ILLUSTRATIONS.

A

Agassiz, a letter from Professor 85
Agassiz, the late Professor 7
Air pressure, noting the effects of, Bert's apparatus 409
Anvil at Perm, Russia, the great.. 247
Atacca cristata, the 327
Atomizer, Gerard's 18
Attraction of the earth and the sun, the relative 164
Auger, Monson's 102

B

Bale fastener, Starr's 39
Balloon ascent of MM. Sivel and Croce-Spinelli 391
Barrel head, Hanvey's 86
Barrel-making machinery, Holmes' 191, 194
Barrow-in-Furness, the factories of 22, 23
Battery, floating, Allan's 98
Baxter, William 259
Bearings for shafting, Hardy & Co.'s 118
Bell signal, railway, Scnepper's.. 278
Belts, elasticity of 291
Bench jack, adjustable, Wardwell's 54
Bird of Paradise, a new 215
Bisulphide of carbon, making 283
Blackboard, portable, Reber's 230
Boiler and method of burning fuel, Casement's 135
Boiler explosion, recent 260
Boiler, sectional, Renshaw's 367
Boiler, the Albion, Eberhardt's.. 319
Bolt cutter, Wood's 237
Boot, wire cloth, Sommerville's.. 374
Boring machine, Combined Power Co.'s 290
Bottle, Odell's 210
Brake, automatic, Harrington's.. 6
Brick, ornamental 253
Bridge and Fulton Ferry House, Brooklyn, the East River 69
Bridge at Albany, N. Y., the Hudson River Railroad 146
Bridge at Czernowitz, Austria, iron 51
Bridge at Keokuk, Iowa 323
Bridge, London, England, the Albert 4
Bumper, car, Lloyd's 371
Butter cutter, Bleakley's 306
Butter former, Watson's 178
Butter-making process, Mot's 119
Butter-purifying process, Prentiss' 119
Butter worker, May's 387
Butter-working process, Kirchhöffer's 119

C

Cable, the new Atlantic telegraph 371
Calf feeder 147
Canal boat, steam, Baxter's 350
Canal, the Champlain ship, map of the 229
Candy cutter, Quinn's 70
Cane, physician's, Osborn's 86
Canopus stone, the 67
Car coupling, Stiles' 195
Car, steam, Baxter's 352
Casters, furniture, Sheldon's 6
Centennial tower, one thousand feet high, the 47, 50
Chair, electric and vapor, Hayward's 150
Chickens, fattening 354
Chimney guard, Scuyler's 86
Chronograph, Marey's 387
Chuck jaw, Horton's 242
Church at Clifton, England 359
Churn dasher, Boyd's 150
Claw bar, railroad, Christie's 278
Clepsydra or water clock, Rome, Italy 199
Cliff Ridge Span, Prospect Park, Brooklyn, the 231
Clock, the polar, Wheatstone's.. 338
Coffin, the late Professor 82
Comet, Prosper Henry's 34
Coasting vessel, Bodkin's 53
Coral sechmea, the 375
Cotton worm destroyer, Johnson's 118
Crane, overhead traveling 322
Cranes at Middlesbrough Docks, England, steam 71
Cremation furnace, Thompson's 295
Cribbing device, anti, Stilwell's.. 322
Currant washer, Oakley's 166
Curves and gear wheels, laying out 356

D

Devil fish, the Newfoundland.... 179
Diamonds, explosive 114
Dicksonia antarctica, the 327
Double tree, Case's 342
Drop hammer, friction roll, Hotchkiss & Stiles 374

E

Echinocactus myriostigma, the.. 327
Electric toy, Leach's 291
Electro capillary engine, the 195
Electro-plating balance, Roseleur's 66
Electro-plating, the utilization of copper scraps in 82
Elevator and conveyer, portable, Shanks' 255
Engine diagrams, pumping 267
Engine, hoisting, Todd & Rafferty's 375

F

Faucet attachment, McConnell's 178
Faucet, self-closing, Hotz's 353
Fence, picket, McGinty's 326
Fence, portable, Porter's 18
Fever tree, the Australian 103
File, newspaper, Whitehall's 355
Fire extinguishing apparatus, Schweizer's 207
Fireplace, ventilating, Galton's.. 99
Fish grappling spear, Knapp's... 147
Fish, the grass-eating 226
Freezing machine 54
Fuel economizer, Bell's 290
Furnace bridge wall, Beecher's.. 70

G

Gaining machine, Fay & Co.'s.... 102
Gang saw table, Carroll & Brother's 406
Garneting, house top 163
Gardens at Caserta, Italy 407
Governor, Matson's 271
Grapes, preserving bunches of.... 147
Grate, clearing attachment for, Tiensch's 23
Greenbacks, canceling 99
Grinder for castings, Miller's.... 1
Gun, the 81 ton 85
Gun, the improved Gatling 79

H

Hammer, Bilharz' 390
Hammer, drop, Merrill & Sons'... 223
Harrow, the tarantula rotary, Benson's 358
Hartford, Conn., the State capitolat 31
Hatchet, compound, Jenkins'.... 342
Heating and ventilating apparatus, Barker's 102
Hinge, safe, Stevens' 406
Horseshoe calk, Barnum's 179
Horseshoe, Todd's 342
Horse, the genesis of the 240
Hydrant, Davis' 406
Hydraulic engineering in Nevada 67

I

Ice cream freezer, Lucetti's 246
Ice-making machine, ammonia, Vass & Littmann's 243
Inkstand, inexhaustible, Teysonnière's 306
Insect case, De Nottbeck's 246
Iron and fireproof construction, Dennett & Co.'s 259
Iron process, Wilson's 35

J

Jointer, universal, Bentel & Co.'s 383
Jupiter's satellites 354

K

Knitting apparatus, electric 242

L

Lantern, signal, Quick's 198
Life raft, instantaneous 275
Lighthouses, modern American.. 293
Lightning rod, arranging a 347
Lightning rod, Munson's 262
Locomotive, road and farm, Aveling & Porter's 335
Lounge and bath tub, combined, Wendel's 118

M

Magneto-electrical instrument.. 211
Mallet, Holbrook's 54
Mammillaria sulcolanata, the 327
Marking brush, Caron's 358
Measuring width of a stream 291
Mercury, Professor Leeds' method of purifying 131
Metaline 19
Metals, Thurston's tests of 38, 39
Microscopic aquarium, a 394
Mirror, polishing a parabolic 276
Miter ing machine, Loetscher's... 279
Miter machine and vise, Van Ness' 342
Mitrailleuse, Hotchkiss' 15
Moon as seen by earth light, the.. 87
Moon, total eclipse of the 101

N

Needle threader, Schoneld's 178
Nelson, the late Judge 7
Nut lock, Dittman's 39

O

Oiler, portable, Crossley's 274
Orchid house, a modern 35

P

Packing and weighing machine, Stewart & Co.'s 310
Pail, butter and oyster, Gilberds & Harris' 163
Palæotherium magnum, the 210
Parallel motion, Veaucellier's.. 371
Pendulum, horizontal, Zöllner's 179
Pen, font, Latourette's 178
Permanent way, Hilf's 130
Pipe cutting and threading machine, the Chase Manufacturing Co.'s 131
Pipes for buildings, flood, Harrison's 227
Pipe smoking, its effect on teeth 339
Plane guide, Snipe's 246
Planer, diagonal, Norris' 198
Planer, surface, Bentel & Co.'s.. 303
Plow, Riviere's 6
Porcelain at Vienna, the Worcester Japanese 5
Potato bug, the Colorado 306
Potato digger, Strait's 230
Practical mechanism 373, 389, 405
Pressure regulator for fluids, Casement's 127, 134
Printing press, the Augsburg 1
Problem, the man and horse 400
Proctor, Professor R. A. 115
Propeller, marine, Browne's..... 103
Pruning shears, De Groodt's..... 39
Pump, cam, the Barney & Smith Co.'s 303
Punch and screwdriver, Lyons'.. 390
Pyrophone, Kastner's 279

R

Refrigerator, zero, Lesley's 227
Rifle hook 85
Riveting machine, hydraulic, McKay & McGeorge's 339
Rubber armor, Jones' 353

S

Safe, drill proof, Geering's 70
Sail, shadow 306
Saloon, floating, Allan's 98
Sash balance, the Shaker, Russell's 262
Saw gummer, Boyd's 150
Saw sets, circular and band, Grundy's 182
Saw teeth, movable, Miller's..... 130
Scaffold, adjustable, Dillon's..... 211
Scale, the diasonal 208
Scissors, combination, Van Hoosen's 274
Scissors, tooth-edged, Richardson's 210
Screw plate, lightning, Wiley & Russell's 226
Screw, wood, Ladd & Corning's.. 99
Seaforthia elegans, the 343
Siamese twins, the 115
Siamese twins, the autopsy on the 144
Silkworm, the yama-mai or oak tree 66
Sink, Miller's 143
Siren or fog horn 279
Skin grafting, Levis' method..... 312
Slotting machine and tool, New York Engine Co.'s 175
Smith, Sir Francis Pettit 151
Solar attractionapparatus, Ericsson's 355
Sounding apparatus, Toselli's.... 194
Sound, the motions of Professor Tyndall's lecture on 162
Spike bar, Douglass' 194
Spoon, mixing, Clark's 342
Square, to make a T 163
Steam engine, domestic, Fontaine's 386
Steam generator, Mitchell's 239
Steam pump, direct-acting, Hardick's 310
Steam pump, Niagara, Hardick's 243
Steam street car, Grantham's 35
Stoker, mechanical, Smith's 274
Stove for smoke houses, Deardorff's 214
Strain diagrams 277, 307

T

Tar, separation of ammoniacal liquor from 258, 259
Tea, solidified, Spratt's 370
Telegraph post, the ribbon 117
Telegraphs, the English 114
Telescope, new and gigantic, Chapman's 159
Testing the strength of iron, Thurston's apparatus for..... 38
Thrashing machines, English.... 83
Threshold, adjustable, Wilson & Co.'s 210
Tool grinder, automatic, Conner's 182
Tool holder, Lamb's 18
Tool holder, Reder's 166
Tools, machine 373, 389, 405
Torpedo, Toselli's 86
Tower and clock, Delhi, India.... 399
Tramway and vehicle, Cass'..... 34
Trench brace, McKiernan's..... 131
Trotting gear, Schmalhausen's.. 18
Tube and disk problem 99
Tubing for mines 293
Tunnel-boring ram, a 111
Turbine wheel, Herriman's..... 214
Turbine wheel, Whitmore's..... 294
Turning crank pins and journals, machine for 402
Turtle with teeth 114

V

Ventilation of school rooms, the 49
Victoria Regia house, Chatsworth, England 151
Villa and garden, Egyptian..... 311

W

Wash boiler, Barnes' 103
Water meter, waste, Descon's... 167
Well drill, Phillips & Goletz'.... 104
Wire way, transporting, Rogers' 374
Wheat steamer and dryer, Hunt's 370
Wheel, vehicle, Gardner's..... 294
Whip and rein holder, Matson's.. 246
Wigandia caracasana, the 327
Wind wheel and water elevator, Dietz' 402
Work holder, lathe, Hopkins' ... 326

Y

Young, James 95

Z

Zodiacal light, the 371

MISCELLANY.

Figures preceded by a *star* (*) refer to illustrated articles.

A

Acaroid of resin 346
Acetate of lime 58
Acetic acid in wines 167
Acetone 107
Acoustic darkness and mental light 177
Acoustics of public buildings 324, 392
Acoustics, Professor Mayeron... 356
Acre, a square 8
Adee, Mr. A. A 165
Adulterations of tea, coffee, and pepper 197
Advertising, good 82
Aerial navigation 388
Aerolite, a huge 145
Aerophore, the 132
African explorations 116
Agassiz, in the laboratory with.. 244
Agassiz, Louis *2, 7
Agassiz memorial, the 240
Agassiz, the autopsy of 96
Agassiz, the brain of 211
Air, floating matter in the 305
Air for respiration 43
Air, mechanical properties of.... 178
Air poison and its remedy 116
Air pressure and animal life *408
Air supply for miners and divers 85
Air, weight of 166
Akkas, the 305
Alcohol and fat 85
Alcohol and vinegar polyp 305
Alcohol, effects of 86
Alcohol, methylic 376
Alizarin, artificial 72, 197, 345
Alligators, cheap 409
Alloy for dental plates 85
Alloy for models 91
Alloying gold 138
Alloys, new iron 48
Alloys of metals, fusible 27
Alloy, white metal 368
Alumina from the clay to the sapphire 20, 36
Aluminum, preparing 66
Amalgamating zinc 27
Amazons, up the—Letters from Professor Orton 24, 40, 56
American cars in England 196
American inventions, the Germans and 344
American machinery in Germany 294
American river Nile, an 353
Americans, the aboriginal 116
Ammonia arsenite 282
Ammonia gas, absorption of..... 199
Ammonia, vapor of 43
Amylammonium chloride 181
Anæsthesia 406
Anæsthetic, new local 339, 388
Aniline color, a poisonous 34
Aniline colors ..... * 41
Aniline dyes, poisonous 100
Answers to correspondents.. 11, 27, 43, 56, 75, 90, 106, 122, 138, 151, 169, 186, 202, 218, 234, 250, 266, 282, 298, 314, 330, 346, 362, 378, 394
Antimony 282
Antimony blue 81
Ants, army 289
Ants of Brazil, the 340
Anvil, a 500 ton *247
Aquafortis for brick walls 394
Archæological discoveries 116
Arcturus, the star 379
Arithmetic, mental 68
Arsenical poisoning 394
Ashantees, art among the 321
Asian explorations 116
Asphalt pavements 148
Astronomer, honor to an American 192
Astronomical conditions of life. 256
Astronomical lectures, Proctor's *87
Astronomical notes 8, 84, 147, 216, 248, 294, 360
Atmosphere, the 27
Atomizer, improved *18
Attraction and centrifugal force 324
Attraction of the earth and the sun.. 68, 84, *164, 228, 245, 250, 291, 309, 324
Audition, the functions of 298
Auger, improved *102
Australian fever tree, the *103
Australian stupidity 150
Austrian Athenæum, new 114
Automaton, an 298

B

Bale fastener *39
Balloon advertising dodge, the.. 21
Balloon ascent in France *391
Ballooning extraordinary 280
Ballooning, perils of 292
Bamboo a poison 305
Barometer, frog 227
Baroscope, Babinet's 331
Barrel head *86
Barrel making machinery ... *191, 194
Barrow-in-Furness, Lancashire, England *22, 23
Baryta, manganate of 118
Battery, acids for Daniell's 331
Batteries and saloons, floating... *98
Battery, bichromate 75, 203
Battery, Bunsen's 330
Battery, Bunsen's improved 340
Battery, continuous 379
Battery, Smee's 330
Baxter, William, and his inventions *351
Beach mining in California 131
Beard grow, to make the 283
Bearing for shafting *118
Bedsteads, metallic 408
Beech blight, a new 196, 245
Bee keeper's convention, the 8
Beer 401
Beer, the manufacture of 258
Bell signal for railways *278
Belts, elasticity of *291
Bench jack, adjustable *54
Bending wood 43
Beneficent Californian, a 389
Bird of Paradise, a new *215
Bisulphide of carbon *283
Bisulphide of carbon, uses of.... 144
Blackberry wine 122
Blackboard composition 91
Blackboard, portable *230
Blackboards 347
Blasting with dualin 59
Bleaching, improvements in..... 402
Bleaching wood tar 394
Blood, coloring matter of 370
Blood spots, the detection of. 53, 117
Blowpipe, use of 378
Blue, Egyptian 305
Boats, floats for 211
Boats, pleasure 59
Boiler and method of burning fuel *135
Boiler explosion, a 145
Boiler explosion at Philadelphia 340, 372
Boiler explosion commission, the 97
Boiler explosion, remarkable 50
Boiler explosions no mystery ... 224
Boiler explosions, preventing damage 150
Boiler explosions, recent *260, 321
Boiler explosions, the SCIENTIFIC AMERICAN and 208
Boiler, patching a 267, 299
Boiler reflector 287
Boiler scale, analysis of 347
Boiler, sectional *367
Boiler, the Albion *319
Boiler tubes, destruction of 53
Boltcutter—a correction 338
Boltcutters, a novelty in *287
Bone dust, exporting 143
Boot, wire cloth *374
Borax for colds 133
Borax, octahedral 199
Boring machine *290
Boron, the green flame of 338
Bottle, patent *210
Brain and nerves, functions of... 298
Brain impressions on memory... 164
Brain, the double 219
Brake, automatic *6
Brake, the Heberlein 114
Brake, the Turner 81
Brake, the vacuum car 39
Brass 171
Brass, burnishing 409
Brass, dips for 266
Brass gun barrels 90
Brass work for bedsteads 408
Brazing iron 347
Brick, ornamental *259
Bricks, burning 91
Bricks with oil, burning 53
Brickwork, preserving 22
Bridge, Albany, N. Y. *146, 147
Bridge anchorage, East river.... 408
Bridge at Keokuk, Iowa *323, 324
Bridge, a satinwood 355
Bridge at Poughkeepsie, N. Y.... 7
Bridge construction, iron *51
Bridge, excavation for East river 406
Bridge, London, England, the Albert *4
Bridge over the Alleghany, Pa.. 118
Bridge over the Saco, Me 196
Bridges, upright arched 408
Bridge, the East river *65
Bridge, the St. Louis 280
Bristles, a substitute for 101
Bronze green 58
Bronze, Japanese 289
Bronze on iron 266
Bronze powder 123
Bronzing 91
Bronzing iron castings 107
Bugs, roaches, etc., to kill 238
Building houses 267
Bunsen burner, a new 118
Burial in the sea 321
Burner and blower, new 53
Butter, artificial *119
Butter, coloring 119
Butter former *174
Butter from fat, making 119
Butter from little milk, much.... 53
Butter from whey *119
Butterine—artificial butter 392
Butter, refining *119
Butter worker *387

C

Cabbage, analysis of 282
Cables, laying ocean 8
Cables, the life of Atlantic 197
Cactus family, the 340
Calcium light 219
Calf feeder *147
Calming the sea with oil .. 212, 245, 288
Camphor for seeds 181
Camphor water 322
Canada, good work in 218
Canal, Hudson river and Lake Champlain 224
Canal navigation problem 52
Canal reward, the $100,000 81
Canals, heating the 370
Canals, steam on the 64, 161, 309
Canal, steam on the Erie 344
Canal, the Champlain ship *229
Canal, the Suez 119, 171
Cancer, new treatment of 296
Candy cutter *70
Cane, physician's *86
Cannon revolver, the Hotchkiss. *15
Cañon of Colorado, the 211
Canopus stone, the *67
Canthocamptus, the 395
Capitol at Hartford, Ct., the new. *31
Capitol, the iron dome of the..... 357
Car axles and bearings 254
Carbon for gunpowder, supply of 193
Carbonic acid, liquid 261
Carbonic acid on fires 267
Carbons, battery 11
Carbon, the hardest and softest. 256
Car bumper *371
Carbureting hydrogen 379
Car coupling accidents 196
Car coupling dangers 53
Car coupling, improved *195
Car cooling slaughters 98
Carmine 330
Carriages, splicing railway 55
Cars, freight 308
Car wheels, American 175
Casting bronze under pressure.. 186
Caterpillars, destruction of 82
Cattle, sickness among 49
Caveat rules, unauthorized 161
Caviare 198
Cedar wood cabinet 392
Cement, aquarium 274
Cement, boiler 310
Cement for aquariums 90
Cement for cast iron 283
Cement for coral 170
Cement for engine cylinders 347
Cement for mending rubber goods 208
Cement for metals and glass 298
Cement for milistones 346
Cement for oil pipes 75
Cement for whalebone 90
Cementing cloth to iron 347
Cementing glass to metal 27
Cementing paper to glass 203
Cement, turner's 315
Centennial, a chemical 357
Centennial, defeat of the grant for the 337
Centennial, everybody's 385
Centennial exhibition, the 296
Centennial, progress of the 17
Centennial subscription, the 288
Centennial tower, the *46, 50
Centralization of matter, the 134
Centrifugal force 122
Centrifugal force formula 378
Chainmakers' peculiarities 101
Chainmakers, the Troy 129
Chair, electric and vapor *150
Chameleons 225
Chaos to coral, from 321
Charcoal, animal 186
Charcoal and tar for wounds 66
Charcoal as a preservative 200
Charcoal for wounds 181
Checking, preventing wood from 288
Cheese factories in Vermont 232
Chemical experiment, amusing.. 375
Chemical industries, progress of. 113
Chemical notes 181
Chestnut leaves, fluid extract of. 360
Chicken, a golden 370
Chicken cholera 395
Chickens, fattening by machinery *354
Chicory in ground coffee 255
Chili international exposition, the 145, 161
Chimney guard *86
Chloride of calcium 266
Chloride of gold 171
Chloride of gold for toning..... 182
Chocolate, adulteration of..... 306
Cholera 407
Chromes, adulterations in 117
Chronograph, Dr. Marey's..... *387
Chuck jaw, improved *242
Church at Clifton, England..... *359
Churn dasher, the victor *150
City of Peking, launch of the..... 209
Claw bar, detachable *278
Cleaning clothing 76
Cleaning bats 347
Clepsydra in Rome, the *199, 262
Clock tower at Delhi, India..... *399
Clock with 500 dials, a 263
Clothing from mildew, preserving 101
Clothing, the warmth of 376
Clouds, registering direction of.. 225
Coal 325
Coal, analysis of 48, 170, 266
Coal, combustion of 167
Coal dust, utilizing 52, 148
Coals, the value of 8
Coal tar naphtha 27
Coal tar products 36
Coal, white 81
Cockroaches, exterminating..... 107
Cod liver oil bread 20
Coffee, analysis of 330
Coffee and milk as an aliment.... 214
Coffee as a disinfectant 375
Coffee grounds 385
Coin, wear of 72
Cold, the greatest possible 266
Collars, waterproof 180
Colorado cañons, the 293
Colorado desert, irrigation of the 198
Colorado desert, reclaiming the.. 309
Colorado mines 230
Combustion, gain in weight by... 246
Combustion of fuel 325
Comet, a new 272 *408
Comet, Prosper Henry's *34
Comets, a new idea about 147
Comets, a new theory of 53
Commerce of the world, the 376
Compasses, influence of carcases on needle 48
Compass needle, a circular 117
Compound marine engines 165
Concrete construction 179
Concrete walls 138, 218, 219
Condensation 267
Condensation in steam cylinders 279
Condensed wife, a 246
Conditions of life 401
Conductors of heat, etc 130
Conductors, the 280
Connecticut valley, the 53
Consumption, the curability of.. 86
Contractive energy 375
Convection, experiments in 117
Cooking vessel, improved *54
Cooperation, profits of 4
Copper alloys and ores 181
Copper in Minnesota 133
Coral sechmea, the 375
Coral, artificial 229
Coral, imitation 203
Corn salve 58
Corn, value of a kernel of 82
Cotton press, steam and hydraulic 115
Cotton raised by Indians 226
Cotton seed oil, refining 19
Cotton seed, the waste of 225
Cotton worm destroyer, the *118
Court plaster 107
Cow again, the $40,000 55
Cow, death of the $40,600 184
Cranes, overhead steam *71
Crane, traveling *322
Cremation furnace *295
Cremation question, the 278
Creusot, the works at 296
Cryolite glass 234
Crystals in plants, microscopic... 96
Culture, main force of 183
Currant washer *166
Curves and gear wheels, laying out *355
Cutting glass jars 331
Cyanide of potassium 154
Cyclones, the laws of 308

D

Darwinian theory, Agassiz on the *85
Dead subjects and live discussion 305
Death, a new sign of 241
Death, the detection of 69
Death valley 339
Decalcomania 43
Dental amalgams 130
Desert places, reclaiming the 256
Devil fish of Newfoundland, the 100, *179
Diamonds 234
Diamonds, explosive *114
Diamonds, South African 241, 274
Diamond, the origin of the..... 97
Diffusion in moist and dry air.... 401
Discovery, possible future 407
Discovery was made, how a 241
Disease, bacteria in 261
Disinfectant, a good 408
Diving apparatus 24
Dogs as smugglers 295
Doors, by machinery 340
Doubletree, improved *342
Draining a cellar 298, 379
Drawing and sketching 99
Drill, well-boring *103
Droera, the 72
Drop hammer, friction roll..... *374
Dryers for oil paint 282
Drying lumber 283
Dualin 234
Dyeing black 107
Dyeing felts 101
Dyeing ivory 362
Dyeing leather blue-black 357
Dyeing natural flowers 170
Dyeing, notes on 229
Dyeing sheepskins 58
Dyeing silk 379
Dyeing with logwood 171
Dyeing with mahogany sawdust. 390
Dyes, testing 339
Dynamite as a stump puller..... 341
Dyspeptics, currant leaf tea for.. 279

E

Earth, curvature of the 122
Earthenware, the manufacture of 8
Earth's crust, the 282
Ebonite 122
Ebony, imitation 299
Eclipse of the moon, total *100
Education and book knowledge. 112
Education of artisans, the 404
Education of children, early..... 213
Eggs, preserving 181, 298, 378
Elastic limit, elevation by stress. 368
Electrical condenser 363
Electrical figures on conductors. 249
Electrical gas regulator 24
Electric amalgam 91
Electric conductors, elongation of 307
Electric current, passage of..... 376
Electric discharges in air 65
Electric gas lighting 401
Electricity, animal 69
Electricity from albumen 342
Electricity, galvanic 210
Electricity *vs* yellow fever..... 51
Electricity and chemical action. 343
Electric knitting gear *242
Electric light and gas compared 372
Electric light, Wilde's 275
Electric toy, an *291
Electric writing 91
Electro-capillary engine *195, 245
Electromagnets, making 58
Electroplating 15, 133
Electroplating balance *66
Electroplating, copper scraps in. *82
Electroplating pewter 132
Electroplating with cobalt 357
Electro-sympathetic clocks..... 214
Electrotypes, iron 226
Elevator and conveyer *255
Emerald mines of Muzo, the..... 245
Enamel, black and white 107
Enamel, jewelry 27
Endosmosis, curious 289
Engine accident, steam 51
Engine, domestic steam *386
Engine economy, steam 325
Engineering, expert 17
Engineers, mistakes of 181
Engineers, the convention of civil 408
Engine, improved shifting 212
Engine, regulating an 321
Engines and boilers, efficiency of 52
Engines and boilers, the relative efficiency of 20
Engines and water wheels, steam 383
Engines, compound 122, 260
Engines, effective power of 272
Epsom salts in dyeing 72
Eremacausis, burial, and cremation 288
Eucalyptus or blue gum tree 165, 341
Expansion in rotary engines..... 123
Exploration of the Libyan desert 22
Explosion of volatile oils, etc... 341
Explosives, dangers of nursery.. 176
Eyes, focal differences in the.... 18

F

Famine in Bengal, the 288
Farmers' health 369
Faucet, self-closing *178, *358
Feathers, new use for 120
Fence, picket *326
Fence, portable *18
Fertilizer, a new 260
File, newspaper *354
Files, tempering 59
Fillits for walnut wood 43
Fire, a street 216
Fire extinguishing apparatus.... *207
Fire, Greek 267
Fireplace, Galton's ventilating.. *99
Fireproof Building Company, the 117
Fireproof construction, new..... 232
Fires, colored 58, 154
Fires, curious origin of 292
Fish culture, private 242
Fish grappling spear *147
Fish, hybrid 53
Fish in alkaline waters 388

© 1874 SCIENTIFIC AMERICAN, INC.

Fish in Nevada hot springs 148
Fish scale ornaments 344
Fish, the grass-eating *226
Flannels, washing 219, 267
Floats for ships' boats 293
Floral chameleon, a 277
Floral ornament, a new 37
Fly wheel, fracture of a 197
Fog dispeller wanted 85
Fogging negative baths 379
Food, a neglected source of 256
Formic fungus farmers 352
Fossil man, new 161
Franklin Institute exhibition 296
Franklin Institute on steam boilers 152
Franklin Institute semi-centennial 133
Freak of nature, a curious 372
Freezing machine *54
Freezing mixture 106, 170
Friction engine 325
Friction gears 52
Friends, to our 49
Frog culture 166
Frost striations in mud 182
Fruit cans, old 8
Fruit trees, how to treat 384
Fuel, composition of 200
Fuel economizer *290
Fuel in furnaces 390
Fuel manufacture, artificial 213
Funnel, hot water 231
Furnace bridge wall *70
Furnace, the Woolwich 359
Furniture casters *6
Furniture polish 315
Fusible metal 27

G

Gaining machine *102
Gallon, the American 274
Galvanometer, new 150
Gang saw table *406
Gapes, to cure 299
Gardening, house top *183
Gardening, seasonable hints on 200
Gardening, window 200
Gardens at Caserta, Italy *407
Gardens, modern Egyptian *311
Gas meter, the largest 3 3
Gasoline, dangers of 97
Gas pressure alarm 387
Gas, prices of 404
Gas wells of New York, the 370
Gears, curves for 219
Genius in Massachusetts 98
Geographical progress in 1873 116
Geology of the West 341
Geyser basin, the new 212
Gilding, fancy 154
Gilding on glass 90, 283, 379
Gilding on marble 59
Gilding on wood 90
Gilding on zinc 392
Gilding without a battery 331
Girders, wrought iron 69
Glacial epoch, the 299
Glacial remains in Central America 304
Glass, cutting 128
Glass, etching on 330
Glass opaque, to render 264
Gloves, cleaning 283
Glue 27
Glue as a healing remedy 116, 200
Glue, liquid 170, 250
Glue, waterproof 379
Glycerin, making 347
Glycerin, pure 111
Glycyrrhizin 181
Gold, casting 40
Gold coin, the wear of 37
Gold fish, treatment of 402
Gold for illuminating 102
Gold from quicksilver, separating 320
Gold, malleability of 197
Gold, melting point of 81
Gold plating with a battery 346
Gold wash 48
Governor *271
Governor for prime movers 336
Go West, if you 239
Gradients, steep 385
Grapes, preserving *147
Grassing a slope 260
Grate-clearing attachment *262
Grease spots, to remove 19
Greenbacks are canceled, how *99
Grinder for castings *143
Grindstones, bursting of 196
Gulf stream, the 376
Gum arabic, improving 214
Gum in fruit trees 341
Gum, transparent 175
Gun cotton 43, 171, 202
Gun, new 81 ton *338
Gunpowder, non-explosive 76
Gunpowder, white 170, 298
Gun, the Gatling 79
Gypsum and marshmallow cement 69

H

Hachisch 181
Hammer at Woolwich, steam 344
Hammer, drop *221
Hammer, improved *390
Hammers, an odd use for 246
Hardness of minerals, etc 2 5
Hardware, American 279
Harness, repair the 264
Harrow, the tarantula *358
Hartford Boiler Inspection and Insurance Company 101, 116, 165
Hatchet, compound *342
Hats' paradise, old 367
Heart and the nervous system, the 213
Heat 40
Heat and its origin 20
Heat as a motor, solar 101
Heat by friction of liquids 319
Heating and ventilating apparatus *102
Heating feed water 106
Heating houses 27
Heat, mechanical equivalent of 145
Heat of the season 369
Heat on gases, action of 181
Heat on textile fabrics 359
Heel ball 58
Heliographic engraving 373
Heptagon, drawing a 130
Hinge, improved *406
Hides, the depilation of 19
Hippophagy in France 101
Hoisting engine *375
Holland, American securities in [illegible]
Honest, machines to make people [illegible]
Honey, adulterated 404
Honey, artificial 395
Hoosac tunnel, alignment of the 49, *219
Hoosac tunnel, the 104
Horse disease, a new 257
Horse in market 384
Horse power, dynamometrical 325
Horses from cribbing, preventing *322
Horseshoe calk *179
Horseshoe, improved *342
Horse's hoofs, contraction of the 219
Horses, shoeing 322
Horses, the care of 322
Horse, the genesis of the *240
Horse vs. steam power 404
Hot beds 131
Hotel on wheels, an 247
Hours of labor, the 53
Houses, new 69
Hydrant, improved *406
Hydrate of chloral 145
Hydrate of chloral poisoning 407
Hydraulic engineering in Nevada *67
Hydrocarbon gas, its permanence 376
Hydrocarbon, vulcanization of 81
Hydro-electric machine 363
Hydrogen, absorption by iron 371
Hydrogen alloys 367
Hydrogen a metal 278
Hydrogenated palladium 261
Hydrogen, buoyancy of 250
Hydrophobia, a remedy for 197

I

Ice, 112 miles an hour on 181
Iceberg alarm 374
Ice cream freezer *246
Iceland's millenial 326
Ice-making, ammonia *243
Idleness 130
Illinois, new industries in 310
India rubber for steam pipes 279
Indicating steam engines *64
Indigo, sulphate of 394
Induction battery 171
Induction coil 218, 315, 378, 379
Infusorial silica 65
Improvements, the march of 296
Ink, gold and silver 58
Ink, green black 28
Ink, invisible 203, 234, 299
Ink, printer's 154
Ink, red 200
Ink, restoring faded 85, 378
Inks, bronze and gold 123
Inks, colored 27, 251
Ink, silver 298
Inkstand, inexhaustible *306
Inkstand, the dry 103
Ink, violet 58
Insect case, magnifying *246
Insect catching device, an 295
Insects, to destroy 115
Insulators 280
Inventions, introducing 245
Inventions patented in England by Americans, 25, 74, 104, 120, 136, 152, 168, 201, 216, 232, 248, 264, 297, 312, 328, 345, 361, 392
Inventions, rights of employers and workmen in 160
Inventive progress, a year's 65
Inventor, a fortunate 305
Inventor, benefactions of a 6
Inventors, a chance for 229
Inventors and patent owners, N. E. Association of 81
Inventors' mistakes 226
Inventors, to 101
Investors, a chance for 280
Iodate of calcium 346
Iron and fireproof construction *259
Iron, burnt 51
Iron, chemical classification of 280
Iron columns 210
Iron from the ore, wrought *35
Iron-making, new process for 213
Iron ores of Missouri, the 112
Iron, protecting 103
Iron pyrites, utilization of 134
Iron ships, protecting paint 343
Iron, the welding of 406
Iron trade, state of the 112
Iron trade, the 357
Iron trade, the depression in the 304
Ivory, imitation 394
Ivory, artificial 234

J

Japanese scintillettes 123
Japan, geological survey 368
Japanning bedsteads 408
Jerusalem, the ancient 116
Jointer, universal *383
Journal boxes, adjusting *69
Journal box metal 90
Jupiter's satellites *354

K

Kainit 155
Kangaroo and alligator skins 72
Kiln, Hawley's 18
Kindness and brutality 307
Knock knees 250

L

Labor, aversion to 325
Labor legislation in California 274
Labor, the hours of 37
Lacquer, green and gold 363
Lacquer, Japan 230
Lacquer, pale 266
Lake Tahoe, depth of 88
Lake Titicaca 160
Lameness, intermitting 262
Lamp, new petroleum 182
Lamps, lighting street 228
Lantern, signal railroad *198
Lap and lead 11
Lard and butter cutter *306
Lard oil 289
Larynx, a metallic 343
Laugh and be healthy 34
Laughing gas 171
Lava flood of Oregon, great 176
Lava overflow of Oregon, the 55
Law suit, curious 34
Lead poison, a preventive of 408
Leather, preventing sweating of 178
Leather, Russia 378
Leather, testing 357
Left-hand writing 353
Legal decision, interesting 392
Lemon sugar 378
Lemons wholesome 299
Leveling instrument 376
Lever, power of a compound *11
Leyden jar 347
Life raft, instantaneous *275
Lighthouses, modern American *263
Light in air and in vacuo 308
Light in stones 279
Lightning rod *347
Lightning rod, improved *262
Lightning rods 132, 170, 218
Linoleine 230
Linseed oil 322
Lipomata, the diagnosis of 55
Live oak, the 395
Locomotive, a Fairlie 229
Locomotive engineers, brotherhood of 209
Locomotive, road and farm *385
Locomotives, American and European 290
Locomotive sand box *133
Locomotive, street 280
Locomotive, the fireless 96, 261
Lounge and bath tub *118
Lubricator for outdoor use 379
Lune, measuring a 298
Lupus, cure of 85

M

Machinery and civilization 258
Machine tools *373
Machine tools, charges for 404
Machinists' supplies 69
Magnetic equivalent of heat, the 321
Magnetism and the nodular form of iron 36
Magneto-electrical instrument, a new *211
Magnets, new results with 175
Mallet, improved 54
Man, growth of 122
Marble, cleaning 58
Marble, polishing 283
Marine propulsion, new mode of 53
Marking brush, fountain *358
Marking fluid, a 406
Mars, the planet 355
Matches, take care of the 177
Measuring logs 75
Measuring the width of a stream *291
Meat diet 161
Mechanical equivalent of heat 325
Mechanics, the marvels of 208
Mechanism, practical *373, *389
Medical notes 407
Medical study in France 264
Members, their increased uses 368
Mennonites, the 376
Mercury, pressure of 378
Mercury, purification of *131
Mesmerism 378
Metaline *19
Metallic decorations, new 180
Metallic spectra, on some 70
Metals, expansion, etc., of 379
Metals, Professor Thurston on 229
Metals, testing the quality of *38, 39
Metals, their character exhibited by fracture 209
Metals under strain, behavior of 225
Metamerism in organic chemistry 308
Meteor in Nevada 82
Meteors, recent 82
Metrological science 2 8
Metronome 123
Mica, a substitute for 132
Microscope, oxyhydrogen 294
Microscopical exhibition 100
Microscopic aquarium *391
Milk as a diet 337
Milk from Switzerland 401
Milk in Switzerland, condensed 349
Millers, a mass convention of 319
Mind over the body, power of 244
Mine in the world, the greatest 212
Mineral statistics of Great Britain 279
Mirror, a globe 384
Mirrors repairing 203
Mississippi river, the 404
Mississippi, the overflow of the 340
Mitering machine *278
Miter machine and vise *342
Moles 53
Moles, to destroy 404
Montezuma, the palace of 193
Morphia, new alkaloid from 82
Motion without nerve force 244
Motor, a Mexican 88
Motor, another new 273
Mountains of the United States 180
Muscarin 242
Muscular movement without life 320
Museum of Natural History, the 385
Mustard, poultice, improved 408

N

National Academy of Science, the 293, 308
Natro-metallurgy 131
Naval efficiency, our 193
Naval engineers, pay of 357
Navy, machinists of the 85
Navy, the report of the chief engineer of the 2
Needle threader *178
New books and publications, 9, 25, 41, 74, 88, 104, 120, 152, 168, 184, 201, 232, 248, 264, 297, 312, 345, 361, 377, 392, 409
Nerve derangements 243
Nerve force 177
Nerve force, Dr. Brown-Séquard on 2 3
Nerve, separation of a 243
Nerve, the optic 212
Nervous impulses, velocity of 96
Nervous system, central 244
Nickeling 151
Nickel in Missouri 37
Nickel plating 171
Nitrate of ammonia 267
Nitrite of ammonia 117
Nitrogen from the atmosphere 27
Nitro-glycerin 289
Notes from Washington, D. C. 340, 388
North polar expedition, Swedish 357
Norwegian antiquities 213
Nut lock *89

O

Oatmeal as infants' food 339
OBITUARY:
Agassiz, Louis J. R. *7
Arnot, Neil 209
Bakewell, Thomas W 310
Bogardus, James 276
Coffin, James H *82
Glass, Sir Richard A 68
Harrison, Joseph 248
Jacobi, Moritz H. von 296
Legros, —— 145
Nelson, Samuel *7
Papillon, Fernand 145
Rive, A. de la 49
Ruggles, Draper 33
Schultze, Max 145
Sharps, Christian 200
Smith, Sir Francis P *151
Thurston, Robert L 145
Wilkinson, Jephtha A 33
Williams, Lloyd A 33
Offal, utilization of 294
Ohm, the 117
Oil deposits of the west 160
Oiler, portable *274
Oil notes 130
Oils, essential 215
Oil spots 145
Oleomargarin 305
Orchid house, a modern *55
Ordnance, European 403
Organ, inside a church 21
Organ pipes 123
Oroide 347
Orton's travels, Professor 86
Ourselves, about 101, 132, 165
Oxides of nitrogen, the 98
Oxygen absorbed by plants 336
Oxygen gas, making 267
Oxygen, the respiration of 337
Oyster culture in America 391
Oyster patent, an 343
Ozone, new method of supply 112
Ozonized water 65

P

Packing and weighing machine *310
Pail, butter and oyster *163
Paint, a reddish brown 216
Paint from cloth, removing 75
Painting bedsteads 408
Painting magic lantern slides 390
Painting on glass 123
Painting tin roofs 202
Paints, varnish 347
Palace cars in England, the Pullman 271
Palæotherium magnum, the *210
Palestine 116
Paper and glass debate, a 129
Papering, house 226
Paper pulp, molding 170
Paper, transparent, to make 247
Paraffin 263
Paraffin oil industry, the 95
Paraffin, transparent 309
Parallel motion, a new *371
Parrot, a hunter's 327
Paste for gems 106
Paste that will not sour 219
Pasteur, M., and the French Assembly 369
Pastilles, fumigating 154
Pasting paper to tin 235
Patent affairs at Washington 309
Patent cases, delay in 6
Patent convention, proceedings of the 65
Patent conventions, new 16
Patent decisions of the courts, 9, 25, 41, 56, 72, 88, 104, 120, 136, 152, 168, 184, 200, 216, 232, 248, 297, 328, 360, 376, 392
Patent discussion, a congressional 176
Patent extension schemes, failure of 401
Patent law for castings 144
Patent litigation decision 240
Patent litigation, the Page 134
Patent monopolies in Congress 128
Patent Office decisions, 9, 88, 168, 184, 328, 360
Patent Office in 1873, operations of 113
Patent Office, reform in the [illegible]
Patent Office printing, the 32
Patent sellers, swindling 160, 212
Patents, official list of 12, 28, 44, 60, 76, 91, 107, 123, 139, 155, 171, 187, 203, 219, 235, 251, 267, 283, 299, 315, 331, 348, 363, 380, 395, 410
Patents, official list of Canadian, 12, 28, 44, 76, 92, 108, 124, 140, 155, 204, 220, 236, 252, 268, 284, 300, 316, 332, 349, 364, 380, 396
Patents, one week's issue of 5
Patents, recent American and foreign 10, 25, 41, 56, 73, 88, 104, 120, 137, 152, 168, 184, 201, 217, 232, 248, 264, 280, 297, 312, 329, 345, 361, 377, 392, 409
Patent, the metal shoe tip 309
Pavements, London 352
Pavements, slippery 128
Pearlash for extinguishing fires 66
Pearls, imitation 250
Peat coal 194
Peat, drying 324
Pen, an excellent 37
Pen, capillary font *178
Pendulum, horizontal *179
Percussion priming 284
Perfume from flowers, extracting 170
Permanent way, iron *130
Petroleum fires and chloroform 373
Petroleum in steam boilers 164
Phosphate of calcium 123
Phosphide of calcium 52, 59
Phosphor bronze 315
Phosphoric acid on oats 339
Phosphorus a cure for cataract 376
Phosphorus, black 145, 376
Photographic engraving 231
Photographic process, new 49
Photographs, exhibiting 197
Photographs, transparent 376
Photography at bottom of the sea 353
Photography, Dr. Vogel's discovery 84
Photography, dry plate 215
Photo-lithography, improvement in 150
Photo-negatives, reproducing 399
Photo-negatives, treating 310
Photo paper, sensitive 295
Pillars of brick and stone 226
Pine, the strength of 293
Pipe cutting and threading machine *131
Pipes for buildings, flood *227
Pipe way transportation 213
Pipe smoking on teeth, effect of *339
Pisciculture in Canada 102
Pisciculture in its sanitary and commercial aspects 36
Plane guide *216
Planer, diagonal *193
Planer, the diagonal 216
Planer, the Hamilton surface *309
Planetary distances, law of the 181
Planetary satellites 308
Planetary system, harmony of the 212
Plantain as paper stock 1 7
Plants, carnivorous 207
Plants, curious *327
Plants, curious ways of 149
Plants, respiration of 401
Plant, the laughing 200
Plating steel springs 330
Platinum, ductility of 257
Platinum, fusion of 7
Platinum plating 266
Pleasant words 161
Plow, improved *6
Poisons and their antidotes 228
Polar clock, the *338
Polariscope, objects for the 212
Polaris expedition, results of the 177, 308
Polish for walnut wood 315
Polishing agate 133
Polishing a parabolic mirror *276
Polishing selenite 330
Polish, starch 27
Porcelain, the home of 86
Porcelain, Worcester Japanese *5
Pork in Indianapolis 230
Postage to France 371
Postal cards 273
Post, the Phœnix 18
Post, the ribbon *117
Potassium, salts of 58
Potato bug, Colorado *306
Potato bug, remedy for 383
Potato digger, improved *230
Potato flour 106
Pottery, lead coating on 19
Poultry manure 7
Power by wire ropes 376
Practical mechanism *373, *389
Presence of mind 130
Pressure forging 278
Pressure not a motive power 336
Pressure of water in pipes 251
Pressure regulator, fluid *127, 134
Prevention in place of cure 276
Prime movers and their recent progress, the 16, 88
Printing press, the Augsburg *1
Prismoidal railway, the 20
Prize for a coal-cutting machine 166
Prize for an alcoholometer 216
Prize for an essay on steel 294
Prizes for national industries, French 196
Problem, a curious *400
Proctor on the habitable planets, Professor 8
Proctor, Professor R. A. *115
Proctor's return, Professor 358
Procyon, the companion of 41
Propagating house, the 211
Propeller, fast 104
Propeller, marine *103
Propellers, small swift 1
Propeller, the bow and stern screw 311
Propeller, the screw 245
Propulsion of floating bodies 161
Pruning shears *39
Psychic force 65
Pump, improved steam *243
Pumping engine economy *257
Pumping engines, remarkable 176
Pump, the Dayton cam *303
Pump, the Niagara *310
Punch and screwdriver *3 0
Pyrites, a hill full of 246
Pyrites, the utilization of iron 48
Pyrometer, acoustic 129
Pyrophone, the *279

Q

Quantivalence, the new theory 368
Quicksilver, extraction of 65

R

Rabbits' hair, felting 19
Railroad, a Russian Chinese 255
Railroad curves 228
Railroad in a new country, a 261
Railroading, amateur 255
Railroading at a high elevation 149
Railroad signal office, a 166
Railroads in Europe and America 264
Railroad, 60 miles an hour by 175
Railway freight 210
Rail way, locusts on a 401
Railway receipts and expenses 37
Railways, English and American 213
Railways in Great Britain 81
Railways, underground, in London 272
Railways without switches, etc 399
Railway, the Mount Vesuvius 401
Railway up Mount Vesuvius, a 276
Railway, 3,500 miles by 409
Rainbow, the 383
Rain cannonades 280
Rain in California 129
Ramie industry, the 101
Ramming the mold 89, 196
Rattlesnakes and tarantulas 367
Rawhide journal boxes 405
Refraction, atmospheric 52
Refrigerator, zero *227
Reservoir and dam, the burst 344
Reservoir, bursting of a 344
Rifle hook *85
Rhigolene 81
Rhinoceros, death of the great 37
Rhodium, oil of 58
Riveting machine, hydraulic *339
Rolling mill, a six acre 307
Roofing composition 326
Rope, the longest in the world 367
Rosewood, imitation 154
Rubber as a defensive armor *353
Rubber, dissolving 27, 363
Ruled plates, Rutherford's 261

S

Saccharometer, a new 197
Safe, drill-proof *70
Saffranin 72
Sail, the shadow *306
Salt in sickness 66
Samoan islands, the 370
Sand blast for cleaning walls 115
Sand blast, the philosophy of the 81
Sand blast, Tilghman's 24
Santonine, researches in 19
Sap in the bark of trees 309
Sash balance, the Shaker *262
Sawdust, burning 59
Saw gummer, improved *150
Saws, Asiatic 402
Saw set, circular and band *182
Saws, movable teeth for *130
Saw, the Emerson stone 53
Scaffold, adjustable *211
Scale, Gunther's 330
Scale, the diagonal 208
School room, death in the *49
Science, a national museum of 340
Science as a trainer 70
Science Record for 1874 32
Sciences, the study of the 117
SCIENTIFIC AMERICAN, Dr. Hall and the 152
SCIENTIFIC AMERICAN, special number of the 17
SCIENTIFIC AMERICAN, value of the 17, 114, 165
Scientific and practical information 19, 41, 49, 65, 81, 101, 117, 129, 145, 161, 197, 225, 241, 261, 277, 289, 309, 357, 376, 401
Scientific Englishman on scientific Americans, a 8
Scientific ghouls 65
Scientific notes, French Academy 195
Scientific principles, value of 369
Scientific progress in Europe, recent 197
Scissors, combination *274
Scissors, tooth-edged *210
Screw, improved wood *99
Screw plate, the lightning *226
Screw propulsion, the origin of 241
Seaforthia elegans, the *343
Sea lions, how they enjoy life 277
Sebacic acid 341
Selenium, action of light on 241
Sensitized paper 314
Sewers of Paris, the 261
Sewing machine engine 165
Sewing machine monopolists, the 304
Shark, a basking 215
Shell heaps in Maine 248
Shipbuilding, a novelty in 343
Ship Faraday, launch of the 213
Ships, collisions of 53
Ships, compartment 272
Ships, insubmersible 376
Ship, the polysphenic 359
Ship, war, the Inflexible 279
Shirts, etc, polishing 250
Siamese twins, autopsy on the *144
Siamese twins, physiology of the 100
Siamese twins, the 80, *115
Signal, new luminous 357
Signal, rail way 296
Silkworm, the yama-mai *66
Silver, aluminum 409
Silver, imitation of 51, 152
Silvering glass 234
Silvering tin ware 266
Silver mines of Peru, the 69
Silver plate, polishing 250, 346
Silver plating without a battery 170, 187
Sinai, Mount 161
Sinai, the peninsula of 116
Sink, improved *143
Siren, steam *279
Sirup, testing 122, 171, 267
Situation, to keep a 115
Skamptjelding 54
Skin grafting *312
Skunk's bite, is it deadly? 344
Sky and clouds 261
Slag, analysis of 331
Slates, fixing 103
Sled body, to build a 359
Slotting and planing tool *175
Slugs and snails 196
Snow on the Sierra Nevada 223
Soap, curd 123
Social Science Association, American 360
Social Science Congress, American 337
Soda, American 176
Soda, washing 59
Sodium flame, a monochromatic 197
Solar attraction and centrifugal force *355
Solar counter, the 247
Solar system, the 88
Solder, bismuth 58
Solder for Britannia metal 27
Solderingfiles, etc 90
Soldering iron 123
Solder, pewterer's 330
Solids, the flow of 328
Sound from flames, etc 293
Sounding apparatus *194
Soundings, Pacific Ocean 212
Sound, motion and sensation of *162
Sound, Professor Tyndall's experiments 177
Sound, refraction of 372
Sound, the sensation of 293
Spectroscope, the analyzing power of the 276
Spectroscopic analysis 64
Spider's web, the 149
Sponge, washing 376
Spoon, mixing *322
Sporting tackle 130
Sphygmograph in Bright's disease 390
Spike bar, improved *194
Springs of Costa Rica, warm 2 0
Square, to make a T *165
Stains of fruit, removing 171
Stalactites from masonry 391
Starch, corn 154
Starch, sources of edible 401
Star depths, the 87
Stars, double 298
Steam auxiliary, new 167
Steamboat law, new 356
Steamboat, the first 362
Steam engine, domestic *386
Steam engine economy 325
Steam engines and water wheels 388
Steam engines, the effective power of 272
Steamer, a model 353
Steamers, light draft iron 119
Steamer, the fastest 343
Steam, expansion of 337
Steam generator, safety *239
Steam, higher pressures of 325
Steam life boats 289
Steam navigation 215
Steam omnibus and street car *35
Steam pipes, isolating 369
Steam power, useful information on 325
Steam pressure on steamers 388
Steam, utilizing waste 183
Stearin candles 145
Steel bars in place of bells 250
Steel, case hardening 122
Steel, Damascus 298
Steel for boilers 166
Steel, hardening 51
Steel, phosphorus 261
Steel rails 101, 104
Steel, softening 347
Steel, tempering [illegible]
Steel, Whitworth 129
Stellar motion 49
Stereotyping 363
Stokers, mechanical 274
Stone, béton Coignet artificial *231
Storm glass 75
Storms, the law of 308
Stove for smoke houses *214
Stove pipe, condensation in 122
Stoves, look to your 2
Strain diagrams and their revelations *307
Strain diagrams and what they tell us *277
Stuffing animal specimens 250
Subscribers, to new 129, 145, 184, 197, 209
Subscribers, to our 17
Sugar, ammonia for purifying 242
Sugar, chemical 7
Sugar, clarifying 378
Sugar from caoutchouc 181
Sugar-making, improvement in 161, 257
Sulphate of copper 394
Sulphide of cadmium 101
Sulphur, a hill of 209
Sumac 71
Sunday science 114
Sun, latest news from the 85
Sun, no water in the 357
Sun ray, Herschel, Tyndall, and Draper on the 128
Sun's atmosphere, absorption by the 242
Sun's distance, determining the 167
Sun, the 298
Sun, the heat of the 289
Suppressed member again, the 240
Surgical devices, new 101
Surveys, mountain and lake, N.Y. 296
Swimming baths in Australia 80

T

Tallow and lard, purifying 41
Tannin, determining 261
Tannin, estimating 315
Tanning, improvement in 149
Tan skins, to 147
Tar and ammonia from waste *258
Tartaric acid, property of 277
Tattoo marks, removing 331
Teamsters, a handy device for 19
Tea, solidified *370
Teeth, root filling 200
Teeth, the decay of 55
Telegraph cable, failure of the new 160
Telegraph cable, the new *371
Telegraph, computing 175
Telegraphic progress in 1873 144
Telegraph in China 117
Telegraph lines 280
Telegraph lines, underground 294
Telegraph, new district instrument 344
Telegraph poles, etc., preserving 343
Telegraphs, the English *114, 280
Telegraphs, the Post Office and the 192
Telegraphs, unprofitableness of government 344
Telegraph system, automatic 8
Telegraph, test of the automatic 129
Telegraph, time for railways 358
Telegraph wires, overhouse 280
Telescope at Washington, the great 308
Telescope of unlimited power, a 20
Telescope, new and gigantic *159
Telescope, cheap 7, 186
Telescope, the mercurial 309
Telescope, the million dollar 148
Telescope, the proposed great 53
Telephon, the 115
Telluric ores of Colorado 308
Temperance crusade motto 306
Temperance problems 261
Temperature on iron, effect of 43
Temperatures, artificial low 227
Temperature, to attain high 400
Tempering iron 305
Tempering taps 235
Terra del Fuego, lake in 342
Testing laboratory, a 320
Textile plant, a new 41
Thallium 231
Thallium, combustion of 344
Thermometers, how they are made 322
Thrashing machines, English *83
Threshold, adjustable *210
Ticks in sheep, killing 330
Tides of Tahiti, the 308
Timber preservative 195
Timber, the preservation of 148
Time, ascertaining the apparent 11
Time, uniform mean 111
Tinfoil ornamentation 180
Tinning cast iron 76
Tinning iron wire 122
Tin ware, American 387
Tool-grinding machine *182
Tool holder *18
Tool holder, a new *166
Tools, boring *405
Tools, holding *389
Tools, machine *373
Tools, round nosed *389
Tools, side *405
Tools, side rake *389
Tools, spring *405
Tools, square nosed *389
Tools, strains on *373
Torpedo, the fish 193
Torpedo, the Toselli *86
Torsional strain 28
Towers and spires 84
Tower, Trevethick's 1,000 feet 133
Tramway and vehicle *24
Transfer of negative films 260
Transfer paper, black 154
Transferring engravings to wood 138
Transferring to glass 123
Trees and plants, Australian 339
Trees, plant 328
Tree that keeps a standing army, a 272
Trench braces, improved *131
Trolite 277
Trotting gear *18
Trout in an artesian well 163
Tube and disk problem, the 379
Tubercle, propagation of 34
Tubing for mines, flexible, etc *292
Tunnel at Richmond, railroad 18
Tunnel, Bergen Hill 120
Tunnel borer, battering ram *111
Tunnels 212
Tunnel, the British channel 50
Tunnel, the Detroit river 208
Tunnel, the Dover and Calais 80
Tunnel, the St. Gothard 51, 262, 390
Turbine limitations 228
Turbines, effective power of 289
Turbine water wheels 356
Turbine wheel, improved *214
Turbine wheel, Whitmore *294
Turning crank pins, etc., machine for *402
Turpentine 324
Turtles with teeth *114

V

Vaccination of dogs 241
Vaccine virus 282
Vacuum, procuring a *379
Valerian in diabetes 407
Valves, pump 218
Varnish for iron work, black 266
Varnish, gutta percha 379
Varnish, red shellac 11
Vegetables by drying, preserving 66
Vegetables, fecundation of 66
Velocipedes, practical use of 287
Ventilation 59
Ventilation of the Senate chamber 68
Ventilation question, the 228
Ventilation, theories on 211
Ventilation, the principles of 132
Venus, the transit of 298
Vermin in birds 58
Vermin killer 65
Vibrations of liquid surfaces 405
Victoria Regia house, Chatsworth, England *151
Vienna exhibition and its results, the 32
Vinegar, malt 58
Vitality, is it vital? 80
Volume XXX., the end of 400

W

Wales, Mr. Salem H 369
Wash boiler, improved *103
Wash for walls, red 394
Watches by machinery, making 149
Water and copper pipes 200
Water as fuel 384
Water, maximum density of [illegible]
Water, measuring flowing 372
Water meter, a new *167
Waterproof calico 55
Waterproofing cloth 58, 90
Waterproof paper 346
Water, refraction of compressed 375
Water, solvent powers of 69
Water works at Rochester, N.Y. 161
Wax flowers, making 50
Wells, artesian 241
Wells, Hon. D. A., and the French Institute 320
Whale in New Jersey, a 385
Wheat steamer and dryer *370
Wheelerite, a fossil resin 392
Wheel, improved *294
Whip and rein holder *246
Wind, noting the direction of the 242
Wind, pressure of the 378
Winds on vegetation, influence of 98
Wind wheel and water elevator *402
Wine crop in the United States 322
Wines and their colors 375
Wine, tests for red 101
Wire and its manufacture 386
Wire, insulating 123
Wire, manufacture of 386
Wires, jointing telegraph 280
Wires of remarkable length 386
Wire, varied uses of 386
Wire way for transporting ores, etc *374
Wire worms 406
Women dentists in Egypt 39
Wonder camera, the *354
Wood ashes for worms 277
Wood, decorating 49
Wooden labels, preservation of 218
Wooden taps, preserving 319
Wood filling 155
Wood like mahogany, polishing 4
Wood, petrifaction of 282
Woolwich Arsenal, the Czar at 383
Workholder, lathe *326
Wounds, the open treatment of 357
Wrecks, raising 225

Y & Z

Yankee notions 54
Yeast 284
Yeast, compressed 266
Young, James *96
Zinc, casting 379
Zinc, oxidation of 394
Zinc, pulverizing 58
Zodiacal light, cause of the 320
Zodiacal light the *371

© 1874 SCIENTIFIC AMERICAN, INC.