CONTENTS

Prefacevi
Chapter I
Introduction
Heat—Temperature—Heat Quantity—Specific Heat—Changes Effected by Heat—Heat as Related to Industrial Operations—Electromagnetic Radiations—Heat Transfer—Conduction—Convection—Radiation—Early Use of Infrared Heat—Industrial Application of Radiant Energy.
Chapter II
Advantages of Infrared Heat
Heat Laws and Formulas as Applied to Radiant Heat—Speed—Simplicity of Construction and Operation—Flexibility of Control—Instant Starting and Stopping—Uniformity of Results—Cleanliness and Improved Working Conditions—Low Initial and Maintenance Costs—Reduced Space Requirements—Safety—Improved Quality of Product—Visibility of Material in Process—Reduction in Spoilage—Portability—Suitability for Vertical Ovens.
Chapter III
THE INCANDESCENT LAMP AS A SOURCE OF INFRARED RADIATION
Terms Applied to Infrared Lamps—Operating Characteristics of Incandescent Lamps—Factors Affecting Design of General-lighting-service Lamps—Factors Affecting Design of Infrared Lamps—Life of Infrared Lamps—Carbon-versus Tungsten-filament Infrared Lamps—Effect of Voltage Variation on Lamp Performance—Use of Lamps on 230- and 440-volt Circuits—Protection of Lamps from Vibration.
Chapter IV
RADIANT-HEAT EQUIPMENT
Basis of Design of Infrared Reflectors—Infrared Reflector Surfaces—Sockets—Conveyors—Conveyor Belting—Conveyor Drives—Transformers—Ventilation Equipment—Electrical Wiring and Equipment—Commercial Equipment and Ovens.

Chapter V

Planning and Design of Infrared Installation 54
Heat-requirement Calculations—Energy Requirements for Mass Heating—Calculation of Power Required for Liquid Evaporation—Experimental Labora tories for Infrared Tests—Heat Produced by an Infrared Lamp—Heat versu Temperature—Use of Visible Light Produced by Infrared Lamp in Arrangemen of Units—Operating Position of Lamps—Spacing and Arrangement of Infrared Units—Test Equipment—Test Procedure—Requirements for Uniformity of Radiation—Attainment of Uniform Radiation—Attaining and Maintaining Given Temperatures—Simulation of Actual Operating Conditions—Determination of Length of Oven—Design Refinements.
$Chapter~{ m VI}$
Special Application Problems
Heating Three-dimensional Objects—Radiation of Materials Having High Infrared Reflectivity—Infrared Heating of Glass—Radiation of Granular Materials—Heat Processing Involving Highly Explosive Volatiles—Heating of Loosely Woven Materials.
Chapter VII
Paints and Other Surface Finishes
Paint Characteristics—Manner in Which Protective Coatings Dry—Effect of Color on Infrared Baking—Color Coating Materials—Drying of Finishes Applied to Wood.
$Chapter~{ m VIII}$
Industrial Applications
Drying Surface Finishes—Textile Drying and Finishing—Processing of Ceramics—Manufacture of Paper—Metalworking—Skin Drying of Foundry Molds—Manufacture of Plastics—Specific Installation Information.
$Chapter~{ m IX}$
Miscellaneous Uses of Infrared Radiation 162
Therapeutic—Photographic—Plant Protection—Insect Extermination—In the Home and Office.
Appendix
Effect of Infrared Radiation on the Human Body—The Skin—The Eye—Other Human Organs—Glass Filters—Gas-fired Infrared Generators—Here and There with Infrared—Useful Data—Bibliography.
Index