

# INDEX TO VOLUME XIII.

## ENGINEERING.

Aeroplane, Goupils, 59.  
 Boiler Explosions, 335.  
 Boiler, The Lane Sectional, 174.  
 Brake, New Prony, 126.  
 Bridge at Verona, 182.  
 Bridge, The Tay, 227.  
 Cranes, Fifteen Ton Steam Forge, 339.  
 Domes or no Domes, 118.  
 Dredger, Hydraulic, 247.  
 Drill, The Diamond, 154.  
 Efficiency, Steam Boiler, 47.  
 Elevator, Fifty Ton Floating Grain, 102.  
 Engine, Compound Portable, 6.  
 Engine, Gas, 25.  
 Engines, Centrifugal Pumping, 7.  
 Engines of the "Cotentin," 147.  
 Engines, Rolling Mill, 51.  
 Engine, Umpherston's Rag, 327.  
 Engineers in Australia, 270.  
 Fan, The Smith Ventilator, 306.  
 Ferry, Railroad, 38.  
 Ferry, The Isle of Wight Steam, 278.  
 Gear, Hand Screw Steering, 171.  
 Gun, The Maxim Machine, 242.  
 Ice and Cold Air made by Machinery, 162.  
 Inventors and Manufacturers, 275.  
 Iron Foundries, Chinese, 74.  
 Iron makes way for Steel, 198.  
 Locomotives, The Construction of, 143.  
 Locks of the Manchester Ship Canal, 371.  
 Machine, Poring, 27.  
 Machine, Keel Plate Bending, 82.  
 Machine, Radial Drilling, 21.  
 Machinery Designing, 206, 282.  
 Machinery, Mineral Water, 15.  
 Machinery, Pumping, 142.  
 Metal, a New, 94.  
 Modern Locomotive Construction, 318, 334, 367.  
 Pumps, Centrifugal, 259.  
 Punches, Improved, 32.  
 Progress, Recent, in Engineering, 151.  
 Purifier, Feed-Water, 382.  
 Railway Appliances, 187.  
 Railway, Cable, in Cincinnati, 142.  
 Ram Pump, 215.  
 Saw Mill, New "Peerless," 71.  
 Saw, Victor Scroll, 91.  
 Shaper, Bridgeport, 91.  
 Smoke Prevention, 67.  
 Snow Shovel, Rotary Steam, 210.  
 Sonnebula, The, 107.  
 Steam Boiler and Engine Economy, 98.  
 Steam Fire Engines for Liverpool, 150.  
 Steam, Superheated, 110.  
 Steel Pens, The Process of Making, 7.  
 Stereotype Plate, 82.  
 Table, Glass Rolling, 21.  
 Tunnel, The Hoosac, 131.  
 Turntable, Small, 43.  
 Viaduct, The Garabit, 231.  
 Water Softener, Stanhope, 222.  
 Works, The Forth Bridge, 251.

## THE SCIENCES.

Ball Engine and Governor, The, 126.  
 Blunders in Electric Lighting, 65.  
 Driving Dynamos, 87.  
 Durability, The, of Dynamos, 299.  
 Electricity, A House full of, 167.  
 Electric Light, The, for Warships, 274.  
 Electric Motor on the New York Elevated Railroad, 359.  
 Electricity, Recent uses of, 34.  
 Fittings for Laboratories, 291.  
 Gun, an Electric, 238.  
 Machine, A Great Electric, 114.  
 Mechanics, Theoretical, 354.  
 Microscopic Examination, 367.  
 Organ, a big Electric, 235.  
 Oxygen, The Manufacture of, 295.  
 Placing Wires Underground, 298.  
 Pneumatic System, The, 95.  
 Pyrometers, 75.  
 Science and Modern Discovery, 235.  
 Telegraphing by Ciphers, 323.  
 Telegraphy, A Revolution in, 163.  
 Weston Incandescent Lamp Fitting, 302.

## ARCHITECTURE and SHIP-BUILDING.

Alacrity, The, 315.  
 Benbow, H. M. S., 239.  
 Boat, The French Torpedo, La Bombe, 275.  
 Bulkheads in Ships, 26.  
 Chimney Construction, 3.  
 Chimney, The station "B," 250.  
 Compass, The, in Iron Ships, 310.  
 Cottage, A \$4,500, 55.  
 Cottage costing \$1,400, 70.  
 Cruiser, a model fast, 83.  
 Docks, Simpson's Timber Dry, 139.  
 Dr. Sang on the Forth Bridge, 166.  
 Grand Opera House, Sydney, 159.  
 Machine Shop, a well designed, 7.  
 Maritimes, The Messageries, 254.  
 Monument, The Washington, 175.  
 Modelling, a chat about, 255.  
 Navy, The British, 33, 134.  
 Problem, The Interoceanic, 379.  
 Raft, Life, 43.  
 Rivalries, The, of Railways and Steamships, 266.  
 Scouts, The New, for the Admiralty, 186.  
 Ship, New War, 210.  
 Shipbuilding, Notes on, 327.  
 Speed on the Ocean, 298.  
 Steamboat, A new, 374.  
 Steamboat, The first, 50.  
 Suburban Residence, Design for, 46.  
 Tenement House Reform, 62.  
 Vessel, A, of new Design, 295.  
 Yacht, Steam, 331.  
 Yacht, Steam, Magnolia, 203.  
 Yacht, The Steam, Topsy, 123.

## MISCELLANEOUS.

Appliances, Railway, 187.  
 Asphaltum, 38.  
 Afghanistan, 130.  
 Cable System, The, in Philadelphia, 191.  
 Canal, New Panama, 307.  
 Cheese Poison, 307.  
 Clock, The great, at Lucknow, 326.  
 Color Blindness, 90.  
 Connections, Proper, for Steam Pipes, 347.  
 Converter, The Gordon, 215.  
 Conveyor, The, 102.  
 Crops and Railway Tonnage, 238.  
 Diamonds in South Africa, 338.  
 Domestic Information, 18.  
 Enamel, The discovery of, 122.  
 Evaporator for drying fruit, 142.  
 Exhibition, The New Orleans, 39.  
 Finding a remarkable Cave, 262.  
 Fire Escape, 6.  
 Foreman, The Planing Mill, 70.  
 Fossil Elephants in California, 247.  
 General Grant's Preface, 239.  
 Geography, The, of the Greely Arctic Expedition, 42.  
 Gun Carriage, Sawyer's revolving, 178.  
 Habits of the Scorpion, 54.  
 How Smoke is formed, 319.  
 Illusion, a curious optical, 319.  
 Insurance, Fire, 129.  
 Labour, Comparative value of, 79.  
 Labour in Europe, 146, 183.  
 Lamps, Regenerative Gas, 158.  
 Large, Per Cents, 138.  
 Law, The Patent, 263.  
 Lecture on Free-Will, 11, 58.  
 Lighthouse Illuminants, 87.  
 Lincrusta-Walton, New, 83.  
 Machine, Brick-making, 259.  
 Mechanism, The vital, 346.  
 Meter, Schemid's Water, 215.  
 Milling in France, New system of, 170.  
 Ontario, Northern, 162.  
 Optometer, Compound, 162.  
 Pacific, The Central, 38.  
 Paper on the Pacific Slope, 218.  
 Paper, The New Bank Note, 294.  
 Portraits, Composite, 111.  
 Prevention of Accidents in Mills, 192.  
 Process, New, of the Manufacture of Chloroform, 355.  
 Pupilage, 254.  
 Pyrometer, The Saintignon, 326.  
 Quick Capital, 202.  
 Removing Cotton from Woollen Rags, 222.  
 Smaller Incomes, 218.  
 Smoke Prevention, 67.  
 Southern Pine, 202.  
 Stain removing soap, 155.  
 Staiths, Butler's movable, 187.  
 Tall Chimney Climbing, 63.  
 Technical Education, 1.  
 Toboggan Slide, New design for a, 10.  
 Tramways, The importance of, 66.  
 Voting Apparatus, 158.  
 Waiting for the verdict, 358.  
 Water, The purification of, 175.  
 Ways, Permanent, 190.  
 Workman and Employer, 211.  
 Work in the Baldwin Locomotive Shops, 186.