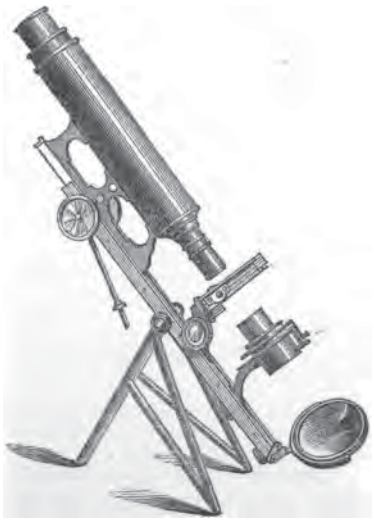
# CATALOGUE

OF

# Optical, Mathematical, and Philosophical INSTRUMENTS,



MANUFACTURED AND SOLD BY


**WILLIAM LADD,**

11 AND 12, BEAK-STREET, REGENT-STREET,

LONDON, W.,

**MICROSCOPE & PHILOSOPHICAL INSTRUMENT MANUFACTURER,**


By Appointment to

THE ROYAL INSTITUTION OF GREAT BRITAIN;

THE GOVERNMENT SCHOOL OF MINES; THE WAR DEPARTMENT;
HER MAJESTY'S COMMISSIONERS OF NATIONAL EDUCATION;
THE GOVERNMENTS OF THE BRAZILS AND NETHERLANDS;
THE UNIVERSITIES OF OXFORD, CAMBRIDGE, LONDON, ETC.

1861.

# CATALOGUE.

**Honourable Mention was awarded to W. LADD by the Jury of Class X. at the Great Exhibition of 1851, for his Improvements in Microscopes.**

## MICROSCOPES.

| | £ | s. | d |
|---|---|---|---|
| Ladd's Aquarium and Sea-side Microscope. The Stage and Mirror can readily be removed from the stand, so that the object-glass may be brought to bear upon the Aquarium, and to follow an object with facility ... | 4 | 0 | 0 |
| Educational Compound Microscope, with set of three achromatic object-glasses, eye-piece, and forceps, in mahogany case, with drawer ... ... ... ... | 3 | 10 | 0 |
| Larger Instrument than the above, with the addition of rack motion to stage, condenser, stage forceps, and live box, in superior case ... ... ... ... | 4 | 10 | 0 |
| Educational Microscope, of superior finish, with sliding stage, eye-piece, achromatic object-glasses, ranging from 30 to 300 diameters, condenser, animalculæ cage, forceps, and mahogany case ... ... ... ... | 5 | 5 | 0 |
| Microscope, designed by the late Geo. Jackson, Esq., in which the compound body, stage, and sub-stage are fitted in a dove-tailed slide running from top to bottom of the instrument, with improved magnetic stage, and eye-piece, in mahogany case ... ... ... ... | 5 | 0 | 0 |
| The above, with ¼ and 1-inch achromatic object-glass, animalculæ cage, and forceps ... ... ... | 8 | 0 | 0 |

| | £ | s. | d. |
|---|---|---|---|
| Compound Achromatic Microscope, with moveable stage, having ¾ of an inch motion in rectangular directions, with sliding and revolving object-holder, two eye-pieces, double mirror, fine adjustment, diaphragms, and forceps | 9 | 0 | 0 |
| ¼-inch and 1-inch object-glasses ... ... ... | 2 | 15 | 0 |
| Condenser on brass stand ... ... ... | 0 | 18 | 0 |
| Animalculæ Cage ... ... ... ... | 0 | 6 | 0 |
| Mahogany Cabinet ... ... ... ... | 1 | 10 | 0 |
| £14 9 0 | | | |

## Ladd's Improved Compound Microscope.

"An improved form of microscope has been recently manufactured by Mr. Ladd, having a stand so simple and light in its construction as to render it very portable and useful. It is fitted with a magnetic stage, which facilitates the moving of the objects when placed on it by the unaided fingers; a point of some importance to such microscopists as desire to retain and cultivate delicacy of touch in preference to that growing dependence upon mechanical movements. The main features of the new form of microscope are that the bearings for the compound body-stage and sub-stage are all fitted while connected together into the dovetailed slide running from top to bottom of the instrument. The magnet is attached to the under part of the stage, and a gilt iron bar-ledge or keeper serves for an object rest. The sub-stage is constructed of three thin plates, having rectangular movements, the top one having a tube attached, into which is fitted the polariscope, spotted lens, &c., the focusing of which is effected by a rack. The mirrors are provided with a double-jointed arm, and can be used with any amount of obliquity. The stand forms a tripod, strengthened by cross-bars; the beauty of the chain-movements (with which all Mr. Ladd's microscopes are furnished) is made apparent by the simple and effective adjustment attached to the *milled* head, thus making the one adjustment subsidiary to both purposes. The general appearance of the instrument is one of elegance, stability, lightness, and compactness."—*The Microscope, its History, Construction, and Application, by* JABEZ HOGG, *p.* 604.

| | £ | s. | d. |
|---|---|---|---|
| The above, with magnetic stage and two eye-pieces ... | 9 | 0 | 0 |
| ¼-inch object-glass ... ... ... ... | 4 | 4 | 0 |
| 1 and 2-inch combined ... ... ... ... | 3 | 3 | 0 |
| Condenser, on stand ... ... ... ... | 0 | 18 | 0 |
| Animalculæ Cage ... ... ... ... | 0 | 6 | 0 |
| Stage forceps ... ... ... ... | 0 | 3 | 0 |
| Mahogany case ... ... ... ... | 1 | 10 | 0 |
| £19 4 6 | | | |

| | £ | s. | d. |
|---|---|---|---|
| The same, with mechanical stage, having rectangular movements ... ... ... ... ... | 10 | 0 | 0 |
| Quarter-inch object-glass ... ... ... | 4 | 4 | 0 |
| 1 and 2-inch ditto, combined ... ... ... | 3 | 3 | 0 |
| Condenser, on stand ... ... ... ... | 0 | 18 | 0 |
| Spot-glass for dark ground illumination .. ... | 0 | 12 | 0 |
| Polariscope... ... ... ... ... | 1 | 15 | 0 |
| Animalculæ Cage ... ... ... ... | 0 | 6 | 0 |
| Stage Forceps ... ... . . ... | 0 | 3 | 0 |
| Mahogany Case ... ... ... ... | 1 | 10 | 0 |
| £22 11 0 | | | |
| *The following can be added*:— | | | |
| Extra deep eye-piece ... ... ... ... | 0 | 15 | 0 |
| ½-inch object-glass .. ... ... ... | 6 | 0 | 0 |
| Achromatic Condenser, with diaphragms and stops ... | 5 | 10 | 0 |
| No. 1.—Large size Compound Microscope, of very superior worrkmanship and great solidity, the stage having 1-inch motion; plain and concave mirrors, fine adjustment (100 turns to the inch), secondary stage for holding achromatic condenser, spotted lens, &c., to which is applied the horizontal and vertical adjustments for insuring the perfect centricity of all its parts ... | 18 | 18 | 0 |
| *The above can be fitted with the following apparatus*:— | | | |
| Parabolic Condenser ... ... ... ... | 1 | 10 | 0 |
| Achromatic Condenser... ... ... ... | 5 | 10 | 0 |
| Spotted Lens ... ... ... ... | 0 | 15 | 0 |
| Condenser on brass stand ... ... ... | 1 | 0 | 0 |
| Polariscope, with selenite stage ... ... ... | 2 | 5 | 0 |
| Camera Lucida ... ... ... ... | 1 | 0 | 0 |
| Animalculæ Cage ... ... ... ... | 0 | 6 | 0 |
| Extra deep Eye-piece ... ... ... ... | 0 | 15 | 0 |
| Mahogany Cabinet, with box for apparatus ... ... | 2 | 15 | 0 |
| Quarter inch and 1 and 2-inch Object-glasses of large angular aperture ... ... ... ... | 7 | 7 | 0 |
| One-eighth inch Object-glass ... ... ... ... | 7 | 7 | 0 |
| £49 8 0 | | | |
| Professor Quekett's portable Dissecting Microscope, with drawer ... ... ... ... | 2 | 10 | 0 |
| Compound body for ditto, making it a portable Sea-side Microscope ... ... ... ... | 1 | 0 | 0 |
| Coddington Lens, of high magnifying power, very useful for opaque objects, mounted in ivory, German silver, or silver ... ... ... ... 4s. to | 0 | 15 | 0 |
| Stanhope Lens, in various mountings ... from | 0 | 2 | 6 |
| Cloth Microscopes or linen provers, to fold for the pocket, 2s. to | 0 | 4 | 6 |

## MICROSCOPIC APPARATUS.

| | £ | s. | d. |
|---|---|---|---|
| Camera Lucida, for taking drawings of objects... 15s. and | 1 | 0 | 0 |
| Neutral tint Glass for the same purpose ... ... | 0 | 7 | 6 |
| Erecting Glass, for dissecting with the Compound Microscope | 0 | 15 | 0 |
| Silver Reflectors, for illuminating opaque objects, 7s. 6d. to | 0 | 10 | 0 |
| Apparatus for Polarisation of Light... ... £1 5s. to | 2 | 5 | 0 |
| Achromatic Condenser, for transparent objects, £2 10s., £5 10s. & | 7 | 0 | 0 |
| Condensing Lens, on brass stand ... ... 18s. and | 1 | 0 | 0 |
| Parabolic Condenser, for dark ground illumination, £1 5s. and | 1 | 10 | 0 |
| Spotted lens, for low powers, by which a perfect black field is obtained ... ... ... 7s. 6d. to | 0 | 15 | 0 |
| Compressorium ... ... ... ... | 0 | 15 | 0 |
| Extra Eye-pieces ... ... ... 12s. and | 0 | 15 | 0 |
| Animalcule Cage ... ... .. 3s. to | 0 | 6 | 0 |
| Glass Micrometers, for measuring the diameter of various objects, 100ths and 1000ths ... ... ... | 0 | 6 | 0 |
| Micrometer mounted in brass frame, with screw adjustment fitted to eye-piece of Microscope ... ... | 1 | 0 | 0 |
| Slips of Glass, 3 inches by 1 ... per packet of 3 dozen | 0 | 2 | 6 |
| Glass Circles for Covers, per ounce... ... ... | 0 | 6 | 0 |
| Ditto Squares ,, ,, ... ... .. | 0 | 4 | 0 |
| Canada Balsam, pure Glycerine, Dean's Gelatine, Asphalt, Gold Size, &c. ... ... per bottle, 1s. to | 0 | 1 | 6 |
| Machine for cutting Sections of Wood ... 7s. 6d. to | 1 | 1 | 0 |
| Turntable for building up Cells and varnishing the edge of covers... ... ... ... ... | 0 | 7 | 6 |
| Brooke's Double-connector ... ... ... | 1 | 0 | 0 |
| Valentin's Knife, in case ... ... ... | 0 | 16 | 0 |
| Set of Microscopical Dissecting Instruments, in case ... | 1 | 10 | 0 |
| Maltwood's Finder ... ... ... ... | 0 | 7 | 6 |
| A large assortment of Microscopic Objects, sections of teeth, bone, &c. ... ... ... ... | 0 | 1 | 6 |
| Insects, Infusoria, and Vegetable structures ... 1s. to | 0 | 1 | 6 |
| Anatomical Injected Preparations ... ... from | 0 | 2 | 6 |
| Microscopic Photographs ... ... ... | 0 | 2 | 0 |
| Mahogany Cabinets, for holding 264 objects, and place for apparatus ... ... ... ... | 1 | 7 | 6 |
| Mahogany Cabinet, with 19 drawers, holding 360 objects, with glass door ... ... ... ... | 3 | 3 | 0 |
| Ditto, ditto, holding 500 objects, with place for apparatus... | 4 | 4 | 0 |
| Glass Trough, for fixing fish, &c. ... ... ... | 0 | 5 | 0 |
| Glass Dissecting Trough ... ... ... | 0 | 4 | 0 |
| Dr. Beale's Cabinet, for Chemical Analysis, containing the following:—Platinum foil, test tubes, pipette, urinometer, graduated glass measure, spirit lamp with wire ring, watch-glasses, glass slides, thin glass covers, and 8 reagents in glass bottles, with capillary orifices ... | 1 | 5 | 0 |

| W. LADD SUPPLIES THE FOLLOWING WORKS. | £ | s. | d. |
|---|---|---|---|
| Quekett's Practical Treatise on the use of the Microscope ... | 1 | 1 | 0 |
| The Microscope, by Dr. Carpenter... ... ... | 0 | 12 | 6 |
| How to Work with the Microscope, by Dr. Lionel Beale ... | 0 | 5 | 6 |
| Half-hours with the Microscope, by Dr. Lankester ... | 0 | 2 | 6 |
| Hogg on the Microscope ... ... ... | 0 | 6 | 0 |

## ACHROMATIC OBJECT-GLASSES FOR MICROSCOPES.

| Object-Glasses. | Angular Aperture. | Price. | | | Magnifying Power with the various Eye-Glasses. | | |
|---|---|---|---|---|---|---|---|
| | | £ | s. | d. | A | B | C |
| 2-inch | 15 degrees | 2 | 10 | 0 | 20 | 30 | 40 |
| 1½ ,, | 20 ,, | 2 | 15 | 0 | 40 | 55 | 70 |
| 1 ,, | 15 ,, | 1 | 11 | 6 | 60 | 80 | 100 |
| 1 & 2 ,, | 25 ,, | 3 | 3 | 0 | ,, | ,, | ,, |
| ½ ,, | 65 ,, | 4 | 4 | 0 | 100 | 130 | 180 |
| ¼ ,, | 95 ,, | 4 | 4 | 0 | 220 | 350 | 500 |
| ⅛ ,, | 135 ,, | 6 | 0 | 0 | 320 | 510 | 700 |
| ⅛ ,, | 150 ,, | 7 | 7 | 0 | 400 | 670 | 900 |

## TELESCOPES.

| | £ | s. | d. |
|---|---|---|---|
| Five-ft. 6 in. Astronomical Telescope, 4½-in. aperture, six Astronomical eye-pieces, the magnifying powers ranging from 50 to 400 diameters, reflecting prism for viewing the sun and moon, mounted on equatorial stand of improved construction ... .. ... | 100 | 0 | 0 |
| Four-ft. Astronomical Telescope, 3¼-inch object-glass, 5 eye-pieces, and brass tripod, with horizontal and vertical movements, packed in mahogany case ... ... | 31 | 10 | 0 |
| 3-ft. 6-in. ditto, 3 eye-pieces, 2¾-in. object-glass, in mahogany case ... ... ... ... | 21 | 0 | 0 |
| 3-ft. ditto, 3 eye-pieces, 2⅜-in. object-glass, in mahogany case. | 15 | 0 | 0 |
| 2-ft. 6-in. ditto, 2 eye-pieces ... ... ... | 10 | 0 | 0 |
| Twenty-one-inch Navy Telescope ... ... ... | 2 | 5 | 0 |
| Eighteen-inch ditto ... ... ... ... | 1 | 16 | 0 |
| Fifteen-inch ditto ... ... ... ... | 1 | 10 | 0 |
| Day and Night Telescopes ... ... from | 1 | 10 | 0 |

*Pocket Telescopes of every description, and of best quality.*

| | | | |
|---|---|---|---|
| Revolving Stereoscope, to hold two dozen glass slides ... | 3 | 10 | 0 |
| A large assortment of Glass Stereoscopic slides, from 4s. 6d. to | 0 | 6 | 6 |

## APPARATUS FOR ELECTRIC LIGHT POLARISATION SPECTRUM ANALYSIS.

| | £ | s. | d. |
|---|---|---|---|
| Duboscq's Electric Lamp ... ... ... | 12 | 0 | 0 |
| Lantern for ditto, with Condensers ... ... | 12 | 0 | 0 |
| Serrin's Electric Lamp ... ... ... ... | 20 | 0 | 0 |
| Mahogany Lantern for ditto ... ... ... | 5 | 0 | 0 |
| Miscroscope for either of the above, with best acromatic Objectives ... ... ... ... | 10 | 0 | 0 |
| Duboscq's Polarscope for above ... ... ... | 12 | 10 | 0 |
| Prisims of heavy Glass on Stand ... ... from £2 to | 3 | 10 | 0 |
| Ditto Quartz. | | | |
| Prisms of Six Glasses of various density ... ... | 3 | 10 | 0 |
| Bottle Prisms of Bisulphide of Carbon ... from 12s. to | 0 | 18 | 0 |
| Prism with moveable Slides, on Brass Stand, with adjusting screws ... ... ... ... | 6 | 0 | 0 |
| Four-inch Condenser, on Stand, for focusing image on screen | | | |
| Kinchhoff and Bunsen's Apparatus for Spectrum Analysis | 6 | 0 | 0 |
| Ditto, with Prism for observing two Spectra at one time ... | 6 | 10 | 0 |
| Ditto, ditto, as constructed by Steinheil ... ... | 10 | 0 | 0 |
| Bunsen's Burners for above ... from 4s. 6d. to | 0 | 10 | 0 |
| Biot's Reflecting Polariscope, with apparatus ... ... | 5 | 5 | 0 |
| Tourmaline Polariscope, to illustrate the system of coloured rings in crystals, &c. ... ... ... | 2 | 2 | 0 |
| Selenites, of various devices ... ... from | 0 | 5 | 0 |
| Specimens of unannealed glass of various shapes, from | 0 | 3 | 0 |
| Plates of Arragonite, Quartz, Topaz, Nitre, Calc-Spar, Borax, &c., for exhibiting the coloured rings, from | 0 | 5 | 0 |
| Apparatus to show the polarising structure communicated to glass by pressure ... ... from 7s. 6d to | 1 | 1 | 0 |
| Rhombs of Iceland Spar. | | | |
| Polished Plates of Tourmaline. | | | |
| Double and single Image Prisms. | | | |
| Polarising bundles of Crown Glass. | | | |
| Polariscopes fitted to Miscrosopes. | | | |
| Selenite Discs. | | | |

## PHANTASMAGORIA LANTERNS, &c.

| | | | |
|---|---|---|---|
| Phantasmagoria Lantern, 4½-inch condensers ... ... | 4 | 10 | 0 |
| Two of the above, with Dissolving Apparatus ... ... | 10 | 0 | 0 |
| One ditto, 3½-inch condenser ... ... ... | 3 | 3 | 0 |
| Two of the above, with Dissolving Apparatus ... ... | 7 | 5 | 0 |
| One ditto, 3-inch condenser ... ... ... | 2 | 10 | 0 |
| Set of Astronomical Slides, with Rackwork, 2½-inches ... | 3 | 15 | 0 |
| Set of ditto, 3-inch ... ... ... ... | 5 | 0 | 0 |

| | £ | s. | d. |
|---|---|---|---|
| Set of Astronomical Slides, 14-inch ... ... | 1 | 10 | 0 |
| ,, Natural History ... ... ... ... | 1 | 10 | 0 |
| ,, Botanical ... ... ... ... | 1 | 15 | 0 |
| English and Foreign Views, &c., &c., each from 5s. to | 0 | 7 | 6 |
| Chromatropes, each ... ... from 7s. 6d. to | 0 | 10 | 0 |

## LADD'S IMPROVED INDUCTION COILS AND APPARATUS.

| | | | |
|---|---|---|---|
| Induction Coil, to give 1½-in. spark in air ... ... | 10 | 10 | 0 |
| Ditto ditto 2½-in. ditto ... ... | 12 | 12 | 0 |
| Ditto ditto 4-in. ditto ... ... | 15 | 15 | 0 |
| Set of five Grove's Batteries, with platina plates 5 × 2½-in., in tray ... ... ... ... | 3 | 0 | 0 |
| Ditto ditto ditto 6¼ × 3-in. | 5 | 5 | 0 |
| Apparatus consisting of glass tube with two platinum terminals, with brass plate and glass receiver to fit upon air pump for experiments with Torricellian vacuum ... | 1 | 10 | 0 |
| Gassiot's Torricellian Vacuum tube (Fig. 15)* for broad, cloudy stratification (Fig. 16) ... ... | 1 | 5 | 0 |
| Ditto packed in case ... ... ... | 1 | 12 | 0 |
| Uranium glass tube mounted on stand, with stopcock £1 1s. to | 2 | 2 | 0 |
| Glass tubes for showing the Aurora Borealis, fitted with stopcock, and capable of being charged with various gases, from 2 to 6-ft. long, and 1 to 4-in. diameter (Fig. 13) ... ... ... ... | | | |
| Apparatus for showing the rotation of a spark round an Electro-magnet (Fig. 11) ... ... ... | 3 | 10 | 0 |
| Ditto ditto (Fig. 12) ... ... | 1 | 10 | 0 |
| Bar Electro-magnet for experimenting with the electric spark | 1 | 0 | 0 |
| Egg-shaped glass, with stopcock and sliding wire (Fig. 14) £1 15s. and | 2 | 5 | 0 |
| Gassiot's Cascade (Fig. 9) ... ... £3 and | 3 | 10 | 0 |
| Gassiot's Revolving Star (Figs. 37 and 38) ... £3 3s. to | 4 | 10 | 0 |
| Geissler's sealed vacuum tubes. These tubes have been charged with the various gases and then exhausted to the utmost and hermetically sealed. | | | |
| Carbonic acid vacuum tube with stick of caustic potash at one end (Fig. 19) ... ... ... £1 5s. and | 1 | 10 | 0 |
| Ditto with carbon terminals... ... ... | 1 | 5 | 0 |
| Double Garland tube (Fig. 24) ... ... ... | 2 | 0 | 0 |
| Single ditto ,, 25 ... ... ... | 1 | 10 | 0 |
| Vacuum tube (Figs. 26, 27, 29, and 31) each ... ... | 1 | 5 | 0 |
| ditto ,, 28, 32, 33, ,, ... ... | 1 | 10 | 0 |
| ditto ,, 30 ,, ... ... | 1 | 1 | 0 |
| ditto ,, 34 ,, ... ... | 0 | 12 | 6 |

* See "Treatise on the Induction Coil," by Dr. H. M. Noad, F.R.S., &c.

| | £ | s. | d. |
|---|---|---|---|
| Vacuum tube for surgical purpoees (Fig. 35) ... ... | 1 | 1 | 0 |
| ditto „ 36 ... 15s. to | 1 | 1 | 0 |
| ditto of Uranium Glass ... ... 15s. to | 1 | 10 | 0 |

*A variety of other tubes always in stock.*

| | | | |
|---|---|---|---|
| Uranium Glass vessel for showing fluorescence ... ... | 0 | 5 | 0 |
| Block of Uranium Glass, 6½ × 3¼ × 1 in mahogany case ... | 1 | 15 | 0 |
| Glass tubes containing Becquerel's Phosphorescent powders. | | | |
| Revolving colour disc for showing white light, also for proving that the Induction Spark is not continuous ... | 0 | 7 | 6 |
| Spotted Jars ... ... ... 7s. 6d. to | 2 | 2 | 0 |

## APPARATUS FOR FRICTIONAL ELECTRICITY.

| | | | |
|---|---|---|---|
| 24-inch Plate Electrical Machine, mounted upon the best principle, with Electrometer attached ... ... | 10 | 10 | 0 |
| 18-inch ditto ditto ditto | 7 | 0 | 0 |
| 15-inch ditto ditto ditto | 5 | 0 | 0 |
| 12-inch ditto ditto without Electrometer | 4 | 0 | 0 |
| 9-inch ditto ditto ditto, | 3 | 0 | 0 |

*Cylinder Electrical Machines made to order.*

| | | | |
|---|---|---|---|
| Improved form of Electrometer with Condenser (very delicate) | 3 | 3 | 0 |
| Quadrant Electrometer... ... ... ... | 0 | 7 | 0 |
| Cuthbertson's Self-acting Electrometer ... ... | 1 | 18 | 0 |
| Bennet's Gold Leaf Electromer ... ... 14s. to | 1 | 10 | 0 |
| Medical Jar ... ... ... ... | 0 | 5 | 0 |
| Henley's Universal Discharger, with Press and Table, £1 5s. and | 2 | 0 | 0 |
| Electrical Cannon, with brass carriage ... ... | 0 | 18 | 0 |
| Electrical Flask, with cap and valve ... ... | 0 | 6 | 0 |
| Electrical Pistol ... ... ... ... | 0 | 5 | 0 |
| Luminous Conductor ... ... ... ... | 0 | 18 | 0 |
| Electrical Sportsman ... ... ... 15s. and | 1 | 1 | 0 |
| Egg-stand ... ... ... ... ... | 0 | 7 | 6 |
| Egg-shape Glass, with stopcock and sliding wire for shewing light in vacuo, used with Induction Coil ... ... | 1 | 15 | 0 |
| Hand Spiral ... ... ... 3s. 6d. and | 0 | 5 | 0 |
| Set of five spirals ... ... ... ... | 1 | 8 | 0 |
| Luminous Woods in frame ... ... ... | 0 | 10 | 6 |
| Revolving Spiral on stand ... ... ... | 0 | 8 | 6 |
| Image Plates, with brass stand ... ... 8s. 6d. and | 0 | 10 | 6 |
| Dancing Figures made of pith ... ... ... | 0 | 1 | 0 |
| Electrical See-saw ... ... ... ... | 0 | 12 | 0 |
| Pith ball Stand ... ... ... ... | 0 | 5 | 6 |
| Pith Balls ... ... ... per dozen 9d. and | 0 | 1 | 0 |
| ...rved Head with hair ... ... 3s. 6d. and | 0 | 5 | 6 |

| | £ | s. | d. |
|---|---|---|---|
| Diamond Jar ... ... ... 7s. 6d. and | 0 | 12 | 0 |
| Bucket and Syphon ... ... ... ... | 0 | 5 | 0 |
| Electrical Orrery ... ... ... ... | 0 | 7 | 6 |
| Sturgeon's Apparatus for firing gunpowder, &c. ... | 0 | 9 | 0 |
| Insulated brass or wood stands ... ... ... | | | |
| Electrical Spider ... ... ... ... | 0 | 1 | 0 |
| Electrical Obelisk ... ... ... ... | 0 | 7 | 0 |
| Thunder House ... ... ... ... | 0 | 7 | 0 |
| Fire House... ... ... ... ... | 0 | 12 | 6 |
| Gamut of Bells ... ... ... ... | 1 | 10 | 0 |
| Set of three Bells ... ... ... ... | 0 | 7 | 0 |
| Insulated Stool ... ... ... ... | 0 | 12 | 0 |
| Jointed Discharger ... ... 7s. 6d., 9s., and | 0 | 10 | 6 |
| Discharging Rods ... ... ... ... | 0 | 3 | 6 |
| Apparatus for shewing the falling star ... ... | 0 | 15 | 0 |
| Electrical Cylinders ... ... ... ... | | | |
| Glass Handles and Legs ... ... ... | | | |
| Brass Chain ... ... ... per yard | 0 | 0 | 4 |
| Amalgam ... ... ... per box | 0 | 1 | 0 |
| Circular Glass Plates, for Electrical machines ... ... | | | |
| Conductors ... ... ... ... | | | |
| Leyden Jars ... ... ... from | 0 | 3 | 6 |
| Brass Balls ... ... ... from | 0 | 0 | 9 |
| Electrophorus ... ... ... 10s. and | 0 | 15 | 0 |
| Glass Jar with moveable tin coatings ... ... | 0 | 10 | 6 |
| Set of Electrical Apparatus for educational purposes, consisting of the following articles:—9-in. Plate Electrical Machine, Leyden Jar, Pith-ball Stand, Jointed Discharger, Hand Spiral, Brass Clamp, Head of Hair, Amalgam, and Chain, packed in coloured deal case with lock and key ... ... .. ... | 5 | 5 | 0 |

## VOLTAIC AND MAGNETIC APPARATUS.

| | | | |
|---|---|---|---|
| Medical Galvanic Coil of improved construction, which can be regulated so as to apply it either to an infant or to the most obstinate cases, in mahogany box ... ... | 4 | 4 | 0 |
| Medical Galvanic Machine, in mahogany box ... ... | 3 | 3 | 0 |
| Ditto, ditto, small size ... ... ... | 2 | 2 | 0 |
| Improved Magneto-Electric Machine, for medical purposes, in mahogany case ... ... ... ... | 2 | 5 | 0 |
| Magneto-Electric Machines for firing Abel's Fuzes, from | 3 | 10 | 0 |
| Electro-Magnet ... ... ... 6s. and | 0 | 10 | 6 |
| Mahogany support for ditto ... ... ... | 0 | 5 | 0 |
| Galvanometer, on stand ... ... ... | 0 | 10 | 0 |
| Galvanometers with Astatic Needle, on stand, with levelling screws and glass shade ... ... from | 1 | 8 | 0 |

| | £ | s. | d. |
|---|---|---|---|
| Barlow's Wheel ... ... ... ... | 0 | 10 | 0 |
| Sturgeon's Disc, to go with the above ... ... | 0 | 3 | 6 |
| Oersted's Experiment ... ... ...7s. 6d. and | 0 | 10 | 0 |
| Apparatus for showing the rotation of Electro-magnet between the poles of a soft horseshoe ... ... | 0 | 10 | 0 |
| Richie's Eletro-magnetic Apparatus, consisting of horseshoe-magnet, on stand, with levelling screws, Armature, Ampere's Bucket, wire frame, helical coil, and two flood cups ... ... ... ... | 2 | 10 | 0 |
| Marsh's Vibrating Suspended Wire... ... ... | 0 | 7 | 0 |
| Working Model of Telegraph, by which sentences may be transmitted ... ... ... ... | 3 | 10 | 0 |
| Apparatus for ringing a Bell by Electro-magnetism ... | 1 | 1 | 0 |
| Ditto, ditto, of improved construction ... | 2 | 2 | 0 |
| Meloni's Thermo-electric Battery of twenty-five pairs of Antimony and Bismuth Bars ... ... from | 1 | 10 | 0 |
| Smee's Batteries, pints ... ... ... ... | 0 | 7 | 6 |
| Ditto, quarts ... ... ... | 0 | 10 | 0 |
| Set of six Smee's Batteries in glass cells, in mahogany trough, with adjustments for raising it out of the cells; may be arranged for quantity or intensity... ... | 3 | 10 | 0 |
| Grove's Platinum Battery ... ... ... | 0 | 12 | 0 |
| Set of eight of Grove's Batteries, in glass cells and mahogany tray ... ... ... ... ... | 5 | 5 | 0 |
| Set of ten ditto in tray... ... ... ... | 6 | 0 | 0 |
| 4 sets of ditto for Electric Light ... ... ... | 24 | 0 | 0 |
| Improved Coke Batteries, in glass or stoneware cells ... | | | |
| Brass Clamps for Batteries ... ... ... | | | |
| Glass and Porus Cells ... ... ... ... | | | |
| Platinum Foil and Wire ... ... per oz. | 1 | 12 | 0 |
| Platinized Silver ... ... ... ,, | 0 | 10 | 0 |
| Amalgamated Zinc Plates ... ... per lb. | 0 | 1 | 0 |
| Copper Wire, of all sizes, covered with silk or cotton ,, | | | |
| Set of Electro-magnetic Apparatus for educational purposes, consisting of an Electro-magnetic Coil-machine, Smee's Battery, Galvanometer, Richie's Experiment, Oersted's ditto, Electro-magnet and mahogany stand, Barlow's Spur-wheel and Permanent Magnet, packed in coloured deal case with lock ... ... ... | 5 | 5 | 0 |

## DRAWING INSTRUMENTS, &c.

| | | | |
|---|---|---|---|
| Sets of Drawing Instruments for youths 5s. 6d., 7s. 6d., and | 0 | 10 | 6 |
| Sets of Drawing Instruments in mahogany case ... | 1 | 1 | 0 |
| Ditto ditto ditto | 2 | 2 | 0 |
| Ditto ditto in German silver ... ... | 2 | 10 | 0 |
| Ditto very superior ditto ... ... | 3 | 10 | 0 |

| | £ | s. | d. |
|---|---|---|---|
| Architect's case of ditto, ditto, for the pocket ... ... | 2 | 2 | 0 |
| Ditto ditto, best make, German silver ... | 3 | 10 | 0 |
| Drawing Pens ... ... 3s., 4s., and | 0 | 6 | 0 |
| Proportional Compasses, 6 inch ... ... £1 10s., to | 2 | 10 | 0 |
| Engineer's Pocket Compass ... ... ... | 1 | 0 | 0 |
| Ditto ditto best make, German silver ... | 2 | 0 | 0 |
| Bow Pen and Pencils | | | |
| Spring and Hair Dividers | | | |
| Spring Dividers, Pen and Pencil, the set ... 10s. 6d. to | 1 | 5 | 6 |
| Rolling Parallel Rules, 6 inch, 6s., 9 inch, 7s., 12 inch, 8s. 6d., 15 inch, 11s. | | | |
| Rolling Parallel Rules, brass, 1s. 6d. per inch | | | |
| Protractors | | | |
| Sectors | | | |
| Mahogany and Ebony T-squares | | | |
| Drawing Pins | | | |

## THEODOLITES.

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| | | | |
|---|---|---|---|
| Orreries or Planetariums ... ... £1 10s. to | 10 | 10 | 0 |
| Gyrascopes... ... ... ... £1 5s. and | 2 | 11 | 6 |

## METEOROLOGICAL INSTRUMENTS.

| | | | |
|---|---|---|---|
| Standard Barometers ... ... ... from | 6 | 6 | 0 |
| Pedestal Barometers, in mahogany, walnut, or rosewood frames ... ... ... ... £2 2s. to | 7 | 7 | 0 |
| Wheel Barometer ... ... ... £1 15s. to | 6 | 6 | 0 |
| Marine Barometer ... ... ... £3 3s. to | 5 | 5 | 0 |
| Marine Barometer and Simpiesometer in one instrument £5 5s. to | 8 | 10 | 0 |
| Portable metallic Barometer ... ... ... | 4 | 0 | 0 |
| Standard Thermometers ... ... 10s. 6d. to | 1 | 1 | 0 |
| Thermometers for registering extreme heat and cold from | 0 | 8 | 6 |
| Ivory Thermometers, in leather case ... 4s. 6d. to | 0 | 10 | 0 |
| Chemical thermometers, divided on glass ... ... | | | |
| Boxwood Thermometers ... ... from | 0 | 1 | 0 |
| Mason's Hygrometer ... .. ... ... | 1 | 6 | 0 |
| Rain-gauge in japanned tin or copper ... from | 1 | 0 | 0 |

## PNEUMATIC APPARATUS.

| | £ | s. | d. |
|---|---|---|---|
| Very superior large size double barrel Air Pump, with additional barrel for very accurate exhaustion, barometer gauge, &c., on strong mahogany stool ... ... | 35 | 0 | 0 |
| Ditto ditto smaller size, for table (Fig. 10)* ... | 15 | 0 | 0 |
| Grove's Pump, with 7-inch plate, mercurial gauge, and two clamps ... ... ... ... | 5 | 0 | 0 |
| Large size double-barrel Air-pump, with raised plate, 10 in. in diameter, gauge plate, mercurial gauge, clamp, and key ... ... ... ... ... | 11 | 10 | 0 |
| Second size double-barrel table Air-pump, with raised plate, 9 inches diameter, gauge-plate, gauge, and key ... | 9 | 10 | 0 |
| Ditto, ditto, with plate 8-inches in diameter, on stand (not raised), with gauge-plate, gauge, and key... ... | 8 | 0 | 0 |
| Ditto, ditto, without gauge-plate, gauge, and key ... | 6 | 10 | 0 |
| Third size double-barrel Air-pump, diameter of plate, 6½ in. | 4 | 4 | 0 |
| Smaller size double-barrel Air-pump, diameter of plate 5½ ... | 3 | 10 | 0 |
| Small size single-barrel Pump, 3½-inch plate ... ... | 1 | 0 | 0 |
| No. 2 ditto ditto, 4½-inch plate ... ... | 1 | 7 | 0 |
| No. 3 ditto ditto 5½-inch plate ... ... | 1 | 10 | 0 |
| No. 4 ditto ditto sloping barrel, 6½ inch plate | 2 | 2 | 0 |
| Flat Brass Plate, with sliding wire... 10s. 6d. and | 0 | 13 | 0 |
| Exhausting or Condensing Syringes ... ... | 0 | 7 | 0 |
| Ditto ditto in one instrument ... | 0 | 10 | 0 |
| Apparatus, consisting of Glass Cylinder and Piston, to show the effect of pressure upon gases ... ... | 1 | 0 | 0 |
| Fire Syringe ... ... ... ... | 0 | 3 | 6 |
| Bell Experiments ... ... ... 7s. 6d. and | 1 | 0 | 0 |
| Bacchus Experiment ... ... ... ... | 1 | 8 | 0 |
| Lungs Glass ... ... ... ... | 0 | 6 | 0 |
| Large size Hemispheres ... ... ... | 1 | 8 | 0 |
| Middle size ditto ... ... ... ... | 0 | 16 | 0 |
| Small size ditto ... ... ... ... | 0 | 12 | 0 |
| Filtering Cup, with Brass Plate ... ... ... | 0 | 6 | 6 |
| Three-fall Guinea-and-Feather Apparatus ... ... | 1 | 1 | 0 |
| Two-fall ditto ... ... ... ... | 0 | 15 | 0 |
| Tall glass Receiver for ditto ... ... 7s. 6d. and | 0 | 10 | 6 |
| Windmill (improved) ... ... ... | 1 | 15 | 0 |
| Double Transferer ... ... ... ... | 1 | 16 | 0 |
| Single ditto ... ... ... 12s. and | 0 | 18 | 0 |
| Bladder Frame and Lead Weights ... ... | 0 | 8 | 0 |
| Copper Bottle, Beam, and Stand ... ... .. | 2 | 5 | 0 |
| Fruit and Taper Stand ... ... ... | 0 | 3 | 6 |
| Syringe and Lead Weights ... ... ... | 0 | 8 | 0 |
| Balance Beam and Cork Ball, with counterpoise weight ... | 0 | 10 | 0 |
| Torricellian Experiment ... ... ... | 0 | 15 | 0 |

* See "Treatise on the Induction Coil," by Dr. H. M. Noad, F.R.S., &c.

| | £ | s. | d. |
|---|---|---|---|
| Ditto, having the Barometer fixed in the cap of glass receiver | 1 | 7 | 6 |
| Glass Globe, with brass cap and stopcock for weighing air ... | 0 | 8 | 0 |
| Leslie's apparatus for freezing water ... ... | 0 | 10 | 0 |
| Breaking squares ... ... ... ... | 0 | 1 | 3 |
| Wire-cage for ditto ... ... ... ... | 0 | 4 | 6 |
| Brass Stopcocks ... ... ... 2s. 6d. and | 0 | 3 | 6 |
| Apparatus for showing fountain in vacuo ... ... | 0 | 12 | 0 |
| Tall Receiver for ditto ... ... ... ... | 0 | 7 | 6 |

## Ladd's Educational Set of Pneumatic Apparatus,

*As supplied by him to the various Educational Societies, consisting of the following Articles:—*

| | £ | s. | d. |
|---|---|---|---|
| Single-barrel Air-pump and Receiver, Brass Clamp, Filtering Cup for Mercury, Magdeburgh Hemispheres with handles, Bladder Frame and Weights, Guinea-and-Feather Apparatus, Fruit, and Taper Stand, Hand and Bladder Glass, Single transferer and Fountain Apparatus, Brass Pipe for ditto, Bell Experiment, Brass Syringe for instantaneous Light, Glass for Fountain and Guinea-and-Fountain Apparatus, and Plate for Top of Fountain Glass, packed in coloured case, with lock and key ... ... ... ... | 6 | 6 | 0 |

## HYDROSTATIC AND HYDRAULIC APPARATUS.

| | £ | s. | d. |
|---|---|---|---|
| Working Model of Bramah's Hydrostatic Press, £5, £15, and | 19 | 0 | 0 |
| Apparatus to illustrate the principle that fluids will rise to the same height, whatever the form through which they flow, ... ... ... ... | 2 | 10 | 0 |
| Tantalus Cup ... ... ... ... | 0 | 10 | 0 |
| Glass Syphon ... ... ... 2s. and | 0 | 3 | 6 |
| Glass Balloons, Divers, &c. ... ... each | 0 | 2 | 0 |
| Ditto, ditto, with Tall Jar ... ... ... | 0 | 12 | 0 |
| Model of Centrifugal Pump ... ... ... | 3 | 3 | 0 |
| Model of Lifting Pump, with glass barrel ... ... | 0 | 18 | 0 |
| Ditto, of Forcing Pump ... ... ... | 1 | 8 | 0 |
| Model of Archimedes' Screw, with glass worm... ... | 2 | 2 | 0 |
| Ditto of Undershot Wheel ... ... ... | 1 | 15 | 0 |
| Ditto of Overshot Wheel ... ... ... | 1 | 15 | 0 |
| Ditto of Diving Bell, with Force-pump ... ... | 1 | 1 | 0 |
| Fountain Apparatus, consisting of strong metal vessels, stop-cock, condensing syringe, and set of jets ... ... | 2 | 2 | 0 |
| Tantalus Cup ... ... ... ... | 0 | 10 | 0 |
| Philosophical Water Hammer ... ... ... | 0 | 5 | 0 |
| Woolaston's Cryophorus ... ... 4s. and | 0 | 6 | 0 |
| Marcet's Steam Apparatus ... ... ... | 5 | 0 | 0 |

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