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PREFACE TO THE 27th EDITION

IN THE revision of The Heating Ventilating Air Conditioning Guide for the 1949 edition, all chapters have been examined and improvements have been made wherever current engineering practice or recent published data have indicated progress or change in the presentation of the subject. The Technical Data Section has been enlarged by 80 pages, and the Catalog Data Section has been increased by the addition of up-to-date products of many additional manufacturers.

Particular attention is called to the revision of the following chapters:

Chapter 1—Terminology. Many definitions have been added to the previous list.

Chapter 4—Fluid Flow. The theory and mathematical background for fluid flow computations have been enlarged upon and a section has been added on variable-area flow meters.

Chapter 6—Heat Transmission Coefficients of Building Materials. The section on vapor transmission has been enlarged and the method of computing the overall heat transfer coefficient of walls having high conductivity members has been expanded and improved. Federal specifications for water-proofed building papers have been added.

Chapter 10—Air Contaminants. Revisions have been made in tables of permissible limits of contaminants wherever changes have been found in accepted values.

Chapter 11—Instruments and Measurements. Descriptions and comments on use of several additional instruments have been added. The chapter has been extensively revised and portions rewritten to clarify principles of operation and to indicate precision of various measurements.

Chapter 12—Physiological Principles. Revisions in sections relating to human reactions to extremes of hot and cold environments have brought data on these effects up to date with most recent research, and also with findings of the Armed Services.

Chapter 13—Air Conditioning in the Prevention and Treatment of Disease. The text has been coordinated with present medical conclusions in regard to environmental conditions found most beneficial in treatment of disease.

Chapter 14—Heating Load. Data on tabulated winter climatic conditions have been extended by addition of new information received from the U. S. Weather Bureau.

Chapter 15—Cooling Load. The calculation of solar heat gain through walls and roofs has been simplified by means of tables providing equivalent temperature differentials which can be used with the heat transfer coefficients of the structure to obtain the heat transfer resulting from solar radiation, as well as air temperature difference. The tables also contain correction factors to permit application to other than tabulated conditions. Tabulated climatic conditions have been brought up to date by new data furnished by the U. S. Weather Bureau.

Chapter 17—Automatic Fuel Burning Equipment. The section on Vaporizing Oil Burners has been enlarged. Tables and data on sizing of gas piping to appliances have been added.

Chapter 18—Heating Boilers, Furnaces, Space Heaters. A section has been added to cover space heaters, their design, rating, installation and operation.

Chapter 22—Mechanical Warm Air Systems. The chapter has been completely revised in conformity with latest recommendations of the *NWAH&ACA*. A section, Design Procedure for Large Systems, has been added.

Chapter 23—Steam Heating Systems and Piping. The section referring to traps has been rewritten and illustrations of various types of traps added. The range of steam main and riser capacities has been extended for two-pipe systems. Many new diagrams showing piping connections to heating coils have been included.

Chapter 26—Unit Heaters, Unit Ventilators, Unit Humidifiers. Improved air vent piping connections are shown in unit heater piping diagram.

Chapter 30—Electric Heating. Sections pertaining to Resistors and Heating Elements, Unit Heaters, and Electric Heating by Induction and Dielectric means, have been rewritten.

Chapter 33—Air Cleaning Devices. Dust Collectors are discussed in a new section which covers types, application and selection of collectors for industrial use.

Chapter 35—Motors and Motor Controls. Revisions have been made wherever necessary to insure compliance with present motor and motor control practice and specifications. Descriptions of types of motors have been improved.

Chapter 37—Spray Apparatus. The entire sections dealing with cooling towers and spray ponds have been revised and rewritten to include description of current equipment and to present up-to-date design information. Factors affecting location, selection and performance of cooling towers are given. Illustrations of various types of towers are included.

Chapter 39—Refrigeration. A thorough revision improving the presentation of the subject includes a new section on the heat pump, and added pressure-enthalpy charts for ammonia and "Freon-12". Revised tables are supplied for sizing of refrigerant piping. Emphasis is placed upon application of refrigeration equipment.