

INDEX OF AUTHORS

- Andrews, 124
 Arrhenius, 256
 Aston, 7
 Avogadro, 9, 15, 48, 49, 50, 75, 99,
 123, 152, 179, 192, 315
- Baeyer, von, 136
 Baker, 72, 159
 Bemmelen, van, 242
 Berthollet, 6
 Berzelius, 240, 322, 323
 Biltz, 318
 Birkeland, 142, 145
 Bjerrum, 106
 Black, 28
 Boussingault, 121
 Boyle, 2, 36, 64
 Bradley, 142
 Bragg, Sir W. H., 51
 Bragg, W. L., 51
 Brauer, 145
 Bredig, 247
 Brin, 67, 68
 Bunsen, 36, 125
- Canizzaro, 50, 315
 Cavendish, 46, 140, 141, 146, 173
 Charles, 65, 251
 Clark, 40
 Clausius, 256
 Crookes, 141
- Dalton, 9, 36, 48
 Daniell, 289
 Davy, 2, 286
 Deacon, 89, 94
 Debray, 118
 Deville, 174
 Dewar, 115, 320
 Dippel, 212
 Dixon, 72
 Dulong, 327
 Dumas, 60, 61, 316, 325
- Eyde, 142, 145
- Faraday, 25, 94, 247, 254, 259, 260
 Fehling, 306
 Fleitmann, 58, 234, 235
 Forbes, 326
 Frankland, 77
- Gay Lussac, 9, 48, 173, 200
 Gibbs, Willard, 27
 Glover, 201
 Goldschmidt, 285
 Graham, 77, 244, 245, 246
 Guldberg, 196
- Haber, 59, 144, 147
 Hautefeuille, 215
 Henry, 36, 150
 Hess, 95
 Heydweiller, 44
 Hofmann, 150
 Holmes, 228
 Howliss, 141
 Hyman, 15
- Joule, 8
- Kelvin, *Lord*, 9, 25, 293
 Kohlrausch, 44
- Landolt, 7
 Langmuir, 66
 Lavoisier, 7, 307
 Leblanc, 128
 Le Chatelier, 28, 68, 79, 119, 142,
 145, 175, 196
 Lecoq de Boisbaudran, 329
 Lovejoy, 142
- Marsh, 233, 235
 McDougall, 141
 Mendeléeff, 21
 Meyer, V., 319, 320

334

INDEX OF AUTHORS

Mitscherlich, 328
 Moissan, 100, 113, 285
 Morley, 62

Nernst, 44, 321
 Nessler, 45, 308

Odling, 15, 97
 Ohm, 255, 256
 Olszewski, 59
 Ostwald, 36, 63, 145, 328

Parkes, 107, 284, 294
 Pattinson, 283
 Peligot, 122, 123
 Penny, 322, 323, 326
 Petit, 327, 328
 Priestley, 67, 141, 307
 Proust, 6
 Prout, 14, 329

Ramsay, 10, 147
 Raoult, 149
 Rayleigh, *Lord*, 8, 141, 146
 Regnault, 19

Reinsch, 235
 Richards, 326
 Rutherford, 7, 10

Scheele, 232
 Schönbein, 75
 Scott, 61
 Siemens, 76
 Soddy, 10, 15
 Solvay, 129–130
 Soret, 75, 76, 79
 Stas, 323, 324, 325
 Strutt, 146

Thomson, J., 25
 Thomson, Sir J. J., 10
 Traube, 154
 Troost, 174, 215
 Tyndall, 25

Van 't Hoff, 156, 253, 261

Waage, 196
 Werner, 157

INDEX OF SUBJECTS

- Absolute temperature, 65
 zero, 65
 Accumulators, 299
 Acetylene, 136, 137
 Acid, arsenic, 232
 arsenious, 232
 boric (boracic), 237
 carbonic, 125
 chlorosulphonic, 227
 chromic, 313
 ferrocyanic, 208
 formic, 130
 graphitic, 114
 hydriodic, 101, 103, 104, 109
 hydrobromic, 101, 102, 104
 hydrochloric, 86; distillation of, 88; action of, on metals, 90
 hydrocyanic, 263, 267
 hydrofluoric, 100, 240, 243
 hydrosulphuric, 186
 hypochlorous, 96
 iodic, 109
 mellitic, 114
 nitric, preparation of, 160; from ammonia, 145; distillation of, 162; action of, on metals, 164–168
 nitrosyl-sulphuric, 200
 nitrous, 176
 oxalic, 130
 perchromic, 84
 persulphuric, 210
 phosphoric, 221
 phosphorous, 224
 pyrosulphuric, 198
 silicic, 242
 sulphuric, basicity of, 203; composition of, 202; constant boiling, 202; hydrates of, 198; manufacture of, 198–202; properties of, 203; salts of, 204–208
 sulphurous, 193
 Acid chlorides, 226, 227
 Adsorption, 52
 Air, composition of, 76, 138, 146; liquefaction of, 68
 Alcohols, 103, 104, 120, 135
 Alkali metals, 290
 Alkaline earth metals, 290
 Alkalinity, 264, 267
 Allotropy, 73. (*See also under individual elements*)
 Alloys, 291–295
 Aluminium, 58, 234, 285; extraction of, 286; properties, 290
 Alums, 208, 329
 Amalgams, 294
 Amides, 227
 Ammonia, 147; preparation of, 148; properties of, 149; solution of, 150; molecular composition of, 150–152
 Ammonium, amalgam, 158; salts, 158; sulphides, 190
 Amphoteric hydroxides and oxides, 291, 296
 Anion, definition of, 257
 Anode, 45
 Antichlor, 194, 209
 Antimony, 234; allotropy of, 293; extraction of, 282; hydride, 234
 Apatite, 212
 Aqua fortis, 162
 regia, 91
 Argon, 147
 Arsenic and its compounds, 230–236
 Asbestos, 241
 Atmosphere, *see* Air
 Atomic heat, 327
 weights, 11, 315 *et seq.*; Table of, 331
 Atomicity, 73
 Atoms, 8; divisibility of, 10
 Autoxidation, 310
 Baking powder, 127
 Barium, 290; peroxide, 67, 80

- Basic oxides, reaction of, 204; preparation of, 118, 169, 298
 Basicity, 203, 238
 Bauxite, 286
 Black ash, 128
 Bleaching powder, 96
 Boiling point, 19
 Bone ash, 213, 284
 Borax, 237
 Boron, 237
 Brass, 294
 Bromine and its compounds, 101–105
 Bronze, 294
- Calcium, 285, 290; oxide, hydroxide, 119; phosphate, 212; phosphide, 228
 Caliche, 105
 Calorie, definition of, 28
 Carbides, calcium, 136; copper, 137; iron, 279; silver, 137
 Carbon, 112–137; allotropy of, 113; atomic weight of, 325; disulphide, 210; oxides of, 115 *et seq.*
 Carbon dioxide, critical phenomena of, 124; equilibrium in atmosphere, 121–123; estimation of, 126; molecular formula of, 123; solutions of, in water, 125; solid, 125
 monoxide, 115, 116; preparation of, 130; properties of, 131; molecular formula of, 130
 Carbonyls, 131
 Carnallite, 104, 286
 Catalysis, 70, 82, 145, 195, 199, 247
 Cathode, 45
 Cation, 257
 Caustic soda, preparation of, 295
 Chamber crystals, 200
 Change, chemical, essential features of, 15
 Charcoal, 114
 Chlorine, 92 *et seq.*
 Chromates, 312
 Chrome alum, 208, 314
- Chrome iron ore, 312
 Cinnabar, 279
 Clay, 241
 Coal, 112
 Coke, 114
 Colloids, 244–248
 Combustion, 71
 Conductors, first and second class, 45, 262
 Constant, meaning of, 16
 Constant composition, 4–6
 Contact process, 195
 Copper, metallurgy of, 280; sulphate, manufacture of, 280; oxides and ions of, 305
 Coprolites, 212
 Corrosive sublimate, 308
 Coulomb, definition of, 260
 Critical phenomena, 21
 Cryohydrate, 254
 Cryolite, 287
 Crystalloids, 244
 Cupellation, 284
 Cyanamide, 144
 Cyanide, potassium, hydrolysis of, 267
 Cyanogen, 178
- Deliquescence, 52
 Desiccation, 22; exhaustive, 72, 159
 Dialysis, 245
 Diamond, 113
 Diffusion, Law of gaseous, 77
 Dissociation, 55; electrolytic, 256 *et seq.*; pressure, 119
 Distribution ratio, 107
- Efflorescence, 52
 Effusion, 76
 Electrode, 45
 Electrolysis, 45, 258; Laws of, 255, 259
 Electrolytes, osmotic effects of, 254; conductivity of, 255
 Electrons, 10
 Element, definition of, 2
 Enantiotropy, 182, 293
 Endothermic change, 13

INDEX OF SUBJECTS

337

- Energy, conservation of, 6–8
 Equations, meaning of, 12
 Equivalent weight, definition of, 62
 Esters, 227
 Ethylene, 135
 Exothermic change, 13
 Eutectics, 254
- Felspar, 241
 Fermentation, 120
 Ferro-silicon, 57
 Fire damp, 132
 Fluorine, 100
 Flux, 276
 Formulae, empirical and molecular, 50. (*See also* Notation, symbolic)
 Freezing point, 24; depression of, 25, 253, 261
 Furnaces, 276–278
- Galena, 281
 Gallium, atomic weight of, 329
 Gangue, 276
 Glass, 242
 Gold, 275, 281; colloidal, 247
 Graphite, 113
 Gypsum, 51
- Haematite, 279
 Halogens, 86 *et seq.*
 Hardness of water, 38–42
 Heat, of formation, 13; unit of, 28
 Helium, 7, 147
 Hydrates, 33, 51, 52
 Hydrocarbons, 132–137
 Hydrogen, 53–60; bromide, chloride, fluoride and iodide, Chap. III; peroxide, 79–85; sulphide, 184–190
 Hydrogen ion concentration, 264–266
 Hydrolith, 57
 Hydrolysis, 53, 267
 Hydroxides, metallic, 295–298
 Hyperol, 81
 Hypothesis, meaning of, 14
- Ice, equilibrium between water and, 23–26; latent heat of fusion of, 28
 Indicators, 264
 Iodine and its compounds, 101–109
 Ionic theory, 249 *et seq.*
 Iron, metallurgy of, 278; oxides and ions of, 299–301; sulphate, 281
 Iron pyrites, 190, 281
 Isomeric compounds, 178
 Isomorphism, 208, 328
 Isotonic solutions, 252
 Isotopes, 11, 15, 329
- Kaolin, 241
 Kieselguhr, 170
 Kinetic theory of gases, 78
 Krypton, 147
- Law, meaning of, 14. (*See Index of Authors*)
 Lead, desilverising of, 283; metallurgy of, 281, 282; oxides and ions of, 302; white, 303
 Lead chamber process, 199
 Lime, 119; water, 120; milk of, 120
- Magnesium, extraction of, 286
 Magnetite (magnetic iron oxide), 54, 279, 291, 300
 Manganates, 310
 Marble, 117, 119
 Marsh gas, 132
 Mass, conservation of, 6, 7
 Mass action, Law of, 196, 265, 270
 Matches, 218
 Matter, divisibility of, 1
 Meerschaum, 241
 Mercury, metallurgy of, 279; oxides and ions of, 307
 Metallurgical processes, 276–287
 Metals, 275 *et seq.*; allotropy of, 292; colloidal, 247; distinction between non-metals and, 3, 275; electrode potentials of, 289; hydrogen equivalent of, 63, 64. (*See also under separate metals*)
 Methane, 132

- Minium, 302
 Mispickel, 230
 Molecular dimensions, 8, 9
 formulae, 50
 weights, 49; determination of, 253,
 315 *et seq.*
 Molecule, definition of, 8
 Monotropy, 182, 215, 293
 Mortar, 120; hydraulic, 243

 Nascent hydrogen, 166, 233
 Neon, 147
 Neutrality, 264
 Nickel carbonyl, 131
 Nitrates, effect of heat on, 169; ring
 test for, 164
 Nitre plantations, 160
 Nitric oxide, 172; molecular formula
 of, 173
 peroxide, 173; dissociation of, 174,
 175
 Nitrites, 175–177
 Nitro compounds, 171, 177
 Nitrogen, active, 146
 atomic weight of, 326
 density of, 146
 fixation of, 140–145
 preparation of, 138
 properties of, 140
 Nitrogen and its compounds, 138 *et seq.*
 Nitrolim, 144
 Nitrosyl chloride, 91
 Nitrous oxide, 171; molecular for-
 mula of, 172
 Normal solutions, 263
 Notation, symbolic, 11

 Olefines, 135
 Oleum, 198
 Orpiment, 230
 Osmosis, 249–253
 Oxidation, 82, 272, 291
 Oxygen, preparation and properties
 of, 67–70
 Ozone, 72–79

 Paint, 304
 Palladium, absorption of hydrogen
 by, 62

 Paraffins, 112
 Partition coefficient, 107
 Passive iron, 165
 Periodic Law, 329
 Permanganates, 309
 Permutite, 42
 Peroxides, preparation of, 298
 Phase Rule, 27
 Phenolphthalein, 264
 Phosgene, 131, 227
 Phosphine, 228
 Phosphonium compounds, 229
 Phosphor bronze, 217
 Phosphorus, allotropy of, 214
 atomicity of, 218
 extraction of, 213
 halides of, 224–226
 oxides of, 219–224
 properties of, 216–218
 Phosphorus and its compounds, 212–
 229
 Photography, 110, 111
 Plaster of Paris, 51
 Platinum, colloidal, 247
 Plumbago (graphite), 113
 Portland cement, 244
 Potassium, extraction of the metal,
 286
 Potassium bichromate, 312
 chlorate, 69, 96
 ferricyanide, 273, 301
 ferrocyanide, 208, 273, 301
 hydroxide, 54, 295
 iodate, 108
 iodide, 108
 perchlorate, 69
 permanganate, 309
 persulphate, 210
 Pressure, partial, 36
 Producer gas, 116
 Properties, arbitrary and specific, 16

 Quartz, 53, 240
 Quicklime, 119

 Radical, compound, 157
 Radium, 10
 Realgar, 230
 Red lead, 302

INDEX OF SUBJECTS

339

- Reduction, 83, 272
 Reversible reaction, definition of, 12
 Revert phosphate, 224
 Rouge, 300
- Sal ammoniac (ammonium chloride),
see Ammonium salts
- Salt cake, 128
 Salts, anhydrous, 33
 classification of, 204–209
 hydrated, 33
 Sand, 239
 Saturated compounds, 134
 Scrubbers, 89
 Semi-permeable membranes, 249–252
 Silica, 239
 Silicon, 239
 Silver, 323 *et seq.*; from lead, 283–285
 Slag, 276
 Soap, 38
 Soda lime, 133
 Sodium, extraction of, 286
 Sodium chlorate, 96
 hypochlorite, 95
 hydroxide, 54, 295
 permanganate, 310
 sulphate, solubility of, 32, 33
 thiosulphate, 209
 Solubility, 29–37
 Curves, 31, 32, 35
 Stalactites and stalagmites, 39
 Standard solutions, 263
 Steels, 279
 Stibine, 234
 Stibnite, 282
 Strength of acids, 262
 Strontium, 290
 Sulphates, *see* Acid, sulphuric
 Sulphides, 184–190
 Sulphites, 193
 Sulphur, allotropy of, 181–183
 atomicity of, 184
 oxides of, 190 *et seq.*
 Sulphur and its compounds, 180–211
 Superheating, 22
 Superphosphate of lime, 223
 Supersaturation, 30
- Talc, 241
 Theory, meaning of, 14
 Thermite, 285
 Thermo-chemical equations, 13, 94, 95, 106, 136
 Tin, allotropy of, 292, 293
 metallurgy of, 279
 oxides and ions of, 301
 Tinstone, 279
- Ultra-microscope, 246
 Unsaturated compounds, 135
 Urea, 81, 227
- Valency, 153–157
 of ions, 257
 Vapour density, determination of,
 315–321
 pressure, 19, 20
 Verdigris, 206
 Vitriol, oil of, 201
 Vitriols, 207
- Washing soda, 128
 Water, composition of, 46–49, 60–61
 compressibility of, 17
 critical phenomena of, 21
 freezing of, 24
 hardness of, 38–42
 methods of softening, 40–42
 mineral, 38
 molecular formula of, 49
 preparation of pure, 43–45
 specific volume of, 18
 thermal decomposition of, 55
 vapour pressure of, 19, 20
 Water gas, 116
 White lead, 303
- Xenon, 147
- Zinc, 56, 278, 288
 Zinc-copper couple, 58, 133