

INDEX

ILLUSTRATIONS.

Adirondack steamboat, 456
Aerophile, the, 389
Air compressor, mining, 284
Ambulance, velocipede, 284
Ammunition hoists, Indiana, 172
Amphitrite, monitor, 373
Anchor shore, Ryan's, 410
Aphasia in polyglots, 185
Arctic, steamer, 58
Armor plate, ballistic test, 296
Artist, toy, 296
Austin water works, 138
Axle lubricator, 328

Cuyuk, ruins of, 333
Exhibition, Industrial, Berlin, 233
Expedition, polar, Nansen, 171
Expedition, polar, proposed, 223
Feedwater heater, new, 249
Fireworks, dramatic display, 26
Fishwheel in operation, 232
Furnace, sulphur, 353
Gallery of Adirondack, 456
Garnus, botanical, 195
Gasoline engine and pump, 121
Gasoline motor, 490
Gear, transmitting, wind power, 361
Girl, singing, from Copan, 440
Gold mines, Homestake, 188
Governor, water wheel, 137
Grant monument, 323
Gravity, determination of, 140
Great Eastern, the, 54
Gun and turret of Indiana, 173
Gun carriage, disappearing, 78
Gun, wire wound, 10 inch, 396
Harrow, improved, 282
Harvesters, 75
Headlight, locomotive, 237
Heater, feed water, Munday's, 249
Hinge, Rode's, 424
Hippopotamus, new, Paris, 265
Homestake mines, 188
Houses, country, cheap, 413
Hubs, bicycle, Stephens', 440
Iceberg, collision with, 220
Icebergs, Newfoundland, 220
Illusion, a stage, 141
Illusion, optical, 350, 358
Indiana, battleship, 156, 165
Indicating device, bottle, 5
Inkstand, pneumatic, 8
Inspection car, new, 287
Instruments, stringed, improved, 346
Inventors, distinguished, 85
Iron pierced by ballstones, 223
Isabella of Lorraine, tomb, 159
Jerome Park, reservoir, 181
Journal, a model, 414
Juice and vapor apparatus, 168
Kangaroo, baby, 143
Kinestoscope stereopticon, 325
King Rene, tomb of, 325
Lady, appearing, 461
Lake Biwa-Kioto, 341
Lake, Crater, Oregon, 405
Lamp, electric, for lanterns, 458
Lamp, electric, holder, 300
Lamp, photographic, new, 158
Lantern signal, 6
Leads, engine, rest for, 42
Lead City, Dakota, 188
Lethal device for looms, 344
Library, Congressional, 357
Lifeboat, jet propelled, 263
Light for photographers, 357
Light, search, powerful, 156
Lightship signaling plant, 1
Li Hung Chang, 202
Liquid measuring device, 352
Locomotive, American, 325
Locomotive, balanced, 265
Locomotive, electric, 1878, 70
Locomotive, express, 169
Locomotive, logging, 316
Locomotive, mining, new, 136
Locomotive, 100 ton, 71
Locomotive, 100 ton, 124
Logging machine, novel, 124
Logging in Sierra Nevada, 444
Louis VII, bust of, 24
Lubricator, axle, 328
Lunch counter, automatic, 408
Map of Jerome Park reservoir, 186
Map of Nansen's expedition, 171
Map, north polar, 411
Map of submarine cables, 63
Matabeles and Mashonas, 41
Men of progress, 60
Merchants' Bridge, 55
Merriman, ironclad, 77
Merriman, Prof. M., 154
Measuring machines, 40
Metal house, Poulsen, 302
Milk industry, 302
Milling machine, new, 201
Mill, white lead, 376
Mines, Calumet and Hecla, 236
Mines, Hecla and Calumet, 236
Mines, Homestake, 188
Mining locomotive, 136
Mississippi, steamer, 76
Mola mola, the, 399
Motor, compressed air, 163
Motor, electric, Nef, 70
Motor, electric, 300 h. p., 71
Monitor, Amphitrite, 373
Monitor, ironclad, 77
Monument, Grant, 329

Musical transmitter, telephone, 334
Museum of Natural History, 441
Museu, Plantin-Moretus, 348
Nansen, Dr., 171
Nassau Hall, 317
New York water supply, 293
Niagara Falls bridge, 57
Niagara, steamer, 65
Nut, an explosive, 348
Oiling device, Holt's, 323
Oven, disinfecting, 453
Paddle wheels, feathering, 78
Paper, 367
Patent department, Mann & Co., 91
Pen, fountain, Climax, 250
Perfume of flowers, intensity, 121
Phonograph, multiplex, 393
Phonograph, the, 65
Photograph, electric, coin, 288
Photo-micrographic apparatus, 266
Pictograph, Mahler's, 378
Pioneer of science, a, 490
Pistols, old and new, 185
Plover, improved, 217
Ride, the, 320
Poster, railroad, of 1845, 55
Potteries, Peruvian, 392
Powhatan, U. S. steamer, 78
Press, Franklin, 80
Press, Hoe, 80, 81
Presroom, ancient, 343
Princeton College, 309
Projectile, motion inside gun, 318
Pump, force and lift, 312
Pump valve, Parker's, 360
Pump, waterworks, Gould's, 137
Pumping engine, gasolin, 121
Queen of Flowers, the, 431
Rail sawing machine, 217
Rail, trolley, duct, 20
Ray, X, new tube, 414
Ray, X, toy machine, 330
Rail fastening, Wilson's, 264
Railroads and bridges, 55
Railway, single rail, 237
Ridge, the, 300
Railway switch, electric, 377
Reaper, progress of, 74
Refractor, U. S. Observatory, 181
Refractor, Jerome Park, 181
Revolver, the modern, 155
Rings, the, 300
Ruins of Enyuk, 333
Rubber eraser holder, 222
Salmon fishery, Columbia River, 229
Saw, band, guide, 264
Saw mill, portable, 217
Scaffolds of Congress, Library, 357
Scientific Americans, first, 49
Scientific American offices, 92
Sewer gas trap, 168
Ship, roller, Bazin, 221
Ship of state, Trajan's, 191
Ship Zaragoza, Mexican, 117
Ship yard, Cramp & Sons, 87
Shoddy manufacture, 37
Shot, victory over armor, 412
Signal, locomotive, 136
Signaling plant, lightship, 1
Skeleton of King Rene, 159
Stork, fossil, bones of, 36
Snake, bisphenous, 413
Sewing machine, the, 72
Spool wire clamp, 122
Square, adjustable, 287
Staff of Munn & Co., 93
Starway of Adirondack, 457
Stamp mills, Calumet, 125
Stamp mills, Homestake, 189
Statue, bronze, discovery, 207
Steam missionary, 124
Steamer, American, first, 52
Steamship, transatlantic, 52
Stereopticon, kinestoscope, 325
Street cleaning car, 250
St. Louis and St. Paul, stuns, 54
St. Louis bridge, 56
Subway, electric, Boston, 197
Sulphur mills, Louisiana, 280
Sunshine, companion of, 359
Switch, railway, electric, 377
Tandem, Eiffel, 446
Telegraph laying eye, 187
Telegraph, the, 58
Telemeter, new, 200
Telephone, Houts, 281
Telephone music transmitter, 334
Telephones, 89, 90
Telescope, Huygens, 88
Telescope, reflecting, 89
Telescope without observatory, 392
Tires, bicycle, repair, 125
Tomb of King Rene, 159
Tomb of Theodoric, 397
Tower, water, iron, 27
Toy, a new, 27
Toy artist, 296
Trap, sewer gas, 168
Trees, raising, 204
Tricycle, a giant, 361
Tricycle, gasoline, 302
Tribby, music of, 141
Tubes, Crookes, 203
Turret, chilled iron, 457
Turret of Massachusetts, test, 428
Turle, a gigantic, 184
Type foundry, ancient, 349
Valve, pump, Parker's, 360
Vehicle wheel, Court's, 184
Velocipede ambulance, 284
Velocipede, an ice, 4
Velocipede of 1888-9, 68
Ventilator, car awning, 184
Vise for jewelers, 297
Washing machine, 377
Washing machine, Rowe's, 96
Waterspout of Cottage City, 255
Water supply, New York, 293
Water wheel governor, 137
Waterworks, Austin, 133
Wheat mixer, new, 216
Wheel, bicycle, 237
Wheel, vehicle, Court's, 184
Wheel, wind, Court's, 184
Wheel, water, governor, 137
White lead grinding, 376
Wind power transmitting gear, 361
Wind wheel, Com's, 184
Wire binders, exploration of, 380
Wood bending machine, 360
Wood carving, Renaissance, 424
Wrench, monkey, Dixon's, 312
Wrench, Stokes', 424
Zaragoza, ship, Mexican, 117

Band saw guide, 264
Barges, propulsion of, 223
Barium sulphide, prep., 443
Barrel for mining machine, 436
Battery, secondary, plates, 28
Battery, storage, applications, 426
Battleship Indiana, 156
Battleship Texas, sinking, 374
Battleships, three new, 119, 247
Bearing, ball, for cycles, 440
Beetle that cuts metal, 39
Bell ringing mechanism, 184
Benzene, melting point, 154
Berlin Industrial Exhibition, 233
Berlin suburban traffic, 199
Bible, new version, 20
Bicycle among the savages, 42
Bicycle and good roads, 363
Bicycle business, all in it, 363
Bicycle, Eiffel, 446
Bicycle, gear, meaning of, 239
Bicycle, learning to ride, 398
Bicycle, motor, benzine, 425
Bicycle, parts of, testing, 317
Bicycle, progress, 425
Bicycle race across continent, 228
Bicycle, Swiss, new, 216
Bicycle telegraphs in war, 187
Bicycle tires, repair of, 125
Bicycles, case for, 270
Bicycles, prices in England, 255
Bicycles, price for wine cellars, 344
Bird skins, collecting, 28
Birds, speed of, 411
Birds, young, in nest, in, 254
Boat building, modern, 388
Boat, roller, Bazin, 221
Boats, big, on the lakes, 214
Boats, torpedo, armored, 439
Books bound in human skin, 380
Boiler check, Albin's, 20
Boiler incrustation, prevent, 369
Boiler practice, European, 294
Boilers, facts about, 5
Bolometer, Langley's, 28
Bombardment, molecular, 362
Bottle, magic, 239
Bottle, non-refillable, 138, 328
Bottles, musical, 377
Boy, Martin H., 430
Bridge, East River, new, 213
Bridge, Essex, Merrimac, 300
Bridge, lift, on Erie Railroad, 389
Bridge, suspension, Loschwitz, 245
Bridge, Victoria, disaster, 4
Bridges and railroads, 187
Britannia, steamer, 52
Building materials, test app., 152
Buildings, lofty, New York, 277
Bullets fused by impact, 330
Abdomen, exploration of, 350
Academy of Design, exhibit, 264
Academy of Sci., Chicago, 26
Acetylene gas explosion, 364
Acetylene in the laboratory, 378
Action, novel plan of, 359
Adirondack, steamboat, 456
Aerodrome, Prof. Langley's, 459
Aerophile, the, 389
Africa, development of, 298
Agricultural machinery, 474
Air, respirability of, 39
Alcohol, influ. on digestion, 427
Alka, marine, 157
Alloys for coinage, 382
Alloys, new, for coins, 256
Alloys, preparation of, 202, 328
Aluminum analysis, 248
Aluminum class, 206
Aluminum, polishing, 311
Altitude, statistics of, 123
Amber, production of, 408
Ambulance, velocipede, 284
Amer. Assn. Adv. Sci., 3, 188, 215
American Association meeting, 331
American Institute exhibit, 279
American Institute Fair, 174, 256
Ammonia, condensation of, 408
Amphitrite, monitor, 373
Anchor, mine, Ryan's, 410
Andree, Prof., return of, 185
Animal antipathies, 378
Animal kingdom, census of, 411
Animals and steam, 411
Animals, aquatic, food supply, 254
Animals, cave dwelling, 307
Animals, change of color in, 393
Animals, experiments on, 442
Anniversary number, our, 118
Antrioxin, tetanus, 431
Ants, life of, 254
Apprenticeship system, 2, 7
Aquarium, New York, 440
Archaeology, notes on, 126, 190, 360, 366
Arc, electric, in laboratory, 459
Arc, trans-continental, 346
Arion, densities of, 328
Armor, for fortifications, 457
Armor plate, ballistic test, 296
Army, German, hygiene in, 250
Arrow poison, bacteriology of, 360
Artist, toy, 296
Ashmolean Museum, 220
Atlas, cloud, the, 368
Aurora and solar corona, 203
Aurora borealis and X rays, 361
Austin waterworks, 138
Axle lubricator, 328
Babylonia, discoveries in, 398
Bacillus, diphtheria, vitality, 23
Bacilli, tubercle, note on, 39
Baldness and music, 185
Ball bearing inspection car, 287
Ball bearing, O'Byrne's, 234
Ballis swerved by electricity, 256
Ballon ascent, highest, 315
Ballon ascensions, high, 133
Ballon, dirigible, new, 221
Ballon, experiment, 362
Ballon, kite, German, 363
Ballons in war time, 232
Ballons, military, destructive, 266
Bananas, facts about, 282

Bananas, facts about, 282
Band saw guide, 264
Barages, propulsion of, 223
Barium sulphide, prep., 443
Barrel for mining machine, 436
Battery, secondary, plates, 28
Battery, storage, applications, 426
Battleship Indiana, 156
Battleship Texas, sinking, 374
Battleships, three new, 119, 247
Bearing, ball, for cycles, 440
Beetle that cuts metal, 39
Bell ringing mechanism, 184
Benzene, melting point, 154
Berlin Industrial Exhibition, 233
Berlin suburban traffic, 199
Bible, new version, 20
Bicycle among the savages, 42
Bicycle and good roads, 363
Bicycle business, all in it, 363
Bicycle, Eiffel, 446
Bicycle, gear, meaning of, 239
Bicycle, learning to ride, 398
Bicycle, motor, benzine, 425
Bicycle, parts of, testing, 317
Bicycle, progress, 425
Bicycle race across continent, 228
Bicycle, Swiss, new, 216
Bicycle telegraphs in war, 187
Bicycle tires, repair of, 125
Bicycles, case for, 270
Bicycles, prices in England, 255
Bicycles, price for wine cellars, 344
Bird skins, collecting, 28
Birds, speed of, 411
Birds, young, in nest, in, 254
Boat building, modern, 388
Boat, roller, Bazin, 221
Boats, big, on the lakes, 214
Boats, torpedo, armored, 439
Books bound in human skin, 380
Boiler check, Albin's, 20
Boiler incrustation, prevent, 369
Boiler practice, European, 294
Boilers, facts about, 5
Bolometer, Langley's, 28
Bombardment, molecular, 362
Bottle, magic, 239
Bottle, non-refillable, 138, 328
Bottles, musical, 377
Boy, Martin H., 430
Bridge, East River, new, 213
Bridge, Essex, Merrimac, 300
Bridge, lift, on Erie Railroad, 389
Bridge, suspension, Loschwitz, 245
Bridge, Victoria, disaster, 4
Bridges and railroads, 187
Britannia, steamer, 52
Building materials, test app., 152
Buildings, lofty, New York, 277
Bullets fused by impact, 330

Chrono-photography, 344
Chronograph, electric, 140
Cire perdue process, 575
Clamp, steel wire, 122
Cloisonne ware, Japan, 386
Cloud atlas, the, 386
Cloud forms, 38
Clutch, safety, 312
Coach, lord mayor's, 124
Coal consumption, 169
Coal, loss of weight, 190
Coffee drier, 313
Coinage, alloys for, 382
Coin, composition, determine, 122
Coins, new, metals for, 256
Colds, how taken, 18
Colorado, a voice from, 229
Color blindness in soldiers, 122
College laboratory burned, 183
Color of negro race, 159
Color screen making, 364
Colors, protective, 247
Colosseum, destruction of, 344
Comet, Brooks, 174
Comets and solar corona, 203
Congress, geological, 35
Conscience and health, 141
Cooler and surface, 168
Copan, Honduras, ruins of, 460
Cope, Edward D., 216
Copper, bromo-iodide of, 350
Copper mine, Calumet, 236
Copper mine, Hecla, 236
Coral islands, growth of, 217
Corinth, excavations at, 58
Cornell, longitude of, 41
Crystallization, arsenoph., 7
Cost, estimation of, errors in, 343
Cotton seed industry, 363
Coupling, car, Herrick's, 5
Court, Supreme, decisions of, 430
Crater Lake, Oregon, 405
Craton, present, new, 399
Crowd panics, psychology of, 138
Crowds, suggestibility of, 9
Carrera marble quarries, 265
Crust of earth, relief of, 190
Crust of earth, water in, 287
Crystal, growth of, 314
Curtain or shade fixture, 36
Curtains, water, as fire protect., 412
Cyanide patents revoked, 358, 362
Cycle, horse, 382
Cycle notes, 135, 154, 174, 190, 216, 254, 284, 350
Cycle pedals, power spent on, 250
Cycle, telegraph laying, 187
Cycling, danger of, 383
Cyclone in Paris, 328
Dam, Austin, 133
Dam, Croton, new, 283
Dancers, the, 27
Dance, dry, accident to, 108
Dock, dry, hydraulic lift, 117
Dock, dry, Port Orchard, 262
Duplicator, automatic, 42
Dynamometer, Nivet's, 152
Earth, currents, direction of, 122
Earth, land surface of, 174
Eating effect on sleep, 23
Eclipse, observing the, 141
Egypt, herapeutics, 312
Egypt, vital statistics of, 312
Electric app. and lightning, 123
Electric energy, progress, 69
Electricity in mineral waters, 284
Electro-plating, 296
Elephant, mounting an, 441
Elk horn tence, 358
Embossing on glass, 362
Employer, liability of the, 363
Employers, liability to employees, 272
Engine and human body, 2
Engine, hydraulic, 410
Engine, passenger, express, 216
Engineering education, soc., 314
Engineering, sanitary, 354
Engineering work, artistic, 34
Engineering work, estimates on, 124
Epidemic, costly, 23
Epidemics spread by wind, 224
Eraser holder, Hinkel's, 222
Essay, prize competition, 18
Essay, prize, our, 82
Establishment, Amer. in Russia, 351
Etching, zinc, discoverer of, 170
Etymology, 333
Exhibition art, Venice, 189, 328
Exhibition, Industrial, Berlin, 233
Exhibition, Swedish, 23
Expedition, Antarctic, new, 35
Expedition, polar, Nansen, 171
Expedition to Svalbergen, 346
Expedition to Tibet, 445
Expeditions, Arctic, failure, 182
Expert testimony, 296
Explorers, American, lost, 283

Table listing various scientific topics and their page numbers, categorized by letters A through Z. Topics include 'Exposition, Brussels, 1897', 'Fahrenheit to centigrade, conv.', 'Gas, ammonia, condensation', 'Hinge, a cheap', 'Iceberg, collision with', 'Japan, area and population', 'Labor and machinery', 'Lithography, centennial of', 'Machinery exhibit, China', 'Rays, X, application', 'Steel, electric furnace for', 'Temperatures, underground', 'Tires, bicycle, repair of', 'Waves, tidal and seismic', 'Zero, the absolute', 'Zirconium, metallic', 'Zinc etching, discoverer of'.