The
Polytechnic Institution
1840

J. Ingall

Incorporated by Royal Charter

THE

POLYTECHNIC

INSTITUTION,

FOR THE ADVANCEMENT OF THE

ARTS AND PRACTICAL SCIENCE;

ESPECIALLY IN CONNECTION WITH

AGRICULTURE, MINING AND MANUFACTURES,

AND OTHER

BRANCHES OF INDUSTRY,

309, REGENT STREET, AND 5, CAVENDISH SQUARE.

CATALOGUE for 1840.

LONDON:
PUBLISHED AT THE POLYTECHNIC INSTITUTION,
309, REGENT-STREET.

M.DCCC.XL.

[Catalogues, One Shilling each.]

PRINTED BY J. GATHERCOLE,
AT THE POLYTECHNIC INSTITUTION, 309, REGENT STREET.

POLYTECHNIC INSTITUTION,

No. 309, *REGENT STREET.*

INCORPORATED BY ROYAL CHARTER.

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HOURS APPOINTED FOR THE DIFFERENT EXHIBITIONS.

	o'clock.	
Half-past	10	OPEN.
	12	MAGNETIC EXPERIMENTS.
Half-past	12	MICROSCOPE AND FIRE CLOUD.
	1	OPERATIVES AT WORK IN HALL OF MANUFACTURES.
Half-past	1	PNEUMATIC TELEGRAPH.
	2	DAGUERREOTYPE & PHOTOGENIC ART ILLUSTRATED, or LECTURE.
	3	ELECTROTYPE; or PROCESS OF PRODUCING MEDALS AND COINS BY ELECTRICITY.
Half-past	3	Mr. GREEN'S EXPERIMENTS ON AEROSTATION.
	4	DIVER AND DIVING BELL.
Half-past	4	OPERATIVES AT WORK IN HALL OF MANUFACTURES.
	5	MICROSCOPE AND FIRE CLOUD.

OPEN DAILY AT HALF PAST TEN.

ADMISSION ONE SHILLING EACH.

ANNUAL SUBSCRIBERS ONE GUINEA.

Annual Subscribers of Two Guineas, have the privilege of personally introducing a Friend, or Two Children under twelve years of age.

Family Ticket, to admit Subscriber's Family and One Friend, Three Guineas each.

Annual Subscribers to the Association (to include Admission to the Institution), Three Guineas each, and Three Guineas Entrance.

DESCRIPTION

OF THE

POLYTECHNIC INSTITUTION.

THIS INSTITUTION was opened to the Public on Monday, the 6th of August, 1838, and was established for the advancement of Practical Science, in connection with Agriculture, the Arts, Mines and Manufactures. The principal object of the Directors of this Institution will be to demonstrate, by the most simple and interesting methods of illustration, those sound and important principles, upon which every Science is based, and the processes employed in the most useful Arts and Manufactures are conducted.

An appropriate Building has been erected, having its public entrance at 309, Regent-street, near Langham-place, which extends 320 feet in depth, and includes the mansion, No. 5, Cavendish-square.

The interior arrangements of the Building consist of a HALL, 45 feet long by 40 wide, devoted to Manufactures of various kinds, among others—

The workshop of an OPTICIAN, with lathes and tools for grinding and polishing Lenses.

The workshop of an IVORY TURNER, with a Lathe for rose-engine, oval, eccentric, and ornamental turning of every description, Machines with circular saws, &c.

Weaving by POWER LOOMS.

A STEAM-ENGINE, constructed by Messrs. Cottam & Hallen, giving motion to the Pumps, Glass-spinning, and other machinery.

Beneath the Hall of Manufactures is a very extensive and complete LABORATORY (under the superintendence of Mr. Maugham, Chemist to the Institution) peculiarly adapted for private experimentalists, and patentees, who may require assistance on any subject of chemical inquiry.

Economical Cooking by GAS.

A FORGE, and ENGINEER'S WORKSHOP.

Two STEAM-ENGINE BOILERS, a ROTARY PUMP, the invention of EARL DUNDONALD, and other machinery.

The principal Staircase of communication leads to a spacious apartment, in which the beautiful Process of Weaving Cloths, composed of Silk and Glass, is daily exhibited by means of a French Jacquard Loom, and Patterns for Tapestries and Court Dresses shown.

Over the Hall of Manufactures is a THEATRE, or LECTURE-ROOM, capable of containing five hundred persons, in which LECTURES on CHEMISTRY, NATURAL PHILOSOPHY, the CHEMICAL ARTS, and DAGUERREOTYPE, are delivered and illustrated on a most extensive scale.

An HYDRO-OXYGEN MICROSCOPE, by Cary, being by far the largest ever constructed, is here exhibited on a screen containing 425 square feet; together with the Microscopic Cosmorama and Chromatic Fire-cloud.

Here also are to be seen Dr. Lardner's beautiful Working Model of a Bolton and Watt's Steam-engine; likewise the Sectional Model of the same on a much larger scale.

The GREAT HALL, 120 feet long, 40 feet wide, and 40 feet high, is entered from the principal staircase, and contains two METALLIC REFLECTORS, by means of which, whispers may be heard the whole length of the Hall without a tube, and Cooking is daily performed by a fire 100 feet from the meat: a great variety of interesting Models, specimens of Manufactures, valuable Paintings, and other works of art; among which, are the Colossal Sculpture Group of the Murder of the Innocents; Models of the Human Ear and Eye, every part of which may be separately removed for clearness of explanation. Two very curious Astronomical Clocks, are also worthy of observation.

In the centre of the HALL are two Canals, containing a surface of 700 feet of water, attached to which are all the appurtenances of a DOCK-YARD, affording the means of illustration for Lectures on NAVAL ARCHITECTURE. An extensive series of LOCKS and WATER-WHEELS in motion.

At the junction of the two Canals is a large circular Reservoir, into which a DIVING-BELL, capable of containing four or five Persons, is lowered to a considerable depth under the water; air being supplied by two powerful PUMPS, so that Visitors may descend with convenience.

A DIVER (clothed in a Patent Water and Air-tight Diving Dress), exhibits the art of carrying on various operations under water: showing the practicability of Recovering Sunken Vessels and their Cargoes from the Bed of the Ocean; by properly securing Air and Water-tight Cylinders and Cones, &c. to the Wreck, and afterwards inflating them by the Air-Pump, which will raise the whole to the surface. Similar Apparatus, on an extended scale, conveyed to Ships in distress, will prevent their Sinking.

Mr. BACHHOFFNER exhibits daily, at Four o'Clock, the Method of Blowing-up Sunken Vessels by Voltaic Electricity: — a Model of a Ship, containing a small charge of gunpowder, is sunk some depth under water, to which the Diver attaches wires communicating at a considerable distance with a Voltaic Battery, which, when connected, instantly explodes the powder, and the vessel is shattered to pieces.

Mr. GURNEY'S LIGHT-HOUSE LIGHT is seen burning Daily in a Lighthouse Reflector in the Laboratory: the light is produced by passing pure oxygen into the flame of oil or other carbonaceous combustible bodies; and has been called the "Bude Light" by the Trinity House, after Mr. Gurney's residence in Cornwall. This Light combines great *intensity* with *quantity*, the two difficult but essential requisites for effective Lighthouse illumination; it is consequently capable of great divergence and accuracy of focus. The small light seen burning diverges 18 degrees, which may be measured by any one curious in these matters. When placed in a true parabola at night, and sufficiently elevated, it may be seen 90 miles.

The Right-hand Room, at the West end of the GREAT HALL, contains the magnificent Escriban or Secretaire of Marguerite of Parma, valued at 2500 Guineas; and a beautiful Series of Models of Ships. In the Left-hand Room is a Jacquard Loom, at work daily, and a Lithographic printer.

The HOUSE in CAVENDISH SQUARE is approached by a small Gallery, leading from the GREAT HALL, and is in part appropriated to a LITERARY and SCIENTIFIC ASSOCIATION connected with the INSTITUTION; the remaining part of the House is appropriated to the ENGLISH AGRICULTURAL SOCIETY.

On the advantage this Institution offers of bringing home the present and advancing state of Science to the understanding of all, it rests its claim to PUBLIC SUPPORT.

HALL OF MANUFACTURES.

FIRST DIVISION.

COROTTI'S ingenious Copper Lamp-furnace, Steam-boiler, and Water-bath; for heating vessels, containing Six different Colours of Melted Wax, for Moulding Figures, Busts, Fruits, and Flowers, in Plaister of Paris Moulds, wetted. The very curious process of doing which, is exhibited daily. Also, by Mrs. Corotti, the process of making Fruits, Flowers, and Vegetables, in Rice paper.

SECOND DIVISION.

PORTER'S (Practical Optician) MANUFACTORY, consists of a complete set of Optical Tools, for the grinding and working of Lenses for Telescopes, Theodolites, Gas, Solar, Compound, and Pocket Microscopes; Coddington's Spherical Powers, and Stanhope's Lenses; Spectacle-Eyes, Brazil Pebbles, and all kinds of Optical Instruments.

Flat Tools, for working of Parallel Glasses, for all sorts of Mathematical Instruments; also for Flat Preservers for the Eyes.

One Large Lathe, for Brass-work, for turning Tubes, Cells, &c. for Optical Instruments.

Two Small Lathes, for grinding and polishing Coddington's and Stanhope's Lenses.

Horizontal Lathe, for edging Glasses in Cells and Spectacles, and for slitting and polishing Stones.

Rough Grinding Tools, sunk in the work-bench, for the first process of the work, or rough-grinding.

Two large upright Posts, on which the Grinding Tools are screwed.

The Glasses are put on from the rough-grinding tools, made true, smoothed, and polished.

THIRD DIVISION.

The GLASS MANUFACTORY contains a great collection of Fancy Glass, worked by the Bellows and Lamp, in Miniature, and the Manufacture of which is continued throughout the day.

Specimens of Sand and Frit (the component parts of Glass), in their various stages of Manufacture.

FOURTH DIVISION.

A SIX-HORSE HIGH-PRESSURE STEAM-ENGINE, constructed by Messrs. Cottam & Hallen.

This is what is usually termed a Beam Engine.

The steam is generated in the boilers below, and is admitted into the cylinder through the throttle valve, alternately above and below the piston, by means of a beautiful contrivance called the slide valve;—of the use of the throttle we shall have occasion to speak more fully hereafter. The piston rod is made to preserve its parallelism by means of another contrivance called the parallel motion. Among the many mechanical inventions produced by the fertile genius of Watt, there is none which has excited such universal, unqualified, and merited admiration, as the parallel motion. It is indeed impossible, even for an eye unaccustomed to view mechanical combinations, to behold the piston of a steam-engine moving the beam through the instrumentality of the parallel motion, without an instinctive feeling of pleasure at the unexpected fulfilment of an end by means having so little apparent connection with it. Next, the steam cylinder is the feed pump or plunger, the object of which is, since the water in the boiler would suffer a constant diminution from the formation of steam, and therefore the level in it would be constantly falling, this plunger, or solid piston, forcing a quantity of water into the boiler at every stroke of the engine, thereby makes good the deficiency occasioned by steam of a high degree of elasticity, passing uniformly from the boiler into the cylinder. The level of the water in the boiler should be maintained at one uniform height, which can easily be told by guage or try-cocks placed for that purpose on the boilers. Next, the feed pump is the cold water pump, whose office is to pump water from the well beneath into the cistern of the engine, whence it is forced by the plunger into the boiler. Through this cistern the eduction or waste steam-pipe passes and partially warms the water, so that its temperature in the boiler is not so much reduced as if cold water were to be forced in. Between the cold water pump, and connecting rod, is an air pump, for the purpose of producing a vacuum, in a strong wrought iron receiver in the gallery. To this receiver pipes are attached leading to the smaller models of steam-engines exhibited, and showing the action of various forms of the steam-engine; the pipe from the receiver is made fast to the eduction pipe of the engine, and a vacuum being occasioned thereby on the under side of the piston, the pressure of the atmosphere (passing through the steam pipe) on the other side of the piston, forces it down, the slide valve being then reversed by the engine itself a vacuum is produced on the other side of it, the atmospheric

pressure is again exerted and forces the piston upwards: the slide is again reversed, the piston is forced down, and so on continuously. On the main shaft of the engine is a pulley from which a gut passes round another pulley which is made fast to the governor spindle. This contrivance is alike remarkable for its precision and unerring regularity. The principles on which the governor acts are the centrifugal and centripetal forces; when the motion of the engine is increased, the governor balls expand or fly asunder, and raise the throttle valve: on the other hand, when the engine moves too slowly, the balls drop and close the throttle by means of levers attached to it, and as the throttle is opened or closed, more or less steam is admitted into the cylinder. The governor therefore admirably answers the end for which it is adapted, viz., a correction of the irregularities of the steam-engine.

Immediately beneath the engine, and driven by a strap from it, is the ROTARY-PUMP, the invention of the Earl of Dundonald; here are also the boilers, which are cylinders of wrought iron with hemispherical ends, and are termed EGG boilers from their shape. They are capable of withstanding a pressure of 100 lb. per square inch, while the ordinary working pressure is only 25 lb. per square inch.

On the same floor is a forge and the workshop of the engineer, with lathe, vices, &c., &c.

FIFTH DIVISION.

1. A Single ENGINE, or POWER-LOOM, for Weaving Checks; deriving its motion from the Steam-engine.
2. A BRAIDING MACHINE.
3. COINING PRESS, showing the Method of Coining at the Mint, by which process Seventy Medals are struck off in a Minute.

SIXTH DIVISION.

An IVORY, HARD-WOOD, and BRASS-TURNER'S WORKSHOP.

Two Lathes, for turning Ivory, Hard-wood, or Brass, with a ROSE-ENGINE. Oval, Eccentric, and Ornamental Turning.

In the centre is an IRON SUSPENSION BRIDGE, invented by HERR LAVES, of Hanover. The peculiarity is, that it does not require Piers, but may be laid on the opposite banks of a river, without any preparation.

Deposited by T. MEYER, Architect.

GALLERY IN THE GREAT HALL.

LEFT HAND.

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1. Dr. Arnott's Hydrostatic Bed.

   Manufactured by Mr. WILLIAMS, Upper Cleveland-street.
2. Specimens of Marble Paper.

   Deposited by Mr. BARRON, 68, Strand.
3. Colossal Dissected Model of the Human Eye.
4. Hawkins' Method of illustrating the Vibration of Musical Strings.
5. One Universal Dial, on a Plain Cross; one Anelemmatic Dial, which sets itself; one Cylinder ditto; and a Universal ditto.

   Deposited by Mr. ALDERSLEY
6. Specimen of a New Application of the Art of Engine-turning, peculiarly adapted for Hall Lamps, Parlour Blinds, Windows, Conservatories, &c.

   Executed by the Inventor, Mr. C LONG, 6, Palace-row, New-road.
7. Drawing. Horizontal View of Mr. BEAL'S Rotary Engine, laid down on a Scale of 3 Inches to the Foot.

   By Mr. W. SPENCE, 97, Leadenhall-street.
8. Specimens of Cuttings with Scissors.

   By Mr. W. F. WINDSOR.

8*Model of their Shop Front—Messrs. Saunders & Woolley, 170, Regent-street.

9. A Plaister Group; Arria and Pœtus.
10. A Cottage Bee Hive.

    Deposited by Mr. NUTT.

GLASS CASE, MARKED (A).

11. Two Specimens of CRACE and SONS' Papier Machee.
12. Rich Specimens of Copper Ore.

    Presented by JAMES CLYMO, Esq.
13. Chess Board, painted to imitate Minerals.

    By Miss C. E. WILSON, 63, Newman-street.

Glass Case, marked (A)—*continued.*

14. Series illustrating the Manufacture of English Porcelaine.
Deposited by Mr. T. RICHARDS.

15. Series illustrating the Manufacture of Worcester China, with Specimens of the Services executed for Windsor Castle. Deposited by Mr. DANIELL.

16. Series illustrating the Manufacture of Earthenware.
Deposited by POUNTNEY & GOLDNEY, Pottery, Bristol.

17. Series illustrating the Manufacture of Steel from British iron.
Deposited by HOLLIS SOLLY, and SON.

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18. Portrait of William Prince of Orange. By WEENYNX.
Deposited by J. ROGERS, Esq.

19. Specimen of Carving in Wood. Executed by J. R. GODFREY, 9 Years of Age.
Deposited by Mr. PETER AUBE.

19 *A* A Hydraulic Press.
This is the invention of the celebrated Engineer, BRAMAH, and is founded on the principle of the incompressibility of water; it is the most powerful kind of press known.
Deposited by Messrs. COTTAM & HALLEN.

19 *B* Balistic Pump.
Invented and Deposited by Mr. VAUCHER.

19 *C* Model of a Vessel, with a new Propeller. By Capt. CARPENTER.

19 *D* A Machine for riveting Leather-bands. By Mr. B. HICK.

19 *E* Model of a Screw-cutting Apparatus.
Deposited by Lieut. GREEN.

19 *F* A Portable Punching Press.

19 *G* Acorn, No. 1 & 2. Two Designs for the Nelson Monument.
Deposited by Mr. R. DAY.

19 *H* A Design for the Nelson Memorial.
Deposited by Mr. W. PITTS.

19 *I* A Royal Bengal Tiger, killed by T. B. Beale, Esq. in March, 1834, in the District of Goruckpoor. He measured, when killed, Twelve-and-half hands in height, and Eleven feet in length.
Deposited by Mr. BEALE.

19 *K* A Design for the Nelson Memorial.
Deposited by Capt. SMITH, R.N.

19 *L* Model of a Fire-extinguishing Apparatus & Fire-escape.
Deposited by Capt. SMITH, R.N.

19 *M* A Great Gun-lock, fitted with a Lever, on the principle applied to the Tubes for Congreve Rockets.
Deposited by Capt. SMITH, R.N.

19 *N* Geological Specimen, taken on the East Bank of the Genesee River, County of Monroe, State of New York, 151 feet above the level of Ontorio.
Deposited by Mr. E. BUCKWELL.

19 *O* Specimen of a Patent Metallic Packing, or New Mode for the complete making by means of casting (without any hand-working being required afterwards), for the grinding and burnishing those parts in Hydraulic and Steam-engines, which require to be fluid or steam-tight. By Mr. M. VAUCHER.

19 *P* Model of a Crank applied to the Universal Joint. By Mr. W. A. GRAHAM.

19 *Q* Painting, "Mary Queen of Scots," by ZUCCHERO.
Deposited by Mr. W. JENKINS.

19 *R* Model of St. John's Church, Paddington.
Deposited by Mr. C. FOWLER.

19 *S* Design for the Nelson Monument.
Deposited by Mr. C. FOWLER.

19 *T* Model of the Royal George, in Ivory.
Deposited by Mr. REYNOLDS.

19 *U* Geological Map of England.

19 *V* A Bushman's Spear.
Deposited by Sir G. CAYLEY, Bart.

19 *W* Specimen of Artificial Stone.
Deposited by Mr. D'HARCOURT.

19 *X* The Patent Shrapnel Corkscrew.
Invented by H. SHRAPNEL, Esq., Ellen Lodge, Gosport, Hants.
The Machine is placed to the neck of the Bottle, similar to the old plan; the leather is to secure the machine more firmly to its work, as well as to keep the hand clean, and free from any accident by the glass breaking. The worm is then turned into the Cork, which, when done, the handle is to be opened, which forms a powerful lever: then turn the handle, and the cork will be drawn from the bottle without any difficulty.

19 *Y* A Compendium Portmanteau.
Deposited by Messrs. S. & H. PRATT.

19 *Z* Specimen of the Brick Tally for Marking Trees and Plants,—*Vide Gardeners' Mag.*, vol, xvi.
Deposited by Mr. LOUDON.

MODELS OF STEAM-ENGINES, MINING MACHINERY, &c. IN ACTION.

19 *a*. The Ælopile, invented by Hero, the celebrated philosopher of Alexandria, 120 years before the Christian era.

b. Branca's Engine, invented by Giovanni de Branca, a native of Spain, A.D. 1629.

c. Newcomen's Engine, invented by Newcomen a smith, and Cawley a plumber, both of Dartmouth. This was the first step towards making the Steam-engine a really useful motive power. A.D. 1705.

Deposited by WATKINS & HILL, Charing Cross.

The engine thus brought into use is sometimes called the Atmospheric Engine, and is commonly a lifting pump, having its rod fixed to one end of a lever, which is worked by the weight of the atmosphere upon a piston at the other end, a temporary vacuum being made below it by suddenly condensing the steam that had been admitted into the cylinder in which the piston works by a jet of cold water thrown into it. A partial vacuum being thus made, the weight of the atmosphere presses down the piston, and raises the other end of the lever, together with the water from the well. A hole is then uncovered in the bottom of the cylinder, by which a fresh quantity of steam rushes in from a boiler below it, which proving a counterbalance for the atmosphere above the piston, the weight of the pump rods at the other end of the lever carries that end down, and raises the piston of the steam cylinder. The steam passage is then shut, and a cock or valve opened for injecting the cold water into the cylinder which, condenses the steam again; and thus making a vacuum below the piston, the atmosphere again presses it down and raises the pump-rods as before, and so on continuously.

d. Bramah & Dickson's Rotatory Engine.

Deposited by WATKINS & HILL.

This consists of a cylinder having an inner cylinder, whose axis is eccentric to the outer one, and which is furnished with four blades or pistons working freely through it. The steam acts on the outer edges of the blades and drives them round, thus producing rotatory motion.

e. A Vibrating Engine.

Deposited by Mr. D. C. MILLAR.

The advantages of this form are, its occupying a less space than any of the same power, and much less complexity; inasmuch as the parallel motion, beams, side rods and connecting rods, are here wholly dispensed with; together with a less degree of friction, arising from the numerous bearings required in an engine of the ordinary construction. They are now getting into extensive use.

f. A Portable or Pedestal Engine.

Deposited by COTTAM & HALLEN.

g. A Portable or Pedestal Engine.

Deposited by Mr. CLARK.

h. A Portable or Pedestal Engine, with Boiler complete.

Deposited by Mr. SCHOLL.

19 *i*. A Condensing, or Low-pressure Engine, with Boiler.

Deposited by Mr. HURWOOD.

In the High-pressure Engine described previously, steam of high elastic force is admitted into the cylinder, and having performed its duty of driving the piston up and down, is suffered to escape or blow off into the open air. In this kind of engine the waste steam-pipe, instead of opening into the air, opens into a vessel called the condenser, which is a cylinder surrounded with water, and into which a jet of cold water is constantly playing. When the steam comes in contact with the water it is condensed, or restored to its original form of water. Now, since it is known that steam occupies about 1,800 times the space that it did in the shape of water, it is evident, if we condense the steam, *i. e.* reduce it to the form of water, we shall have very nearly a vacuum on one side of the piston, while the steam exerts its full force on the other side of it; thus we get rid of the negative pressure which we have in the High-pressure engine, and which is a serious drawback to its power.

The Condensing Engine must be provided with a condenser, air-pump, cold and hot water pumps. The use of the condenser has been described; the air-pump pumps the water and gaseous matter out of the condenser into the hot well, whence a part of the former is forced into the boiler by the plunger or hot water pump. The cold water pump is to keep the condenser constantly surrounded with cold water, and to furnish the water for injection.

k. A One-horse Beam-engine.

Deposited by Messrs. BARKER & ROSE.

This is on the same plan as the Six-horse already described, and is supplied with steam from the boilers in the Boiler-room by a pipe passing through the yard to it and the others.

l. A Three-quarters Horse-engine.

Deposited by Mr. LUMSDEN.

This differs from the common engine in its parallel motion in the crank being placed overhead, and in its having a tappet motion to work the slide, instead of the more usual way of an eccentric.

m. A One-horse-engine.

Deposited by Mr. LEDGER.

Engines of this variety of form are called portable engines.

n. Gifford's Paddle-Wheel.

Deposited by Mr. GIFFORD.

o. Dr. Spurgin's Paddle-wheel, in which there is no Back-water.

p. Mr. Andrew Churcher's Popelling Wheel.

The principle by which this peculiar motion is given to the floats, is a new variety of (angular) sun and planet motion; the properties of which, by a small comparative amount of friction (to avoid backwater), are to imitate the action of an oar in rowing. It is adapted to a curved-sided, sea-going vessel; acting at any immersion in the water-line, and when inverted, sail may be made in the vessel as usual. A ship on this plan may be much more heavily rigged than on any known plan, as the floats inserted would be available as lee-boards.

q. A Model of a Cornish Back-shot Water-wheel, with bobs, shears, hafts and pumps, complete.

Deposited by Mr. TAYLOR.

This Machine is now in use in the Tin and Copper mines in Cornwall.

19 *r*. An Ore-crushing and Sifting Machine.
Deposited by Mr. TAYLOR.

s. Dr. Spurgin's Endless Chain Ladder for Mines.

t. An Ore-crushing Machine.
Deposited by Mr. TAYLOR.

u. Miniature Model of a Harp.
Deposited by Mr. BLAZDELL.

v. Ancient Model of the Bucentaure, the State Galley of the Doges of Venice.
Deposited by Mr. COLMAN.

w. Marriott's Patent Weighing Machine, and Standard Measuring Machine; by means of which Visitors can be weighed and measured, and obtain a Certificate, without extra charge.

x. Beautiful Specimen of Painting on Velvet, which may be learned in Three Lessons, without any previous knowledge of Drawing.
Deposited by Mrs. COOPER.

y, Patent Portable Oven: it will bake Bread, Pastry, and Meat in perfection and quickly, before a small Grate in a Sitting-room, or Wood Fire on the Hearth.
Deposited by Mr. JOHN WATTS.

z. Curious decomposed Glass, immersed upwards of Two Centuries in Water.
Deposited by Mr. J. COOPER.

20. The Assumption of the Virgin. By JULIO CANO.
Deposited by R. FORD.

21. A Plaister Group.

22. A Bust from the Antique.

23. A Cast from the Venus de Medicis.
Deposited by — NOLAN, Esq.

23* Specimen of Cast Iron Chain made at one Casting, Moulded and Cast by Messrs. Wilson and Midworth, Wellington Foundry, Newark.
Deposited by Mr. CRAMPERN.

23† An Alarum Letter-box, or Post Accelerator.
Deposited by Mr. DOWNER.

23‡ Specimen of Embossed Etching on Glass.
Executed and deposited by Miss C. E. WILSON.

23§ Simple Illustration of the Hydrostatic Press.
Deposited by Mr. H. GRAFTON.

24. A Chess Table, painted on Slate, in imitation of various Marbles.
Deposited by Mr. G. WILSON.

GLASS CASE, MARKED (C).

25. Specimens of Imperial Waterproof Composition for Shoe-leather, and without Indian Rubber.
Deposited by Mr. M'MILAN.

26. Specimen of Cloth manufactured from Glass.
Deposited by Mr. BAKER.

27. Specimens of Carving in Wood.
Deposited by Mr. T. ASKEW.

28. Patent Magazine Gun.
Deposited by Mr. WILKINSON.

29. Read's Patent Flexible Tubes; Hollow Probang, and newly invented Catheter, &c., for Cattle.

30. Windpipe of the Wild Swan.
Presented by J. STUBBS, Esq.

31. Double Cocoa Nut, from Seychelles Island.
Presented by ARTHUR TUPPER, Esq.

32. A Patent Double Gun.
By C. JONES, St. James's Street.

33. An Improved Double-spring Crutch.
Deposited by Mr. SPARKS.

34. MASSEY'S Patent Sounding Machine.

35. MASSEY'S Patent Log.
Deposited by MASSEY and WINDHAM.

36. Salterian Chemical Razor Strop.

37. DAY'S Patent Gun and Pistol.
Deposited by Mr. HUBBARD.

38 Specimens of Ashes from Hay, Oats, Wheat and Barley Ricks.
Deposited by ARTHUR TUPPER, Esq.

39. Nest of the Tree Wasp of South America.
Deposited by Mr. A. P. LANE.

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40. Painting. Lord Chatham. By the late B. WEST.
Deposited by E. MORGAN, Esq.

41. Painting. Raising of Lazarus. By the late B. WEST.
Deposited by E. MORGAN, Esq.

42. Painting. George the Third. By the late B. WEST.
Deposited by E. MORGAN, Esq.

43. Painting. Prophet Jeremiah. By the late B. WEST.
Deposited by E. MORGAN, Esq.

44. A Pair of Water-colour Drawings:—Views of Ashted Gate, near Epsom, Surrey. J. PARRY.

45. An Entomologist's Night Trap-Lantern.
Deposited by Mr. LANE.

46. Specimens of Wolf and Son's Creta Lævis.

47. Portrait of a Turkish Nobleman.
Deposited by Mr. ASSETT.

48. A Copy of "The Dutch Girl."

48* A Copy of "The Merry Wives of Windsor."
By Mrs. G. H. BACHHOFFNER.

GLASS CASE, MARKED (No. 1.)

Twelve Models of Agricultural Implements, &c.
Deposited by Messrs. COTTAM and HALLEN, viz.:—

49. Beatson's Scarifier.

50. Smith, of Deanston's, Sub-soil Plough.

51. An Improved Sluice-Cock.

52. Morton's Revolving Break Harrow.

53. A Park Roller, in two parts.

54. A Mole Plough; with Windlass, Plate, and Anchor.

55. A Double Frame Couch Rake, with Three Wheels.

56. A Single Spiked Roller, for Breaking Clods.

57. A Northumberland Two-row Roller, Turnip-Drill.

58. Finlayson's Harrow.

59. A Bone Crusher, with a Double Set of Rollers, and a Horse Power.

60. A Portable Thrashing Machine.

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61. A Portrait. By HOGARTH.
Deposited by W. M. NURSE, Esq.

62. Crosley's Pneumatic Telegraph.

Intelligence may be transmitted from one Station to another many miles distant, by means of a Tube containing Atmospheric Air. A gasholder, or other collapsing vessel, is connected with the air tube at one station, containing a small volume of air as a reservoir to compensate for any changes of volume, arising from compression or variation of temperature, and for supplying any casual loss from leakage, so that any degree of pressure which may be given, shall be uniformly maintained. Thus, by means of Ten different weights, numbered from ONE to TEN, and having a pressure Index at the opposite extremity, with TEN corresponding divisions, it will be evident, that if a weight of any required number be placed upon the collapsing air-vessel at one station, the same number will speedily appear on the Index at the other; whereby an infinite variety of numbers may be transmitted, corresponding to a dictionary of words, or sentences, in the usual manner.

63. ROE'S Patent Water Closet.

64. A Market Group; and

65. Strolling Players on the March. By R. J. LONGBOTTOM, Esq.

66. Painting of The Deluge. By MARTIN.
Deposited by the ARTIST.

67. Painting. Abraham. By the late B. WEST.
Deposited by E. MORGAN, Esq.

68. Two Large Metallic Reflectors; in the foci of which, the softest whisper may be heard the whole length of the Hall; and Meat be cooked by a Fire, at 100 feet distance.
This latter Experiment will be repeated daily.

69. An Iron Rocking-Chair. By Messrs. COTTAM and HALLEN.

70. An Inlaid Marble Plate.
Deposited by Mr. MAWE.

71. A Model of the Human Ear, (in Papier Machee,) of Twelve Times the Natural Size.

This important organ, which, nevertheless, has had too little attention paid to it, owing to its minute and complicated study is now exhibited on an enlarged scale, showing the external convoluted Ear, with its gristly and bony passage, (in which the ceruminous glands, that secrete the wax, are situated), leading to the Drum, or membrane of the Tympanum.

By means of this Colossal Model, the difficult, but interesting study of *Acoustics*, is greatly facilitated. The Temporal Bone being so divided, as to show, at one view, the cavity of the Tympanum, or Intermediate Ear, with the small chain of Bones,—viz. the *Malleus*, *Incus*, *Orbiculare*, *Stapes*, the Muscles attached to them, and the *Eustachian Tube*, or *Trumpet*,—the passage from the Mouth to the Ear, the supposed use of which is to preserve the equilibrium of the atmospheric pressure on the Tympanum. The *Labyrinth*, or *Internal Ear*, is also seen, divided into the *Cochlea*, *Vestibulum*, and *Three Semicircular Canals*, on the Membranes of which, the nervous pulp of the *Auditory Nerve* is beautifully expanded, to receive the sonorous vibrations, and to convey them to the *Sensorium*, where the Mind is made conscious of Sounds.

72. An Anatomical Model of the Human Arm (in Papier Machee), exhibiting the Arteries, Veins, Nerves, and Muscles.

73. An Anatomical Model of the Human Leg, with the Nerves, Vessels, and Muscles.

74. A Model of the Human Eye; exhibiting the Tunics or Coats, Chambers, Humours, Arteries, Veins, and Nerves.

It is impossible to do ample justice to this most exquisitely beautiful Organ, in the brief description to which we are confined, by the limits of a Catalogue. The Eye is divided into several departments, such as the external appendages, viz., the Eyeball, the Muscles, the Nerves, and the Blood-vessels; and it is received into a bony cavity, called the Orbit, which is formed of seven Bones. The Eyeball is not entirely spherical; the line, forming the visual axis, being greater than the transverse diameter. The forepart of the Eye, which projects like the convex glass of a watch, is called the *Cornea Transparens*, to distinguish it from the other part, which is white, or the *Cornea Opaca*, through the back part of which, the Optic Nerve perforates the *Tunica Sclerotica*, the thickest coat. The *Cornea* is covered by the *Tunica Conjuctiva*, which is reflected, from the *Palpebræ*, or Eyelids. Immediately behind the *Transparent Cornea*, there is a circular membrane stretched across the Eye, like a curtain, and forming the coloured part, which varies in different individuals; it being sometimes blue, black, &c.; and is called the *Iris*. In the centre is an opening named the *Pupil*, which is contracted or dilated, by the muscular fibres of the *Iris*. Within the *Tunica Sclerotica*, is the *Choroid Coat;* an extremely thin, vascular, and delicate Membrane, being covered on its surface with a mucus of a brownish-black colour, known by the name of the *Pigmentum Nigrum*. The *Sclerotic and Choroid Coats*, adhere to the *Transparent Cornea*, and form a white circular line, called the *Ciliary Ligament*. Upon the thinner and central surface of the *Choroid Coat*, adjoining the *Ciliary Circle*, there are the *Ciliary Processes*, extending onwards to the *Crystalline Lens*, forming so many loose folds, radiating from the edge of the Lens, upon the surface of the *Vitreous Humours*, and constituting the *Ciliary Zone*. The *Choroid Coat* is lined by a white, nervous, pulpy substance, or expansion of the *Optic Nerve*, named the *Retina*, or immediate seat of vision; in the centre of which is an artery, beautifully ramifying, called the *Centralis Retina*. These Membranes are held distended by the three humours, the *Aqueous, Crystalline Lens*, and *Vitreous*.

The *Vitreous Humour* is nearly a sphere, of a soft and very transparent substance, having a depression, in its anterior surface, to receive the *Crystalline Lens;* which is so constructed, as to correct, by its density towards the centre, the spherical aberration of light, and to bring the rays to a perfect focus.

The Lens is enclosed in a Membrane, called the *Capsule* of the *Crystalline Lens*. The space between the Lens and the *Transparent Cornea*, is occupied by the *Aqueous Humour*, of which the anterior chamber is separated from the posterior one by the *Iris*. The focus, resulting from the combined refractions of these three humours, falls upon the *Retina*, depicting upon it perfect images of external objects; whence, through the medium of the *Optic Nerve*, the ideas of those objects, are conveyed to the mind.

These beautiful Models, Nos. 71, 72, 73, and 74, were constructed by Mr. GEORGE SIMPSON, Surgeon to the Westminster General Dispensary.

75. A Model of the Luxor Monument, lately erected in Paris.
Deposited by Mr. MAWE.

76. An Architectural Drawing; being a Design for a Conservatory. By J. GRAY.

77. A Water Colour Drawing:—View of Woolwich Dock-yard. By G. SCHARF.

78. A Panoramic View of the late Houses of Parliament, and the surrounding Buildings; taken shortly after the fire, from the top of the wall of St. Stephen's Chapel. By G. SCHARF.

79. A Figure in Plaister of a Female, to imitate Marble.
Deposited by — NOLAN, Esq.

80. Myers's Patent Æolophon.

81. Ramsey's Volti Subito, or Leaf-turner.

GLASS CASE, MARKED (No. 2.)

82. The Block Machinery.

"By modern art and new invention raised."

The machines by which the blocks of every description are formed, are the most splendid and ingenious that have ever been erected in the world, and entitle their inventor to a high rank among the mechanics of the present age. A patent for the invention was taken out by Mr. Mark Isembard Brunel, in 1802, and at the recommendation of Gen. Bentham, Government resolved to erect a set in the Arsenal, at Portsmouth. The machinery was set to work in 1804, and consists of 44 machines, driven by a steam-engine of 32-horse power, erected by Messrs. Boulton and Watt. The manual labour required, is simply, to supply the wood as it is wanted, and to remove the blocks from one machine to another, till they are completely finished. In order to convey some idea of these machines, and of the effects they produce, we shall trace the whole process from the rough timber to the finished block.

By means of four sawing machines, distinguished for the ingenuity of their construction, viz. the straight cross-cutting saw, the circular cross-cutting saw, the reciprocating ripping-saw, and the circular ripping-saw, the timber is cut into parallelopipeds of the proper size for the blocks. The blocks, in this rude state, are taken to the boring machine, of which five are used, for the purpose of boring a hole for the centre pin, and another at right angles to this, at the same time, for the commencement of the mortice, which is to contain the sheave. From this machine, the blocks are taken to the morticing machines, of which three are used. These beautiful machines give motion to one or more chisels in a vertical direction, which mortice out the cavities for the reception of the sheaves. A chip, of the thickness of a piece of pasteboard, is cut out with the most wonderful accuracy, and these chips are prevented from accumulating, by means of a piece of steel at the back part of each chisel, which drives them out. The chisels make from 110 to 115 strokes every minute. When the cavities are morticed out, the blocks are taken to the corner-saws, of which there are three, by which the angles are cut off in succession, by means of a circular saw, fixed on a maundril.

When the blocks are thus sawn into a polygonal figure, they are carried to the shaping engine, the object of which is to shape them to the segment of a large circle. For this purpose, ten blocks are fixed by their extreme ends between the rims of two equal wheels, fastened upon the same axis. These wheels are then made to turn with amazing rapidity, so as to bring the blocks successively against the edge of a fixed gouge, which thus cuts them to their proper curvature. A progressive motion is also given to the gouge, in order to give the blocks their proper curvature in a direction at right angles to the planes of the

wheels between which they are fixed. When one side of the blocks is thus shaped, all the ten are, by an instantaneous movement, turned a quarter round, so as to expose another side to the gouge, which shapes them as before, and in this way the third and fourth sides are formed of the proper shape. Three of these engines are used for blocks of different sizes. The blocks are now taken to the scoring-engine, which is intended to form the score, or groove round the largest diameter, for the reception of the ropes or straps of the blocks.

By the above machines the shells of the blocks are formed. The next part of the operation is the formation of the sheaves, which are made of lignum vitæ. By means of two saws, the straight-saw and the circular-saw, the tree of lignum vitæ is cut into pieces, approaching to a circular shape, and nearly that of the intended sheave. These pieces are taken to the crown or trepan-saw, with a centre-bit in its axis. When the wood is properly fixed, the saw is applied against it, and cuts it into a circular form with great rapidity, while it, at the same time, forms a hole exactly in its centre.

The sheaves are now taken to the coaking-engine;—a machine remarkable for the ingenuity which it displays. It is employed to form, in the centre of the sheave, a cavity of the shape of three small semicircles, arranged at equal intervals round the centre hole, formed by the crown-saw. This cavity is intended for the reception of the coak, or metal bush, which is made of a composition of copper, zinc, and tin, and cast of the same shape as the cavity now formed. When the coaks are inserted into the sheave, the drilling-machine is employed, to perforate the three semicircular projections of the coaks, and the wood beneath, in order to fasten the coaks by copper pins put in these holes. The pins being placed into the holes then drilled, are rivetted by means of the rivetting hammers, which are made to strike a heavier blow at the end of the operation. The sheave is now carried to the broaching-engine, and fixed to an axis revolving vertically. A broach, or cutter, is inserted in the hole, in the centre of the coak, for the purpose of enlarging it and making it truly cylindrical. The sheaves are then finished by the face-turning-lathe, which has a sliding rest that supports the turning tool, and moves it slowly across the face of the sheave. As the face of the sheave which is thus turned is composed partly of the metal coak, and partly of wood, and as it has been found by experience, that different velocities are required for turning wood and metal; the machine has a very ingenious contrivance for changing the velocity, when the tool passes from the wood to the metal.

Besides the machines already mentioned, there are five others; viz., the turning lathe, by which the iron pins are cut to their proper diameter; the polishing engine, by which they are polished, and which is sure to detect those that have flaws in them; the machine for boring very large holes in any position, which is used for the largest size of blocks; the machine for making dead-eyes; and the other for making tree-nails, used in fastening the planks to the timbers of ships.

By this machinery the blocks are made with the nicest precision; a quality that was always found wanting in those before made by hand, which oftentimes rendered them unserviceable at the moment, when the quickness of their movement was intimately connected with the fate of the ship.

To give a pretty accurate idea of the expedition of these works, we will state the number of blocks that can be made per day. The first set of machines make those from four to seven inches in length, at the rate of 700 per day: these have wooden pins. The second set make those from eight to ten inches in length, at the rate of 520 per day: these have iron pins. The third set make those from eleven to eighteen inches in length, at the rate of 200 per day, so that upwards of 1,400 blocks may be made daily. All the blocks for the service of the navy are supplied from this machine.

No. 1.—Boring Machine.
2.—Morticing ditto
3.—Corner Machine.
4.—Shaping Engine.
5.—Scoring Engine

83. Improved Drums. By Mr. Charles Ward.
84. Plaister Cast. Apollo.
Deposited by — NOLAN, Esq.
85. Banditti Reposing. By Salvator Rosa.
Deposited by Mr. WATSON.

GLASS CASE, MARKED (D).

86. A Series, illustrating the Manufacture of Silk; with several Specimens of English Manufacture.
Deposited by COOPER & SONS, Waterloo Place.
87. Specimens of Painted Screens, in imitation of Japanned Work.
Deposited by Mr. STAIGHT.
88. The Sea Swallow.
Deposited by Sir G. CAYLEY.
89. Paper Fruit Basket, of Clay's manufacture.
Deposited by T. SMALL and SON.
90. A fine Cast, in bronze.
Deposited by Mr. DANGER.
91. The Pentadactyla.
92. A Coat of Mail of an Indian Warrior; made with the scales of the Pentadactyla, or Short-tailed Manis, from the East Indies.
Deposited by Major-General ALEXANDER.
93. Various Specimens of War and other Implements Fishing Tackle, and Articles of Dress, from New Zealand.
Deposited by T. M. BATTERSBY.

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94. A Plaister Bust:—a Female. By Mr. Loft.
95. Plaister Cast. The Piping Fawn.
Deposited by — NOLAN, Esq.
96. The Vision of Loyala. By Francisco De Ribalta. Date, 1612,
Deposited by R. FORD, Esq.
97. Landscape and Figures. By G. Poussin.
Deposited by J. ROGERS, Esq.
98. Landscape and Figures. Reinagle.

GLASS CASE, MARKED (E).

Series of Specimens of English Agricultural Soils, Earths, and Manures, viz.:—

UPPER SHELF.

CALCAREOUS SOILS:	APPROPRIATE MANURES:
Chalk and Shell Marls. Clay and Galt. Chalk and Oolite.	Carbonized Humus. Ditto, with Bone-Dust.

SECOND SHELF.

ARGILLACEOUS SOILS:

Clays and Clay Loams.	Animalized Carbon, for the Clays, and Carbonized Humus, with Bone-dust, for Loams.

THIRD SHELF.

SILICEOUS SOILS:

Sands and Sandy Loams.	Animalized Carbon. Carbonized Humus, with Bone-dust, for Loams.

FOURTH SHELF.

LEFT HAND.

ALLUVIAL AND VEGETABLE SOILS:

Peat Bog, &c.	Animalized Carbon, with additional Lime, and Pulverized Earths.

RIGHT HAND.

MAGNESIAN SOILS:

Magnesia, Lime, &c.	Carbonized Humus, with Bone-dust.

Glass Case, marked (E)—*continued.*

FIFTH SHELF.

Specimens of various Improved Manures.
Ditto of various Corn.
Model of a Hop-Press.
Deposited by Mr. LANCE.

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99. A Painting of Adam and Eve in the Garden of Eden.
Deposited by P. NORTON, Esq.
100. Plaister Group:—Hector and Andromache.
101. Two Specimens of Scagliola, in two circular Table Tops.
102. Two Mosaic circular Tables.
103. Two Specimens of Marquetaire.
Deposited by Mr. GREENWOOD.

GLASS CASE, MARKED (F).

Eight Busts in Wax.
Deposited by C. A. RIVERS.
104. Enamel of a Lady.
105. Patent Tablet, for Sharpening Razors.
Deposited by Mr. HIGHAM.
106 Various Articles manufactured from the Phormium Tenax.
Presented by JOHN MURRAY, Esq.
107. Antique Statuary alto relievo of Minerva.
Deposited by Capt. WARRINGTON.
108. Model of Alum Bay, and 32 Specimens of the Geology of the Isle of Wight, and Four Casts of rare fossils.
Deposited by Mr. J. DECK.
109. Thirty-three Specimens of rare Minerals.
Deposited by Mr. NEWTON.
110. Various Specimens of English Coral Fossil, ditto, and Madripores, &c.
Deposited by Mr. J. HAGGARTY.
111. Hawkins's Patent Everlasting Gold Pens.
112. Geological Model of the Isle of Wight, with Section.
Deposited by Mr. LOWRY.
113. Improved Bill Files.
Deposited by Mr. COWELL.

Glass Case, marked (F)—*continued.*

114. Five Specimens of Marquetaire.
Deposited by Mr. HEWETSON.

115. Three Specimens of Casting in Type Metal:—a Cartoon, and two others.

116. Five Castings in Bronze, from Natural Subjects.
Deposited by Mr. WILKINSON

117. A Prism.
Deposited by Mr. PORTER.

118. Specimen of Ivory Turning: Bust of the Queen.
Deposited by Mr. STAIGHT.

119. Model of an Apparatus for Cleaning Chimneys.
Deposited by Mr. ELSE.

120. A Specimen of Caligraphy:—Illustrations of Playfair's Lectures on Dynamicks and Mechanics.
Deposited by E. GARDNER.

121. *Peau en Plastique* Ornaments.
Manufactured by EQUILANT, No. 25, St. Alban's Square, Kennington Road.

These Ornaments have an advantage over every other kind as to relief and durability, together with a flexibility, that enables them to bend to any shape, to be placed in corners, &c. &c.; they will gild equal to Wood, and may be painted to imitate China.

122. A Multiplying Mirror.
Deposited by Mr. GOULD.

123. A Concave ditto, and several Sectional Mirrors.
Deposited by Mr. WRENCH.

124. Four Specimens of Parallel Glasses.
Deposited by Mr. J. HUNT.

125. Layton's Rotary Navigation.

126. Four Impressions from Silver Snuff-Boxes; two Impressions, from Miniature Mountings, for Bracelets; and an Engraving, by R. EDWARDS, from a Picture by LANCRETE.
Engraved for Her Majesty, and Deposited by R. EDWARDS, 26, Lisle Street, Leicester Square.

127. Eight Pieces of Unannealed Glass; to illustrate the Polarization of Light.

128. A Freezing Ball.

129. Model of the only Obelisk now standing at the Heliopolis.
Deposited by Mr. MAWE.

130. Bust of Arago.
Deposited by Mr. E. M. CLARKE.

131. A Helix Lever, and a ditto Time-piece.
Invented and deposited by Mr. Chas. M'Dowell, 41, St. James's Street.

Of this HELIX LEVER the following are stated to be the distinguishing properties:—First, it passes over equal spaces in equal times; and, consequently, is at all times at equal distances from the centre of motion, a perfection never before accomplished by any practical method of communicating motion. Secondly, it has a continued line of centres, and a single point of contact. Thirdly, its pressure is always in a line parallel to its axis, by which all the friction of shoulders is avoided. And, lastly, it has a rolling action, which materially reduces the friction at the points of contact.

In communicating motion by means of toothed wheels, it is evident that every tooth must transmit some degree of imperfection on coming into action, and on ceasing to act; and, consequently, imperfections will be multiplied in proportion to the number of teeth. An examination of a yearly clock on the old principle, and one on that of the new, will immediately evince the immense superiority of the latter in this respect. On the old principle, the number of teeth are 1,972, and the number of consequent imperfections 148,000,000. On the new principle, the number of teeth is 133, and the number of consequent imperfections 179,760. This striking fact clearly establishes the vastly superior accuracy of the new principle, as applied to all mechanism designed for the measuring of time. Much more might be said in favour of the Helix Lever, but the observations already made are amply sufficient to demonstrate its great practical utility for the communication of motion, and its easy adaptation to every different species of machinery.

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132. A Plaister Cast, to imitate Marble: Female Figure.

133. Cast of the Lion "Nero," of the Surrey Zoological Gardens.
By H. SIBSON, 18, Wellington Road, St. John's Wood.

134. Specimens of Marble Paper-hangings.
SAUNDERS and WOOLLEY, 170, Regent-street.

135. A beautiful Specimen of English Japanned Wood, in a Pillar and Claw Table.
Deposited by Mr. WATSON.

136. Model of one of the Obelisks erected in Zan.
Deposited by Mr. MAWE.

137. A Specimen of Rustic Work.
Deposited by Mr. ROCKALL.

138. The Horographic Orrery,
Constructed by T. RICHARDS, Droitwich,

Is an exemplification of the Copernican-Newtonian system of Astronomy, exhibiting the Sun (a perfect illuminated sphere, with brilliant rays, &c.) apparently poised in space, occupying one of the foci of the Earth's elliptic path. In the immediate vicinity of the Sun, the hour and minute of the day are pointed

out by, and among, clusters of Stars; distant from which the Earth is seen a perfect globe, (apparently without support) receiving its light from the Sun; its axis inclined, and always preserving its parallelism, performing its diurnal revolutions, exemplifying the sidereal and solar day, the length of the day and the hour at all places upon its surface, its annual revolution round the Sun, and consequent change of Seasons, its Perihelion and Aphelion distances. The day of the month is pointed out, as the Earth progresses in her orbit, as are also the signs of the Zodiac, and the principal Stars, and degrees the Earth and Sun are passing through, the nutation of the Earth's axis, the precession of the Equinoxes, &c.

The Moon (likewise a perfect globe) is represented receiving her light from the Sun, and reflecting it back upon the Earth, performing her monthly revolutions round the Earth, illustrating Eclipses of the Sun and Moon, exemplifying the causes of the Tide, accompanying the Earth in her annual revolutions round the Sun, &c. &c.

The harmony and perfect agreement of the apparent (as exhibited in the Egyptian Clock), and real motions of the Sun, Earth, and her Satellite, as shown by the Orrery, are strikingly evident: the simple and intelligible exemplification of the above-mentioned systems of Astronomy, afforded by these novel pieces of mechanism, which, together with the Orrery, being provided with the means of being put into rapid motion, at the rate of 24 hours in 8 seconds, renders them peculiarly well suited for the inculcation of a sound knowledge of this most interesting Science.

139. An Egyptian Astronomical Clock,

Constructed by T. RICHARDS, Droitwich,

Is an illustration of the Ptolemaic or Egyptian system of Astronomy; representing the Eastern Hemisphere of the Earth as a fixed body; the Tides in progressive motion round the Earth, demonstrating their theory, &c.; the Moon surrounded by Stars, performing her diurnal revolution round the Earth, to a second of time; exhibiting her phases, and in her progress, indicating her age, with the most minute accuracy; her position in the heavens, her proximity to the Sun (in degrees) and reverse position; her time of rising, southing, setting, &c. &c.

The Sun, as a body, is represented making his apparent diurnal revolution round the Earth, and indicating his progress by degrees, hours, minutes, &c. His situation in the heavens, or point of the compass he is in, is shown; together with the minute he rises and sets each current day, throughout his unequal variations from the Solstices to the Equinoxes; the relative duration of day and night, and number of degrees he describes above the Horizon; his meridian altitude; length of twilight, the constellation of the Zodiac he is passing through, the day he entered the sign, and number of stars composing the Asterism, the day of the week, and the heathen god from which the day derived its name. The ebbing and flowing of the tides in the Thames, is seen in a view of London, and the time of high water is pointed out. The day and name of the month, are exhibited accurately throughout the year, with the number of days in each month.

The Clock has been in action two years, and fully realizes the expectations of the Inventor. The mechanism and combinations being quite free from perplexity, its motions are exempt from derangement, and require no other attention than a common Timepiece.

140. A Fire-escape.

Deposited by Mr. WIVELL.

GLASS CASE (No. 3.)

Series of Models of Figures and Utensils, illustrating the Habits and Manners of the South Americans.

Ditto of Fossils.

143. A Pair of solid Silver Spurs, used and presented by *Bolivar* to the Depositor,

J. LOGAN, Esq.

144. A Coorg Knife and Belt, a Chinese Bow, and a Bamboo Quiver and Arrows.

Deposited by Mr. M. SMITH.

145. A Pair of North American Mocassins, from the Mohican Tribe.

Deposited by R. J. LONGBOTTOM, Esq.

145* Various Indian Figures and Utensils, also Fossils and Shells, from the Southern Hemisphere, &c.

146. Model of a State Carriage, built for John VI. late King of Portugal

Deposited by Mr. WOOL, Coach Builder, 38 Margaret-street, Cavendish-square.

GLASS CASE (No. 4.)

Contains a Series of Clay Models of Figures and Utensils illustrating the Manners, Dress, and Customs of the Hindoos, and their various grades; *viz.* of Jogees, Kitmudgas, Bearers, Fishermen, Fugeers, Mahomedan Figures, &c.

146.* A Model of the State Boat of the Niewaub of Moorshedebad, and a Dinghee, carved in Ivory.

147. A State Carriage, drawn by Oxen.

148. A Palankin and Bearers; a Mohamedan Priest; a Messenger and two Bullocks, carved in Ivory.

149. Three Figures of Animals, carved in Green-Stone.

150. A White Copper Balance Lamp.

151. Eight Bronze Figures, used as Weights by the Burmese
152. Various Bracelets and Ornaments, carved on Shells; and various Ornaments from Rangoon.
153. An Alligator, preserved in Spirits; and the Nutmeg in its various states.

Deposited by Dr. JACKSON.

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154. Four Tygers' Skulls.
155. Two Wild Boars' ditto.
156. One Alligator's ditto.
157. Three Hats, made of the Pith of the Willow
158. Two Burmese lackered Bowls.
159. Two ditto Musical Instruments.
160. One ditto Harp.
161. Six Exercising Instruments ditto
162. A Model of a Budgerow.

Deposited by Dr. JACKSON.

THE GREAT HALL.

The descriptive Catalogue of the Models, &c. in this Hall, begins on the left hand of the East Entrance from the Hall of Manufactures. This noble Room, 120 feet long, 40 feet wide, and 40 feet high, contains Two Canals, covering a surface of 700 superficial feet of water, and at their junction is a Large Circular Cistern of considerable depth, for experiments with the Diving Bell and Diving Dress.

163. A Model of the Centurion, Commodore Anson's Ship, with a Patent Launching Slip.

Deposited by Mr. BONNIWELL.

164. Batten's Patent Compresser, for checking and stopping Chain-Cables.

Deposited by Messrs. BAILY and Co., Holborn.

165. An Improved Bee Hive.

Deposited by Mr. NUT.

166. A New Zealand Spear.

Deposited by Mr. KIDD.

167. Glass Enamel of Richard Cœur de Lion.

W. TUSSELL, 14, Museum Street.

168. Whinfield's Hydraulic Cone. This Machine will raise 180 Gallons of Water 27 Inches in one Minute.
169. Dr. Spurgin's Self-supporting Chain Bridge.
170. An Improved Fire Engine.
171. A small Garden Engine.
172. A larger ditto.

Deposited by Mr. READ.

GLASS CASE, MARKED (G).

173. Patent Castor.

Deposited by Mr. HUXLEY, 28, Castle-street, Long Acre.

174. Specimen of Turf, from Donegal.
175. An Apparatus for the Rectification of *Lateral* Curvature of the Spine.

Deposited by E. DUFFIN, Surgeon, 14, Langham Place.

The Couch of this apparatus, as may be seen by reference to the accompanying drawing, serves the patient for a bed (Fig. 1); or it may be used as a double inclined plane (Fig. 2). The plane, leather apparatus, and windlass, are similar to those recommended by the late Dr. Harrison. The side machine (A Fig. 3) exhibits the mode of applying, which the model is more especially designed to illustrate; and the counter-props, placed at the hips and shoulder, are an additional and powerful means of fixing and straightening the spine, that may be advantageously resorted to in certain cases of long standing, in which the curvature is considerable, and so unyielding, as to require mechanical extension of the spinal column.

176. A Powerful Spring, for the Correction of *Twisted* Spine, when there is not much *Lateral* Curvature.

The power of this Spring can be made to vary, from fifteen to thirty-five pounds, according to circumstances. The mode of wearing it is delineated in the Drawing, which explains the foregoing model (Figs. 7 & 8). The object of the Spring is to maintain steady, powerful pressure on the projecting angles of the Ribs, so as to counteract the TWISTED axis of the Spine. The necessary counter-pressure is distributed over a skeleton breast-plate (c. c. c. Fig. 9), which rests upon the acromion of each shoulder, and the projecting abdomen of the wearer; the chest being left free and uncompressed.

177. A Model of an Apparatus, for Exercising Persons affected with Weak Spine.

Invented by Dr. DODDS, and Simplified and Improved by E. DUFFIN.

The mode of performing this exercise is represented in the Drawing, which explains the two former Models (Fig. 10.)

177.* Jeffrey's Patent Respirator.

Glass Case, marked (G)—*continued.*

178. An Ancient Persian Bow, which belonged to Tymur Tamerlane.

179. The Rich Quiver to Ditto, with beautifully finished Steel-pointed Arrows.

180. Curious Stag's Horns ; from the Ohio.
Deposited by Mr. WILKINSON, Pall-Mall.

181. Raper's Patent Water-proof Cloth.
Deposited by BEALE and NICOLL.

182. The Feet of the Albatross.

183. The Feet of the Emu.

184. A Carved Tinder-Box ; from New Zealand.

185. A Chinese Umbrella.

186. A Specimen of Madrepore, or Coral Plant; from the Southern Ocean.
Deposited by Mr. KIDD.

187. A Malay Crease.
Deposited by Mr. MARTIN.

188. Specimens of Crystographic Tracing Paper.

189. Several Specimens of Sculpture, in Marble, Alabaster, and Wax.
Deposited by Mr. CAROTTI.

190. Six Dissections of Coleopterous Insects.
Deposited by Mr. LANE.

191. A Carving in Ivory. ST. PETER.
Deposited by Mr. STAIGHT.

192. Figure in Wax. POMONA.
Deposited by Mr. PALMER.

193. A Mechanical Carving in Marble. ALEXANDER.
A Ditto in Ivory - - MILTON.
Deposited by Mr. CHEVERTON.

194. Specimens of Optical Lenses, composed of Amber.
Deposited by Mr. SOLOMONS.

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195. A Picture of the Descent from the Cross.
Deposited by PETER NORTON, Esq.

196. An Improved Bucket Garden Engine.
Deposited by Mr. READ, Regent Circus.

197. A Model of a Chinese Pagoda, in Ivory.

198. A Glass Vase, with a Bouquet of Flowers, in Ivory.
Deposited by Mr. STAIGHT.

199. Model of a Tomb in Paper. Eloisa and Abelard.
Deposited by Miss S. COLLIER.

200. A Model of a Frigate.
Deposited by Mr. BAILY.

201. A Model of a Design for the Fitzwilliam Museum, Cambridge.
Deposited by Mr. BARDWELL.

202. Alabaster Vase, ornamented with a Group of Wax Flowers.
Deposited by Madame COROTTI.

203. A Bust of the Queen.

204. A Bust of a Lady.
Deposited by Mr. N. PALMER.

205. A Bust of Sir Walter Scott, in Berlin Cast Iron.
Deposited by Mr. MULLAR.

206. A Model for a Park-gate Lodge.

207. A ditto at Querns, near Cirencester.
Designed and Deposited by Mr. F. S. CRAWLEY.

208. Specimens of Mechanical Sculpture in Ivory.
Deposited by Mr. CHEVERTON.

209. Model of a Wheel with Elastic Spokes.
Presented by Mr. A. SHANKS.

210. Perkins's Cooking Apparatus.
Deposited by Mr. BENHAM.

211. Improved Truck Garden Engine.
Deposited by Mr. READ.

212. A Model of Wivell's Fire Escape.
Deposited by Mr. WIVELL.

GLASS CASE, MARKED (H.)

A Series, illustrating the Manufacture of Caoutchouc, or India Rubber; with Specimens of the Raw Vegetable Gum, in various forms as it is imported; and, likewise, numerous articles manufactured from it; from the ropes for the breechings of a Ship's Guns, to the silk-like fabric of a Lady's Dress.

Manufactured and deposited by B. I. SIERVIER, Holloway.

213 Two Specimens of Paradise's improved Door-Plates.
September 25, 1808.

214. Two Models of a Hot-air Furnace-feeder. By SCHAUFFELENS.
Deposited by Mr. FLORENCE.

The advantages resulting from the invention, (made in 1828,) at the iron-works on the Clyde, of feeding high furnaces with hot-air (which has since been applied to most of the iron-works in every part of the kingdom) first gave rise to the present discovery; by which this method of feeding fires, hitherto confined to blast-furnaces only, is now extended to all kinds of enclosed fire-places, without the aid of mechanical power; which, in every previous instance, had been indispensable.

215. The Hot-air Furnace-feeder.

(Of which a full description will be found in the *Testimonials to be had at the door of the Institution.*) It is simple and inexpensive in its construction. It is not subject to damage or derangement, and its application will not, in most cases, require stoppage of the Works. It may be adapted to almost every arrangement of the chimney or furnace, even when the flues of the latter are carried, as in some instances, to a considerable distance under ground. It is applicable to the boiler-fires of Steam-engines, the Furnaces of Breweries, Distilleries, Water-works, Gas-works, Glass-houses, Potteries, Brick-kilns, Bleach-works, Dye-works, and, generally, to every kind of enclosed fire-place. During the last three years, many of these apparatuses have been erected at various places on the Continent, where they are now in full operation, and have effected a saving of fuel, which, varying from 20 to 25 per cent. has never fallen below the former. An apparatus upon this principle has recently been erected at Messrs. G. F. Walker's and Co.'s College Wharf Saw-Mills, Belvedere Road, Lambeth, where it may be inspected by permission of the Proprietors. The Agricultural and Mechanical Societies of Wurtemberg and Baden, and the celebrated Society for the Promotion of Industry, at Mulhausen in France, having instituted the strictest examination of the Apparatus, in the several establishments at which it is in operation, have expressed themselves in the highest terms as to its result; the Society of Baden, at the same time, electing the Inventor one of its Members. In this country, the apparatus before referred to, has been already inspected by several Engineers, who have reported of it in terms of the strongest commendation.

216. A Model of the Brilliant, 32-gun Frigate.
Deposited by permission of the Lords of the Admiralty.

217. A Cooking Apparatus.
Deposited by the Honourable Major COCHRANE.

218. Clarke's Patent Blower.

219. A Patent Garden Syringe.
Deposited by Mr. READ.

220. Crosley's Improved Rain Guage.
Deposited by WATKINS and HILL, Charing-cross.

221. A Model of an Apparatus for heating a Hothouse, or Greenhouse.

222. A Model of an Apparatus for heating a Building.

223. A Model of an Apparatus for heating a Room.
Deposited by Mr. COOPER.

224. Model of a Stone Coffin and Coffin-case.
Deposited by Mr. JOHNSON, New Road.

225. A Model of the Phœnix, 44-gun Frigate.
Deposited by permission of the Lords of the Admiralty.

246. A large Painting. By SNYDERS.
Deposited by P. NORTON, Esq.

227. A Model of an improved method of Paving Carriage Roads.

GLASS CASE, MARKED (I.)

228. A Design for a Spiral Paddle-wheel.
Deposited by Mr. PAYNE.

229. A Model of an Hydraulic Press.
Deposited by Mr. WATKINS.

230. A Model of an Elliptic Paddle-wheel.

231. A specimen of a Self-supporting Engine Chain.
Deposited by Dr. SPURGIN.

232. Model of an Improved Rudder.
Deposited by W. PARSONS, Esq.

233. A Quadrant with improved Shades.
Deposited by Mr. HUNT.

234. Patent Composition Metal Pipe, and Metallic String, for Horticultural Purposes.
Deposited by Mr. J. WALBY.

235. Patent Fan Jet, and improved Hose-Web, without seams, one Specimen has been in use two years.
Deposited by M. VAUCHER, Esq.

236. Case containing Lever, Stomach-pump, and Enema Apparatus, with Pipes and Tube.

237. Case containing 15 Scalpels, 16 Instruments for Insect and Botanical Dissections, 5 Pairs of Scissors, and 8 Pairs of Forceps, of different kinds.
Deposited by T. WEEDON.

238. A Model of an Iron Portable Flour-mill, used by Buonaparte in the first Russian campaign.
Deposited by Messrs. COTTAM and HALLEN.

239. A Solitaire, or Portable Tea-pot, and a ditto Coffee-pot.

240. Two Specimens of BENHAM's Improved Pewter and China Water-Plates.
Deposited by Mr. BENHAM.

241. Four Specimens of Patent Wire Rope.

Glass Case, marked (I)—*continued.*

242. An Engraved Table.
Two Pieces of Sculpture, a Bull and a Cow.
Inlaid Vase and an Inkstand.
Pair of ditto, with the Signs of the Zodiac.
Section of a Nautilus.
Three Chrystals of Selenite, 4 Specimens of Barytes.
One large Ammonite, 4 Sections of ditto.
A variety of Fossils, and several Spar Ornaments.
Deposited by Mr. MAWE.

243. A Model of a Double-screw Jack.
Deposited by Mr. A. SMITH.

244. A Model of a Machine to indicate when a Ship drags her Anchor.
Deposited by Mr. C. PAYNE.

245. A Portable Gas-Microscope.
Deposited by Mr. PORTER.

246. Patent Signal Light and Identifier.
Deposited by Mr. ROBSON.

247. Card Model of the Thames Tunnel, with Map and Plan.

248. A Safety Gas-Valve.
Deposited by Mr. CARTER.

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249. Cabinet Statue of the Mother of Lord Brougham.
Deposited by Mr. WATSON.

250. Model of the Chapel in Windsor Great Park: Scale 7-16 to an Inch. By J. D. Davis.

251. Model of an Invalid Chair.
Deposited by Mr. MILLS, Everett-street.

252. Specimen of Modelling in Wax, by A. ROACH, Esq.
Deposited by W. T. FISH, Esq.

253. Two Black Marble Pedestals; late the Property of MURAT.
Deposited by CYRUS MURRELL, Esq.

254. A Water Filter.
Deposited by Mr. LIPSCOMBE.

255. A Model of the Thames Tunnel.
Deposited by Mr. WHITLEY.

256. WIVELL's Fire-Escape.
Deposited by Mr. WIVELL.

257. Model of Spinal-adjusting Sitting Crutches.
Deposited by Mr. SPARKS.

258. A Model of a Whim-cage; with Two Horses, Pullies, Ropes, &c., complete.

259. A Model of a Whim; with Ropes and Buckets.
Deposited by Mr. TAYLOR.

260. Model of a Machine for making Bricks, invented by the Marquis of Tweedale.
Deposited by Messrs. COTTAM and HALLEN.

261. A Painting of the Holy Family.
Deposited by P. NORTON, Esq.

262. Messrs. Harper and Joyce's Patent Heating Apparatus.

This Apparatus is simple and economical, and possesses the following advantages:
1. It feeds itself.
2. It does not emit either smell or smoke.
3. It is portable, and can be placed on a table or side-board, or may be suspended, as most convenient.
4. It throws out no dust whatever.
5. Nothing which may come into contact with it will ignite.
6. It will continue burning from twelve to forty-eight hours, or longer, if required.
7. During that time it does not require any attention whatever.

ITS TREATMENT IS AS FOLLOWS:

If a single cylinder, place a ladleful of the fuel on any fire, and when the fuel arrives at a red heat, which will be in three or four minutes, take off the lid of the apparatus and place the heated fuel at the bottom; then fill the apparatus to its top with cold fuel, and replace the lid, leaving the regulator open to the extreme point, till the temperature of the room be raised to the degree desired; then reduce it about two-thirds of its length, and the same temperature will be preserved so long as the machine shall be in action. To increase or decrease the temperature, open or reduce the regulator; and to extinguish the fire, close it entirely.

263. A Fire-Escape.
Deposited by Mr. W. A. GRAHAM.

This machine has a librating and revolving motion, about vertical and horizontal axes; by which the assistants are enabled to present the chair at any window of the house, and to carry the person to be saved beyond the reach of the flames in the descent. The principles of its action are equilibrium and parallelism. As the assistants are intended to act as counterpoises, by keeping a perpendicular pull upon the hand-ropes; their number may be diminished, by attaching any weighty substance that may happen to be at hand, to the hook on the lower lever. The strain on the long shaft is relieved by the stay-rope, and the guide-ropes of the parallel motion keep the chair in such a position, that it may be entered without the slightest danger of its overturning.

264. A Bust of the late Mr. Nash.
Deposited by Mr. BEHNES.

265. A Group of Sculpture:—Tam O'Shanter, &c.
Deposited by Mr. SPARKS.

266. A Model of a Vibrating Steam-engine.
Deposited by Mr. DANIEL MILLAR.

267. A Model of the Metropolitan and Whitehall Patent Wood Pavement.

268. A One-horse High-pressure Steam-engine.
Deposited by Messrs. BARKER and ROSE.

269. Stereotomy of the Cube into Sections, applicable to the Shape and Conbinations of all the Materials appropriated to Building, Paving, &c.
Invented and presented by COUNT DE LISLE.

270. Two Patent Alarm Locks. Mr. THOMPSON.

271. Working Model of a Steam-engine. Mr. CLARKE.

272. An occasional Voltaic Battery. — RONALDS, Esq.

273. Specimens of Patent prepared Sheet-cork, single, double, or treble, of any thickness.
Deposited by Messrs. LLOYD and Co.

274. Illustrations of Gun-Flint Making; and which also illustrates the mode, which savage nations have adopted, who were in possession of Siliceous Stones, for making their Arrow-Heads, Hatchets, and even rude Surgical-Instruments.
This branch of manufacture is now become almost obsolete, in consequence of the universal adoption of Percussion, or Fulminating Powder, instead of flints.
Deposited by Mr. H. WILKINSON, M.R.A.S. and M.S.S.

275. Model of a Brick-making Machine. By Mons. PLENEY.
Deposited by Mr. CUMMING.

276. Mercurial Equipoise for Weighing Letters. Mr. J. WHINFIELD.

277. Patent Stove.
Invented and Deposited by Mr. HALL.

278. External Fire-escape.
Invented and Deposited by Mr. DAVIES.

279. Four Models of Railroads. Scale one inch to the foot.
Deposited by Mr. PURNELL.

280. Plaister Group—the Murder of the Innocents. Mr. P. HOLLINS.

281. Hippozygone, or Driving Regulator.
Deposited by Mr. GARSON.

282. Painting. The King of Oude. By SMART.
Deposited by Gen. BRIGGS

283. Painting. The School of Athens. By N. BONVINCINI.
Deposited by Mr. Jos. LA MERT.

GLASS CASE, MARKED (J.)

284. Percussion Rifle Shells, water and fire-proof.

285. Capt. Norton's Percussian Lead, for exploding Charges of Gunpowder under Water.

286. Flannel Cartridges, for small-arms.

287. Water-proof Percussion Primes.

288. Percussion Caps, having the orifice covered with tin-foil.

289. A Rifle Arrow.
Deposited by Captain NORTON.

290. Rifle Cartridges for the New Two-grooved Rifle.
Invented and Deposited by Ensign A. R. MARGARY, 26th Regt.

291. Fire-Escape.
Deposited by ARTHUR TUPPER, Esq.

292. Iron Hoop, taken from the Bowsprit of the Royal George.

293. Impression of a Doubloon, corroded to a loaded Pistol; a Copper Pot; a Piece of Chain; two Spanish Dollars; and a variety of articles recovered from the Royal George, fifty-three years after she foundered.

294. A Mass of corroded Copper Coin, and Bars of Copper, from the Wreck of the Abergavenny.
Deposited by M. C. A. DEANE.

295. Parts of the Venerable Ship of War, lost in Torbay in 1823, showing the Operation of the Teredo Navalis.
Deposited by Mr. J. HEGGERTY.

296. A Turkish Yataghan, brought up from the state cabin of the Admiral Pacha's Frigate Yatch, sunk at the Battle of Navarino.
Deposited by MATHEW RICHARD SCOTT, Esq.

297. Model of a Pneumatic Grate. The fire, instead of being immured, is here set so far forward as greatly to increase the field of its radiation, while a copious body of fresh air warmed, not by heat stolen from the fire, but by heat recovered by the waste smoke current that issues from the tubes ranged behind the fire, and enters the room above the mantelpiece.
Invented and Deposited by Mr. JULIUS JEFFREYS.

298. Three Specimens of Bismuth crystalized in cooling, after being melted.
Deposited by Mr. TENNANT.

299. Model of a Hydraulic Press for Printing.
Deposited by Dr. Ure.

300. A Patent Expanding and Contracting Table; which, from a size capable of dining four persons only, can be expanded to a size capable of accommodating twenty-four persons.
Invented and deposited by Mr. JUPE, 67, New Bond-street.

301. Diving Dress complete, with Pump. By Braithwaite.
Deposited by Mr. KEMP.

302. Imitation of a Suit of Ancient Steel-plate Armour, in Papier Machee.
Deposited by Frederick CRACE and SON

303. A Chinese Map.
Deposited by W. M. NURSE, Esq.

304. A Model of a New Zealand Canoe.
Deposited by Mr. BATTERSBY.

THE DIVING BELL.

Constructed by Messrs. COTTAM and HALLEN.

To illustrate the principle of this machine, take a glass tumbler, plunge it into water with the mouth downwards; you will find that very little water will rise into the tumbler; which will be evident if you lay a piece of cork upon the surface of the water, and put the tumbler over it; for you will see, that though the cork should be carried far below the surface, yet that its upper side is not wetted, the air which was in the tumbler having prevented the entrance of the water; but as the air is compressible, it cannot, when condensed, entirely exclude the fluid.

The first diving bell of any note was made by Dr. Halley, and is most commonly seen in the form of a truncated cone, the smallest end being closed, and the larger one open. It is weighted with lead, and so suspended that it may sink full of air, with its open base downwards, and as near as may be parallel to the horizon, so as to be close with the surface of the water. Mr. Smeaton's diving bell was a square chest of cast-iron, four feet and a half in height, four feet and a half in length, and three feet wide, and afforded room for two men to work in it. It was supplied with fresh air by a forcing pump. This was used with great success at Ramsgate. Other contrivances have been used for diving bells.

The first diving bell we read of in Europe, was tried at Cadiz, by two Greeks, in the presence of Charles V., and 10,000 spectators. It resembled a large kettle inverted. The first person who brought the diving bell into vogue with us was Phipps, an American blacksmith, in the reign of Charles II., and who, from the fortune he acquired from a Spanish ship, to which he went down, laid the foundation of the honours of the Mulgrave family.

The diving bell in the Great Hall, is composed of cast-iron, open at the bottom, with seats around, and is of the weight of three tons; the interior, for the divers, is lighted by openings in the crown, of thick plate-glass, which is firmly secured by brass frames, screwed to the bell; it is suspended by a massive chain to a large swing-crane, with a powerful crab, the windlass of which is grooved spirally, and the chain passes four times over it into a well beneath, to which chain is suspended the compensation weights; and it is so accurately arranged, that the weight of the bell is, at all depths, counterpoised by the weights acting upon the spiral shaft; the bell is supplied with air by two powerful air-pumps, of eight-inch cylinder, conveyed by the leather hose to any depth. The bell is put into action several

times daily; and visitors may safely descend a considerable depth into the tank, which, with the canals, hold nearly 10,000 gallons of water, and which can, if required, be emptied in less than one minute.

305. DEANE'S Patent Water-tight Diving-Dress and Helmet, with flexible Tubes, and Air-tight Belt, &c. &c., and a Three-Crank Air-pump.
See Description, p. viii.

SMALL ROTUNDA.

*** Mosaic Picture of George IV.
This magnificent Mosaic Picture was executed in the Vatican, at Rome, from an original painting by Sir Thomas Lawrence; presented by his Majesty, George the Fourth, to Pope Pius the Seventh. It occupied the artist, "Moglia," five years in its completion; and contains nearly two millions of separate stones, all of their natural colours. No paint whatever is used in its composition. For sale—Price 1,000 guineas.

306. Bust of Professor Faraday, D.C.L., F.R.S.
Deposited by Mr. RIVERS.

307. Bust of the Son of Laacoon, in Marble.
Deposited by Mr. T. HARRISON.

308. Bust of Lord John Russell.
Deposited by Mr. P. HOLLINS.

309. Two others ditto:—Busts.
Deposited by Mr. BEHNES.

310. Model of a Sleeping Infant and Dog.
Deposited by Mrs. E. CAYLEY.

311. Specimen of Aberdeen Polished Granite Column and Vase.
Deposited by Messrs. MACDONALD & LESLIE, Aberdeen.

312. A Plaster Cast, Group of Figures—The Deluge.
Deposited by Mr. SCHOLAR, 25, Clipstone-street.

ROOM, No. 5. (G.)—*Intended for Geological Specimens.*

313. Patent Plate Warmer.
Deposited by J. ROPER and SON.

314. Landscape, View in Cumberland.
Deposited by Mr. MARQUIS.

315. A Rustic Table and Chair.

316. A Cosmoramic View of a Mechanical Picture, representing a Swiss Boathouse, and distant Scenery.
Deposited by Mr. GRAY.

317. A Lithographic Press in daily operation.
Deposited by Mr. FRIEDEL.

318. A Jacquard Loom, weaving figured silk, in operation daily.
Conducted by G. MACKAY.

ROOM, No. 6.

319. The celebrated Escriban or Cabinet of Marguerite de Parma, the Governante of the Spanish Possessions in the Pays Bas in 1559.

The Cabinet is eight feet high, surmounted by two silver gilt figures personifying Wisdom and Truth, and supported at the base by two beautiful figures representing Neptune and Plenty. The front is composed of columns of filigree silver, inlaid with Oriental agates, chalcedonies, cameos. topazes, garnets, lapis-lazuli, onyxes and sardonyxes (the latter are of extraordinary size and beauty), which are arranged with exquisite taste, and are of the most curious workmanship. The drawers are formed Pallisander Wood, inlaid with Ivory.

Deposited by — SKRENE, Esq.

320. A Series of beautiful Miniature Models of Ships & Boats.
Deposited by Mrs. E. WOOLES.

321. Model of the Custom House, with a Design for a Pier for landing Goods and Passengers.
Deposited by — WROUGHTON, Esq.

321* A Curious Specimen of Caligraphy on one entire Sheet of Paper, executed by a British Officer during three years confinement in a French prison.
Deposited by JAMES FAIRLIE.

GLASS CASE, MARKED (K).

322. Two Models for securing the Linchpin on Wheel-carriages
Invented and Deposited by M. VAUCHER, Esq.

323. A Complete Set of Daguerreotype Apparatus.
Deposited by Mrs. HARRIOTT.

324. Model of a Paddle-wheel.
Deposited by Mr. A. CHURCHER.

325. Etching on Glass for producing Photogenic Drawings.

326. Drawing in Frame—"Winter Island."
Deposited by W. MOGG, Esq.

327. A Built Model of a Frigate.
Deposited by Mr. BONNIWELL.

328. Five Models of Boats from the East Indies.
Deposited by the Earl of DUNDONALD.

329. A Newly-invented Thermo-Barometer.
Invented and Deposited by Mr. J. RONKETTI.

330. A Model of a Wherry.
Deposited by Mr. BONNIWELL.

331. A Built Model of the Sultana.
Deposited by — HALE, Esq.

332. A Model of a Gig.
Deposited by Mr. BAILY.

333. Franciscan Monks. By B. MURILLO.
Deposited by R. FORD, Esq.

334. A Working Model of a Steam-engine, with a Waggon-tilt Boiler.
Deposited by Mr. COLSTON.

335. A Mast-rigging Model; showing specimens of Wire-Cordage.
Deposited by Mr. ANDREW SMITH.

336. A Model of a Three-throw Compensating-Crank, for Pumps.
Deposited by — BRUNTON, Esq.

337. A Sectional Model of the Rum-Sheds in the West Indies, with the Swing-crane on the Quay.
Deposited by Mr. F. H. YATES. To be sold

338. A Small Model of a Pump; showing the Action of Globular Valves.
Deposited by Mr. READ.

339. A Model of a Steam-boiler, with Dickson's Rotary-Engine.
Deposited by WATKINS and HILL, Charing Cross.

340. Benham's Patent Rotary Freezing-Apparatus.
Deposited by Mr. BENHAM.

341. A Model of Mr. Curtis's Acoustic Chair, designed not only for the Use of Deaf Persons, but also for conveying intelligence from one house to another.

"The original is of the size of a large library Chair, having a high back, to which are affixed two barrels, for sound, so constructed as not to appear unsightly; at the extremity of each barrel is a perforated plate, which collects sound from all points into a paraboloid vase. By this contrivance, sound is concentrated and impressed more strongly upon the ear, by being confined to a small quantity of air. The convex end of the vase serves to reflect the voice, and to render it more distinct. Further, the air enclosed in the tube being excited by the voice, communicates its motion to the ear, which thus receives a more powerful impression. By means of sufficient tubes, this chair might be made to convey intelligence from St. James's, to the Houses of Lords and Commons; and even from London to Windsor." *Curtis on the Ear.*

342. A Model of an Ore-crushing Machine, with Water-Wheel, Weights, &c.; complete.
Deposited by JOHN TAYLOR, Esq.

343. The First Dead Eye recovered from the Wreck of the Royal George.
Presented by Col. PAISLEY.

344. A Model of a New Seventy-four-gun Ship, building at Chatham.
Deposited by permission of the Lords of the Admiralty.

345. Patent Shadowless Self-regulating Lamp.
Deposited by Mr. T. EDGE, Westminster.

346. Pickworth's Paddle-wheel.

GLASS CASE, MARKED (L).

347. A Model of a Weather-tight Fastening, and Cill-Bar.
Deposited by ANDREW SMITH.

348. A Model of a Sawing Machine.
Deposited by Mr. BRACKENBURY.

349. A Model of a Cotton-Press and Hydraulic Pumps.
Deposited by Messrs. COTTAM and HALLEN.

350. Model of a Bombay Grab.
Deposited by Major-General ALEXANDER.

351. Newly-invented Elastic India Rubber Collar. Mr. DAVY.
Deposited by Mr. R. CUFF.

352. Brandreth's Patent Horse-power.
Deposited by Messrs. COTTAM and HALLEN

353. Model of a Cone, for projecting a Line over a House on Fire.
Deposited by Mr. W. A. GRAHAM.

354. Brown's Patent Hydraulic Level.
Manufactured and deposited by Mr. A. F. HEMMING, 340, Strand.

355. A Model of Burgess's Patent-Axle.
Deposited by Mr. WILLIAMS.

356. A Model of a High-Pressure, Pendulum Steam-engine.
Deposited by Mr. ELLIOTT.

357. A Model of a Governor for a Steam-engine, and Throttle-valve.
Deposited by Mr. HEMMING.

358. A working Model of a Steam-engine.
Deposited by Mr. WRENCH.

359. A Model of a Crane, in the West India Docks.

360. A Model of a Wind-guard, and Lightning-Conductor.
Deposited by Mr. H. F. YATES.

361. Double-Palm Anchor.
Deposited by Mr. STEVENS.

362. A Model of a Force-Pump.
Deposited by Mr. NEWMAN.

363. A Model of the Pontoon Bridge, Boat, and Carriages, used by Buonaparte in his passage to Russia, and in crossing the Alps.

364. A Model of the Railroad, used by Buonaparte, in going to Russia; with the four Ammunition Waggons, used for transporting it.
Deposited by Mr. F. H. YATES

Glass Case, marked (L)—*continued.*

365. A Model of a Crab, or Crane.
Deposited by Mr. F. H. YATES.

366. A Model of a Patent Sash-Suspender.
Deposited by Mr. COWELL.

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367. A Patent Steam Fountain Coffee-pot.
Deposited by Mr. S. PARKER, Egyptian-Hall, Piccadilly.

368. A Specimen of HARFORD's Chain Cable iron, tied cold.
Deposited by Mr. C. MANBY.

369. A small Model of a Patent Fountain-Pump.

370. A Model of a large ditto.
Deposited by Mr. BEARE.

371. A Plaister Bust of Lord John Russel.
Deposited by Mr. HOLLINS.

372. Patent Sounding-Machine.
Deposited by Messrs. BRAITHWAITE, MILNER, and Co.

373. A Flexible Voice-conductor, used as a Carriage Check-string.
Deposited by Mr. M. M. CARSON.

374. A Pair of Esquimaux Snow-shoes.
Deposited by Mr. COBHAM.

375. A Sectional Model of a Ship. By Mr. HUNT, of Plymouth.
Deposited by Captain CODRINGTON, R.N.

376. A Model of a High-pressure Steam-engine, on a new principle.
Deposited by Mr. BURNE.

377. A Model of Newcomen's Steam-engine.
Deposited by WATKINS and HILL, Charing Cross.

The first notice which we have of the Steam-engine, is in a small pamphlet by the Marquis of Worcester, written in 1655, and published during the reign of Charles II., in 1663, entitled, "A Century of the Names and Scantlings of the Marquis of Worcester's Inventions." In the sixty-eighth article of this "Century of Inventions," the author thus speaks of an admirable and most forcible way to drive up water by fire, and gives many hints respecting the invention; but however plain these hints may now appear, they were thought at the time when first published, to border so much on the marvellous and romantic, as to be scarcely worthy of notice; and finally, from being neglected, they became nearly forgotten. At length, after a lapse of about forty years, Capt. Thomas Savery, a Commissioner of sick and wounded, obtained a patent, in 1698, for "A new Invention for raising Water, and occasioning motion to all sorts of Mill-work, by the impellent force of Fire." The power and utility of Savery's Engine being everywhere acknowledged, many improvements were subsequently made

by various engineers, in its appendages, arrangements, and the adjustments of its parts; but nothing of importance appeared to mark an era in the history of the Steam-engine, until about the year 1705, when Thomas Newcomen, ironmonger, and John Cowley, glazier, of Dartmouth, obtained a patent for a new invention; but so far was their principle of movement connected with that of Savery, that the latter was admitted to a participation in their patent. The engine, thus brought into use, is sometimes called the Atmospheric Engine, and is commonly a forcing pump, having its rod fixed to one end of a lever, which is worked by the weight of the atmosphere upon a piston at the other end, a temporary vacuum being made below it, by suddenly condensing the steam that had been admitted into the cylinder in which this piston works, by a jet of cold water thrown into it. A partial vacuum being thus made, the weight of the atmosphere presses down the piston, and raises the other end of the straight lever together with the water, from the well. Then, immediately, a hole is uncovered in the bottom of the cylinder, by which a fresh quantity of hot steam rushes in from a boiler of water below it, which proving a counterbalance for the atmosphere above the piston, the weight of the pump-rods, at the other end of the lever, carries that end down, and raises the piston of the steam-cylinder. The steam-hole is then immediately shut, and a cock opened for injecting the cold water into the cylinder of steam, which condenses the water again, and thus making a vacuum below the piston, the atmosphere again presses it down, and raises the pump-rods as before; and so on continually.

378. A Model of a German Blast, or Blowing-Machine.
Deposited by Mr. TAYLOR.

379. A Model of the Batavier Ship of War.
Deposited by permission of the Lords of the Admiralty.

380. A Model of a Paddle-Wheel.
Invented and deposited by ANDREW SMITH.

GLASS CASE, MARKED (M).

381. A Model of a Fire-Escape.
Deposited by Mr. W. YATES.

382. A Chess-board, painted in Oil to imitate Marble.
Deposited by Mr. G. WILSON.

383. A Model of a Paddle-Wheel.
Deposited by Mr. GRAHAM.

The continuous motion produced by the action of this wheel is intended as a remedy for the dangerous inconveniences arising from the agitation of the water in rivers. There is an economy of power in the manner in which the floats enter and leave the water; and, as the water, by becoming locked, rises above the level about the centre of the immersion, the wheel has the advantage of what is equivalent to a greater dip, in that part *only* where it acts at the greatest advantage.

384. A Marine Barometer.

385. An Improved Castor for Tables, &c.
Deposited by Mr. PAYNE.

386. A Model of a Tinman's Raising-press.
Deposited by Mr. H. F. YATES.

Glass Case, marked (M)—*continued.*

387. A Cupping-Machine.

388. Robert's Safety-Lamp.

389. A Machine for Burning Gases.

390. A Model of Branca's Steam-engine.

391. A Model of Hero's ditto.

392. A Model of Savory's ditto.

393. A Model of a Pump.
Deposited by Mr. HEMMING.

394. An Apparatus for Purifying Gases.
Deposited by Mr. PORTER.

395. Instantaneous-Light Apparatus.
Deposited by Mr. BENHAM.

396. A Model of an Improved Oval Wrought-iron Boiler.
Deposited by Mr. THOMPSON.

397. Four Card Models, viz.:—A Clock, an Orrery, a Wind-Mill, and a Water-Mill; to be moved by Electricity.
Deposited by Mr. WRENCH.

398. A Perspective Model; exhibiting the Effects of Foreshortening and Convergence.
This Model shows the effect on the eye, produced by the surface lying oblique to the point of view. This effect arises from perpendicular, as well as horizontal surfaces.

Invented by A. PARSEY, Professor of Perspective, No. 91, Regent Street.

399. A Perspectronometer.
An Instrument invented by Mr. PARSEY; which defines the apparent reduction of lines, under any angle of inclination.

400. A Model of Visual Geometry; showing the natural manner in which the Trapezoid is created by the eye, or what is really seen; showing the distinction between the Optical and the Mathematical Sections of the Visual Rays.
Invented by A. PARSEY.

401. A Model of Visual Geometry; showing the natural creation of the Trapezium in the Eye.
Invented by A. PARSEY.

402. A small Mattress filled with Patent Cocoa-nut Fibre.
Deposited by Messrs. WILDEY & Co.

403. Specimen of improved Ventilating Waterproof Cloth; Lycopodium process.
Deposited by Messrs. CUMMING & Co.

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404. A Model of an Endless-Chain Ladder, for Coal, Copper, or other Mines; with Boxes and Platforms.
Deposited by Dr. SPURGIN.

405. Beale's Rotary Steam-engine.
Deposited by Mr. BEALE.

406. A Tin Case of Preserved Mutton.
This Case was landed from the Fury, August, 1825, in lat. 72 47, and long. 91 50; and taken from thence, July, 1833, by Capt. Sir John Ross, R.N.

407. A Musical Instrument, combining in its Construction the Harp and Guitar.
Mr. A. B. VENTURA, 3, Hercules' Buildings, Lambeth

408. A Model of a Steam-engine.
Deposited by COTTAM and HALLEN.

409. A Sectional Model of a Steam-engine.
Deposited by WATKINS and HILL.

410. A Working Model of a Steam-engine.
Deposited by Mr. HURWOOD.

411. A Painting:—a Portrait.
Deposited by P. NORTON, Esq.

412. An Agricultural Drilling-Machine.
Deposited by Mr. LANCE.

GLASS CASE, MARKED (N).

Nine Agricultural Models.
Deposited by Messrs. COTTAM and HALLEN.

413. A Self-clearing Double-spiked Roller, for Breaking Clods.
414. A Potatoe Washer.
415. A Double-wheel Creasing Plough.
416. A Thirteen-row Suffolk Lever Drill.
417. A Double Oil-cake Breaker, for Feeding Cattle.
418. Cottam's Rising and Falling Harrow.
419. A Heavy Triangular Cultivator.
420. A Hay-making Machine, with Double Motion.
421. A Six-row Suffolk Drill.

Glass Case, marked (N)—*continued.*

422. A Model of a Fire-escape.
Deposited by Mr. DAVIS.

423. Model of a Fire-Escape.
Deposited by Mr. EBELTHITE.

424. A Machine for Cutting Transverse Sections of Wood.
Deposited by Mr. NEEVES.

425. A Model of a Fire-escape.
Deposited by J. H. VILLERS, Esq., M.D.

426 A Silver-banded Portfolio.
Deposited by Mr. DIXON.

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427. A Garden Engine.
Deposited by Mr. READ.

428. An Observatory Bee-hive, on an improved principle.
Invented and deposited by Mr. NUTT.

429. An Improved Garden-Engine.
Deposited by Mr. READ.

430. An Hydrostatic Paradox.
A person standing on the top of the Bellows, may raise himself by blowing down the Tube.

431. Nott's Patent Stove.
Deposited by Mr. BENHAM.

432. Model of a Wood Pavement.
Deposited by Mr. WHINFIELD.

433. A Glass Case, containing Honey and Comb, as produced from one of NUTT's improved Hives.
Deposited by Mr. NUTT.

434. Seven interesting Models of the Machines used in the Washing and Manufacturing of Woollen Cloth, *viz.*, One Warping Mill; One Set of Stocks for Fulling Cloth; One Gig Mill for raising ditto; Two Shearing Machines; One Dressing ditto; One Loom.
Deposited by Messrs. NEWTON and BERRY.

435. A Model of a Paddle-Wheel.
Deposited by Mr. GIFFORD.

436. Captain MANBY's Mortar Apparatus, for throwing a rope to a ship wrecked on a lee-shore.

437. A Design for a Memorial to Sir W. Scott.
Designed and deposited by Mr. S. C. TRIPP.

438. A Model of a revolving Steam-engine.
Deposited by Mr. G. YATES.

439. Patent Section, TAPPET.
Deposited by Mr. B. WOODCROFTS.

440. A Model of an Intermitting Fountain, to prove that the Syphon of Natural Intermitting Springs is set in action by the rarefaction of the air within its channel, before each discharge of the water.
Deposited by W. L. WHARTON, Esq.

441. Mr. E. R. HANDCOCK'S Patent Spherical Castor, for Pianofortes and other Furniture.
Messrs. HARCOURT and BROTHERS, Manufacturers, Birmingham; and Messrs. CHINNER & Co., Manufacturers, Dudley.

ELECTRIC AND ELECTRO-MAGNETIC APPARATUS.

442. A Powerful Electro-Magnet; — its supporting power is 2,240 lbs.

This Instrument is simply a bar of soft iron, bent into the form of a horse-shoe magnet, around which are wound a series of convolutions of insulated copper wire. When a voltaic current is made to circulate through these coils, and, consequently, at right angles to the axis of the iron bar, powerful magnetic effects are instantly developed, and the bar of soft iron becomes a temporary magnet, capable of supporting the enormous weight of one ton, or 2,240 lbs. This effect is maintained only during the flow of the voltaic current; for, when the latter is cut off by breaking the connexion, the bar of soft iron instantly returns to its original state, being no longer magnetic.

443. A New Arrangement for the Voltaic Battery.
Deposited by Dr. HOSKINS.

444. An Apparatus, showing the Rotation of the Magnet on its axis, by the transmission through one-half of its length, of a voltaic current.

445. An Electro-Magnetic Machine.
Deposited by Mr. BACHHOFFNER.

446. A Powerful Magnet.
By SCHMIDT.

447. Professor BARLOW'S Electro-Magnetic Sphere.
Deposited by E. M. CLARKE.

448. Powerful Magnetic Electrical Machine.
Made for this Institution, by E. M. CLARKE, Magnetician.

The advantages of this arrangement are, that having two distinct inductors, the full effects of quantity and intensity are developed; the use of mercury is avoided, and the wire coils being in metallic contact with the iron armature, a

considerable increase of power is obtained. This machine is on a larger scale than has ever yet before been made; the magnets, 10 in number, weigh 156 lbs. The inductors are put in rapid motion by the foot of the operator. The intensity inductor has 894 yds. of insulated copper wire, one twenty-eighth of an inch diameter. The quantity inductor has 100 yds. of insulated copper wire, one tenth of an inch diameter. For a detailed description of this instrument, see Transactions of the London Electrical Society, September 4th, 1838. Also, Edinburgh Phil. Mag, for October, 1836; Sturgeon's Quarterly Annals of Electricity, for January, 1837; Poggendorff's Annalen der Physik, No. 10, 1836; Silliman's American Journal of Scienee, No. 2, 1838; and Pouillet's Traite de Physique, 1837.

449 Crosse's Voltaic Battery.

The peculiarity in this arrangement is, that of being excited by water, without the addition of either acid or alkali. It consists of 286 pair of copper and zinc plates, each pair being in a glass jar, by this means perfect insulation being secured. This Battery gives shocks, decomposes water, charges the Leyden phial with a low intensity, and deflects the Gold-leaf Electroscope.
Made for this Institution, by E. M. CLARKE, Magnetician.

451 Picture, a Portrait of Mr. Crosse.

452. An Electro-Magnet.
Deposited by Mr. BACHHOFFNER.

453. BACHHOFFNER'S Revolving Electropeter.

454. An Electrical Cannon.
Deposited by Capt. SMITH, R.N.

455. A Model of a Carriage, to be propelled by Electro-Magnetism.
Deposited by Mr. LYNN.

456. A Steam-engine, with a Rocking Cylinder.
Deposited by Mr. WATKINS.

457. An Apparatus, for the generation of Solid Carbonic Acid.
Made for the Institution, by Mr. ADDAMS.

458. A series, of Three Hundred Pairs, of CRUIKSHANK'S arrangement, for a Voltaic Battery.

459. JOYCE and HARPUR'S Patent Stove.

460. A small Working Model of a Steam-engine, putting in motion a Circular Saw.
Deposited by Mr. WATKINS.

461. BACHHOFFNER'S Electro-Magnetic Machine.

This small, but powerful instrument, consists of a wooden cylinder, around which is coiled a stout insulated copper wire, of about two or three hundred feet in length; upon the latter, but not in metallic connexion with it, another thin insulated copper wire, of great length, is coiled; and the ends of the first, or thick wire, are connected with the *electrodes*, or poles, of a Voltaic Battery; the ends of the thin wire being furnished with brass conductors, for receiving the shock. On the connexion with the Voltaic-Battery being rapidly made and broken, very powerful shocks are received, by grasping the conductors with the hands.

462 Zamboni's Electric Pile.

This Instrument consists of several thousand series of discs of paper, having a mixture of the black oxide of manganese and honey, ground into a paste, and laid on one side, and silver leaf on the other, placed alternately, as in the ordinary voltaic pile; the commencement and termination of the series being connected with the two upright brass pillars, fixed in the base of the Instrument, communicate to it opposite electrical states. The rotation of the small figures on the upright spindle, fixed in the centre of the base-board, is due to the alternate attraction and repulsion, resulting from the opposite electrical states of the pillars.

Deposited by Mr. PAYNE.

463. A Model of a Windmill, worked by Electrical Magnetism.
Deposited by Mr. WATKINS.

464. An Electro-Magnetic Machine, for giving shocks, by the action of the secondary coil.

In this arrangement, contact is made and broken by the rotation of an Electro-Magnet.

Deposited by Mr. WATKINS.

465. The Model of a Pile-driving Machine, worked by Electro-Magnetism.

Manufactured for the Institution, by Mr. WATKINS.

466. Professor Henry's Flat-Ribbon Coil.

467. Specimen in Alabaster—The Birth of Venus.
Deposited by LOUIS BARRONTI.

468. An Improved Dr. Arnott's Stove.
Deposited by Mr. HEINKE, Great Portland Street.

469. Six sustaining Batteries.
Economical Modification of Daniel's Battery.
Deposited by Messrs. POOLE and SON.

470 A New Voltaic Battery and a Voltaic Discharger.
Deposited by Mr. WARREN DE LA RUE.

CANALS, AND THE SPACE BETWEEN THEM.

BUILDING DOCK.

On the left hand side of the Circular Basin are Models, to scale of one quarter of an inch to one foot, of a Building Dock, or Slip, with the capstans and palls, and the model of a ship of war in the progress of building. The vessel is placed on the slip, or stocks; and the method of supporting her while building, is shown by the raking-shores, which are not struck until the vessel is ready to be launched.

LAUNCHING SLIP.

On the right hand side, and opposite, is a three-decker, without stores or rigging; representing the state of a ship with the raking shores struck, and the slip laid, ready to be launched. The cradle and slip, with the method of fixing the dog-shores, are here clearly shown. Every piece of timber being removed, the whole mass is retained by the dog-shores only, which, when struck away by a smart blow, allow the ship to rush with great rapidity into her native element. A Model of a powerful Windlass is also placed here, for the purpose of bringing the vessel back on to the slip.

DRY DOCK.

On the left hand, near the Pier, is the model of a Dry Dock for repairing Ships, with Models of four Capstans and Palls, and a pair of large Floodgates with Sluices. The capstans, which are used for opening and closing the gates, are connected with machinery built in the solid masonry, and act upon the gates by means of chains connected with them. The gates are partly supported by rollers placed at the points, running upon an iron tram, placed upon the floor of the dock-cill. This model shows correctly the method by which a first-rate ship, with all her stores, may be docked and the whole of her bottom inspected in a few hours.

GRAVING SLIP.

On the right of the Pier is a Graving Slip, for laying vessels on. The capstans and palls on each side, show the means of hauling the ship on to the slip.

PIER.

On the Pier is placed a Model of the Masting-Sheers, with treble action blocks and fall, and the model of a mainmast slung: also, the hand-blocks and fall, for the purpose of stepping the mast, and the connection of the great falls by means of snatch-blocks with the capstans. The method by which the strain is relieved from the top of the upright spar, is plainly to be seen, by inspecting the manner in which the supporting chains are placed.

LOCKS.

At the bottom of the Canals are, a series of Models of Canal-Locks, to point out the method of raising and lowering barges. These, consist of eight pairs of iron lock-gates with sluices, and models of foot-bridges, for the purpose of crossing the locks. The gates inclose six pounds, or locks; and, being built to a scale of one inch to the foot, show a rise of fifty-eight inches; or, if in practice, a rise of fifty-eight feet. These models are put into action daily: the model of a vessel will pass from one canal, down, through the tunnel under the floor, to the opposite locks; by which it will be raised into the canal on the opposite side.

Here is also shown the method of passing a vessel up an inclined-plane, by the resistance of her own paddles, as practised by vessels that surmount the American rapids.

471. Three Water Wheels, in Motion, viz.:—A Breast Wheel, an Undershot Wheel, and a Back-shot, or Pitchback Wheel.

472. Three Models of Read's Patent Pumps.
Deposited by Mr. READ.

473. A Cast from Canova's Celebrated Group, of the Three Graces.
Deposited by Mr. LOFT.

474. A Model of a Cornish Back-shot Water-wheel, with Bobs, Sheers, Pumps, and Shafts, complete.
Deposited by Mr. TAYLOR.
This Engine is now in use in the Tin and Copper Mines in Cornwall.

475. A Safety Screw-plug Bull's Eye; to give light to a Ship, from her sides below water.
Invented by Mr. LAING.

476. A Model of a Burmese War-boat, from Rangoon.
These Boats generally run from 100 to 120 feet long, 6 or 7 feet wide, and 3 or 4 feet deep, and carry from 100 to 150 men.

477. Two Models of Chinese Vessels of War.

478. An Hydrostatic Fountain.

479. A Model, rigged complete, of the "Atalanta" Steam-boat.

480. A Model of a Steam-boat, in a glass case. By MAUDSLEY and Co.
Deposited by L. PEACOCK, Esq

481. Dr. Spurgin's Double-Valve Vibrating-Pump.

482. Stocker's Hydraulic-Machine, and Crockford's improved Ball-Valve.
Deposited by Mr. CROCKFORD.

483. A Model of an Ore-crushing Machine.

484. A Model of a Steam-boat, with Life-boat, and various other improvements.
Deposited by Capt. GEO. SMITH, R.N.

485. A Model of a Circular Stern, for a ship.
Deposited by Mr. BONNIWELL.

486. Model of a Machine for raising Cannon.
Deposited by Mr. KEMP.

487. Model of Kemp's Patent Machine, for raising sunken vessels.

488. Two Models of Read's Patent Ball-valve Pumps.
Deposited by Mr. READ.

489. A Working Model of a Steam-boat.
Deposited by Mr. T. GINGELL.

490. Two Patent Fountain-Pumps.
Deposited by Mr. BEARE.

491. Hale's Patent Horizontal-Windmill.

492. A Model of the Royal George.

493. A Model of a French 74-gun Ship.
Deposited by Mr. BAILY.

From the Ceiling will be suspended, SIR GEORGE CAYLEY'S ORRERY.—*(Now in preparation.)*

STAIRCASE, BASEMENT-STORY, &c. &c.

494. RICKETS's Gas-Oven, for Baking Bread, &c. &c.

N. B.—Mr. Rickets will attend from 3 to 4 o'clock, on MONDAYS and THURSDAYS, to exhibit the Gas-Oven in operation, by Baking Bread without Yeast, on Dr. Whiting's plan.

495. A Calorifere Gas-Stove, for warming Halls, Shops, Chapels, and other Places, without any Chimney.

496. A Gas Roasting and Boiling Apparatus.

497. A Diluted Gas Cooking Apparatus; also used for Economically Warming Bookbinder's Tools.

This Apparatus requires only a small stream of Coal-Gas, to produce an intense heat, which may be increased or decreased at pleasure. It is worked without any Chimney, and emits neither dust, smoke, nor noxious vapours.

498. A Diluted Gas-Cooking Apparatus, for Stewing, Boiling, Steaming, and Baking.

499. A Salamander Foot-stool, for heating Carriages and Rooms.

This Apparatus is heated, by means of a small Tea-Urn Heater; and the heat is retained for a considerable length of time, by being surrounded by an iron case, containing Calais-sand; an ornamental outer case covering the whole.

Deposited by Mr. CHARLES RICKETS, Agar Street, Strand.

500. A Plaster Cast of the Entablature, about to be erected in Westminster Abbey, to the late Dr. BELL.
Deposited by Mr. BEHNES.

501. A Plaister Cast from Dante.
Deposited by Mr. WATSON.

502. Rubens and his Family, by himself.
Deposited by J. RODGERS, Esq.

503. A Map of Europe, exhibiting the Great Roads and Physical Features.

504. A General Map of Africa, describing the Progress of African Discoveries.

505. Map of North America, exhibiting the recent Discoveries.

506. A Map of South America, on which is delineated the Modern Discoveries, and showing the New States.

Deposited by JAMES WYLD, Geographer to the QUEEN, Charing-Cross, East.

507. A Cooking Stove.
Deposited by Messrs. ORCHARD and DEAR.

508. A Thermocrat Stove.
Deposited by Messrs. LIVERMORE & SIEBE.

509. Indian Rubber Webb Shoe, for weak Ancles.
Deposited by Mr. B. SEADON.

510. Model of a Rick Cloth.
Deposited by Mr. B. EDGINGTON.

511. Specimens of Improved Mineral Teeth.

Deposited by Mr. C. A. CHADWICK, Surgeon Dentist,
No. 269, High Street, Borough, nearly opposite to St. Thomas's Street.

Mr. Chadwick has proved many very important original designs, which he has matured after much elaborate study, to the finer and more delicate branch of the mechanical arts. They have also been proved by scientific persons, and admitted by them to be most chaste, effective, and true to nature, and capable of supplying any exigence that may present itself.

One of Mr. Chadwick's original designs, which he denominates Court, or Facia Piece, is intended to conceal natural defects, or irregularity of Teeth, and produce the effects of an improved or elegant set of Teeth, without extracting any of the Teeth, or causing pain. The Teeth adopted are not altered either by climate, constitution, or chemical agent.

Sir Astley Cooper and other Gentlemen eminent in the Medical Profession, have expressed their high approbation in writing of the ingeniousness and originality of the designs above described, and ocular demonstration of their utility and effect is shown.

512. A Musical Instrument, and Two Pairs of Zoolah Ear-rings, from the Coast of Africa.
Deposited by W. HADDON, Esq.

513. Jaws of the Bottle-nose Shark.
Deposited by Mr. SKINNER.

514. Model of a Steam-Vessel.
Deposited by Mons. MOVILLON.

515. Patent Self-rolling Mangle.
Deposited by Messrs. BARNARD and JOY.

516. Model of a Barouch.
Deposited by Mr. MARKES.

517. Six Acoustic Instruments.
Deposited by J. CURTIS, Esq.

518. Thirty-one Specimens of Rare Minerals.
Deposited by Mr. MAWE.

519. A Librating Shifting-power Double-barrel Pump.
Invented and Deposited by Dr. SPURGIN.

520. Design for the Nelson Monument.
Deposited by Mr. SIBSON.

521. A Grass Hammock; a Cloak from the Fibre of the Aloe; an Indian Hat from ditto; and a Bamboo Stool, from New Grenada.

522. A Chair found in an Indian Tomb.
Deposited by — TURNER, Esq.

523. Royal Arms, Specimen of Modelling.
Deposited by Mr. D. COCKER.

524. Cooking Apparatus.
Deposited by Dr. HODGKIN.

525. Two Models of Increasing-power Cranes.
Deposited by Mr. JAMES CALDWELL.

526. Four Specimens of Spherical Castors.
Deposited by Mr. E. R. HANDCOCK.

527. Specimens of Minerals, from Scotland.
Deposited by J. F. YOUNG, Esq.

528. Specimen of Minerals from Corsica.
Deposited by J. F. YOUNG, Esq.

529. Six Portraits of North American Indian Chiefs.
Deposited by Mr. CAMPBELL.

530. A Patagonian Mantle; One Case of Brazilian Insects; a Drawing of Winter Island; and Twenty-five Stuffed Birds, from South America.
Deposited by Mr. W. MOGG.

531. An Ancient Astronomical Clock.
Deposited by Mr. HOOK.

532. A Model of an Intermitting Spring.
Deposited by — Wharton, Esq.

533. Three Cases of Stuffed Birds; Two ditto of Insects.
Deposited by the Earl of DUNDONALD.

534. Model of a Double-truss Girder.

535. Method of preventing the Deflection of Timber.
Deposited by E. GARDNER.

536. A Balistic Pump.
Deposited by W. DEVEY and SON, No. 329, Shoe Lane, Fleet Street.

Although the principle upon which this Apparatus is constructed has been long known as one of the most compact and powerful contrivances for raising and throwing fluids, it has not been very extensively put in practice on account of the great difficulty of making the packing of its piston durable and water-tight, when, by means of the application to it of M. de Vaucher's Patent Metallic Packing, or new mode of rendering fluid and steam tight, those moveable surfaces in Hydraulic and Steam engines which require to be packed, (and Messrs. Devey having treated with this gentleman for obtaining a licence,) this contrivance is now complete, and has been highly approved and patronised by the most scientific and competent judges.

The Balistic Pump is at will single or double action; it may be used without its air-vessel for the mere purpose of raising water at the rate of about 20 gallons per minute, when, with the application of the air-vessel, the water is thrown to a distance of 70 feet horizontally, and 45 feet in height; and by means of the Patent Fan Jet, with which it is also furnished, this great volume of water is divided in a very thin shower, thus rendering the instrument (if desired) the most effective of the kind for horticultural purposes, and for wetting the sails on board of ships, as this Fan Jet throws the shower to a great distance, and may be applied to any length of hose pipes.

Lastly, the simplicity of the construction of this pump obviates the liability to derangement; it will be ready for use at any time without any previous preparation, and it may be adjusted to any shape of tube.

537. Specimen of Patent Compound Metal.
Deposited by Mons. VAUCHER DE STRUBING.

538. Specimen of a New Method of Lettering Marble.
Deposited by H. C. PAGE.

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