

Heating and Ventilating Research Association

The Heating and Ventilating Research Association is a co-operative organisation formed in December 1955. It is controlled and financed by the heating, ventilating and air-conditioning industry and allied interests, and assisted by grants from the Ministry of Technology.

At their laboratories at Bracknell, Berks., the Association carries out a continuous programme of research and development covering a wide range of subjects, the results of which are made available to members. There is also a comprehensive reference library, and a technical enquiry service offering invaluable advice and practical assistance.

The Association acts as the industry's spokesman on technical committees. It also maintains a close liaison with Government research establishments, other British and foreign research organisations and technical education authorities.

Major projects handled by the H.V.R.A. during recent years include field trials on intermittent heating, fan noise rating, electric off-peak heating, air-conditioning of hospital operating theatres, and improvements in site methods and organisation, including prefabrication of systems.

COMPANY LIMITED BY GUARANTEE AND NOT
HAVING A SHARE CAPITAL

Memorandum of Association

(As altered by Special Resolution passed 29th July, 1965)

OF

THE HEATING AND VENTILATING RESEARCH ASSOCIATION

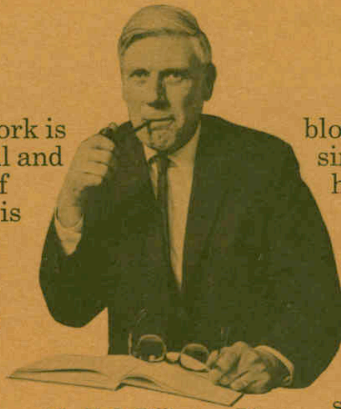
1. The name of the Company (hereinafter called "the Association") is "THE HEATING AND VENTILATING RESEARCH ASSOCIATION."
2. The registered office of the Association will be situate in England.
3. The objects for which the Association is established are :—
 - (A) To promote research and other scientific work in connection with the Heating, Hot Water Supply, Ventilating and Air Conditioning trade or industry, and other trades and industries allied therewith or accessory thereto, and for that purpose to establish, equip and maintain laboratories, workshops, or factories, and conduct experiments and to provide funds for such work, and for payment to any person or persons engaged in research work, whether in such laboratories or elsewhere, and to encourage and improve the education of persons who are engaged or are likely to be engaged in the said trades or industries.
 - (B) To apply to the Government for, and to accept, grants of money and other assistance for carrying out the objects of the Association, and to discuss and negotiate with the Ministry of Technology and other Government Departments schemes of research and other work and matters within the objects of the Association.
 - (C) To prepare, edit, print, publish, issue, acquire and circulate, books, papers, periodicals, gazettes, circulars and other literary undertakings treating of or bearing

*First page of the
Memorandum of
Association of
the H.V.R.A.*

Although most of H.V.R.A.'s work is concerned with the larger industrial and consumer systems, a development of great interest for the domestic field is a coherent piping system for mini-bore heating installation.

The mini-bore system, which originated in Scandinavia, employs pipes of $\frac{1}{4}$ " or even less, and its success depends largely on the arrangement of flow and return connections between riser pipes and appliances. H.V.R.A. have developed a duplex distributing manifold which is integral with the flow and return risers, and from which piping in bores from $\frac{3}{16}$ " upwards radiates and provides run-outs to the radiators at each floor level. Normally, a two-pipe system is used, with individual flow and return to single radiators, but a ring main on the one-pipe principle is entirely feasible.

The system is particularly useful for



Mr. N. S. Billington, Director of the H.V.R.A. laboratories at Bracknell, Berks.

blocks of flats. At the laboratory, a simulated three storey block of flats has been built, in which the distribution pipes are embedded in floor screeds or hidden in hollow skirting boards. Ease of concealing the pipe work is a feature of mini-bore systems.

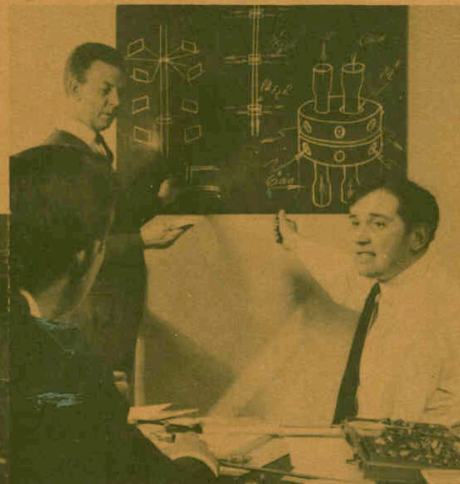
To determine the suitability of nylon as a substitute for copper or steel mini-bore piping, the prototype system has been working since 1967 at 180°F. and 45 lb./in² pressure, and no

signs of deterioration have yet appeared. If nylon can be used successfully there should be very considerable installation economies.

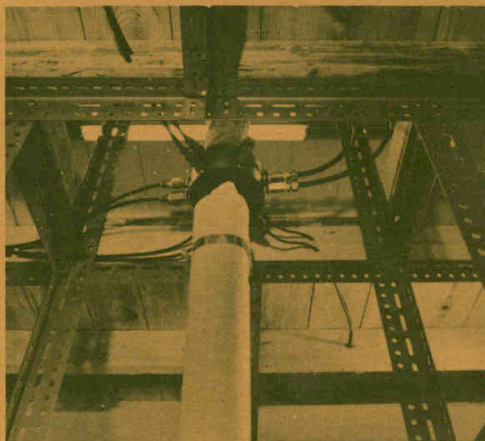
H.V.R.A. are also working on an associated project which will facilitate site work. This is the design of radiator connections which enable the pipework to be completed and the radiator simply "plugged-in", in the same way as connection is made to an electric socket, at the appropriate time.

Mini-bore heating systems

Development team responsible for work on mini-bore heating systems.



Mini-bore applications, with connections to radiators and hot water cylinder.



INAUGURAL MEETING OF THE HEATING AND VENTILATING RESEARCH COUNCIL

*An account of the proceedings during which
the Research Council of the Heating and
Ventilating Industry was officially launched.*

ON Thursday, December 29, 1955, the first General Meeting of the Heating and Ventilating Research Council was held at the Institution of Mechanical Engineers, Westminster, London, S.W.1.

Chairman's Opening Remarks

In his opening remarks, Mr. C. S. K. Benham, Chairman of the Provisional Heating and Ventilating Committee, outlined the events leading to the formation of the Research Committee, reminding the meeting that soon after the War the Employers Association of the Heating and Ventilating Industry had indicated a desire to promote research in the industry. Consequently, Mr. G. Nelson Haden undertook, on behalf of the Association, the task of exploring ways and means whereby such a research organisation could be set up. At that time the intention had been to form a research association which would attract support from the Department of Scientific and Industrial Research in the form of grant aid, but, unfortunately, the rather large sum of money required to start the project could not then be raised. Although the matter lapsed, there had been recurrent interest by prominent members of the industry. In particular, Mr. White of the Brightside Company, who was President of the Institution in 1953, expressed great interest, and through the Research Committee of the Institution a report was prepared by Mr. Billington which reaffirmed the case for research via a co-operative research association.

Financial Arrangements

There was still, however, the financial hurdle of raising sufficient funds from the industry in order to attract official support, and a figure of some £8,000 was suggested as a suitable target from which negotiations could commence with the D.S.I.R. That was towards the end of 1953. Since then members of the Sub-Committee of the Institution's Research Committee have been untiring in their efforts to interest the various sections of the industry and to obtain promises of support should the general response be satisfactory. To this end a number of meetings and discussions were held with the Employers Association, consulting engineers and manufacturers of control equipment, and discussions took place with many other manufacturers, fuel companies and Government bodies.

COMMITTEES AND ORGANISATION OF THE RESEARCH COUNCIL

Following the formation of the Research Council, Members of the **Executive Committee** were proposed, seconded and elected as follows :—

Representing Subscribing Contractors

Mr. C. S. K. Benham	Mr. L. J. Fowler
Mr. W. R. Cox	Mr. J. R. Paterson
Mr. I. H. Duff	Mr. F. R. L. White
Mr. A. G. Engelbach	

Representing Consulting Engineers

Mr. J. R. Kell	Mr. D. V. H. Smith
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Representing Automatic Control Manufacturers

Mr. M. J. Gartside	Dr. F. M. H. Taylor
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Nominated by Department of Scientific and Industrial Research

Dr. F. M. Lea, C.B.E.	Mr. G. A. McMillan
Mr. A. B. Mann, O.B.E.	(<i>non-voting</i>)

Nominated by Institution of Heating and Ventilating Engineers

Mr. N. S. Billington

Nominated by British Coal Utilisation Research Association

Mr. J. S. Hales

Mr. J. S. Hales was appointed Research Director (part-time) of the Council, B.C.U.R.A. agreeing to release him for such part-time duties.

The Executive Committee has now appointed two Sub Committees, a Research Committee, and a Finance and Membership Committee as follows :—

Research Committee

Mr. F. R. L. White (*Chairman*)
Mr. C. S. K. Benham
Mr. N. S. Billington
Mr. W. R. Cox
Mr. L. J. Fowler
Mr. J. R. Kell
Dr. F. M. H. Taylor
Mr. A. T. Pickles, O.B.E.
(*D.S.I.R. Representative*)
Mr. J. S. Hales
Mr. H. C. Jamieson

Finance and Membership Committee

Mr. J. R. Paterson (*Chairman*)
Mr. C. S. K. Benham
Mr. I. H. Duff
Mr. A. G. Engelbach
Mr. M. J. Gartside
Mr. D. V. H. Smith
Mr. G. A. McMillan

Acting Secretary—Mr. J. Duncan Ferguson

Both these Committees have powers to co-opt other persons for special requirements.

MEMBERS OF THE RESEARCH COUNCIL AT MARCH 31, 1956

SUBSCRIBING CONTRACTORS

- Air Control Installations, Ltd.
J. S. Akroyd & Webb, Ltd.
Anderson, R. W. & Co. (Engineers), Ltd.
Arkinstall Bros., Ltd.
Ashwell & Nesbit, Ltd.
- Barrett & Wright, Ltd.
Bayliss Kenton Installations, Ltd.
F. J. Baynes & Co., Ltd.
Bearfoot & Bryett
Beaven & Sons, Ltd.
Bell & Martin
Benham & Sons, Ltd.
W. A. Bennett & Son
Birmingham & Blackburn Construction Co., Ltd.
Bowerman Bros.
S. Boxell & Co., Ltd.
Brightside Heating & Engineering Co., Ltd.
- Cairns (Newcastle), Ltd.
W. G. Cannon & Sons, Ltd.
John Carter & Son (Salisbury), Ltd.
Champions (London), Ltd.
H. Cheetham & Co., Ltd.
The Chiswick Heating Co., Ltd.
Frank Church
T. W. Clarke & Son
Clayton Chambers, Ltd.
Comyn Ching & Co. (London), Ltd.
Cooke Bros. (Engineers), Ltd.
J. Cooksey & Son (Ashford), Ltd.
Couzens & Akers, Ltd.
Richard Crittall & Co., Ltd.
Wilfred L. Crumblehulme (Bolton), Ltd.
J. W. Cabbage & Son
- G. Dawson & Sons, Ltd.
Edward Deane & Beal, Ltd.
Thomas De La Rue & Co., Ltd.
John Drake & Co. (Egham), Ltd.
Ducatt Heating Co., Ltd.
Ductwork, Ltd.
H. W. Dutton & Co., Ltd.
- William Eardley & Co., Ltd.
Ellis (Kensington), Ltd.
Elsy & Gibbons, Ltd.
Engineering Service Installations, Ltd.
Evans (F) & Sons, Ltd.
- Harold Fairclough (Heating), Ltd.
Frank Felce, Ltd.
Flynn & Wright (Engineers), Ltd.
- S. J. Frith & Son, Ltd.
Froggatt & Prior, Ltd.
- J. Gardner & Co., Ltd.
W. H. Gascoigne & Co., Ltd.
Gee, Walker & Slater, Ltd.
John Gibbs & Sons, Ltd.
Samuel Gibson & Sons, Ltd.
Goodacre Glover & Butler, Ltd.
Gough & Sons (Burton), Ltd.
W. Gregory & Son, Ltd.
Alfred Grindrod & Co., Ltd.
Gusterson Heating Co., Ltd.
- G. N. Haden & Sons, Ltd.
C. H. Harrington & Co. Ltd.
Harrods, Ltd.
H. & E. Engineers, Ltd.
Heat & Air Systems, Ltd.
J. W. Henry & Co. Ltd.
Hicklin & Son
J. H. Hicks & Co., Ltd.
Hinton Jones (Engineers), Ltd.
The Hobdell Engineering Co., Ltd.
S. H. Holdway & Son, Ltd.
Hope's Heating & Engineering, Ltd.
Horner & Son
K. F. Horner
S. Booth Horrocks & Sons, Ltd.
John Hughes & Co. (Heating), Ltd.
- C. B. Jackson & Co., Ltd.
J. B. Jackson & Partners, Ltd.
J. Jeffreys & Co., Ltd.
Jerram & Company, Ltd.
- F. H. Keating
David Key & Leslie, Ltd.
C. H. Kempton & Co., Ltd.
Chas. P. Kinnell & Co., Ltd.
- The Lamben Sheet Metal Co., Ltd.
John Legg & Sons, Ltd.
C. H. Lindsey & Son, Ltd.
A. Longworth & Sons, Ltd.
Henry Lucas & Son
- Mackenzie & Moncur, Ltd.
A. G. Manley & Co., Ltd.
R. A. Marshall, Ltd.
A. T. Marston & Co., Ltd.
Mather & Platt, Ltd.
Matterson, Huxley & Watson, Ltd.
J. T. Meredith & Co., Ltd.
Messenger & Co., Ltd.
The Midland Heating & Ventilation Co., Ltd.
Mumford Bailey & Preston, Ltd.

E. Nener & Sons
 J. H. Nicholson & Co., Ltd.
 Norris Warming Co., Ltd.

Ozonair Engineering Co., Ltd.

J. T. L. Parkinson
 Pearson's Installations, Ltd.
 David Peters (Heating Engineers), Ltd.
 A. E. Phillips & Son
 Richard Pickersgill & Sons, Ltd.
 H. Pickup, Ltd.
 J. Preston & Sons, Ltd.
 J. G. Proger & Sons, Ltd.

W. Richardson & Co., Ltd.
 G. F. Rider (Process Plant), Ltd.
 Charles Ritchie & Co., Ltd.
 G. H. Robinson & Son, Ltd.
 Rosser & Company
 Rosser & Russell, Ltd.

Arthur Scull & Son, Ltd.
 Seymour Sweet & Co., Ltd.
 Sheetcraft & Ovens, Ltd.
 H. Singleton
 Smeaton & Sons, Ltd.
 A. Smith & Sons, Ltd.
 Speediwarm, Ltd.
 W. G. Spittle, Ltd.
 Spry & Holman, Ltd.
 Steels Engineering Installations, Ltd.
 Steels Engineering Installations
 (Scotland)
 Robert Stewart & Sons
 Stitson, White & Co., Ltd.
 Super Ducts, Ltd.
 Supervents, Ltd.

Henry Tattersall, Ltd.
 Harry Taylor
 Troughton & Young (Heating), Ltd.
 Truswell & Son, Ltd.
 Wm. Truswell & Son (Sheffield), Ltd.

Robert Walsh, Ltd.
 James Ward (Worcester), Ltd.
 H. Warner & Son, Ltd.
 Fred Watson
 Edward Watts & Sons, Ltd.
 Weatherfoil Heating Systems, Ltd.
 White Bays & White, Ltd.
 Wightman & Wightman
 J. Wontner-Smith, Gray & Co., Ltd.
 J. S. Wright & Co., Ltd.

Young, Austen & Young, Ltd.

CONSULTING ENGINEERS

A. H. Barker & Partners
 Maurice G. Bland & Son
 Brandt & O'Dell
 G. H. Buckle & Partners
 Cairns & Byles
 Brian Colquhoun & Partners
 Couzens & Brown
 Dolby & Williamson
 Oscar Faber & Partners
 Freeman, Fox & Partners
 Sir Alexander Gibb & Partners
 R. W. Gregory & Partners
 Harding, McDermott & Partners
 John Harvey
 Hoare, Lea & Partners
 R. R. Jennings & Partners
 Kennedy & Donkin
 H. J. Knox
 D. G. Lewis
 A. C. Mann
 W. J. Perkins & Partners
 J. Roger Preston & Partners
 A. J. Smith
 Donald Smith, Seymour & Rooley
 R. W. Steele & Partners
 E. Wingfield-Bowles & Partners

AUTOMATIC CONTROL MANUFACTURERS

The Drayton Regulator & Instrument
 Co., Ltd.
 Honeywell-Brown, Ltd.
 Robert Maclaren & Co., Ltd.
 The Magnetic Valve Co., Ltd.
 Negretti & Zambra, Ltd.
 The Rheostatic Co., Ltd.
 Taylor-Short & Mason, Ltd.
 Teddington Industrial Equipment, Ltd.
 Thermocontrol Installations Co., Ltd.

OTHERS

Axia Fans, Ltd.
 Keith Blackman, Ltd.
 Copperad, Ltd.
 J. & E. Hall, Ltd.
 "Heating & Air Treatment Engineer"
 Matthews & Yates, Ltd.
 Stewarts & Lloyds, Ltd.
 Sturtevant Engineering Co., Ltd.
 Technitrade Journals, Ltd.
 John D. Troup, Ltd.
 Wellington Tube Works, Ltd.
 Woods of Colchester, Ltd.