

# THE MECHANICS' MAGAZINE

AND

Journal of Engineering, Agricultural Machinery, Manufactures, and Shipbuilding.

VOL. 94.—No. 2,437.  
Registered for Transmission Abroad.]

LONDON: FRIDAY, JUNE 16, 1871.

PRICE FOURPENCE  
By Post, 4d.

## CONTENTS.

The Conversations of the Institute of Civil Engineers	429
The Bath and West of England Show at Glastonbury	430
The Durability of Iron for Engineering Structures	431
SCIENCE AND ART—	
Professor Tyndall on "Sound"	431
Professor Tyndall on "Dust and Smoke"	432
The Anthropological Institute	433
ARCHITECTURE AND BUILDING—	
The Destruction of Architecture in Paris	434
Scientific Farming at Cannock Chase	435
Glasgow (Portland-steel) Suspension Bridge	435
RAILWAYS—	
Russian Railways	436
ELECTRICITY AND TELEGRAPHY	
Submarine Cables in Tideways	436
Notes from Scotland	437
Pollock's Brick Making Machine	438
Dovetail and Mortise Cutting Machinery, patented by Mr. H. Thompson	439
Notes from India	440
TRADE NEWS	441
FACTORY NOTES	441
NAVAL	441
Recent Launches	442
Law of Manufactures, Arts and Inventions	442
Parliamentary Summary	443
MILITARY	443
Cambridge and Parham's Feed-water Heater	443
The Manchester Steam Users Association	443
Literature	444
MISCELLANEA	444
CORRESPONDENCE	445
CONTRACTS	445
PATENTS FOR INVENTIONS	445
Applications for Letters Patent	448

## ILLUSTRATIONS.

Pollock's Brick Making Machine	438
Dovetail and Mortise Cutting Machinery patented by Mr. H. Thompson	439
Cambridge and Parham's Feed Water Heater	443

## ROYAL UNITED SERVICE INSTITUTION, WHITEHALL-YARD.

EVENING MEETING,  
MONDAY, JUNE 10TH.

MAJOR-GENERAL SIR J. LINTON A. SIMMONS,  
K.C.B., R.E.,  
Governor, Royal Military Academy, Woolwich, in the Chair.  
The Chair will be taken at Half-past Eight precisely  
L. MAJOR H. H. STODHERD, R.E.,  
"On Defensive Sub-Marine Warfare."  
S. The REV'D R. S. REAL, CHAPLIN, R.N.,  
will exhibit a Model of a Chinese Torpedo, and read a  
Translation of a Native Work on the Subject.  
By Order of the Council.  
B. BURGESS, Captain,  
Secretary.

June 13th, 1871.

SILVERED PLATE GLASS, for Looking-glasses, with or without frames. Silvered by new process. With pure silver, not liable to injury from damp, heat, or handling. Unparalleled in brilliancy. Samples, tariffs, and estimates of application.—PATENT SILVERING COMPANY (Limited).

POLISHED PLATE GLASS.—Architects, Builders, and the Trade supplied with above at lowest current rate, and of the best quality.—PATENT SILVERING COMPANY (Limited), 19 and 21, Lower Kensington-place, London.

FOR SALE.—New and Second-hand Screw Cutting and Surfacing Lathes, by Whitworth and other makers. Small Screw Cutting Lathes with Treadle Motion. Amateur Foot Lathes always in stock. Large and small Drilling Machines by Smith, Beacock, and Tannett, Greenwood and Batley, and other makers. Planing and Shaping machines by Kershaw of Manchester, Buckton of Leeds, and others; executive Cutting and Punching Presses by Simpson, Birks, and other makers. Fly Presses, Horizontal, Vertical, and Portable Engines; Lloyd's and Shell's Fans, Stocks, and Dies; Whitworth's thread; New and Second-hand Leather Belting; Shafting Couplings and Plummer Blocks. All sizes kept in stock. About 50 tons of Rigger Wheels; 20 tons of Wrought Iron Tanks, Anvils, Vices, Smith's Bellows, Portable Forges, and every kind of Smiths' and Engineer's tools always in stock, at

J. COHEN'S, 210, Blackfriars-road.

PARTNERSHIP.—There is an Opening for a Gentleman having the command of £2,000 to £2,500 in a first class Mechanical Manufactory. Full investigation and undoubted references. Apply to Messrs. B. M. WOOLLAN and Co., Accountants, 117, Cheapside, E.C., corner of Milk-street.

PARTNERSHIP.—Wanted a Partner with £500 to £1,000 in a genuine Manufactory Business, where the profits are very large, to take the place of a retiring partner. Undeniable references and securities. Apply to Messrs. B. M. WOOLLAN and Co., Accountants, 117, Cheapside, E.C., first door in Milk-street.

PARTNERSHIP.—MR. THOMAS PENN, Inventor and Patentee of the Self-regulating Apparatus for Opening and closing Waterclosets and other Cocks, wishes to meet with a PARTNER (sleeping or otherwise), with £500. The Invention is patented in England, France, and Belgium, and a separate arrangement would be made if desired, with respect to any one of these countries. All Communications to be addressed to Mr. THOMAS PENN, Hydraulic Engineer, 40, Westbury-street, Clapham, London, S.W.

## TO ENGINEERS.

THE "FIELD" TUBES can be fitted to already existing boilers. They will either effect a considerable saving in fuel, or enable boilers now short of steam to keep full steam. For price and particulars apply to Mr. LEWIS OLICK, Consulting Engineer, 27, Leadenhall-street, London.

THE "FIELD" BOILER is the most economical steam boiler as to space, fuel, and price. It is equally adapted for stationary, portable and marine engines. Illustrations and full particulars may be obtained by applying to Mr. LEWIS OLICK, Consulting Engineer, 27, Leadenhall-street, London, E.C.

DRAWINGS, PLANS, TRACINGS, &c., executed with accuracy and despatch, on moderate terms, by MESSEY and THORPE, Mechanical and General Draughtsmen, 8 Quality-court, Chancery-lane, W.C. M. and T. are thoroughly practical Engineers

200 RAILWAY and STEAMSHIP COMPANIES & ENGINEERING firms (with Woolwich, Sheerness, Portsmouth, and Devonport Dockyards) have now been supplied with DUDGEON'S PATENT ROLLER TUBE EXPANDER, by ALEXANDER ANDERSON, 9, London-street, London, E.C. The value of the Expander for Fixing Boiler Tubes is now universally acknowledged. Price lists and references forwarded on application.

ENGINEERS' TOOLS for SALE.—Lathe, Planing, Shaping, Slotting, Drilling, Plate Bending, Bolt Screwing, Punching, and Shearing Machines, in great variety of sizes, ready for delivery.—Apply personally or by letter, fully describing sizes and kinds of machines required, to W. BLACKETT, Hope Ironworks, Southwark Bridge-road, London.

STEAM ENGINES for SALE.—A Large Assortment of Vertical and Horizontal Steam Engines, also Upright Boilers and Engines Combined, from 1 to 10-horse power, ready for delivery.—Apply personally or by letter, describing kind of engine and power required, to W. BLACKETT, Hope Ironworks, 48, Southwark Bridge-road, London.

IMPORTANT TO RAILWAY COMPANIES. ELASTIC RAILWAY WHEELS (Smith's Patent) are more durable, safer, less cost, the trains much easier stopped or started. Information through WM. KELLEY, Esq., 118, Cannon-street, E.C.; or FREDERICK H. SMITH, Esq., Donegal-square West, Belfast.

They are taken up in France and America.

## PRACTICAL TELEGRAPHY.

ALL THE SYSTEMS TAUGHT at the ELECTRIC TELEGRAPH SCHOOLS OF INSTRUCTION

18, CITY ROAD, E.C.

(Nine doors from Finsbury-square.)

Prospectus on application to—

THOMAS EVANS LUNDY, Manager.

GILT ROOM BORDERING—Jin. OG. 6s. per 100 feet; Jin. OG. 7s.; Jin. OG. 10s. 6d. Every description of Picture Frames and Moldings kept on Stock at the Lowest Prices. Regilding to the trade.

AT GEORGE REES'S, 57, DRURY LANE.

EVERY MAN HIS OWN PRINTER.—PRINTING PRESSES (all iron), 25s., complete, to £5. Specimens of work for stamped directed envelope. Enclose to inventor, JABEZ FRANCIS, Rochford, Essex. Type and materials for Amateurs.

MATHEMATICAL INSTRUMENTS, &c.

HOLTZAPFFEL and CO. supply first quality INSTRUMENTS at second quality prices. A visit to inspection is solicited.

NOTICE BOARDS.—AUCTIONEERS and OTHERS supplied.—Address, A. Johnson, Writer, 28, Lime-street, City, E.C. Established 15 years. Estimates sent post free.

Plates, strongly bound in cloth, Price 2s. 2d.

THE HANDBOOK OF SPECIFICATIONS. Illustrated by Precedents of Buildings actually executed by eminent Architects and Engineers. Preceded by a Preliminary Essay, and Skeletons of Specifications and Contracts, &c. By Professor T. L. DONALDSON, President of the Royal Institute of British Architects, &c. With a Review of the Law of Contracts, &c. By W. CUNNINGHAM GLEN, Barrister-at-Law.

London: LOUWOOD & CO., 7, Stationers'-hall-court, E.

CHEAP LATHE.—S. SMITH, 204, HIGH HOLBORN, three doors from Newton-street.

WHEEL, RACK, and SCREW CUTTING SPUR, BEVEL, RATCHET, WORM, and INTERNAL WHEELS cut to any size or number of teeth, slacks or any length or pitch. Dividing plates drilled or lined. Screws to any size or pitch. J. WILKINSON, Engineer, St. George's Works, 42, late 85, St. George's-road, S.E., London.

INSTANTANEOUS WATER HEATER.—THE GEYSER (MAGHAN'S PATENT), for Baths, Lavatories, Domestic Uses, &c.—Office, 214, GOSWELL ROAD. Licenses granted. Gold medal, 1870.

JOHN BOURNE and Co., Engineers, Shipbuilders, and Contractors, 66, Mark-lane, London, E.C. tender for all kinds of Engines, Millwork, Tools, Hydraulic Machinery, Ships and Shipwork, Boilers, Bridges, Roofs, Railway and Contractors' Plant, &c.

THOMAS RICHARDSON, Manufacturer of Church and School Furniture, Patentee and Sole Maker of the PREMIER PATENT SCHOOL DESK, Pimblett-street, Park-street, Cheadle, Manchester.

Pulpits, Reading Desks, Altar Tables, and every description of Woodwork for Churches and Schools, on the most moderate terms. Illustrated Catalogues post free.

MANCHESTER SPONGE CLOTHS, the most economical Cleaning Material for Engineers, Gasfitters, &c.—Sold by SOFUS E. HOLTON, 82, Gracechurch-street, E.C.

ASTON and MANDER, Mathematical Rule, Drawing Scale and Instrument Manufacturers, 25, OLD COMPTON STREET, SOHO, LONDON.—Rules and Scales correctly divided to the standard measures of every country in the world. Price lists sent free to any address on application. Established 60 years.

TO ENGINEERS.—To be Sold, a Great BARGAIN, a magnificently executed SET of STENCIL PLATES for expediting the Lettering on Plans. They consist of Plain and Ornamental Alphabets, Figures, and Plates of every kind of word used upon Engineering Drawings in a variety of types. They are made upon the bevel-edge principle, which prevents the ink from spreading or blotting when being used, and will enable any person to produce the most accurate impressions. They are quite new, being a portion of the remaining stock of the maker, retiring from business. Price for the whole £5s., worth at least £6 or £7. Impressions will be forwarded for inspection, gratis, or the plates, if requested. Apply to

4, Northcote-road, Kentish Town, London.

WANTED TO PURCHASE a Small Engineering and Foundry Business, or a Share in one.—Address, Engineer, Post Office, Chelmsford.

NORMANDY'S PATENT MARINE GENERATOR FRESH WATER COMPANY (Limited). Office, 43, Mincing-lane, London, E.C. The well-known Condensers supplied by this Company are the only ones made which combine, with Great Economy of Fuel, perfect aeration and refrigeration during the process of condensation. The water can be drunk at once as it flows cold from the filter.

LATHES.—The Cheapest House for good Lathes, with planed iron beds, iron standards, &c., the friction parts of hardened steel, is NEILSON'S, 19, Denmark-street, Soho, London, makers of every description of tools and apparatus for amateurs and mechanics. Inventions worked out. Price list two stamps.

WOKKMEN'S INTERNATIONAL EXHIBITION, 1870. Silver Medal (only prize for Lathes) awarded for excellence of workmanship.

TO BE SOLD.—A Second-hand Planing Machine, will plane 1ft. 10in. by 1ft. 10in.—Apply to Mr. ALCOCK, Windsor Bridge Iron Works, Manchester.

D. C. MILLAR & CO., MILREAVAN WORKS, DOUGTY-STREET, LAMBETH-WALK, Office entrance, WILLIAM-STREET, HIGH-STREET, LAMBETH, S.E., make Land and Marine Engines and Machinery of all kinds, and beg to call attention to their Expansive and Compound Engines, which are of the highest order of excellence, and of extreme economy in fuel. The best materials are alone used, together with the most careful workmanship. Old Engines fitted with Expansive Gear, or with new Single or Double Cylinders. Cylinders re-bored, up to 10ft diameter (in their places if desired) and fitted with new metallic pistons, &c. Mr. MILLAR may be consulted on steam engine alterations, with a view to their economical working, at the Works, as above.

## GRAND PRIZE PARIS EXHIBITION.

HOFFMAN'S PATENT KILN for Burning Bricks, Tiles, Pottery, Lime, Cement, and Roasting Ores, at a saving of Two-Thirds of the Fuel.

For particulars, and to see it work, apply to Mr. H. Chamberlain, 3, St. John's, Wakefield; or to Mr. Hermann Wedekind, 3, Great Tower-street, London, E.C.

MACHINERY! MACHINERY!! MACHINERY!!! SALES or HIRE. New and Second-hand, by eminent London and other Makers. 100-ton Boilers, Lancashire, Cornish, Egg-end, Elephant, Portable, &c., from 1 to 60 H.P. Steam engines, edge-runners, saw benches, rack, rope, and other benches, wrought iron and cast iron tanks, shafting, couplings, leather bands, hydraulic presses, pumps, crabs, boiler mountings, and machinery too numerous to mention.—R. H. WILLIAMS, 224, Grange-road, Hermonsey, and South Bermondsey Railway Station, S.E.

TOOLS, MACHINERY, PLANT, ENGINE, and BOILERS for SALE, piecemeal, by eminent makers, being the contents of large locomotive and engineering works in Lancashire declining business.—Particulars in catalogues from FREDERICK MILES, Engineering Agent, Massfield Chambers, St. Ann's-square, Manchester.

LATHES! LATHES!! of Every Description suitable for the Amateur or Mechanic. Superior quality and lowest price. TOOL CHESTS for family use from 12s. each.—Catalogues and price lists sent free on application to MOSELEY and SIMPSON, Tool and Cutlery Manufacturers, 17 and 18, King-street, Covent Garden, W.C.

TO YACHT OWNERS.—FOR SALE.—A Pair of Engines of 3 H.P., of Superior Quality, fitted with link motion, reversing gear, and pumps, in perfect condition, suitable for a Yacht or other purposes. Can be seen at work, if required. Address, by letter, "Omega," Office of the MECHANICS' MAGAZINE, 106, Fleet-street, E.C.

PHILLIPS'S PATENT SOLID FLANGE GIRDERS give double the strength of ordinary riveted plate girders of corresponding sectional area and weight, and are supplied in the usual sections at a lower rate per ton.

Particulars furnished on application to the patentees, W. and J. Phillips, 25, Coal Exchange, E.C.

PHILLIPS'S PATENT IMPROVED FIRE-PROOF FLOORING dispenses with the use of all Wooden Fillets and Laths; can be laid by any labourer, and the ceiling plastered immediately; is light and indestructible, and in combination with the Iron Joists, forms a perfect structure at a trifling cost over the ordinary combustible Timber Floors.

W. and T. Phillips, Patentees, 25, Coal Exchange, E.C.

PHILLIPS'S ROLLED WROUGHT-IRON JOISTS AND BEAMS are specially manufactured from tough and elastic Metals, and are supplied at the cost of the inferior descriptions of Iron in the market.

W. and T. Phillips, 25, Coal Exchange, E.C.

AGENTS WANTED IN LONDON and in every town not yet represented.

BACON'S Agents earn £3 to £5 weekly, without risk.

PERMANENT INCOMES, TERMS UNQUALIFIED.

BACON'S New Articles—Required by every one.

MARVELS OF BEAUTY—Marvels of Cheapness.

\* ALL HAVING SPARE TIME should call at our Establishment, or write for full particulars, and buy a page catalogue before taking other agencies. M. BACON and Co., 127, Strand, London.

AMATEUR PRINTER'S HANDBOOK, with instructions how to make your own presses and work them to advantage, with practical observations. Post free twelve stanzas. A great many of which are working on this principle, and giving every satisfaction. W. WIGHTMAN Derby-crescent, Dewsbury-road, Leeds.

Founded A.D. 1844. Empowered by Special Act of Parliament, 25 and 26 Vict. c.p. 74.