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Printed and Bound by
THE HORN-SHAPER COMPANY
BALTIMORE MARYLAND
U. S. A.

Ref. 628.8
PREFACE TO THE 24th EDITION

THE twenty-fourth edition of THE HEATING, VENTILATING, AIR CONDITIONING GUIDE contains an enlarged technical data section and a new grouping of subjects to provide a more logical progression from fundamental principles to special application. THE GUIDE serves a dual function as both textbook and handbook. As text, it represents a condensation of the pertinent experimental data in this field. The desire for accuracy precludes the use of many of the approximate but convenient tables of the ordinary handbook.

Terminology, Chapter one, covering engineering terms used in heating, ventilating, and air conditioning, has been revised to obtain better conformance with the terms of basic science rather than the less accurate forms which are frequently adopted by engineers in a specific field. Progress in standardization of letter symbols has been continued; leading to uniformity of symbols used throughout the text as far as possible. Separate lists of symbols have been placed at the end of those chapters in which large numbers of symbols are used.

The most accurate information obtainable on properties of moist air and of water in the range -160 to +212 F has been obtained from the cooperative research work of the A.S.H.V.E. and the Towne Scientific School of the University of Pennsylvania and is incorporated in Chapter 3, Thermodynamics. The new Mollier Diagram for Moist Air, prepared by John A. Goff, corresponds with the revised tables of Properties of Moist Air and of Water in Chapter 3, and, in its larger size, is improved in readability.

Chapter 4, Fluid Flow, is a new and very useful addition to the text as it presents the basic theory of fluid flow through pipes, nozzles, and orifices and gives recommendations for location of pressure taps for orifice and venturi meter applications. The explanation of the method of using the data in Chapter 6, Heat Transmission Coefficients of Building Materials, has been simplified and certain suggestions regarding the use of the tabulated data have been added.

Chapter 10, Air Contaminants, contains most of the material previously given in the former chapter on Air Pollution as well as the latest acceptable limits for toxic gases and dusts in working spaces. The rewritten chapter gives the viewpoint of the industrial hygiene engineer. Much useful information regarding the use of testing equipment is given in Chapter 11, Instruments and Measurements.

In Chapter 12, Physiological Principles and Chapter 13, Air Conditioning in the Prevention and Treatment of Disease it has been possible to add interesting information obtained from tests conducted in cooperation with the military services during the war.

Chapter 15, Cooling Load, has been improved by the addition of new data on solar heat transmission through glass obtained from a recent study made at the A.S.H.V.E. Research Laboratory. Revision has been made in the method of computing the cooling load in order to reflect present knowledge of the subject.

A new section on furnaces has been included in Chapter 18, Heating Boilers and Furnaces. This chapter now includes information on the characteristics, performance, and latest rating methods for these appliances. Chapter 21, Gravity Warm Air Systems, and Chapter 22, Mechanical Warm Air Systems show the progress made during the past year in the methods of designing and installing warm air systems.

To the pipe capacity tables in Chapter 23, Steam Heating Systems and Piping, have been added the capacities expressed in pounds of steam so that these capacities are now available in both EDR and pounds. Similarly a chart has been added to Chapter 24, Hot Water Heating Systems and Piping, showing pipe capacities in pounds of water per hour corresponding to various friction losses. This chart is supplied in addition to the familiar chart showing the capacities based on 20 deg temperature drop. Methods (with illustrative examples) of computing heat loss through pipe covering consisting of layers of different kinds of insulation have been added to Chapter 28, Pipe Insulation.

Chapter 38, Dehumidification by Sorbent Materials, has been amplified to include the latest accepted practice in use of sorbents. Chapter 39, Refrigeration, has been enlarged to permit a simple presentation of the different refrigeration cycles in addition to a brief treatment of the most commonly used refrigeration equipment arrangements.

New material from Society sponsored research on air flow in outlets has been added to Chapter 40, Air Distribution, to provide additional useful design information. As a result of studies of the best available data on air flow, made at the A.S.H.V.E. Research Laboratory, a new air friction chart has been prepared and this chart is now included in Chapter 41, Air Duct Design.

The economics of air conditioning are given in a new Chapter 44, Owning and Operating Costs, which shows the method of determining the actual cost of air conditioning to the owner.