half the difference is therefore accounted for by Government action. Might I respectfully suggest an easing of this imposition and impediment to competitiveness.

Manning and Usher Trade Shows

The Royal Doulton and Peglers range of products will be displayed at two trade shows to be held in Dublin and Cork. The Peglers range includes luxury brassware, radiator valves, float valves and plumbers brassware. The Royal Doulton products on show will be their range of acrylic baths, domestic and architectural sanitaryware and fireclay.

The shows are being organised by Manning and Usher and the dates are as follows: Dublin October 21st in Jurys Hotel, Elm and Oak rooms and Cork 23rd October in Jurys.
Mr. Gerard Glynn, 445 Grange Abbey, Raheny, Dublin pictured with the Chairman of Coal Distributors, Mr. John Reihill, after he received his prize of £300 which was the Supreme Award in the first National Art Competition sponsored by Coal Distributors Ltd. A selection from the 2,000 entries received are on view in the Bank of Ireland, Baggot St., Dublin.

WIND POWER
ON INIS OIRR

The Tánaiste and Minister for Energy, Mr. George Colley, T.D., recently met Mr. Peargal Mac Amhlaobh, Manager of Comhar Chuman Forbartha, Inis Oírr, to discuss developments in the provision of a wind power project for Inis Oírr.

Mr. Colley told Mr. Mac Amhlaobh that he expected to have a wind generator installed on Inis Oírr by June or July next year and that the machine will be producing electricity for the islanders by October, 1981.

Mr. Colley said that Messrs Varming, Mulcahy O'Reilly Associates consulting engineers employed by the Department of Energy on the project have been instructed to proceed with the selection and purchase of a machine. Aer Lingus expertise is to be used in assessing the aerodynamic performance of the wind machine. Mr. Colley said that he welcomed the cooperation of Aer Lingus in an area where their particular experience and knowledge could contribute significantly towards the exploitation of our natural advantages in developing alternative energy sources. Inter-connection with the present supply grid will be by microprocessor control which will be handled by Varming in consultation with the E.S.B.

Mr. Colley said that it is intended initially that the wind machine will supply power for about a third of the island.

"Mr. Colley told Mr. Mac Amhlaobh that at his request, the Government has reaffirmed its decision that electricity should be supplied to both Gaeltacht and non Gaeltacht islands. The intention is that both the capital and running costs of the electricity supply should be born by the E.S.B. apart from the normal electricity charge as payable on the mainland.

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or tubing tools

IHVN, October 1980
**Energy Management Meeting**

The cost of energy to P.J. Carroll & Company had actually decreased in real terms during a period of increasing production, said Mr. L. McCaIlion at the first public meeting in Dublin of the Energy Managers' Association at which he gave a paper on P.J. Carroll's "Experience in Energy Saving". During the period 1977/1979, the estimated cost of energy to the company should have increased by approximately one third, using the Consumer Price Index, Fuel and Light Variation as a factor for the effects of inflation. In fact it fell by approximately 1.5%. They could confidently expect to maintain their good record over the next number of years, principally because of the commitment of everyone in the organisation to the concept of energy saving. A saving of £8,000 p.a. had been made in lighting costs with negligible expenditure. £9,000 p.a. had been saved in the boiler house. An incinerator, installed at a cost of £100,000, will have completely paid for itself in under three years and will provide a continuing saving of £36,000 per annum at 1980 energy prices.

Peter Brabazon, Energy Conservation Officer for the Eastern Region, in his paper on Energy Auditing pointed to the need for accurate data on energy use and its costs. In the light of today's energy economics, conservation projects were becoming increasingly more attractive and should be looked on as investment opportunities which are often of low risk and provide a rapid return on investment. An energy audit tells a company how much energy it is using, where it is being used and how much wastage is occurring. It provided a yardstick to which future energy use could be compared.

**Correct Chimney Procedure**

The UK Solid Fuel Advisory Service have recently issued Recommended Procedure when New Stainless Steel Chimneys made to BS.4543 are being installed.

1. Ensure that both the chimney and appliance are correctly installed, that the manufacturers' installation instructions are followed, and that Building Regulations are observed.
2. Ensure that the internal diameter of the chimney is never less than that of the appliance outlet.
3. Ensure that the appliance is connected to the chimney by a minimum of 900 mm (3 ft) of cast iron or mild steel, and in accordance with Building Regulations or as recommended by the chimney maker.
4. Ensure that raincaps or cowls are not used.
5. Ensure that an inspection/cleaning/access port is provided where this cannot be obtained through the appliance.
6. Advise the household/user as follows:

   a) For safety reasons as well as efficient performance the appliance flueways should be cleaned at least once a month and the chimney swept annually — even when solid smokeless fuel is used.

   b) That under no circumstances should the appliance be used for incinerating household waste — this can damage the appliance and the inner liner of the chimney.

   c) That in the event of a chimney fire lasting more than 10 minutes the entire chimney must be removed and replaced with new components; and that a mild soot burn-out lasting less than 10 minutes requires an inspection of the chimney to ensure that the system is safe to use.
Agents For

BRAITHWAITE

Sectional Tanks

- Ability to store almost any liquid
- Adaptable to special requirements
- Reliable & Strong
  Easily transported
- Unlimited range of capabilities
  New protective finishes

Economical, easy to erect, dependable, versatile and strong the Braithwaite Sectional Tank has all these features and many more. If you have a liquid storage requirement call Finheat for a speedy answer.
Jøtul Guarantee

David Couper of Tyrrellspass, Co. Westmeath, the Irish distributor for Jøtul woodburning stoves has just returned from a trip to the parent foundry in Norway with a number of interesting titbits.

All Jøtul woodstoves are now covered by a three year guarantee for replacement parts and labour provided that the stoves have been installed and used in accordance with the manufacturers’ recommendations. Furthermore, as a sign of the manufacturers’ confidence in their product, this guarantee applies retro-spectively so that householders who have purchased stoves up to three years ago are still covered.

A number of extras and improvements have also been announced. These Norwegian stoves were originally designed to be used as wood or wood/turf burning stoves. However, a new coal basket has been introduced for urban dwellers who can experience difficulty in obtaining either of these commodities now enabling coal and anthracite to be burnt as well. Constructed entirely in cast iron, the coal basket is essentially a removable grate which stands within the combustion chamber. The ribs of the basket are designed so that a layer of ashes forms on top of the grate insulating the cast iron from the burning coals.

Sheffield Insulations (Ireland) Limited sponsored a highly successful Open Golf competition at Carrick-on-Shannon recently for the Micarta Perpetual Trophy, and a large number of their customers in the West of Ireland competed in the event. The first winner of the Trophy was Con Finn, of Balaghaderreen Golf Club, pictured above receiving the trophy from Don Scannell (left) Managing Director, Sheffield Insulations and Brendan Kieran (right) Captain, Carrick-on-Shannon Golf Club.

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IDEAL FOR ALL GRADES OF OIL

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Telephone: 010 411 65 86 55
Established 1873
**Investment in Consumer Services**

The Merchants Warehousing Company Ltd., one of the oldest and most strongly established public companies in Ireland, have recently announced their acquisition of a majority shareholding in Consumer Services Ltd.

Consumer Services Ltd., based at 179 James’s Street, Dublin, was founded by Mr Deryk Morris, whose family have operated a heating and plumbing business in Cavan since the early nineteenth century. Co-proprietor with Mr. Morris is Mr. W.J.R. Couchman the Technical Director for both Consumer Services Ltd. and its associated Gaelwood Exports Ltd. It is understood that Messrs Morris and Couchman have retained substantial shareholdings in both companies, with Mr. Morris continuing as Managing Director. Mr. Michael Walsh retains the responsibility for sales on the home market while Mr. Couchman, who was a lecturer in solid fuel technology with the Coal Utilisation Council during the fifties, will continue to concentrate his main activities towards design and development, as well as general technical policy.

The operational policy of Consumer Services Ltd., in recent years has been to exploit their unique patents relating to combustion of solid fuel with their Conserva space heater and boiler, the Gaelwood Multi-Fuel central heating boiler, and the Centrafire back boiler. Each of these appliances has been impartially recognised as outstandingly efficient with good home sales and rapidly developing export sales. No doubt this would have influenced the Merchants Warehousing Company Ltd. in their decision to diversify their investment into this promising company. As well as marketing their own products Consumer Services also handle carefully selected imported equipment. Probably their most important exclusive agency is the Smith and Wellstood (Esse) range of solid fuel cookers.

---

**WHATEVER THE INDUSTRIAL IMMERSION HEATING PROBLEM SANTON HAVE ALREADY SOLVED IT**

We’ve got the range
- Water, oil, caustic solutions, degreasing agents, inflammable gases and vapours - they all present the installer of industrial immersion heaters with problems. Problems that Santon have already solved.

We’ve got the expertise
- Installing is your job. Providing you with the right immersion heater is ours. Our expertise will help you give your customers the right heater every time.

We’ve got the service
- Stocks of standard industrial immersion heaters are held by Charles Nolan & Co. (Ireland) Ltd, who will give you advice on specification and installation problems. For further details contact the electrical engineering specialists.

Sole distributors in Ireland
CHARLES NOLAN & CO. (IRELAND) LTD.
Techna House, Terenure Road East, Dublin 6, Ireland.
Telephone: 962244 (5 lines)

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*Pictured at the reception to announce details of the National Energy Conservation Awards competition, which is being organised by the Department of Energy, Macra na Feirme and Junior Chamber Ireland were (L-R) Seamus Hayes, National President, Macra na Feirme, Noel Tierney, Irish Shell (Co-sponsors), George Colley T.D., Minister for Energy, Desmond Kennedy, President, Junior Chamber Ireland and Don Scannell, Managing Director, Sheffield Insulations (Ireland) Limited (Co-sponsors).*

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*We’ve got the range*  
Water, oil, caustic solutions, degreasing agents, inflammable gases and vapours - they all present the installer of industrial immersion heaters with problems. Problems that Santon have already solved.

*We’ve got the expertise*  
Installing is your job. Providing you with the right immersion heater is ours. Our expertise will help you give your customers the right heater every time.

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*Published by ARROW@TU Dublin, 1980*
CTM Chooses Dublin as International Headquarters

At the official opening of CTM Limited's international engineering and design headquarters in Dublin, it was announced that the company will eventually employ 400 people, most of them qualified engineers and technicians.

CTM is affiliated with Chas. T. Main Incorporated of Boston, one of the oldest established and largest consulting engineering firms in the United States. Chas. T. Main ranks in the top ten worldwide and employs some 2,000 people of which over 85% are professional technical people.

The new Dublin office of CTM, will offer design, engineering and planning for projects in the Middle and Far East, Africa and South America.

CTM's General Manager and Director of Irish operations, Mr. William Huseby, said recruitment and training of Irish engineers and technicians had already begun and within a few years staff levels should reach the projected level of 400.

Dublin Gas — Does it Matter?

The recent Consumers Gas Company of Toronto's report on the Alliance and Dublin Consumers' Gas Company again highlights the need for natural gas for the company to survive and also the dilemma which the company faces in relation to getting that gas and its present structure. The government have made it clear that radical reforms are required in the areas of industrial relations and works practices before the Gas Company will be allowed to use the gas.

What has never been clearly stated however is that the money is already there for the pipeline from Kinsale and whether the present Gas Company or some other body distributes the gas, natural gas will definitely come to Dublin.

The Gas Company must realise this and so too must the workers who may take their chances and dig their heels in on the present staffing levels and works practices on the assumption that the Gas Company if it fails will be nationalised.

This may be the case as the Gas Company are reported to have two top Canadian executives on their way to Dublin to take over key jobs in the company and their jobs could be, as is suggested by many in the gas business, to make or break the Dublin Gas Company. So the survival of the company to the users and workers alike is probably of little interest.

Many companies in the gas business are now gearing up to supply the demand for appliances and the expertise needed to convert old appliances in the knowledge that Gas is coming to Dublin regardless.
I.T.T.P.'s 'Irish H&V News' can help

Our business is bridging the trade gap any marketing man ignores at his sales peril — the communications gap between his sales strategy and his trade. With Irish Heating and Ventilating News we have been helping the environmental engineering industry for sixteen years.


IRISH TRADE AND TECHNICAL PUBLICATIONS LIMITED
5/7 Main Street, Blackrock, Co. Dublin. Tel: (01) 885001.
In 1981 the CIBS is combining with ASHRAE in holding a joint Summer Conference, in London, from the 10th to the 14th May.

The programme starts on Sunday May 10 with Registration, and an optional guided tour of the City, followed by a President's Reception. The formal opening of the Conference will be undertaken by a well-known public figure on the morning of May 11.

The theme of the Conference is concerned with the world energy situation, and speakers from both sides of the Atlantic will be predicting the future as well as discussing today's practical implications and solutions. Apart from formal papers, there will be case studies, technical visits, and open forums.

The social functions will include government hospitality at Lancaster House, dinner aboard a Thames river boat, a medieval banquet at Hatfield House, and the closing dinner on the last day at the 17th Century Porter Turn Room in the City of London, including a Reception in the Overford Embroderie. An economy package will be organised by American Express, and variable post-convention tours can be individually arranged. A scheme for reciprocal home hospitality is being considered, to be organised in conjunction with London-based members.

Conference Registration Fee: Technical Delegates £180.00 sterling. Social Delegates £115.00 sterling.

Optional Social Events: Optional social events will be offered, including the Thames Dinner Cruise and Medieval Banquet.

For further information contact—ASHRAE, United Engineering Centre, 345 East 47th Street, New York -NY 10017, USA.

CIBS, Delta House, 222 Balham High Road, London SW12 9BS.

American Express has been appointed as Official Travel Agents for the 1981 C.I.B.S./ASHRAE Conference in London and offer six night hotel accommodation packages from May 9-15.

YOUR CHOICE OF HOTELS

<table>
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<th>Twin With Bath</th>
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PRICES INCLUDE:—

- 6 nights accommodation
- Continental breakfast daily
- 15% VAT and service charges

Prices do not include for Air Travel

Important

These prices together with the Conference Registration Fees are current, but with an estimated increase for May 1981. They may therefore, be subject to amendment.

ROSALIE TO SELL VOKES

Rosalie Carleton has joined Walker Air Conditioning Limited, Dublin, as Applications Engineer for the company's filtration and fluid handling products. She was previously with Vokes Filters, for whom Walker is the sole distributors in Ireland, at their Burnley headquarters.
Meet the energy team - Carlyle from Walker -

1. The unbeatable range of energy miser heat pumps

2. Heat reclaim chillers with multi-compressors for even lower running costs

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Carlyle Distributor for Ireland, Scotland and Northern England

Published by ARROW @TU Dublin, 1980
IHVN were recently invited to look at the new premises of H.R. Holfeld (Hydraulics) Ltd at one of their Open Days. So IHVN takes the opportunity to look at not only the factory but the company as well.

H.R. Holfeld Hydraulics Limited, Ireland’s leading pump manufacturer welcomed its many clients, suppliers and friends to its premises in the Sandyford Industrial Estate on 4th and 5th September. The entire factory and office complex was open to those invited who were able to view the product range and see demonstration models in action.

H.R. Holfeld Limited was established in 1949 by Mr. Harry R. Holfeld and rapidly expanded to form the H.R. Holfeld Group of companies of which Holfeld Hydraulics is a member. The new factory in Sandyford Industrial Estate was established almost a year ago and was designed specifically to produce the Holpak range of cold water pressure booster systems for both the home and overseas markets. Day-to-Day management of the company is guided by Mr. H.R. Holfeld’s son, Mr. Richard R. Holfeld who now acts as Chief Executive.

The company relies heavily on the commitment and enthusiasm of its staff, especially on four senior

Pictured at the Holfeld “Open Evening” inspecting the pump test bay were (left to right) Mr. S. Cantwell, Urlingford, Co. Kilkenny; Mr. A. Kearney, Borrisolea, Co. Tipperary; Mr. P. J. McNamara, Scarriff, Co. Clare; and Mr. S. O’Sullivan, Sales Engineer, Holfeld Hydraulics.
Pictured at the Hofield "Open Evening" were (left to right) Mr. B. Taylor, Quantity Surveyor; Mr. T. Gifford of HGW; Mr. D. Williams, Architect; Mr. D. O'Brien, General Manager, McLoughlin & Harvey Ltd; and Mr. G. Zanchetti of G-Z Steelworks.

employees who have all been with the firm for more than ten years. Mr. John F. McEvoy, ACCA is Financial Director and Company Secretary; Mr. Maurice F. Dore acts as Sales Manager and has been with the company for twenty five years; Mr. Ron W. Shawe is Purchasing and Administration Manager; and Mr. Richard J. Rainsford is Customer Relations Manager.

Holpak Booster systems are installed wherever a guaranteed water supply is required to a certain specification and therefore has extensive application in high rise buildings, group water schemes, and industry in general. The standard Holpak range consists of approx. 23 separate models and where the requirement is outside this range, individually designed booster systems are built to specification. These booster systems are also manufactured for several pump companies who incorporate them in their own ranges.

The company continues to manufacture the original Waterpak range of shallow and deepwell pumps for its many customers in the home market. Additionally it now manufacturers a more modern, compact version known as the Jetpak and so the needs of most customers can be met from its standard production programme.

The company also represents many leading European manufacturers of pumping and allied equipment such as Grundfos, Sulzer, Lee Howl, Calpeda, Loewe, Simon-Hartley and others. In all respects Hoffield Hydraulics is a very adaptable company and welcomes enquiries for all types of packaged pumping plant.

The company has a long established and solid home

---

**THERMWISE STEAM BOILERS**

Boilers Manufactured from 1,000 to 5,000 lbs per hour
Stockists & Suppliers of boilers up to 65,000 lbs per hour suitable for burning Oil, Gas, Turf, Coal and other Unusual Fuels.

Agents for Dunks of Netherton

---

**General Industrial Marine Boilers**

Frankfort, Dundrum Road, Dublin 14  Tel.: 989921, Telex 30870

Published by ARROW@TU Dublin, 1980
Continued

base. However, it is constantly evaluating new market areas and two Export Sales Executives, Mr. David E. Fenning and Mr. Darach E. McEvoy make regular visits worldwide to investigate potential new market areas. The first overseas markets to be explored were the United Kingdom, the Middle East and Nigeria during which time suitable agents and stockists were sought. Agents in these areas now stock a representative range of Holpak booster systems and the export side of the business continues to expand and show promise for the future.

Extensive use is made of trade fairs and missions, both at home and abroad.

Also at the "Open Evening" were (left to right) Mr. P. Condon, Manager, Bank of Ireland, Stilorgan, Co. Dublin; Miss O. Stanley, Holfeld Hydraulics; and Mr. A. Kelly, Sales Manager, Intercontinental Cargo Ltd., Dublin.

AHU Feature

Glowtherm Ltd have advised us that they are now agents for Deltaclima products and also sole agents for Multivent. The caption on last months Biddle V Pak AHU picture should credit Unimack Ltd as agent.

New from Redbro

The Vortaer Range

Available in 6, 8, & 10" Sizes
with Speed Controller
Infinitely Variable & Reversing fitted with Iris Shutter can be installed in Single & Double Glazed Windows or Wall Mounted in
Less Than Half The Time

Available in 10, 12 & 15cm sizes
3 Basic Parts
Double Insulated
Solid State Timer (Optional)
Low Installation Cost

The unit cost of this range of fans make them a must for your applications.
# COMPANIES SUPPLYING DOMESTIC BOILERS, BACK BOILERS AND COOKERS WITH BOILERS

**Names, addresses and telephone numbers of supplying companies**

<table>
<thead>
<tr>
<th>Name and Address</th>
<th>Tel. No:</th>
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<tr>
<td>Alternative Heating Systems</td>
<td>301729</td>
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<tr>
<td>25 Annamoe Terrace, Dublin 7</td>
<td></td>
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<tr>
<td>Apollo Engineering Ltd</td>
<td>390230</td>
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<td>745462</td>
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<td>Brookfield Mill, Crumlin Rd, Belfast 14</td>
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<td>C &amp; F Ltd</td>
<td>264917</td>
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<tr>
<td>Glenside Industrial Estate, Mill Lane, Palmerstown, Dublin 20</td>
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<td>Castlereagh Sheet Metal &amp; Engineering Co Ltd</td>
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<tr>
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<td>Greenhills Road, Dublin 12 and branches</td>
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<td>Clyde Systems Ltd</td>
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<td>John F Kennedy Drive, Dublin 12</td>
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<td>179 James Street, Dublin 8</td>
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<td>Cambell &amp; Cooke Ltd</td>
<td>786099</td>
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<tr>
<td>16 Rutland Street, Dublin 1</td>
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## DOMESTIC BOILERS

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<td><em>Heiton McFerran Ltd</em>*&lt;br&gt;Tara House, Tara Street, Dublin 2 and branches</td>
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<td><strong>Heatilator Engineering Ltd</strong>&lt;br&gt;110 Cork St., Dublin 8</td>
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<td><strong>P. B. Johnston</strong>&lt;br&gt;Ashford, Greys Point, Helens Bay, Co Down</td>
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<td><strong>Ian A Kernohan</strong>&lt;br&gt;Fir Trees, 82 Gransha Road, Bangor, Co Down</td>
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<td><strong>Kenneth Lee Ltd</strong>&lt;br&gt;Martin's Row, Dublin 20</td>
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<td><strong>Megahey Engineering Ltd</strong>&lt;br&gt;Tully, Ballinamore, Co Leitrim</td>
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<td><strong>Mac Fab Ltd</strong>&lt;br&gt;Dundalk Road, Carrickmacross&lt;br&gt;Co Monaghan also at Magheracloone, Kingscourt</td>
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<td><strong>P &amp; D Macfarlane Ltd</strong>&lt;br&gt;51/53 Ridgeway Street&lt;br&gt;Belfast BT9 5FB</td>
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<td><strong>Sydney McClure</strong>&lt;br&gt;Mourne Agric Supplies&lt;br&gt;131 Ballyward Road, Co Down</td>
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<td><strong>P J Mathews Ltd</strong>&lt;br&gt;134 Lower Baggot Street, Dublin 2 and Branches</td>
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<tr>
<td><strong>Mid-Ulster Engineering (Craigavon) Ltd., 31 Springhill Road, Lurgan</strong>&lt;br&gt;Lurgan</td>
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<td><strong>Paramount Distributors Ltd</strong>&lt;br&gt;26 Mountpelier Hill, Dublin 7</td>
<td>777474</td>
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<tr>
<td><strong>Potter Cowan &amp; Co (Belfast) Ltd</strong>&lt;br&gt;114 Henry Street, Belfast BT 15 1GG</td>
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<td><strong>Precision Heating Equipment Ltd</strong>&lt;br&gt;Church Road, Santry, Dublin 9</td>
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<td><strong>Jack Roberts Ltd</strong>&lt;br&gt;46 Gardiner Lane, Dublin 1</td>
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<td><strong>P. H. Ross Ltd</strong>&lt;br&gt;16 Old Cabra Road, Dublin 7</td>
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Dramatic changes have occurred in the type of fuel being used for generating heat and electricity. With an increasingly realistic view being taken of the life of oil supply, manufacturers of heating, air conditioning, refrigeration and allied equipment have concentrated on energy conservation methods and solid fuel burning appliances.

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6mm Steel Boiler
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U. | 
Unidare | Unidare Ltd.

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DOMESTIC BOILERS

Development of Domestic Coal Burning Appliances

by J. L. Ball,
National Coal Board, UK.

For the past few years a small team at the Coal Research Establishment of the National Coal Board, in collaboration with several appliance manufacturers, has been engaged in a programme to develop a range of domestic size heating appliances designed specifically to burn commercial grades of bituminous coal directly and in such a manner to be efficient and convenient in use and to provide acceptable levels of smoke reduction to satisfy the Clean Air Acts of 1956 and 1968 in the UK.

The attraction of this approach for the domestic solid fuel market, from the viewpoints of the customer, the manufacturer and of energy conservation are that i) bituminous coal is a readily available and relatively low cost fuel and when burned in an efficient manner, heating costs are extremely competitive compared with piped fuels, ii) commercial grades of coal can be burned in a domestic appliance as effectively as a smokeless fuel without the need for processing to meet smoke control thus using primary energy supplies more directly and efficiently.

Many bituminous coals contain up to 40% volatile matter, approximately one third by weight which is evolved when coal is heated to above 400°C. When such coal is fired on a conventional domestic grate the released volatile pass upward through the fire bed with the combustion air flow into the cooler zones of the firebox. Here the volatiles are chilled to below their ignition temperature and are only partly burned giving inefficient combustion and causing the emission of yellowish-brown smoke from the chimney.

Initial studies indicated that the essential requirements for burning volatile matter were that it should be well mixed with air (oxygen) and maintained at temperatures above 600°C for a time (about 1/2 second) sufficient for all the combustion reactions to be completed. These requirements of turbulence, temperature and time are well known to combustion engineers as the three t's.

The objectives was to be able to satisfy these criteria and complete the burning of the coal volatiles within the limited space of appliance design which was frequently required to fit within a standard fireplace opening.

The method which has been employed to meet these stringent conditions is the principle of downdraught combustion. This is not a new idea but dates from 1680 when it formed the basis of Dalesme's heating machine, and was later rediscovered and patented by James Watt in 1785. In a down-draught system air enters the combustion...
chamber at the top and combustion products leave from the bottom of the firebed. The important technical point is that the burning fuel front travels upward within the fuel bed in the opposite directions to the downward primary combustion air. Any volatiles evolved are entrained by the downward air stream and pass into the incandescent zone of the firebed to be burned. Thus the fire consumes its own smoke in contrast to the up-draught combustion system in the conventional grate. For low burning rates a second volatile combustion chamber and air supply may be needed to provide a sufficient level of smoke reduction.

The initial work at the Coal Research Establishment was based on a small integral fan to provide combustion air and obtain necessary turbulence. Further developments was in collaboration with interested manufacturers, first in the laboratory and later at trial installations. Extensive tests were made to measure smoke emission and heat output for a wide range of operating conditions and the results submitted for approval to the Department of the Environment and the DSFAAS respectively.

Acceptance by the authorities led to the first generation of full approved commercial appliances such as the Parkray Coalmaster, Rayburn Prince 101 and 301 roomheaters launched in the early 1970's. These models are continuous burning roomheaters with high output boilers which can provide full heating for the two and three bedroomed compact house. The fuel burned is pre-packed singles, a commercial grade of bituminous coal of 12.5 mm to 25 mm (½" to 1") size range. The units are somewhat selective on fuel preferring coals of non or weakly caking quality.

At this stage it was considered that further developments of smoke reducing appliances should be towards units of simpler and cheaper design capable of burning a much wider range of coals. The Rayburn Prince 76 open roomheater, launched in Autumn 1975, was the first commercial design of approved bituminous coal burning.

One of the new Parkray "stars" (see page 2).
Falcon Range Oil Fired 85,000 btu/h. For the larger home to the smaller communal premises this range pr-assemblyed and tested prior to dispatch and matched with Saleetas Pressure Jet Oil Burners. This range of boilers is also available as Gas Fired with the appropriate Saleetas Gas Burner suitable for Towns Gas or L.P.G.

Rondomatic Range Solid Fuel 20,000 btu/h. Modern styling of the O-DE Range. Situated in the kitchen, the Rondomatic Range not only provides up to 25 gallons of hot water per hour if required but can also be used as an open front fire. Draught Stabilizer.

O-DE Range Solid Fuel 20,000 btu/h. Situated in the kitchen, the Ideal O-DE not only provides up to 25 gallons of hot water per hour if required but can also be used as an open front fire.

Ideal Falcon Gas Fired Boiler 87,000 - 394,000 Btu/h.

Robosto Range Oil/Solid Fuel. 80,000 btu/h. Solid Fuel - 170,000 in Solid Fuel, 100,000 in Oil - 280,000 btu/h Oil, Dual Purpose.
Two complete separate chambers, one for Oil one for Solid Fuel. Independent Firing, fully Automatic - no conversion necessary. Manufactured by Ideal Stelrad for over 50 years - during this time the Robosto has proven its worth. Improvements based on experience have been incorporated in the design to produce a modern technically perfect versatile boiler.

Marquis Range Solid Fuel 48,000 btu/h Model 245. 65,000 btu/h Model 265.
Marquis solid fuel boilers are available in two carefully selected output ratings that cover the needs of the majority of homes.
heating people

Fuel Boilers from 20,000 btu/h to 5 million btu/h

From

SAN GIORGIO

Zone 80 Range Oil Fired 58,000 btu/h - 280,000 btu/h. The cast iron body is composed of patented sections - insuring maximum exploitation of combusted gases thus allowing maximum efficiency with reduced consumption. High output efficiency.

Compat Range Oil or Gas Fired 80,000 btu/h - 280,000 btu/h. Very popular for domestic use.

Omnia Range Oil or Gas Fired or Solid Fuel 68,000 btu/h - 180,000 btu/h Solid Fuel. 80,000 btu/h - 280,000 Oil/Gas. Convertable to Solid Fuel.

ALL THESE BOILERS ARE CAST IRON. BY ADDING SECTIONS THE CAPACITY CAN BE INCREASED AT ANY TIME AND DAMAGED PARTS CAN BE SIMPLY REMOVED AND REPLACED.

ALL THE ABOVE ITEMS ARE ON DISPLAY AT P. J. MATTHEWS, BAGGOT STREET SHOWROOMS.

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Tipperary Road, Ballysimon, Co. Limerick. Tel. (061) 43722/43904/43402 Telex 8222 MTHL EI
appliances to operate solely on natural chimney draught and not require fanned combustion air. It contains a simple combustion system and is able to burn satisfactorily household grades of doubles and trebles coal of 25 mm to 100 mm (1" to 4") size range. A further advantage is that the performance is not so sensitive to the caking property of the coal. The Prince 76 can be used either as an open fire giving high radiant heat output and sufficient hot water for several radiators and domestic purposes, or it can be closed manually to operate at intermediate or slumbering outputs as a room heater. A feature of the design is the downward cascade flame effect given behind a front tubular glass panel which makes a very attractive visual appearance. To achieve down draught combustion primary combustion air is induced through the front fuelling aperture and passes down through the bed of coal in the opposite direction to the advancing flame front. Volatile matter released in the bed is heated and ignited as it passes through the throat at the back on its way to the flue. To ensure efficient combustion, secondary air passes separately down a duct at the rear of the firebox where it is heated and mixed with volatile matter at the throat. The combustion of volatiles is completed in the insulated refractory lined chamber located behind the lower part of the firebed. The hot products of combustion then pass over the boiler surfaces transferring heat to the water and pass into the chimney flue.

For intermediate and low output operation a drop down door closes off the fuelling aperture either partially or completely. Improved amenity is always an important consideration in appliance design and the Prince 76 includes an efficient de-ashing arrangement and an ash tray unit which

Stanley Super 80, one of the new Stanley 80 series.
The Thorn oil boiler's got nothing on it for garages and outhouses.

Now the highly successful range of Thorn oil boilers can be a real working proposition in those more out-of-the-way places.

Garages and outhouses have now come within the range of Thorn oil heating simply by removing our boiler's smart outer casing. Leaving you with the highly efficient inner workings.

The only thing that's cheapened is the price.

There's a Riello burner. Which speaks for itself. A performance that's as impressive as the conventionally-cased model. All providing lots of warmth and lashings of hot water.

And the nice thing about it is you don't have to make a performance out of putting it all together.

The electrical centre's easy to connect. The maintenance is easy too. Just once a year.

And you've got the total backing of Thorn service and after-sales. With spares readily available here in Ireland.

Get yourself warmed to Thorn.

The Thorn range of oil boilers are fully-automatic pressure-jet units with outputs up to 120,000 Btu/h.

Thorn Heating Limited, Factory D2, Chapelizod Industrial Estate, Dublin 20.
Telephone: 264001.
The following notes are based on material submitted by the companies concerned.

Current effort in the present programme is to develop a range of 'second generation' closed appliances of simple design and operating on natural chimney draught and not sensitive to coal type. If these units are designed to operate at high efficiency then they can give very competitive running costs compared with alternative fuels. If running costs for various fuels at typical efficiencies are considered to supply 500 useful therm (52.7 GJ) it will be noted that with house heating efficiency of 75% for the closed smoke reducing roomheater the costs for solid fuel are the lowest. Because of this potential advantage development in association with manufacturers has reached the stage of prototype designs of closed roomheater and independent boiler with thermostatic control for both laboratory tests and field assessment trials to prove the units prior to commercial launch. These prototypes embody a simple down draught combustion system able to burn bituminous coal with acceptable smoke reduction and manufacturers can package it in the form to suit existing and future production. The development of the closed roomheater with high output boiler is being followed by a dry back model for warm air only but having the facility for a domestic hot water boiler as optional.

Such an appliance could form the basis for a 'brick central' heating scheme giving advantages of reduced capital cost for the appliance and heat distribution system combined with low running costs. Another line of development is concerned with determining what inexpensive modifications are possible to conventional designs of open fire with high output back boiler to enable them to burn bituminous coal more efficiently and with a measure of smoke reduction, although not necessarily to smoke control standards. When burning coal in an open fire with central heating boiler the appliance efficiency is approximately 40%, an increase in efficiency by 10% is sought and initial test work has given encouraging results.

The programme has also been extended to view the implications for solid fuel of requiring appliance designs to provide heat at very low levels of output suitable for low energy consuming housing. Heating systems based on bituminous coal with emphasis on amenity are under development. In closing this paper it may be opportune to refer to the exciting development of 'fluidised bed' combustion and to point out that whilst it is possible that eventually a domestic scheme can be evolved.

Coal in its simple unprocessed state is likely to be a keen contender for the domestic market in the future and the mining industry, coal distributors and suppliers as well as appliance manufacturers can look forward to prosperity if the potential is dealt with in a responsible manner.*

*This paper was presented at a recent seminar organised by the IRS.

The Tirolia Range, you will always be able to cook and heat your home.

Supplies of energy, such as natural gas, oil and electricity are no longer dependable. How will you cook without them? With a Tirolia Range, you will always be able to cook and heat your home.

Tirolia Ranges burn any-thing. As energy prices increase, you can cook and heat your home with wood, coal, paper, garbage or whatever, and save money. In addition, because of Tirolia's technical advances, more energy is used from your fuel than from ordinary solid fuel ranges.
Tirolia's major goals in the development and manufacture of these ranges are to achieve maximum efficiency and energy savings for you. The Tirolia ranges employ the time honoured Bavarian double draft system, assuring maximum efficiency in the combustion of all types of fuels. Stoves D5N, D7N and D9N have an adjustable grate so that the quantity of fuel being burned at one time can be varied according to the demands of the season. In summer the iron grate can be raised up and in winter can be dropped down thus changing the volume of the fire box. Under the solid steel range top is an especially designed asbestos basking that will assure a tight seal and no false drafts into the range. The fire box and the ash box doors are also sealed with a tight fitting asbestos gasket again to assure no false drafts.

C&F
Glow-Worm Ltd. of Belper, Derbyshire are the biggest manufacturers of domestic gas boilers in Europe. Their range of boilers includes free standing, wall hung and back boilers. The 22 versions of Glow-Worm free standing boilers give outputs of from 8.9 kw (30,000 Btu/h) to 35.2 kw (120,000 Btu/h). They are available in balanced flue or conventional flue form and can have either basic or programmer control panels.

The Space-Saver range of wall hung boilers are available in outputs of 11.14 kw (38,000 Btu/h), 15.2 kw (52,000 Btu/h) and 21.98 kw (75,000 Btu/h). All are available in conventional or balanced flue versions.

Glow-Worm also manufacture back boilers with either the Galaxie 246 or Majorca 246 Fire Front for use on natural gas or town gas.

In the case of the free standing and wall hung boilers, these are available in natural gas, town gas and LPG.

All Glow-Worm boilers have cast iron heat exchangers, thus ensuring trouble free operation and long boiler life. Glow-Worm products are available from C&F Ltd.

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Jøtul woodstoves have become a popular alternative and/or additional method

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CRAFTSMAN Aerocowl
Unique cowl that extracts air and eliminates downdraughts. Maintains balanced flue pressure thereby reducing fuel costs. Also ensures minimum condensation. As seen on 'Tomorrow's World'.

CRAFTSMAN Chimneys
Twin wall vinyl and coated chimneys for internal and external use. ICL pre-fabricated metal chimneys are a recent development that's catching on fast. Chimneys are insulated for greater flue efficiency.

CRAFTSMAN Flues
A telescopic vitreous enamel flue system. The modern way to connect boilers or ranges into your existing lined chimney or new flue. Is neat and easy to clean, resists chipping and looks good.

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Please send me further details on Cows □ Chimneys □ Flues □ and the name of my nearest stockist.
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Published by ARROW @TU Dublin, 1980
DOMESTIC BOILERS

of home heating since they were first introduced to this country by David Couper of Tyrellspass, Co. Westmeath four years ago.

Now, as a result of consumer demand, special water heating kits have been developed for two of the most popular models — No. 1 and No. 6 — as well as for No. 118 and the new System 17. The kit consists of a copper boiler installed in the stove's firebricks and, provided that the stove is used correctly, sufficient domestic hot water for an average sized family should be provided.

David Couper is also distributor for the Swiss designed Tiba central heating cooker which will burn wood, turf or coal, and which can be converted to oil or gas by the addition of another unit. It will meet the domestic hot water requirements of most households as well as providing central heating, depending on the model, the smallest model has an output of 50,000 Btus per hour, while the largest has an output of 84,000 Btus per hour.

poor chimney pot locations, badly proportioned flues, structural faults, adverse wind conditions or down draughts. Whatever the cause, the results are the same: unpleasant fumes, smoke and dirty furnishings. Now there is a complete answer to the problem which avoids expensive and unreliable reconstruction work. Exhausto Electrical Chimney Fans work silently and efficiently to make sure that all the smoke goes where it belongs — up the chimney.

Exhausto gives: Correct chimney draught at all times; Complete independence of weather conditions;

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Our UNIQUE DOWN-FIRING COMBUSTION SYSTEM which has been proved to be the most advanced available is applied to these well known products.

GAELWOOD MULTI-FUEL CENTRAL HEATING BOILER

For radiators and domestic hot water.
- 65/90,000 Btu's/hr GENUINE output.
- Burns any solid fuel including RUBBISH.
- Converts to oil or gas VERY EASILY.
- Burns its own smoke and this complies with Clear Air Act.
- Overnight burning.
- Fully cased and insulated.

CONSERVA SOLID FUEL CENTRAL CHAMBER HEATERS for warm air and small radiator system.
- Up to 42,000 Btu's/hr TOTAL OUTPUT.
- Burns any solid fuel including RUBBISH.
- Burns its own smoke and this complies with Clear Air Act.
- Top Hot plate for cooking and simmering.
- Overnight burning.

CENTRAFIRE HIGH OUTPUT BACK BOILER.
- Increased heat output.
- Increased fuel economy.
- Greater control of heat to water than with any other back boiler.
- Easier installation.
- No fuel in contact with water cooled surfaces.

The Exhausto chimney fan.
DOMESTIC BOILERS

wise result in loss of efficiency. This feature is now available in the 16” and 18” models with inset or underflow fires.

A combination of Firemaster boiler and fires could provide a full space heating for a big room, domestic hot water through a 25-30 gallon cylinder and four radiators. Even more, if no domestic hot water is needed.

Every Firemaster fire gets the maximum efficiency from all recommended solid fuels. It is, of course, approved for smokeless zones. As for trouble-free comfort, few systems could compare with it. The fire can be allowed to burn overnight with minimum attention.

Installation fuss is down to a minimum; there will be no need to damage the present tiled hearth. And don’t worry for a second.

Silent operation with variable speed control; Room ventilation; Reduced chimney condensation.

The fan unit rests on top of the chimney and works by simply sucking the smoke up through it. It is made from cast aluminium and is therefore entirely resistant to corrosion as well as to hot smoke. It needs no maintenance other than occasional inspection. Reconstructing chimneys to avoid smoky fireplaces is inconvenient, messy and expensive. Even after completion the solution cannot be guaranteed 100% effective. Exhaust chimney fans eliminate the guesswork. Troublefree to fit, they provide a certain cure at a known cost.

One of the Firemaster boiler and fire ranges.

Paramount Distributors

This is the boiler designed to obtain the utmost from any fire. Note how the cranked flueway retains the restriced access to flue-way. Regular cleaning will prevent the formation of excessive soot and tar deposits which would otherwise.

Dunsley Enterprise real fire central heating

Dunsley Enterprise 16” approved appliance

The new Dunsley Enterprise is probably the most efficient high output back-boiler unit available. The large capacity square firebox design makes it ideal for burning any type of fuel, including smokeless fuel, household coal, wood logs or peat.

A high efficiency, high capacity fire and boiler unit fully capable of whole home central heating and domestic hot water.

The 16” Dunsley Enterprise outperforms many other 18” units!

Manufactured to the highest standards. Dunsley fires and boilers are designed for high output and great efficiency. Easy to install, Dunsley Appliances will easily adapt to existing water-fed central heating systems. All appliances carry the famous Dunsley 5 year guarantee.

Sole Distributors in Ireland

Dunsley Heating Appliance Co. Ltd., Fearnought, Huddersfield Road, Holmfirth, West Yorkshire

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about that 'underfloor draught' label: the Super-draught can even be installed in homes which have solid floors! In fact, ash should only need to be removed twice a week.

Alternative Heating Systems

Alternative Heating Systems offer the Volund range of multi fuel and solid fuel boilers.

The Volund Q 851 multi fuel boiler is a fine example of Volund's extensive experience in product development and manufacture. It lives up to Volunds well known demands for quality over the past 100 years which has made Volund a market leader in its range of products. The Volund Q 851 is designed to give years of trouble free service and at the same time minimise running costs. The Volund Q 851 is not just designed to offer long life but with its completely separate firing chambers it will, without any conversion, use both oil and solid fuels, with the additional benefit that you may dispose of your combustible domestic refuse (excluding plastics). The Volund Q 851 is a compact boiler unit which requires the minimum of installation work. The standard model is delivered fitted with its own mixing valve, circulation pump and internal pipe connection ready to be connected to the existing heating system in your home.

The Volund Q 855 solid fuel boiler requires little space and is the ideal solution for those wishing to supplement or replace their existing system with solid fuel in order not to be dependent on any one fuel. The Q 855 has the same roomy firing chamber as the Q 855 and is designed to burn all the available fuels including domestic refuse (excluding plastics).

The adjustment of the burning rate is controlled by an inbuilt draft regulator.

Behind the attractive outer casing the Volund boilers are extensively insulated in order to ensure maximum transfer of heat from the firing chamber to your heating system.

The standard of insulation conforms with the exacting Danish Bye-Laws resulting in maximum fuel economy.

Regardless of the Solid Fuel used both the Q 851 and Q 855 are easy to operate. The large stoking door is located so as to afford ease of access.

The Volund Q851 multi-fuel boiler.

Triano

The new Triano G range boilers have been conceived primarily to burn anthracite a superior natural smokeless fuel. They will also burn alternative fuels, including Sunbrite and Sunco so providing a flexibility of fuel choice unrivalled in domestic gravity feed solid fuel boilers. The actual method of burning is sophisticated — yet simple. An integral water sensing thermostat switches a fan on to boost the fire when the room thermostat demands heat, and, when the required temperature is achieved, it automatically switches the fan off to allow the fire to simmer economically under controlled natural draught until the next demand occurs.

As the fuel is consumed, the fire-bed is automatically replenished by gravity from the large hopper above and a constant fire-bed depth is maintained at all times. This ensures constant optimum combustion efficiency which is further controlled

Call C&F Phone 264917 264898
for GLOW-WORM Gas Boilers
Cast Iron Heat Exchangers on all models ensure long life.

The leading name in solid fuel central heating (see our new range of Parkray "Stars") at your local merchants.

The quality smokeless fuel for your central heating boiler — reliable, clean and there is no shortage of it. Order some to-day from your local Merchants or contact Instaheat Limited.

The Spectrum — is the ultimate L.P. gas cooker for you — contact Instaheat Limited.

The Q 4 — "The brown cooker that's come out of the blue." See it at your local L.P. gas showroom.

Agents and Distributors for all the above products.
by an inbuilt draught stabiliser. Residual ash forms into compact solid clinker which is then removed by the ejection system — a simple dust free method involving but two pulls of the ejector handle.

This tightly controlled Trianco system providing high or low output on demand represents what is arguably the most efficient utilisation of solid fuel for domestic central heating in the world. Further information from Heating Distributors Ltd.

**Myson**

The Myson 'Velaire' pressure jet oil fired boiler has made rapid inroads into the oil boiler market since it was launched. It performs well, looks good, has the renowned Myson reliability and is extremely quiet and economical. There are three models in the Myson 'Velaire' oil boiler range — Deluxe, Standard and Boiler House — and each gives a choice of five sizes range rated to give the output in Btu/h indicated from 50/70 to 135/185.

The two smaller sizes, the 50/70 and 70/90, will fit under standard height kitchen work-tops to give an uninterrupted working surface and are also offered with low-level flues resulting in maximum economy of space, more freedom of planning and considerable savings in cost and installation time compared with conventional flues. The Deluxe model is completely cased and has a built in programmer and thermostatic control. The Standard model is also fully cased and has a boiler thermostat on the fascia. The Boiler House model has a simple control box and is supplied without casing. The Myson 'Velaire' range is designed and built to comply with DOBETA requirements and British Standards No: 4876. The boiler complies with all international safety standards and incorporates such

Build for the future with Coal

1 **Roomheater**
   Whole house heating from a living fire behind a glass door.

2 **Back Boiler**
   Heat 5 rooms and all the hot water you need from one open coal fire.

3 **Gravity feed boiler**
   Elegant coal burners for whole house heating that need minimum attention.
   Choice of other independent boilers.

4 **Cookers**
   Many of today's solid fuel cookers heat radiators as well.

or **Interlinking**
   The traditional coal fire can now be interlinked with other hot water radiator systems reducing your heating costs substantially.
   And there's plenty of coal in the world!

Contact your coal merchant or Coal Information Services, 18 D'Olier St., Dublin 2. Tel: 776246

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features as automatic lock-out and over-heat thermostat in addition to normal controls.

For total convenience and cost saving the 'Mysen' Unit Two' water circulating pump can be factory fitted within the casing on Deluxe and Standard models 50/70 and 70/90.

Consumer Services

Traditionally, different fuels have required specially designed boilers.

The Gaelwood 65/90 solves this problem — it is a multi-fuel boiler using a combustion system which has been patented and accepted by users since 1975. The unique design gives the Gaelwood boiler a large number of advantages. No other boiler can claim so many special features, putting the Gaelwood way ahead for economy, ease of operation and its acceptance of a wide range of fuels. Because of its high efficiency rate, refuelling can be as frequent as once every 24 hours. This boiler can be installed in either new or existing heating systems, is compact and needs no power supply when operating on solid fuel.

The Gaelwood boiler has advantages over any other solid fuel heater because it uses a unique down-draught combustion system.

P J Matthews

P J Matthews carry a large range of central heating equipment including the Ideal Stand and the San Giorgio range of domestic heating boilers.

Included in the Ideal Standard Range is the Marquis solid fuel boiler. It is suitable for a wide variety of solid fuels, competitive in running cost, thermostatically controlled and efficient, designed for reliability and ease of operation, smart modern appearance and approved under Domestic Solid Fuel Appliances Scheme in the UK.

Marquis solid fuel boilers are available in two carefully selected output ratings that cover the needs of the majority of homes. They provide central heating and indirect hot water supply.

Ideal Rondo

This successful firepot style of boiler is capable of providing up to 25 gallons of domestic hot water per hour, and keeping the kitchen warm at the same time. Designed to fit most modern kitchens, it is available in one standard finish with a white stove enamelled jacket and a black vitreous enamelled top plate and smokehood. Excess time or money is not wasted at the point of installation because of the speed and ease in which it can be accomplished. The Ideal Rondo incorporates a simple rocking grate and dumping device which speeds up refuelling and servicing.

Ideal Falcon

The range of Ideal Falcon oil fired boilers is designed to heat larger homes and smaller commercial premises. There are twelve boilers from 5 to 16-section sizes, varying in output from 25.4 kW (87,000 Btu/h) for the 5-section boiler, to 115 kW (394,000 Btu/h) for the 16-section boiler. The boilers are comprised of small, compact sections, giving high efficiency to water and a flue gas exit temperature of 260°C to 300°C (500°F to 572°F).

Boiler bodies are supplied pre-assembled and are accompanied by a boiler casing and a matched pressure jet oil burner suitable for use with Class D. 35-sec. oil.

The San Giorgio range includes the Omnia and the Compat models.

The Omnia boiler is designed to operate with oil, gas or solid fuels. The combustion chamber is large and allows the use of coke or anthracite coals. Grids and bars are removable.

The Omnia boiler is supplied packed in 3 pieces:

— the assembled heating body complete with mazut and coal doors, bars, grids, draught butterfly valve, flue outlet, and steel counterflanges;
— the fiberglass insulated orange lacquered jacket;
— the control panel including: thermostat, dual thermostatic, on/off switch and terminal box.

The combustion regulator (1/4" dia.) is supplied on request.

The Compat boiler is designed for the combustion of oil or gas fuels from 20,000 to 160,000 Kcal/h. The Compat boiler is an highly efficient and therefore satisfies the present energy saving requirements. Provided with a cut-out door, the boiler accommodates any type of burner. The boiler is supplied packed in three pieces:

— the heating body assembled with the flue opening, furnace door and solid counterflanges;
— the fiberglass insulated orange lacquered jacket;
— and the control panel (optional) including: thermometer, dual thermostat, on/off switch and terminal box.

The last two items are packed in cartons.

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Call C&F for GLOW-WORM Gas Boilers

Now available on LPG. C&F Ltd Mill Lane Palmerstown D.20
Flues available from 5" I.D. to 16" I.D. Larger sizes available on request.

Part of our extensive range available from your local merchant or on view at

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A BIT OF HISTORY...

THE HYDRAULIC RAM

The inventor was Etienne Montgolfier, one of two technically gifted brothers who together made the first-ever flight in a hot-air balloon in 1783.

Etienne spent part of his later years at a health resort in the south of France, where there was installed a water mains system — a novelty at that time (1805 or so). The system had been constructed of home-made pipes of wrought copper and imposing brass taps. However, Etienne was extremely irritated by the noise in the pipes which resulted from turning off the taps quickly. He became interested in the problem and, as a consequence of various experiments, both the pipes and the taps were soon damaged. Etienne began to inquire whether the pressure waves, which were obviously very powerful, could...
THE RELIABLE ONE IN A 2½ TON!

What else would you expect from Toyota?

"The Dyna is reliable... no off-the-road problems". That's the main reason, users tell us, why they buy Dynas. Reliability is something you expect from all Toyotas, but the dutiful Dyna also offers.

- A 5 speed gearbox for better performance and fuel economy.
- An efficient, silent 3 litre Diesel engine, again for economy.
- Twin rear wheels for extra stability and improved tyre wear.
- A rugged chassis with helper rear springs (which help when the load is light).
- A comfortable cab that doesn't feel like or sound like a truck cab.

TOYOTA DYN

See it at your Toyota dealer listed today. £7056 ex works Dublin.
not be utilized for a more useful purpose than destroying pipes and taps. The result was the hydraulic ram.

Etienne was a joker: he thought that the pressure, balancing valve opened and closed in a manner that resembled a ram using his horns and called the contraption the hydraulic ram. This description became the accepted expression in most languages, which is remarkable when you think about it.

The hydraulic ram began to be manufactured in France in the second decade of the 19th century, but it did not meet with the success which had been anticipated. The reason was that the pressure balancing valve could not be made strong enough with the materials available at that time. The valve cone was smashed to pieces after being used for only a short period. This, of course, did not help marketing activities.

In the 1860's the hydraulic ram was rediscovered and constructed with now available, improved materials. In various places in Switzerland and south Germany, it was a common sight. It was at this point that Bruzaholms Bruk came into the picture and remained a leading manufacturer of hydraulic rams in Sweden until the 1930's. Another type was the Blake hydraulic ram. With the arrival of electrification, however, only electric pumps were good enough. Thus many old low-energy hydraulic rams were pensioned off to museums.

How It Works

The automatic hydraulic ram is a pumping device that has been widely used in rural areas, for lifting water to heights of over 100 metres. It is an ideal machine for water pumping if certain conditions are satisfied, because it works solely on the power from falling water carried in a pipe from a spring, stream or river, without any need for an additional power source. It is completely automatic, and has an exceptional record of trouble free operation. It works by pumping a small fraction of the water that flows through it from a supply source to a level that can be much higher than the source. The ram can only be used in places where there is a steady and reliable supply of water and with sufficient head.

The Hydraulic ram needs to have a fall of at least 1 metre from the source to the ram, and a flow at the source greater than 5 litres per minute. It has many advantages over other pumps:

1. It does not need an additional power source and there are no running costs.
2. It has only two moving parts and so is very simple and cheap to maintain.
3. It works efficiently over a wide range of flows, provided it is tuned in correctly.
4. It can be made with the use of only simple work shop equipment.

Water flows down the drive pipe from the source and escapes through an impulse valve. When the flow of water is fast enough, the upward force on the valve causes it to shut suddenly, halting the column of water in the drive pipe. The momentum of the stopped column of water produces a sudden pressure rise in the ram which will, if it is large enough, overcome the pressure in the air chamber on the delivery valve, allowing water to flow into the air chamber and then up to the header tank.

The pressure surge of hammer in the ram is partly reduced by the escape of water into the air chamber, and the pressure pulse 'rebounds' back up the drive pipe producing a slight suction in the ram body. This causes the delivery valve to close, preventing the pumped water from flowing back into the ram. The impulse valve drops down, water begins to flow out again, and the cycle is repeated.

Reg Killeen of Southern Engineering Ltd in Cork remembers at least one hydraulic ram in the Wicklow area and I wonder if anyone knows if it's still there or knows of any other in use. Ed.
Home Heat Exhibition for Nugent Hall

The Nugent Hall attached to the Kings Hall, Belfast will be the scene of the Home Heat Exhibition sponsored by the N.I. Section of the Institute of Energy from the 27-30th October 1980. Exhibition space is booked out and will feature a range of heating from the wood stove to the heat pumps.

An interesting feature is the number of local manufacturers who have booked space plus the support given by local distributors. Free admission tickets are available from the organisers W.H.C. Industrials Ltd., Bluestone Cottage, Drumhirk, Newtownards.

We regret to announce the sudden death of Professor Asquith, Head of the Industrial Chemistry of Queens University.

Professor Asquith played a leading part in the setting up of the M.Sc. Fuel Technology & Energy course in the University.

He was also an active and interested supporter of the programme undertaken by the various Institutional bodies.

We also have to announce the death of the Mr. Charles Young, recently appointed Assistant Chief Engineer at Kilcort power station.

Mr. Young died as the result of drowning following the upsetting of his dinghy in Larne Lough.

To both families we extend our sympathy on the sudden death of these two gentlemen.

Representatives of the Royal Ulster Society of Architects, the Institute of Civil Engineers, the Ulster Builders Federation and the Chairman, Mr. S. Ferguson, of the Chartered Institute of Building Services have had a meeting with the Ministers of the Northern Ireland Government, pointing out the serious situation which will occur in the construction industry if the continued programme of cut backs take place.

The Northern Ireland Department of Commerce have issued to an American company — Energy Sources (NI) Ltd. — a petroleum licence to investigate the prospects for hydrocarbons off the Antrim coast.

The area, some 138 square miles, embraces the Rathlin Basin and an area off Ballycastle, an area in which many experts have forecast that both gas and oil may be found.

James Maxton & Co. the Belfast based consulting engineers have moved into new offices at 21 Station Street, Belfast.

Continuing expansion of their national coverage has resulted in

HOLPARK Package Pressure Systems are manufactured in Ireland by HOLFELD HYDRAULICS to the highest possible standards.

APPLICATIONS
General cold water supply for services
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We guarantee a high quality product at competitive prices allied to a prompt and efficient service and welcome enquiries from interested parties worldwide.

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2-4 Merville Road, Stillorgan, Dublin, Ireland.
Tel: 01-952001 (24 hours)
Telegrams: HOLFELD Dublin Telex: 25156EI, 24482EI

Published by ARROW@TU Dublin, 1980
The Institute of Energy - Northern Ireland Section has announced the following programme for the incoming winter:

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1981

15th Jan. - Lecture 7.00 pm. Ashby Institute, Belfast. R. Huxford (N.C.B.) - "The Future for Coal in the Industrial & Commercial Market"

25th Feb. - Annual Dinner, Culloden Hotel, Craigavad.

Further indication of the size of the cut back in Northern Ireland is the announcement by some architectural and consulting engineering practices that they intend laying off staff. It must be many years since a situation such as this occurred and it should be remembered that when there is a shortage of work at this point, it is inevitable that a few months later the effect will find its way to contractors. Pressure is being exerted from various sources to try and persuade the Government to release more funds for development and capital schemes, so far without success. If the present situation continues for a considerable period of time the result would be a complete fragmentation of the structural, consultancy and contracting industry.

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Aidelle Products, manufacturers of extractor fans have appointed the Co. Down company, Cathcart Smith Agencies Ltd. to promote their Northern Ireland sales.

Representatives of the Ryokuseisha Corporation of Tokyo were recent visitors to Queens University, Belfast, where they signed a contract which will enable their company to manufacture the navigational buoys powered by wave energy technology developed at the University.

The wave energy team headed by Professor Long have become leaders in this type of research and while the ultimate aim of the team is to produce "commercial" electricity by the use of waves this contract will not only assist the research programme but also increase Queens credibility rating in this form of research.

Following the death of their Hon. Treasurer and Committee member - Mr. S. O. Hicks, the Institute of Energy (NI) have invited Mr. T. S. Green to undertake these duties.

W. J. Hogg & Co. Ltd., 46 Ballynahatty Road, Shaws Bridge, Belfast, have been appointed stockists of the Veloduct spiral tube fittings system in standard Eurovent sizes; access doors and canusa tapes and bands. The Metroduct product range will also be available. These will follow the formation of Hotchkiss Spiral Tubes of Wolverhampton who have appointed W. J. Hoggis to stock the product.

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COMPARE THESE PRICES

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| MCC 50 | ½"-2" | BSPT | £715.00 |
| MCC 80 | ½"-3" | BSPT | £908.50 |
| MCC 100 | ½"-4" | BSPT | £1760.00 |

All above prices are sterling.

For further details phone sole importer on (092) 28285

P & F PIPETOOLS (Ireland) Ltd
High Street
Tuam
Co Galway
NEW PRODUCTS

FILTASTAT CONTROL FROM MANOTHERM

The Filtastat has been primarily designed to improve the efficiency and cost effectiveness of Sand Filtration of drinking water. The system functions with a high degree of accuracy, automatically equalising the flow rates to compensate for maintenance or shut down of single or multiple filter units in a scheme. The desired value is maintained, despite variations in the resistance of the filters, by a pneumatic signal from an input flow rates sensor to a controller/actuator which will ensure a balanced system and prevent excessive flow which can compact the sand in a cleaned bed when its resistance is at a minimum.

The Filtastat is provided with torque limiters to prevent overload and can be adjusted to any value within the design range offering a low cost system with minimum of maintenance.

For further information contact: Manotherm Ltd.

Chromalox Frost Protection Tapes

Chromalox Frost Protection Tapes are controlled by a thermostat, can be plugged in and taped to any pipe that needs protection against freezing, and forgotten. They will activate themselves whenever the temperature falls below 3°C (9°F). The tapes are run down the side of a cold water standpipe, for example, and are rated at 7 watts per 305mm (foot) length. The application limit is 21°C (70°F). The tapes are constructed from high grade alloy resistance wire with special high/low temperature insulation, mechanically protected with a woven metal shield which acts as the earth. Because the tapes are only activated when temperatures fall below 3°C, they are not expensive to run. The tapes are available in eleven sizes varying in length from 6 to 160ft. and are used mainly to protect outside plumbing in the home, on the farm, caravan sites and construction sites.

For further information contact Quadrant Engineers Ltd.

Isoflex — Flexible Insulation from Europair

Isoflex is a very efficient, lightweight, flexible insulation in tube or sheet form. It is made from synthetic substances, specially designed for insulation of steel and copper pipes. With its closed cell structure containing an inert gas, forms a excellent vapor barrier. Its very high thermal efficiency and its resistance to the water-vapor transmission prevent condensation and no other special facing is necessary. Isoflex finds its specific use in the field of air conditioning, industrial refrigeration, plumbing and heating equipment lines. Compared with traditional insulation, the use of Isoflex allows an important reduction of the space taken up and also reduces the installation time by reduction of the space taken up and also reduces the installation time by 45 to 75% according to the complexity of the installation.

Sheets are generally used for the insulation of large diameter pipes or for flat or curve surfaces. Isoflex when installed outside, needs a protection against weather conditions. It is odourless and can be used in food stores and can be painted.

Further information from Europair (Ireland) Ltd.
NEW PRODUCTS

Hunter Extend Range of Traps

Hunter Plastic Industries Ltd has introduced an improved and extended range of white polypropylene tubular and bottle traps for use with both ABS and PP 36 mm and 43 mm diameter waste systems.

The traps all incorporate multi-socket outlets which allow simple jointing of plastic pipe to BSS 5254 and 5255 or copper pipe to BS 2871 by means of compression nut and olive.

Additions to the range include a running trap, a washing machine trap, shallow seal bottle traps and two 90° adaptor bends. The running trap is for use with 43 mm diameter waste systems only, where it is used for fitting after the last of a series of sinks or similar units to eliminate the need for each to have its own separate trap.

The washing machine trap facilitates the plumbing in of any type of domestic machine. It is a tubular P trap with 43 mm diameter multi-socket outlet and comes complete with a 437 mm inlet stand pipe, to receive the machine's discharge hose, and fixing brackets.

The two new 90° adaptor bends have 36 mm and 43 mm diameter multi-socket outlets respectively and allow a P trap to be easily converted to an S trap.

The range also includes two overflow units which connect to the cleaning eyes of certain of the tubular P traps.

Hunter products are available in Ireland through the following distributors: Ward & Goldstone (Ireland) Ltd, Bishopstown, Cork, Cork Plastics Ltd, Little Island, Cork, Northern Ireland W H Martin Plastics Ltd, Mallusk, Co Antrim.

The upsurge and interest in the use of solid fuel, both in this country and abroad have prompted the Manufacturers of the CN Unicorn Auto Burner, Messrs Curwen & Newbery Limited, to re-introduce this equipment which proved to be a highly successful product 20 years ago.

The CN Auto Burner is a pre burner suitable for use with solid smokeless fuel and operating up to 80% efficiency. The pre burner provides a simple method of automatic firing using a wide variety of solid fuel which is gravity fed into the combustion chamber. One of the great advantages of this burner is that there are no moving parts with the exception of the fan and this important feature minimises wear on the burner; consequently long periods of service are obtained without the need for costly skilled maintenance and enables the burner to continue operating at reduced efficiency and output in the event of a power supply.

There are no fire bars to burn out and thus no cost of replacement, fuel is burnt directly on the water cooled base of the burner body. The equipment is suitable for converting some makes of oil fired boiler to solid fuel firing.

The CN Unicorn Auto Burner was previously used in conjunction with the very wide range of cast iron sectional boilers which existed 20 years ago, and it is also suitable for use with low pressure steam boilers. It is ideally suited for use with modern small combustion chamber boilers and it will have a wide appeal to some owners of these boilers that are slightly under-rated and where additional capacity is required when burning solid fuel. The unit has been used successfully on malt kilns, drying kilns and other special heating applications and purposely designed hoppers can be provided to suit Client's requirements.

Further information from MCW Ltd.

The CN Unicorn auto burner.
NEW PRODUCTS

SERIES 4300 IN-LINE PUMP FROM O'BRIEN

A new feature recently introduced to the market is the Series 4300 in-line pump which has an external mechanical seal, the majority of other pumps throughout the world have their mechanical seals embedded within the body of the pump which means dismantling the pump to reach the seal — this Series 4300 obviates this since the seal is fitted internally to the pump and is visible for all to see. Thus a fitter can change a seal within a matter of minutes and it is not necessary for an electrician to be present on site since the electric motor is not touched and it is unnecessary to do so.

As additional interest this Series 4300 will pump water up to a temperature of 315°C, with cooling water fitted to maintain the seal in a suitable environment. This Series 4300 is now being sold worldwide and has been very well received in many markets.

Full details from: O'Brien International Ltd., 128 Inchicore Road, Dublin 8.

Chromalox Pump House Heater

The Chromalox PHH utility pump house convector heater is enclosed by an all aluminium case. The heating element is fully enclosed and the built-in thermostat controls the temperature within the range of 5°C - 30°C (40°F - 85°F) by means of an adjustment knob which can be mounted on either the left or the right of the heater. The heater is protected against overheating and provides safe, efficient freeze protection for all types of small buildings.....isolated pump houses, relay stations, outbuildings, barns, garages, etc. The heater should be mounted horizontally at any height, by means of the brackets built in as part of the unit. The capacity is 500 watts producing 1705 Btu/hr and the unit is available for single phase operation.

HEVAC HAVE MOVED to the LISTER COMPLEX at BALLYMOUNT

TEL: 519411

And are pleased to continue their Association with ALL their Suppliers in the Heating Trade. Including:- Selkirk, Nu-Way, Rio, Chappee, Radiant, Ygnis, Schwank, etc etc.

Published by ARROW @TU Dublin, 1980
NEW PRODUCTS

Wednesbury End Feed Capillary Fitting

It has been recently announced that The Wednesbury Tube Company have launched a completely new range of End Feed Capillary Fittings.

Eighteen years ago, Wednesbury entered the capillary fittings market with their solder ring range. At the time it was a limited range but within two years this had been expanded to encompass the majority requirements of the trade. Since that date Wednesbury have continued to expand the range to meet the needs of the market place.

Continuing their policy of expansion, Wednesbury now announce the introduction of a completely new range of end feed fittings — to BS 864 Part 2. The range covers 34 types of fittings in the size range of 6mm up to 54mm.

Full technical literature is available to the trade and the prices will be found to be competitive. For the Merchant stockist Wednesbury offer their usual generous discount terms as well as Wall Chart, mini poster, bin labels and distinctive packaging.

Heaton Shower Trays and Bath Bar

Heatons Bathrooms Limited of Rotherham have introduced a new design of shower tray to their extensive range of products. Available in 760mm square and 800mm square sizes, in easy clean 3.2 acrylic and 5mm acrylic respectively, the new design is available in a full range of colours and incorporates an attractively-fluted anti slip feature in the base of the tray.

Both sizes are ideal for any type of shower enclosure and are enhanced by an integral matching front panel. Side panels can be supplied as extras.

Heatons have also produced a totally new design bath bar, with integral mirror, to meet what they consider to be a clearly-defined need in the bathroom accessories market. Moulded in polystyrene, and incorporating 3 attractively-proportioned shelves and 2 soap recesses, the new design blends good looks and durability with a high level of practicality. It measures 1675mm x 260mm x 100mm and is produced in an extensive range of colours to match all bath and pottery colours.

Warm to the touch and cleaned with a wipe, Heatons new bath bar is lightweight, easy to handle and fitted with dome head woodscrews and plastic wallplugs.
Dual Purpose Unit from Robinair

Robinair Division of Kent-Moore U.K. Limited have introduced the new R11 Flushing Pump which can also be used for washing units with water, detergents, etc.

Model 30064 Flushing Pump, consists of a motorised pump mounted on a base frame with carrying handle and integral reservoir. The unit is supplied with a set of tools, including Spraying Lance with on/off valve, hoses etc. The pump is a plasticised double diaphragm unit running at 10 r.p.m., powered by a 0.75 h.p. - 1 p.h. - 50 h.z. electric motor. This type of pump running at relatively slow speed produces a pronounced pressure ripple which is particularly effective in removing contamination from the system. Flow is 4.5 g.p.m. and maximum pressure controlled by an adjustable unloading valve is 300 p.s.i. In addition to Freon 11, the pump is capable of handling a variety of fluids including water, detergent, dilute acid etc., and therefore can also be used for washing down external surfaces e.g. air cooled condensers etc.

Additional information is obtainable from: RSL (Ireland) Ltd.

The dual purpose washing/flushing unit from Robinair.

SANDOCLEAN — NEW CLEANING AGENT

Sandoclean is a new cleaning agent for industrial and institutional use. This nonionic specialty product has an exceptionally powerful cleaning action, without giving rise to odours, which is based on the synergistic effect of its optimally harmonized components.

Sandoclean MW Liquid is suitable for the degreasing and cleaning of metal, e.g. machine components, tools etc. On steel and chrome nickel steel the product has an additional anticorrosive effect. It also cleans objects made of plastics, glass and ceramics and, after testing in pretrials, painted and coated surfaces.

Sandoclean MW Liquid can be used in many branches of industry, including the foodstuffs, animal feed, pharmaceutical, automotive and photography industries. It can be particularly recommended for cleaning heavily soiled walls, e.g. of smoke chambers, slaughterhouses, butcher shops and tunnels.

Further information from Sandoz Products (Ireland) Ltd., Airtom Rd., Tallaght, Co Dublin. Tel: 515755/515775; Telex: 5802

CONVECTORS AND UNIT HEATERS

If you buy from Powrmatic's range of convectors and unit heaters we won't just promise you a superb product.

By keeping our products in stock we can also promise an 'off the shelf' door to door service that will leave no-one wanting and waiting.

The range offers both hot water and steam heaters with more than 100 models and heat outputs from 600 to 600,000 Btu's.

The Unit Heater is made to a high specification and is suitable for both vertical and horizontal heat distribution.

The Natural Convector. An efficient, well designed and comprehensive range of hot water and steam convectors. And the Fan Convector equally well constructed, is quiet and smoothly running and is available with front or top louvered air discharge.

This range of products is particularly suitable where there is an existing boiler plant. They can be easily connected into the supply at a minimum of inconvenience and expense.

Alternatively they can be installed in conjunction with our own new range of commercial and industrial boilers.

The Powrmatic convectors and unit heaters also have the great advantage of being virtually maintenance free.

You should be pleased to learn that quality of product and speed of delivery does not constitute a hefty price tag. You'll find that our units have some of the lowest prices in the business.

And of course they come with the usual thoroughly professional back-up service that made and kept us Britain's number one.

"All this probably adds up to the product and service you've been looking for. So before you splash out - read for more details.

Powrmatic
Do business in the right atmosphere

Winterhay Lane, Ilminster, Somerset TA19 9PQ. Tel: 046 05 3553

Published by ARROW@TU Dublin, 1980
The much awaited launch of the new Stanley 80 series of cookers from Waterford Ironfounders took place recently at Blooms Hotel in Dublin. The up-dated appearance and increased boiler output puts this Irish product in a position to eliminate much of the Continental competition.

The Stanley cooker was first manufactured by Waterford Ironfounders in 1900.
A new range of Ridgid Gas Welding and Cutting Kits have been launched by Ridge Tool Ltd. Three comprehensive complete kits are available welding up to 25mm. Cutting to 200mm. Regulators both gauged and gaugeless design, available single and two stage. Features include connectors and bodies made of forged brass, sufficient oxygen content for cutting up to 400mm, safe modern seat design ensures safety even when full cylinder pressure, regulators set for maximum delivery pressure. Comprehensive ranges of cutting and welding tips available.

The Stanley provides constant hot water. Heat shields made of cast iron are produced as standard equipment with central heating units, and these can be hooked on the face of the boiler to regulate output to suit the needs of the particular conditions or to reduce heat during the summer months, when cooking and hot water only are required.

“We are very proud of the Stanley and it is our single most important product”, Mr. John Gaiger, Managing Director of Waterford Ironfounders said at the reception. “We are looking forward to continued success with the new Stanley 80 Series in Ireland, our biggest market”. The Stanley is available from all leading builders providers and hardware merchants and is exported to the UK, Germany, Canada, USA, Australia and the Scandanavian Countries.

Lennox Industries can justly claim to have been in the forefront of the development of modern generation heat pumps.

So it's not surprising that Lennox have what is probably the widest and most flexible range of heat pumps available from any single manufacturer. — Nor that Lennox units have been specified for some of Europe's largest heat pump installations.

We could tell you about their fresh air 'Power Saver' options, sensitive solid-state controls, the latest and most reliable de-frost control system, or the electric or lp hot water supplementary heating options — but you can learn about these from their free data sheets.

What we really want to emphasise is that the viability of heat pumps depends now, as it always has, on their correct application — and because heat pumps are just one of the Lennox alternatives C&F offer, you can rely on us absolutely to appraise any HVAC situation objectively — and find the most appropriate solution.

IF YOU WANT THE FACTS WITHOUT FUSS ASK ABOUT LENNOX
Systems for all seasons

Mill Lane, Palmerstown, Dublin 20
Phone 264-898 or 264-917

Published by ARROW@TU Dublin, 1980
GAS INFRARED HEATING

by John Sullivan
B.S. (Eng.), M.A.

Proper application and installation of gas-fired infrared heaters is not difficult. Initially, a complete heat loss survey of the building should be made using standard heat transmission factors as published by some competent organization. Since one deviation from standard practice is in air change losses, careful study should be made of the actual facility or its layout to determine how many air changes will take place per hour.

This careful study in some cases results in using more air changes than normal, in others fewer. In any event, this phase deserves detailed consideration for it can mean success or failure of an installation.

On completion of the calculations—rules of thumb should not be applied—the total heat loss is reduced by 15 per cent, when using unvented infrared heaters, to determine the number of heaters to install. This accounts for more than a 15 per cent savings in operating cost, since it is customary to install more than the calculated heat loss, with conventional systems, to compensate for flue losses.

Gas-fired infrared is able to accomplish a comfortable heating job with less than the calculated heat loss installed because of the increased Mean Radiant Temperature (MRT)—each degree of MRT being equivalent to one degree of ambient temperature. Therefore, the higher the MRT, the lower the ambient temperature can be to obtain comparable comfort.

It is this lower temperature that is one of the main reasons why infrared conserves so much energy. Air changes remove less heat resulting in less stratification. With lower temperatures inside, the roof and walls have less temperature differential and, therefore lose less heat.

Basic Principals

Infrared heat energy is a form of radiation that closely resembles and behaves much the same as light. The basic difference between the two is that upon striking an object, infrared energy is converted to heat whereas light energy changes to illumination.

Infrared travels in a straight line from source, unaffected by space, to the absorber—usually any solid object in its path. People, machines, stored materials and floors receive the energy and their temperature is increased, causing them to become part of the heating system by reradiating this energy and by minor convection transfer.

In an infrared heated building, the comfort condition is equal to the ambient temperature plus the radiation absorbed by the person being heated. For any particular comfort condition selected, the air temperature can be lower than with any system where the air is the heating fluid. In any convection system, to maintain a man at comfort the air temperature must be in excess of the required temperature. Energy won’t flow up hill. This higher temperature causes stratification and higher heat losses.

When installing the required units, the heat loss calculations should be closely studied. The heaters should be installed as closely as possible to where the heat losses occur. In total building heating it is not necessary to cover the entire floor with direct radiation for a comfort according to the inverse square law. Double the distance from a cold wall and radiation, your radiation loss, is cut to ¼. In fact a plot of a person’s heat loss when crossing a building will very closely approximate the radiant pattern of a radiant system installed around the periphery of a building. This same storage of Btu’s in the floor, machinery and other solid objects makes it possible to cycle units without loss of comfort.

Spot Heating

On special applications such as condensation control or spot heating, the actual radiation per square foot is important. In this type of job, the units must be placed so that proper intensity hits the area involved. Spot heating is the heating of a small area in an otherwise unheated building. Since the Btu’s installed will have no effect on ambient temperature, the people must be hit by sufficient intensity to be warmed. In condensation control, the steel or other material to be protected must be covered by enough intensity to keep the surface above the dew point temperature eliminating any possibility of moisture.

Units should be controlled in small zones so that no units are on unless needed. The ultimate of course is individual unit control. A by-product benefit of small zones of infrared heating is that various comfort conditions can be maintained within a building if desired without the necessity of partitions or other dividers. The radiant heat does not disperse throughout the building as does warm air. Zones should be determined by keeping both the heat loss of the building and other requirements in mind.

Heater Control

In full building heating, control of infrared heaters can be accomplished with standard room thermostats. Where the application is for condensation control only a humidistat or dew point controller may be used. A humidistat or dew point controller will call for heat whenever the relative humidity reaches the set point. The surface temperature of the steel at this time may or may not be below the dew point. With the dew point controllers, heaters are not called for unless the surface temperature of the steel approaches the dew point. At the present time there is no economical control system for spot heating. It is usually best to use manual switches.

Installation of gas-fired infrared units is easy and flexible and therefore can accommodate most requirements. They can be hung from outside walls, throughout the building, over the aisle in warehouses, above cranes and under cranes. In fact, they are so light and easy to install that there is almost always some place to put them.

*John Sullivan is Managing Director, Pioneer Radiant Products Ltd.
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RANGE

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D.M. 10, 20 & 30 Range

COMPUTER AGE AIR CONDITIONING

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Castlemahon 59 Galway 093-24896

Published by ARROW @TU Dublin, 1980

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Inside De Dietrich boilers, you will find cast iron sections featuring the latest ideas in boiler technology and based on De Dietrich's 100 years experience of casting iron (cast iron from De Dietrich foundries is at least 10% above international quality standards).

Inside De Dietrich boilers, you will find reliability and efficiency.