

	Page		Page
Industrial air pollution	409	Moisture control and drying	418
Industrial buildings		Motive force in natural ventilation	359
off-peak electric heating systems for	300	Motive power	483, 493
ventilation of	345		
Industrial degree-day	271		N
Industrial fuel oils	261		
Industrial processes	338, 415	Natural draft systems	231
Industrial stokers	277, 278	Natural gas	263
Industrial-type humidifiers	419	Natural ventilation	341, 359
Industrial unit heaters	291, 499	Nature's dust catcher	525
Infiltration		Neutral zone	77, 361
air change method	78	New York, Commission on Ventilation	344
allowance for tall buildings	77	Nicholls' heat meter	23
amount of crack to use	75	Noise, prevention of	468
heat required for	79	Non-evaporative cooling	519
through walls	71	Non-heating periods, allowance for	266
through window cracks	73		O
wind velocity factors	75		
Initial pressure in steam heating systems	137	Objects of ventilation	339
Inlets, location of	471	Odors, removal of	340
Inside temperatures	11	Off-peak electric heating systems	298
Installation		Oil burners	281
air filters	482	Oil burning fan furnaces	434
hot water heating systems	129	Oil, cost and delivery of	262
oil burners	285	Oil-fired boiler ratings	223
Instruments	432, 533	Oil fuel	260
Insulation	32-37, 189, 190, 199, 200, 203, 204, 301	Oil pumps	288
Intermittent operation of oil burners	284	Oil storage tanks	262
Ionization	401	One-pipe gravity hot water heating systems	111, 121, 123
	J	One-pipe steam heating systems	141
Jet pumps	169	Openings, exhaust	342
	K	Optimum air conditions	395, 398, 399
Kata-thermometer	475	Orifice control, steam heating systems	151
	L	Outlets, location of	471
Lacquer spray booths, ventilation of	358	Output	
Lap flange	183	boiler	221
Large industrial stokers	278	gravity convectors,	106
Latent heat	539	radiators	97
Layout, importance of in steam systems	166	Outside temperatures	13, 16
Layout of exhaust system	353	Over-feed stokers	
Lead poisoning	411	flat grate	275
Leader pipe sizes	83	inclined grate	276
Libraries, air conditioning of	552	Ozone, use of	401
Liquid fuels	260		P
Location		Paint, effect of on radiators	101
boilers	226	Panel heating system	551
discharge of unit heaters	504	Parlor furnaces, gas-fired	291
radiators	102	Performance of natural draft chimneys	234
unit coolers	522	Performance test code for steam heating solid	
unit ventilators	513	fuel boilers (Code No. 3)	223
Luminous flame reflector heaters	292	Perspiration, sensible	408
	M	Physical data	529
Magazine feed boilers	218	Pipe coil connections	163
Main trunk ducts with branches	463	Pipe coil radiators	97
Mains		Pipe sizes	
connections to	160	district heating	312
distributing	131	domestic water requirements	205
for domestic water requirements	207	exhaust systems	350
sizing of steam	137, 139	hot water	113
Man, heat regulation in	388	steam	137
Manufactured gas	263	tables	117, 139
Maximum velocity in steam heating systems	137	Pipe	
Measurement of air flow	472	conduits	313
Mechanical draft systems	232	connections to boilers	227
Mechanical stokers	275	equivalent length of	114, 137
Mechanical ventilating systems		flow of steam in	131
(see Chapter 31)	433	insulation	189, 200, 313
Men working, comfort zone for	399	physical data	177
Mercurial		prevention of condensation on	199
barometers	533	tunnels	317
pyrometers	534	welding	186
thermometers	533	Piston pumps	169
Meters, fluid	322	Pitot tubes	473, 538
Methods of measurement	533	Plenum system	442, 457
Metric units	532	Pollution, air	409
Moisture and heat given up by human body	420	Portable fire box steel boilers	
Moisture content and regain	414	Positive meters	322
		Power and work equations	531
		Power consumption, off-peak electric heating	300
		Power-type stokers	279

	Page	S	Page
Pressing rooms, ventilation of	357	Sarlun joint	182
Pressure		Saturated steam, properties of	535
drop in steam heating systems	137	Saturated water vapor table	374
equations	532	Schoolroom ventilation	344
gages	533	Screwed fittings	182
losses in ducts	452	Seamless tubing	177, 180
measurement	533	Seasonal weather, adaptation to	397
Prevention of noise	468	Secondary air for burning solid fuels	252
Principles of air conditioning	371	Selection	
Probability of simultaneous use of water supply	207	boilers	224, 293
Procedure for analysis of exhaust steam heating	306	convectors	109
Production versus comfort	418	pipe sizes	113, 137, 206, 312
Productive devices for oil burners	284	radiators	102
Protection of boilers	229	Self-contained combined thermostats	328
Psychrometric chart	381	Semi-bituminous coal	257
Public buildings, ventilation of	339	Sensible heat	539
Psychologic factor	391	Sensible perspiration	408
Pumps		Separation of air and condensate by venting to	169
air capacities of vacuum pumps	171	atmosphere	170
condensation	168	under a vacuum	170
vacuum	168	Service connections, district heating	317
water capacities of vacuum pumps	172	Service for oil burners	286
Pumps, circulating	127	Service, preparing boilers for	228
Pyrometers	534	Settling chambers	527
	Q	Shields, radiator	105
Quiet operation	505, 511	Side cleaning stokers	276
	R	Silicosis	411
Radial tip blade fan characteristics	485	Simultaneous use of water supply	207
Radiant heaters, gas-fired	292	Sizes of solid fuels	259
Radiant heating	551	Small heating plants, temperature control of	337
Radiation (see Chapter 6)	95, 325	Small industrial stokers	277
Radiation, ultra-violet	401	Smoke	227, 248, 477, 523
Radiators	95, 109, 125, 162, 163, 292	Smokeless arch	258
Radiator		Smokeless boilers	219
connections	162, 163	Solid fuels	223, 249
efficiencies	100	Sound level	551
enclosures	109	Space for boilers	226
temperature control	331	Space heaters	291
rule for determining size for one-pipe hot		Special radiators	97
water heating systems	125	Specific heat of water	539
Ratings and capacities		Specifications for liquid fuels	260
fan furnaces	434	Specifications, heating and ventilation	548
unit coolers	522	Spiral bi-metallic thermostats	328
unit heaters	501	Split system of heating and ventilation	333, 339, 511, 515
unit ventilators	514	Spray	
Ratings, boiler		evaporation of	420
gas fired	223	generation and distribution	423
oil fired	223	humidifiers	358
solid fuel	223	Spray booths, ventilation of	86
steel	224	Stacks, wall	
Ratings for gas heating appliances	294	Standard and short form heat-balance codes for	
Reaming of pipes	139	testing low pressure steam heating solid	
Rear cleaning stokers	276	fuel boilers. (Codes 1 and 2)	222
Reciprocating vacuum pumps	170	Standard warm air code	94
Recirculating dampers	336	Standards and codes	545
Recirculating ducts and grilles	86	Stationary jet	169
Recirculation	342, 401	Steam	
Refrigerating machines	431	consumption per square foot of heating	325
Regain and moisture content	414	surface	324
Registers	86, 444, 472	flow meters	131
Re-heated exhaust steam	310	heating systems	539
Relation of temperature, humidity and air		physical properties of	430
motion to warmth and comfort	393	requirements of air washers	190
Relative cost of heating with different fuels	273	Steam pipes, insulation of	218, 224
Relative humidity	372	Steel boilers	275
Removal of		Stokers, mechanical	259
harmful substances	340	Storage space for coal	
heat and moisture	340	Storage tanks	
impurities	423	domestic water supply	215
odors	340	hot water	215
Residence type fan furnaces	438, 439	use of thermostat with	329
Residences, humidification for	550	Stratification of air	470
Resistance of exhaust systems	353	Straight blade fan characteristics	485
Return traps	176	Straight strip by-metallic type thermostats	328
Reversed return hot water heating system	112	Summer comfort zone	396
Rietchel's formula	13	Summer temperatures	13, 16
Risers for domestic water requirements	207	Sun effect on buildings	69
Room thermostat	329	Supply grilles, air flow through	473
Roof ventilators	363	Surface coefficients	28
Rotary jet pumps	169	Surface losses, effect of air velocity on	28, 201
Rotary ventilators	364	Synthetic air chart	412