Table of contents

- Preface (p. xi)
- Part 1 Cold Water and Supply Systems (p. 1)
- Rain cycle--sources of water supply (p. 1)
- Filtration of water (p. 4)
- Sterilisation and softening (p. 5)
- Storage and distribution of water (p. 6)
- Valves and taps (p. 7)
- Joints on water pipes (p. 10)
- Water mains (p. 11)
- Direct system of cold water supply (p. 14)
- Indirect system of cold water supply (p. 15)
- Backflow protection (p. 16)
- Secondary backflow protection (p. 17)
- Cold water storage cisterns (p. 18)
- Cold water storage calculations (p. 19)
- Boosted cold water systems (p. 20)
- Delayed action float valve (p. 23)
- Pipe sizing by formula (p. 24)
- Pipe sizes and resistances (p. 25)
- Part 2 Hot Water Supply (p. 29)
- Direct system of hot water supply (p. 31)
- Indirect system of hot water supply (p. 32)
- Unvented hot water storage system (p. 33)
- Hot water storage cylinders (p. 34)
- Primatic hot water storage cylinder (p. 35)
- Medium and high rise building supply systems (p. 36)
- **Types of boiler** (p. 38)
- Secondary circulation (p. 41)
- **Duplication of plant** (p. 42)
- Electric and gas water heaters (p. 43)
- Solar heating of water (p. 49)
- Hot water storage capacity (p. 50)
- **Boiler rating** (p. 51)
- Pipe sizing (p. 52)
- **Circulation pump rating** (p. 54)
- Legionnaire's disease in hot water systems (p. 55)
- Part 3 Heating Systems (p. 57)
- Heat emitters (p. 59)
- Low temperature, hot water heating systems (p. 62)
- Panel heating (p. 66)
- Expansion facilities in heating systems (p. 67)
- Expansion vessels (p. 68)
- Solar space heating (p. 69)
- High temperature pressurised hot water systems (p. 70)

- Steam heating systems (p. 72)
- **District heating** (p. 76)
- Combined heat and power (p. 79)
- Thermostatic control of heating systems (p. 80)
- Timed control of heating systems (p. 81)
- Energy management systems (p. 82)
- Warm air heating system (p. 84)
- Heating design (p. 85)
- Part 4 Fuel Characteristics and Storage (p. 93)
- Fuels--factors affecting choice (p. 95)
- Solid fuel--properties and storage (p. 96)
- Domestic solid fuel boilers (p. 98)
- Oil--properties (p. 99)
- **Oil--storage and supply** (p. 100)
- **Oil-fired burners** (p. 102)
- Natural gas--properties (p. 104)
- Liquid petroleum gas--properties and storage (p. 105)
- Electricity--electrode boiler (p. 106)
- Part 5 Ventilation Systems (p. 107)
- Ventilation requirements (p. 109)
- Guide to ventilation rates (p. 110)
- **Domestic accommodation** (p. 111)
- Non-domestic buildings (p. 113)
- Mechanical ventilation (p. 119)
- **Types of fan** (p. 121)
- Fan laws (p. 122)
- Sound attenuation in ductwork (p. 123)
- Air filters (p. 124)
- Ventilation design (p. 126)
- Resistances to air flow (p. 133)
- Part 6 Air Conditioning (p. 135)
- Air conditioning--principles and applications (p. 137)
- Central plant system (p. 138)
- Air processing unit (p. 139)
- Humidifiers (p. 140)
- Variable air volume (p. 141)
- Induction (air/water) system (p. 142)
- Fan coil (air/water) unit and induction diffuser (p. 143)
- **Dual duct system** (p. 144)
- Cooling systems (p. 145)
- Packaged air conditioning systems (p. 149)
- Psychrometrics--processes and applications (p. 151)
- Heat pumps (p. 158)
- Heat recovery devices (p. 160)
- Health considerations and building related illnesses (p. 161)
- Part 7 Drainage Systems, Sewage Treatment and Refuse Disposal (p. 163)

- Combined and separate systems (p. 165)
- Partially separate system (p. 166)
- Rodding point system (p. 167)
- Sewer connection (p. 168)
- **Drainage ventilation** (p. 169)
- **Drain laying** (p. 172)
- Means of access (p. 173)
- Bedding of drains (p. 178)
- Drains under or near buildings (p. 180)
- Joints used on drain pipes (p. 181)
- Anti-flood devices (p. 182)
- Garage drainage (p. 183)
- Drainage pumping (p. 184)
- Subsoil drainage (p. 187)
- Tests on drains (p. 190)
- Soakaways (p. 191)
- Cesspools and septic tanks (p. 192)
- Drainage design (p. 197)
- Waste and refuse processing (p. 205)
- Part 8 Sanitary Fitments and Appliances: Discharge and Waste Systems (p. 211)
- Flushing cisterns, troughs and valves (p. 213)
- Water closets (p. 217)
- **Bidets** (p. 219)
- Showers (p. 220)
- **Baths** (p. 224)
- Sinks (p. 225)
- Wash basins and troughs (p. 227)
- Urinals (p. 229)
- Hospital sanitary appliances (p. 230)
- Sanitary conveniences (p. 231)
- Traps (p. 233)
- Single stack system and variations (p. 236)
- One- and two-pipe systems (p. 240)
- Pumped waste system (p. 242)
- Wash basins--waste arrangements (p. 243)
- Waste pipes from washing machines and dishwashers (p. 244)
- Air test (p. 245)
- Sanitation--data (p. 246)
- Offsets (p. 248)
- Ground floor appliances--high rise buildings (p. 249)
- Fire stops and seals (p. 250)
- Flow rates and discharge units (p. 251)
- Sanitation design--discharge stack sizing (p. 252)
- Part 9 Gas Installation, Components and Controls (p. 255)
- Natural gas--combustion (p. 257)
- Mains gas supply and installation (p. 258)

- Gas service pipe intake (p. 260)
- **Meters** (p. 264)
- Gas controls and safety features (p. 266)
- Gas ignition devices and burners (p. 272)
- **Purging and testing** (p. 273)
- Gas appliances (p. 276)
- Balanced flue appliances (p. 279)
- **Open flue appliances** (p. 282)
- Flue blocks (p. 285)
- Flue terminals (p. 286)
- Flue lining (p. 288)
- Shared flues (p. 289)
- Fan assisted gas flues (p. 292)
- Ventilation requirements (p. 293)
- Flue gas analysis (p. 295)
- Gas consumption (p. 296)
- Gas pipe sizing (p. 297)
- Part 10 Electrical Supply and Installations (p. 299)
- Three-phase generation and supply (p. 301)
- Electricity distribution (p. 302)
- Intake to a building (p. 304)
- Earthing systems and bonding (p. 305)
- **Consumer unit** (p. 308)
- Power and lighting circuits (p. 309)
- Overload protection (p. 315)
- Electric wiring (p. 318)
- Testing completed installation (p. 321)
- Cable rating (p. 323)
- **Diversity** (p. 324)
- Domestic and industrial installations (p. 325)
- Electric space heating (p. 328)
- **Construction site electricity** (p. 332)
- Light sources, lamps and luminaries (p. 334)
- Extra-low-voltage lighting (p. 341)
- Lighting design (p. 342)
- **Daylighting** (p. 344)
- Telecommunications installation (p. 349)
- Part 11 Mechanical Conveyors--Lifts, Escalators and Travelators (p. 351)
- Planning lift installations (p. 353)
- Electric lifts (p. 355)
- Roping systems (p. 355)
- Controls (p. 357)
- Lift doors (p. 360)
- Machine room and equipment (p. 361)
- Safety features (p. 362)
- Installation details (p. 363)

- Paternoster lifts (p. 364)
- **Oil-hydraulic lifts** (p. 365)
- Lifting arrangements and installation (p. 365)
- **Pumping unit** (p. 367)
- Estimating the number of lifts required (p. 368)
- Firefighting lifts (p. 370)
- Builders' and electricians' work (p. 372)
- Escalators (p. 374)
- Travelators (p. 376)
- Stair lifts (p. 377)
- Part 12 Fire Prevention and Control Services (p. 379)
- Sprinklers (p. 381)
- Drenchers (p. 390)
- Hose reels (p. 391)
- **Hydrants** (p. 392)
- Foam installations (p. 394)
- Gas extinguishers (p. 396)
- Smoke, fire and heat detectors (p. 398)
- Electrical alarm circuits (p. 402)
- Fire dampers in ductwork (p. 405)
- Pressurisation of escape routes (p. 406)
- Smoke extraction, ventilation and control (p. 407)
- **Portable fire extinguishers** (p. 410)
- Part 13 Security Installations (p. 413)
- Intruder alarms (p. 415)
- Micro-switch and magnetic reed (p. 416)
- Radio sensor, pressure mat and taut wiring (p. 417)
- Acoustic, vibration and inertia detectors (p. 418)
- Ultrasonic and microwave detectors (p. 419)
- Active infra-red detector (p. 420)
- Passive infra-red detector (p. 421)
- Lightning protection systems (p. 422)
- Part 14 Accommodation for Building Services (p. 425)
- Ducts for engineering services (p. 427)
- Floor and skirting ducts (p. 428)
- Medium and large vertical ducts (p. 429)
- Medium and large horizontal ducts (p. 430)
- Subways or walkways (p. 431)
- Penetration of fire structure by pipes (p. 432)
- Raised access floors (p. 433)
- Suspended and false ceilings (p. 434)
- Part 15 Alternative and Renewable Energy (p. 435)
- Alternative energy (p. 437)
- Wind power (p. 438)
- **Fuel cells** (p. 440)
- Water power (p. 441)

- **Geothermal power** (p. 442)
- Solar power (p. 443)
- **Biomass or biofuel** (p. 444)
- **Part 16 Appendices** (p. 445)
- Appendix 1 Glossary of common abbreviations (p. 447)
- Appendix 2 Graphical symbols for pipework (p. 449)
- Appendix 3 Identification of pipework (p. 450)
- Appendix 4 Graphical symbols for electrical installation work (p. 452)
- Appendix 5 Metric units (p. 453)
- Appendix 6 Conversion of common imperial units to metric (p. 456)
- **Index** (p. 458)