

PRIZE MEDAL

EXHIBITION, 1851.



A  
CATALOGUE

OF

MATHEMATICAL, OPTICAL,

AND

PHILOSOPHICAL INSTRUMENTS

MANUFACTURED AND SOLD BY

**NEWTON & CO.**

WORKING OPTICIANS AND GLOBE MAKERS



TO THE QUEEN,  
3, FLEET STREET, TEMPLE BAR,  
LONDON.

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*Messrs. Newton will be happy to give their customers any further information regarding the apparatus manufactured by them, either by letter or personal application at their Establishment, 3, Fleet Street, Temple Bar, London.*

**ACHROMATIC MICROSCOPES.**

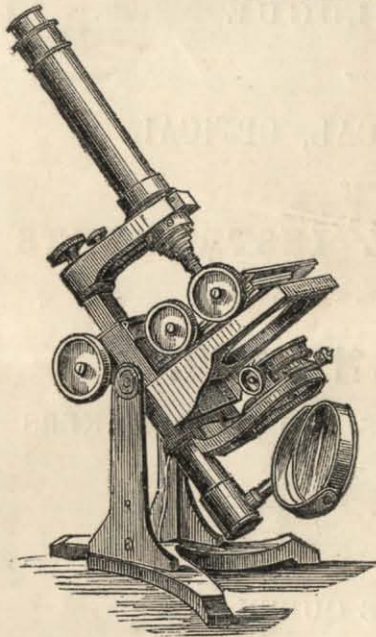


Fig. 1.

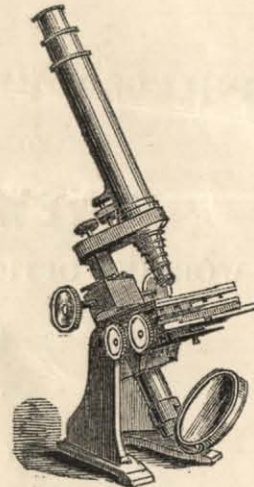


Fig. 2.

**Compound Achromatic Microscope Stand.** Fig. 1 of the largest size and best construction, with quick and slow motions to the body, a mechanical stage, allowing one inch motion in opposite directions, sliding and revolving object plate holder, plain and concave mirrors, glass plates, and two-eye pieces; also a secondary stage, having rotary, rectangular, and vertical motions for holding polariscope, spotted lenses, achromatic condenser, &c. . . . . 22 0 0

**Mahogany polished Case for ditto,** with draw to hold apparatus . . . . . 3 0 0

**Compound Achromatic Microscope,** Fig. 2, with mechanical stage, quick and slow adjustment to body, rotary stage plate, draw tube, two eye-pieces, two achromatic powers, condenser for opaque objects on stand, insect box, well glass, stage forceps, and tweezers, in polished mahogany cabinet case . . . . . 12 0 0

**Achromatic Object Glasses.**

2 inch . . . . .	0 10 0	$\frac{1}{2}$ inch	. . . . .	1 15 0
1 inch . . . . .	1 0 0	$\frac{1}{4}$ inch	. . . . .	2 5 0
$\frac{1}{2}$ inch . . . . .	1 10 0			

**Achromatic Object Glasses** of larger angular aperture

2 inch . . . . .	1 15 0	$\frac{1}{2}$ inch	. . . . .	4 4 0
1 inch . . . . .	2 0 0	$\frac{1}{4}$ inch	. . . . .	7 7 0
$\frac{1}{2}$ inch . . . . .	4 0 0			

The higher priced Object Glasses are of the largest angular aperture, and of first rate excellence. The lower priced are recommended and admirably adapted for general use, producing a clearly defined image, but they are of less angular aperture.

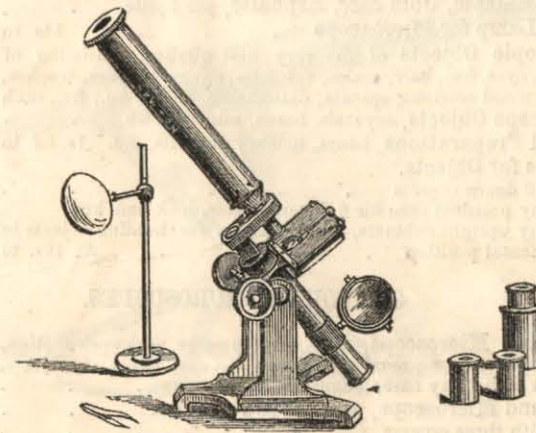


Fig. 3.

<b>Newton's Student's Achromatic Microscope,</b> as shewn in Fig. 3, with two achromatic powers, condenser for opaque objects on stand, brass forceps, and one eye-piece, magnifies 250 diameters, or 62,500 times, packed in cabinet case . . . . .	£ s. d.
Ditto ditto, with two eye-pieces, and fine adjustment, magnifies 350 diameters . . . . .	4 4 0
Ditto ditto, with polarising apparatus, fine adjustments, lever stage, and two eye-pieces . . . . .	5 5 0
	7 7 0

**APPARATUS FOR ACHROMATIC MICROSCOPES.**

<b>Eye Pieces</b> extra for No. 1 Microscope . . . . .	0 17 6
<b>Condenser</b> for opaque objects, large size, on stand, with universal joint . . . . .	1 0 0
<b>Smaller ditto</b> . . . . .	7s. 6d. to 0 12 6
<b>Achromatic Condenser,</b> (brass work mechanical part) . . . . .	1 5 0
<b>Polarising Apparatus</b> for No. 1 Microscope . . . . .	2 0 0
<b>Ditto</b> for Students Microscope . . . . .	1 5 0
<b>Dark Ground Illuminator,</b> or Spotted Lens . . . . .	7s. 6d. to 0 15 0
<b>Diaphragm,</b> with dark cell, fitted to secondary stage for No. 1. . . . .	0 10 0
<b>Camera Lucida</b> . . . . .	15s. to 1 0 0
<b>Silver Side Reflector</b> . . . . .	1 0 0
<b>Animalculæ or Live Box</b> . . . . .	4s. 6d. to 0 10 0
<b>Stage Forceps</b> . . . . .	4s. 6d. to 0 8 6
<b>Glass Stage Plates,</b> per pair . . . . .	0 2 0
<b>Compressorium</b> . . . . .	0 15 0
<b>Frog Plate and Bag,</b> for viewing the circulation of the Blood . . . . .	0 8 6
<b>Micrometer</b> for Stage . . . . .	0 5 0
<b>Ditto</b> for eye piece mounted in brass . . . . .	0 10 0
<b>Plate-Glass Slides,</b> with polished edges, for mounting objects, 3in. by 1in. per dozen . . . . .	0 1 0
<b>Thin Glass,</b> for covering objects, in squares 4s. 6d. in circles per oz, . . . . .	0 6 0

	£	s.	d.
Canada Balsam, Gold Size, Asphalte, per bottle	0	1	0
Argand Lamp for Microscope	15s.	to	1 5 0
Microscopic Objects of the very first quality, consisting of insects, eyes, feet, hair, scales, spiracles, stings, tongues, trachea, wings, wood sections, spicula, diatomacea, shells, &c., &c., each	0	1	0
Polariscope Objects, crystals, horns, minerals, &c.	0	1	0
Injected Preparations, bones, urinary deposits, &c.	1s. 6d.	to	0 2 6
Cabinets for Objects.			
Case for 2 dozen objects	0	1	6
Mahogany polished case for 6 dozen objects, lock and key	0	7	6
Mahogany upright cabinets, with drawers for holding objects in a horizontal position	£2 10s.	to	5 5 0

## COMPOUND MICROSCOPES.

Compound Microscope, with seven powers, rackwork motion, condenser for opaque objects, stage forceps, tweezers, objects, &c., in mahogany case, magnifies 22,500 times	2	15	0
Compound Microscope, with one power, in box	0	10	6
Ditto, with three powers	0	16	0
Ditto, three powers, and condenser for opaque objects	0	18	6
Box of 40 Objects, for the common microscope	0	7	6
Flower Microscopes of various kinds	2s.	to	0 7 6
Linen Provers	2s. 6d.	ditto to fold	0 4 6
Stanhope Lens, in case	0	3	6
Coddington, ditto, in German Silver Ss. 6d., standard silver	0	12	6
Pocket Lenses, in horn case, with one, two, or three powers, 1s. 6d., 3s. 6d., to	0	5	0

## ASTRONOMICAL TELESCOPES.

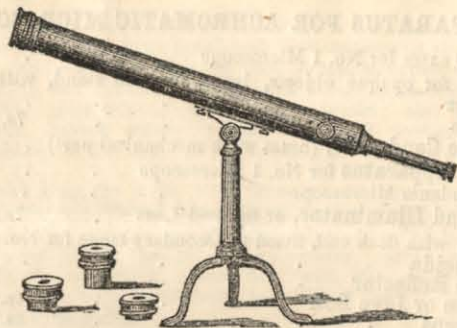


Fig. 4.

Thirty-inch Astronomical Telescope, mounted on brass tripod stand, with three eye-pieces, powers 35, 45, 90, object glass 2½ in. diameter, rack-work adjustment, packed in mahogany case	10	10	0
Ditto ditto with vertical and horizontal-rack adjustment	16	0	0

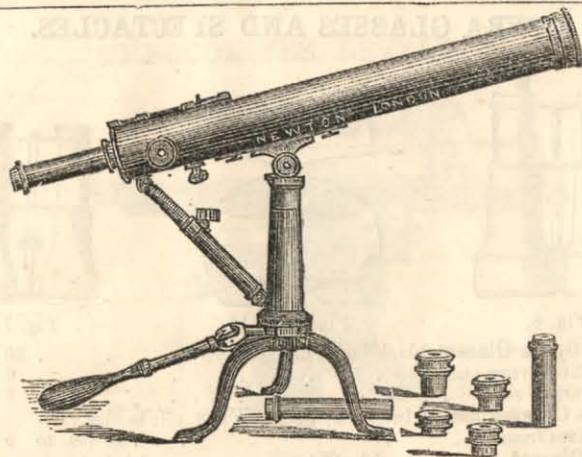


Fig. 5.

Three-and-a-half feet Telescope, with finder, on pillar and claw frame, with two day and three astronomical powers, 35, 55, 80, 120, and 200, object glass 2½ inches, rack and pinion adjustment to eye-pieces, vertical and horizontal racks, universal handle, packed in mahogany case (fig. 5)	31	10	0
Ditto, with improved tripod garden stand, brass stretchers	35	10	0
Ditto, ditto, on plain stand	24	0	0
Three-and-a-half feet Telescope, on garden stand with all the adjustments, object glass 3¼ inches	50	0	0
Five-feet Astronomical Telescope, object glass, 4¼ in. diameter, with finder, 5 powers from 35 to 400, rack and pinion adjustment to eye pieces, vertical and horizontal racks, universal handle, mounted on improved equipoised garden stand, with brass stretchers, and double steadying rods, packed in two cases	90	0	0
Ditto, ditto, mounted on equatorial stand	130	0	0

All the above instruments can be highly recommended, larger ones are made to order.

## PORTABLE TELESCOPES.

Achromatic Pocket Telescope, with two or three draws, mahogany body	10s. 6d.	12s. 6d.	1	1	0
Ditto, larger size	£1 10s.	to	2	2	0
Officers' or Tourists' Telescope, with tubes and mountings of bronzed brass, to adapt it for deer-stalking, draws out to 30in. and closes up to 10 inches, in sling leather case	3	3	0		
Ditto, ditto, with sun shade for India	3	7	6		
Ditto, ditto, with extra power and brass tripod stand for astronomical purposes packed in mahogany case	6	6	0		

These Officers' or Tourists' Telescopes are very strongly recommended, the ordinary day power will clearly show Jupiter's moons.

Navy Telescopes, with one draw, body covered with leather, and code of signals	3	3	0		
Day and Night Telescopes, best quality	3	3	0		
Pocket Astronomical Telescope, with extra power and tripod stand, in case	£3 10s.	and	5	5	0

**OPERA GLASSES AND SPECTACLES.**

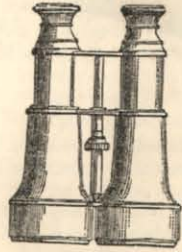
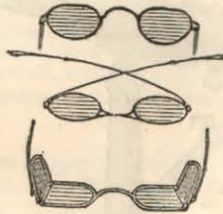


Fig. 6.



Figs. 8, 9, 10.

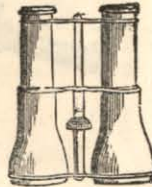
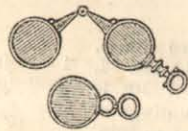


Fig. 7.

Single Opera-Glasses, black body, and gilt draw . . . . .	£0 10 6
Ditto, ditto ivory and gilt . . . . .	0 12 6
Ditto, larger size . . . . .	£1 to 1 10 0
Double Opera-glasses, in black, or ivory and gilt bodies various sizes from . . . . .	£1 10s. to 5 5 0
Opera-Glasses, small size, with 12 lenses very powerful, in black and gilt . . . . .	£2 7s 6d to 3 0 0
Ditto, ivory and gilt . . . . .	£2 15s to 3 10 0
Larger size . . . . .	4 4 0
Race-Glasses, morocco leather body, sliding shades, leather case and sling . . . . .	£3 10s. to 8 8 0
Patent pantoscopic Spectacles, for old or long sight (fig. 8)	
Standard Gold, with best glasses, . . . . .	£2 15s. to 3 3 0
Ditto 50s. Gold ditto, . . . . .	£1 15s to 2 0 0
Standard Silver ditto . . . . .	0 16 0
Blue Steel ditto . . . . .	1s. 6d., 3s., 5s., 7s. 6d. and 0 10 6
Spectacles for short sight, with double bridge, at the same prices (fig. 9)	
Brazilian Pebbles, fitted to any Spectacles, per pair . . . . .	0 5 0
Horse-shoe Spectacles, with neutral tint glasses (fig. 11)	0 12 6
Railway Preservers, . . . . .	4s. 6d. to 0 7 6
Double Eye-glasses, solid Gold (fig. 10) . . . . .	£2. 2s. to 4 4 0
Plated Gold ditto, . . . . .	£1 4s. to 2 2 0
Silver ditto, . . . . .	0 12 6
Tortoise-shell ditto, . . . . .	5s. to 0 7 6
Ditto, with spring to hold on the nose 7s. 6d. to . . . . .	0 10 0
Horn ditto . . . . .	0 3 0
Single Eye-Glasses, Gold (fig. 12) 5s. to . . . . .	1 10 0
Tortoise-shell ditto . . . . .	0 2 6
Horn ditto . . . . .	0 1 0



Figs. 11, 12.

*Lenses accurately fitted to suit every sight.*

**GYROSCOPES, MODELS, &c.**

Gyroscope, for illustrating the effect of rotary motion overcoming gravity, the procession of the equinoxes, &c . . . . .	1 1 0
Foucaults Gyroscope mounted in gimbals with vertical axis, on stand . . . . .	2 10 0
Anorthoscope for illustrating the very curious optical effects of motion on vision . . . . .	1 10 0
Model Locomotive Engine . . . . .	4 4 0
Railway for ditto, 3ft. diameter . . . . .	1 5 0
Still for distilling water 1 Gallon size . . . . .	0 18 0
Set of Mechanical Powers, large size, illustrating gravity, friction, motion, pulleys, screw, levers, &c. . . . .	5 5 0

**THEODOLITES, LEVELS, &c.**

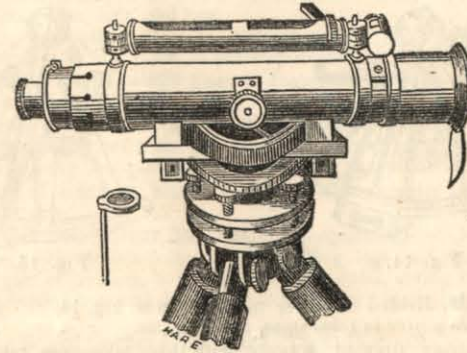


Fig. 13.

	£	s.	d.
Theodolite, 6 inch, of the best construction, divided on silver, with tangent screw adjustments, and tripod staff, in case complete . . . . .	25	0	0
Ditto, ditto, with two telescopes . . . . .	31	10	0
Theodolite, 5in., best construction, one telescope . . . . .	20	0	0
Theodolite, 4in., ditto . . . . .	16	0	0
Transit Instruments, £15 15s. to . . . . .	50	0	0
Dumpy or Gravatt's Level, 10in., with rack adjustment, and tripod staff, in case Fig. 13. . . . .	10	10	0
Dumpy Level, 10in., with silver ring compass, best construction, and tripod staff . . . . .	12	12	0
Dumpy Level, 14in., with silver ring compass, best construction, and tripod staff . . . . .	14	14	0
Miners' Dial, 5in., with divided cover, ball and socket joint, mahogany legs . . . . .	5	10	0
Miners Compass, 5in., with folding sights, in case, without legs . . . . .	2	10	0
Draining Level for Agricultural purposes . . . . .	2	0	0
Ditto, with parallel plates, and mahogany legs . . . . .	3	0	0
Levelling Staff, Sopworth's 14 feet portable . . . . .	2	12	6
Spirit Levels mounted in brass, per inch . . . . .	0	1	0
Prismatic Compass, 4in., with azimuth glass, in sling leather case . . . . .	3	5	0
Tripod Stand, for ditto, with ball and socket joint . . . . .	1	10	0
Pocket, or Box Sextant, in sling leather case, without telescope . . . . .	4	0	0
Ditto, ditto, with telescope . . . . .	4	10	0
Surveyors' Cross Box . . . . .	7s. 6d. to	0	15 0
Surveying Chains, warranted 66 feet, brass handles . . . . .	0	10	6
Set of 10 Arrows . . . . .	0	2	6
Measuring Tapes, best London made, 50 feet . . . . .	0	7	6
86 feet, ditto . . . . .	0	9	6
100 feet, ditto . . . . .	0	12	6
Pentagraphs, best construction, in brass, 24in. . . . .	5	5	0
For every additional 6in. . . . .	1	1	0

## SEXTANTS, QUADRANTS, &amp; COMPASSES.

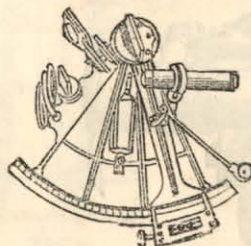


Fig. 14.

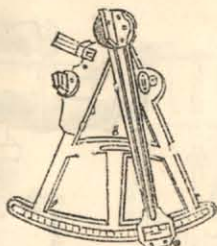


Fig. 15.

<b>Metal Sextants</b> , divided on silver to 10 seconds, Fig. 14	8	8	0
Best ditto, extra power to telescopes, reflector, &c.	10	10	0
<b>Sextants</b> in ebony, divided on ivory, with three telescopes, tangent screw, &c.	6	6	0
<b>Quadrant</b> in ebony, with tangent screw, Fig. 15.	2	10	0
Ditto, with double tangent, and vertical screw	3	0	0
<b>Handle Quadrant</b> , with all the adjustments, and two telescopes	4	10	0
<b>Artificial Horizon</b> , with mercury bottle and trough complete	4	4	0
<b>Ships' Compasses</b> , from 12s. to	2	10	0
<b>Pocket Compasses</b> , in mahogany and metal cases, 2s. 6d. to	0	15	0

## NEWTON'S SCHOOL SETS OF MATHEMATICAL DRAWING INSTRUMENTS.

No. 1 <b>A Set of Drawing Instruments</b> , consisting of compass with shifting pen and pencil leg, in mahogany box	0	2	0
No. 2 Ditto with boxwood scale, in polished box	0	2	6
No. 3 Ditto ditto with 12in. scale, angle piece, and ebony parallel rule, in long box	0	3	6
No. 4 <b>A Set of Drawing Instruments</b> , consisting of compass with pen and pencil legs, lengthening bar, a pair of dividers, drawing pen, and scale of equal parts, chords and diagonals, in polished mahogany box	0	5	0
No. 5 <b>A Set</b> consisting of large and small compasses with shifting pen and pencil legs, drawing pen, and scale of equal parts, &c., in polished mahogany box	0	6	6
No. 6 <b>A Set of Drawing Instruments</b> , with large and small compasses, shifting pen and pencil legs, lengthening bar, pair of dividers, and drawing pen, scale of equal parts, &c., protractor and parallel rule, in polished mahogany box	0	10	6
No. 7 The same as No. 6, with boxwood sector	0	12	6
No. 8 <b>Superior finished full Set of Instruments</b> , with hair points, large and small compasses, with shifting pen and pencil legs, lengthening bar, dividers, ivory-handle drawing pen, fitted in tray, with boxwood protractor, scale, and parallel rule, in polished mahogany case, with lock and key	1	5	0

## DRAWING INSTRUMENTS continued. £ s. d.

No. 9 <b>A Set</b> containing same as No. 8, with 12in. ebony parallel, in long case, lock and key	1	10	0	
No. 10 <b>A Set</b> consisting of same Instruments as No. 8, with ivory scales and rules, in polished rosewood case	1	12	6	
No. 11 <b>Addiscombe College Case of Instruments</b> , with set of Marquois' scales	3	3	0	
<b>Pocket Case of German Silver Instruments</b> , containing a pair of compasses, with needle points and jointed legs, lengthening bar, spring bow-pen, drawing pen, and pair of dividers	1	10	0	
<b>Pocket Case of German Silver Instruments</b> , superior finish, in morocco case	£1 15s to	2	2	0
<b>A Set of German Silver Instruments</b> , consisting of large compasses, with double-jointed and shifting legs and needle points, a pair of dividers, bow-pen and bow-pencil, spring bow-pen, lengthening bar, and drawing pen with ivory scale, in rosewood case	3	3	0	
<b>A Complete Set of German Silver Instruments</b> , double jointed large compasses with pen and pencil leg, hair dividers, double-jointed bow-pen and pencil, jointed lengthening bar, spring dividers, spring bow-pen and pencil, two drawing pens, penknife, and best ivory scales, in rosewood case	5	5	0	
<b>Engineer's Set of German Silver Instruments</b> , consisting of Brunel's compasses with solid slides, full divided proportional compasses, revolving bow-pen and pencil, hair dividers, spring bow-pen, and drawing pen, with ivory scales, in morocco leather case	6	16	6	
Ditto, in handsome rosewood case	7	7	0	
<b>Magazine and Cabinet Cases of Drawing Instruments</b> , in electrum or silver, to order	£10 to	30	0	0
<b>Pentagraphs for Enlarging or Reducing Plans, Maps, &amp;c.</b> , in brass with case, 24in.	5	5	0	
For every additional 6 inches	1	1	0	
<b>Beam Compasses</b> , with extra pen and pencil points, micrometer adjustment, and ebony bar. Brass £2 5s. German Silver	2	12	6	
<b>Proportional Compasses</b> for enlarging or reducing drawings, full divided. Brass, £1 5s. German Silver	1	10	0	
<b>Engineers' Pocket or Pillar Compass</b> , German Silver, in case	£1 1s. to	1	10	0
<b>Napier's Ditto</b>	£1 1s. to	1	10	0
<b>Brass Compasses</b> or dividers, 4in. to 6in.	1s. to	0	3	6
Best Ditto, German Silver, hair points, from	0	5	0	
<b>Brunel's Improved Compass</b> , with solid slides	2	10	0	
<b>Chain Scales</b> of ivory, 12in. long	0	9	0	
Two-inch offsets for ditto	0	2	0	
<b>Chain Scales</b> of boxwood, 12in. long	0	3	0	
Two-inch offsets for ditto	0	1	0	
<b>Marquois Scales</b> , the set in box with book	0	10	6	
<b>Architects' ditto</b> , boxwood 5s. Ivory	0	10	0	
<b>Protractors</b> in brass, boxwood, horn or ivory, 9d. to	0	6	0	
<b>Parallel Rules</b> in ebony, ordinary construction, 3d. per inch.				
<b>Rolling ditto</b> ditto 9d. per inch, divided ivory edge 1s. 3d. per inch				
<b>T Squares, Straight-edges, Curves, Angles</b> , and every other description of Rule and Scale.				

## BAROMETERS, THERMOMETERS, &amp;c.

	£	s.	d.
Pediment Barometers	10s. 6d. to	0	12 6
Ditto with Thermometer, complete	£1 1s. to	2	2 0
Ditto with double rack verniers, in rosewood, mahogany, or carved oak frames	£2 2s. to	5	5 0
Marine Barometer	£2 2s. to	4	4 0
Mountain ditto	£3 3s. to	6	6 0
Wheel Barometers, Sin. of ordinary construction		1	10 0
Ditto superior construction, made portable with stopcock, for travelling	£2 2s. to	4	4 0
Ditto ditto, 10in.	£3 3s. to	6	6 0
Aneroid Barometer,	£2 10s. to	3	3 0
Bourdon's Barometer, in case		3	13 6
Thermometers, with box scales warranted,	1s. and	0	2 6
Ditto japanned, or copper cases from		0	2 6
Self-registering Day and Night Thermometers	from	0	10 6
Chemical Thermometers, with jointed scale for liquids	6s. 6d. to	0	15 0
Mason's Hygrometer		0	15 0
Saccharometers and Hydrometers for milk, Acids, Alkalies, &c.	4s. 6d. to	0	7 6
Metal Hydrometers in case with weights	£3 3s. to	5	5 0
Urinometers	from	0	7 6
Ditto in case, Thermometers and Acid Bottles		1	10 0

## PHOTOGRAPHIC CAMERAS AND APPARATUS.

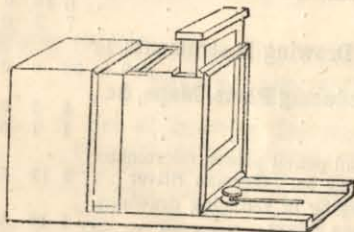


Fig. 16.

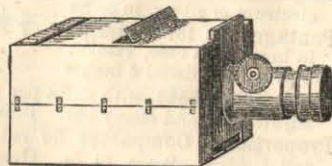


Fig. 17.

Expanding Mahogany Camera, fig. 16. with combined Portrait Lenses $\frac{1}{4}$ plate size, frame for collodion plates, and focus glass.	£3	0	0
Ditto, with tripod stand, and the requisite chemicals for the positive and negative processes	5	5	0
Expanding Mahogany Camera, with back for plates, focus glass, and double $\frac{1}{2}$ plate lenses, for portraits, 6 by 5, and views 7 by 6	7	0	0
Ditto, with stripod stand, pressure frame, weights and measures, chemicals, &c., packed in case	10	10	0
Expanding Mahogany Camera, with collodion back, focus glass, and double whole plate lens for portraits $8\frac{1}{2}$ by $6\frac{1}{2}$ , and views 10 by 8	14	0	0
Portable Folding Camera, fig. 17. with sliding front, $\frac{1}{4}$ plate Portrait Lens, double back for holding two sheets of prepared paper, collodion back and focus glass for views, 6 by 5, and portraits, 4 by 3, packed in case Fig. 17	5	0	0
Folding Camera, with sliding front, $\frac{1}{2}$ plate portraits lens, and apparatus same as above, for views, 7 by 9, and portraits, 6 by 5, in case	9	9	0

	£	s.	d.
Folding Camera, with whole plate lens, for views 10 by 8, and portraits, $8\frac{1}{2}$ by $6\frac{1}{2}$	16	16	0
Stereoscopic Camera, Latimer Clark's principle, with sliding back and adjusting table, without lens	2	10	0
<i>If the above Cameras are for India, they should have brass bands and corners, which will make an addition in price of 20s., and 40s., for either of the above sizes.</i>			

Achromatic Portrait Lenses, with optical and chemical foci coincident, mounted in brass fittings with rackwork adjustment.			
No. 1. $1\frac{3}{4}$ in. diameter, for portraits, 4 by 3 in.		2	0 0
No. 2. $2\frac{1}{2}$ in. diameter, " 6 $\frac{1}{2}$ in. by 4 $\frac{3}{4}$ in.		4	4 0
No. 3. $3\frac{3}{4}$ in. diameter, " 8 $\frac{1}{2}$ in. by 6 $\frac{1}{2}$ in.		10	0 0
Single Achromatic Lenses, for views, mounted in brass, with rackwork adjustment.			
No. 1. $1\frac{3}{4}$ in. diameter, for views 5 by 4 in.		1	5 0
No. 2. $2\frac{1}{2}$ in. diameter, " 8 $\frac{1}{2}$ by 6 $\frac{1}{2}$ in.		2	0 0
No. 3. 3 in. diameter, " 10 by 7		3	10 0

*Larger sizes to order; the whole of the above Lenses are warranted perfect.*

Tripod Camera Stands of various forms, 12s. 6d. to	1	10	0
Pressure Frames for printing positives on paper, with jointed back for observing the picture, for plates, 7 by 6 in., 9 by 7 in., 10 by 8 in. 8s., 10s. and	0	12	0

Glass Plates best patent plate, ground edges.			
$3\frac{1}{4}$ by $2\frac{3}{4}$ inches	0	1	6
4 by 3	0	2	0
$4\frac{1}{4}$ by $3\frac{1}{4}$	0	2	6
5 by 4	0	3	6
6 by 5	0	5	0
7 by 6	0	7	0
8 by 6	0	8	0
$8\frac{1}{2}$ by $6\frac{1}{2}$	0	9	6
9 by 7	0	10	6
10 by 8	0	12	6

Collodion Dipping Baths of Gutta Percha with dipper, for plates, 5 by 4 in., 4s. 6d., $8\frac{1}{2}$ by $6\frac{1}{2}$	0	8	0
Albumenized Paper, for printing positives, of the best quality, 11 by 9 in., per quire	0	6	0
Ditto, ditto, thinner	0	3	0
Turner and Canson's Negative and Positive per quire, 1s. 6d. to	0	4	6
Negative Waxed Paper, 11 by 9 in., per quire	0	9	0
Iodized Paper, 7 by 6 in., per dozen	0	3	0

Pure Chemicals—			
Acid acetic, glacial per oz.	0	0	8
" gallic " "	0	2	0
" pyrogallic . per dram	0	1	6
" nitric " per oz.	0	0	2
" sulphuric . per lb.	0	0	6
Ammonia Liquor pure per oz.	0	0	3
Barium chloride " "	0	0	4
Collodion " "	0	0	6
" iodized " "	0	0	6
Ether sulphuric " "	0	0	6
Gold chloride 15grs. "	0	3	0
Iron protosulphate per lb.	0	1	0
" protonitrate solution per oz.	0	0	3
Mercury bichloride per oz.	0	0	4
Potassium iodide " "	0	2	6
" cyanide " "	0	0	4
Potass nitrate, powdered per lb.	0	1	0
Potassa pure, for taking stains from the hands . per oz.	0	0	4
Silver nitrate, crystallized "	0	4	0
" ammonical nitrate " "	0	1	0
" iodide . "	0	10	0
Soda hyposulphite per lb.	0	1	0
Spirit varnish . per oz.	0	0	4
Tripoli " "	0	0	6
Varnish for backing positives . per bottle	0	1	0
Water distilled per gallon	0	0	6

**AIR PUMPS AND APPARATUS.**

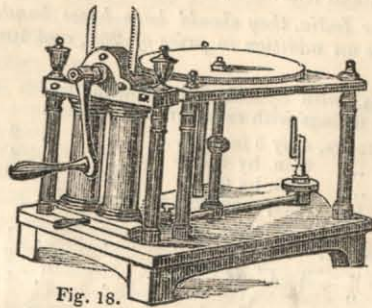


Fig. 18.

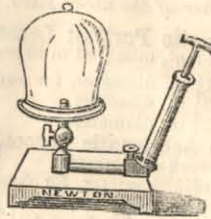


Fig. 19.

	£ s. d.
Air Pump, single barrel, plate 3½ in. diameter, with bell glass receiver	1 5 0
Air pump, with 5½ in. plate, sloping barrel, bell glass receiver, and stopcock to keep a vacuum when removed from the pump (Fig. 19)	2 5 0
This is a very useful Instrument.	
Double Barrel Air Pump, with 6 in. plate	4 14 6
Ditto, ditto, with 8 in. plate, and table clamp	7 7 0
Ditto, with 9 in. raised plate, and gauge plate, mercurial syphon gauge, clamp and key (Fig. 18)	9 9 0
Bell glass receiver for ditto	0 12 6
Double Barrel Air Pump, on mahogany stage stool, 3ft. high, plate 10 in. diameter, with barometer gauge, cistern and key	18 18 0
Bell-shaped receiver for ditto	0 15 0
Pocket Condenser	0 4 6
Condensing and exhausting syringe both in one instrument, 8 in. long, 1 in. diameter.	0 14 0
Tall open receiver, 18 in. high, with plate to close the top for guinea and feather, fountain in vacuo, and other experiments, for either of the pumps	0 10 6
Bladder glass	0 2 6
Magdeburgh Spheres 2½ in. diameter, with handles	0 12 6
Ditto, 3 in. diameter 16 s., ditto 4 in.	1 5 0
Guinea and Feather Apparatus, 2 falls	0 15 0
Bladder frame and lead weights	0 8 6
Mercury filtering cup	0 4 6
Lungs glass	0 6 6
Fountain plate, stop-cock and stand	0 10 0
Bell Experiment	0 10 6
Set of Pneumatic Apparatus, with air pump, 5½ plate, (fig. 19) bell glass receiver, bladder frame and lead weight, Magdeburgh spheres, bladder glass, bell experiment, guinea and feather apparatus, tall open receiver, with plate for closing, fountain jet, mercury filtering cup and glass, condensing syringe. The whole packed in coloured case	6 6 0
Model of Diving Bell with pump	1 5 0

**STEREOSCOPES.**

	£ s. d.
Pocket Stereoscope, in mahogany frame	0 1 0
Stereoscope, in polished mahogany	0 3 6
Prismatic Stereoscope, in polished mahogany or walnut, with sliding draw, to adjust the focus, on handsome stand with twisted pillar	3 3 0
Prismatic Cosmoramaic Stereoscope	7s. 6d. to 1 0 0
Stereoscope Pictures on paper, taken by photography in great variety, per dozen	9s. to 1 10 0
Stereoscope Pictures on glass, each	4s. to 0 7 6

**CHEMICAL CABINETS.**



Fig. 20.

Youth's Chemical Cabinet, Fig 20, containing upwards of sixty articles—No. 1, in paper box, 5s. 6d.; No. 2, cedar box, with hooks, 7s. 6d.; No. 3, polished mahogany box, with lock and key	0 10 6
Student's Chemical Cabinet, in handsome mahogany case, containing upwards of one hundred articles	
No. 1, £1 1s.                      No. 2, £2 2s.                      No. 3,	3 3 0
Hydro-Pneumatic Apparatus, comprising in one piece of apparatus, a Pneumatic Trough with large tray to hold Gas Jars; a Gasometer, and an Hydraulic Blow-pipe, complete with Lamp and Tongs	2 2 0
Ditto, fitted up with 90 Chemical Preparations and Tests, and a large assortment of superior apparatus, Air Jars, and other necessaries for making gases	5 5 0

**ELECTRICITY AND GALVANISM.**

Plate Electrical Machine, with 9 in. plate, and brass conductor	1 5 0
Ditto, ditto, better construction	2 10 0
Ditto, ditto, 16 in. plate and double conductor	4 4 0
This is a very cheap and useful Instrument.	
Ditto, ditto, 18 in. plate	7 7 0
Ditto, ditto, 24 in. plate	12 0 0
Ditto, ditto, 30 in. plate	20 0 0
Cylinder Electrical Machines, from 6 in. to 11 in. diameter	
£1 5s. to	5 10 0
3s. 6d. to	0 15 0
7s. 6d. to	0 12 6
0 12 6	
7s. 6d. to	0 15 0
0 6 6	
0 10 6	
Leyden Jars	
Jointed Dischargers	
Insulated Stool	
Gold Leaf Electrometer	
Henley's Quadrant Electrometer	
Pith Image Plates, with brass stands	0 10 6

**ELECTRICITY AND GALVANISM**—continued.

Pith Figures 1s. each	Balls per dozen	£	s.	d.
Set of Three Bells on brass beam		0	1	0
Head of Hair	3s. 6d. and	0	6	6
Henley's Universal Discharger, for deflagrating metals, &c., for voltaic or frictional electricity		1	12	6
Electro-Galvanic Machine, for medical purposes, consisting of magnetic coil and handles, with Smee's battery, complete in case		2	2	0
Improved ditto, with regulators, in mahogany case		3	15	0
Magneto Electric Machine		2	12	6
Smee's Batteries, in earthen or glass cells, from		0	7	6
Six-cell Smee's Battery in gutta percha cells in mahogany box, with ratchet lifter for raising the plates out of the acid, connections for quantity and intensity, 144 inches of platinum surface.		3	13	6
Maynooth Battery, with porous pot, zinc and iron cell, large size		0	8	6
Grove's Battery		0	10	6
Magnets, horseshoe, from 6d. to		0	15	0
Electro-Magnets and keepers	7s. 6d. to	1	1	0
Electrotype Apparatus, Coils, Jars, and all kinds of Galvanic and Electrical Experiments.				
Electric Telegraph, working model, with battery and wires complete		3	13	6
Alarm Bell for do.		1	11	6

**ORRERIES, &c.**

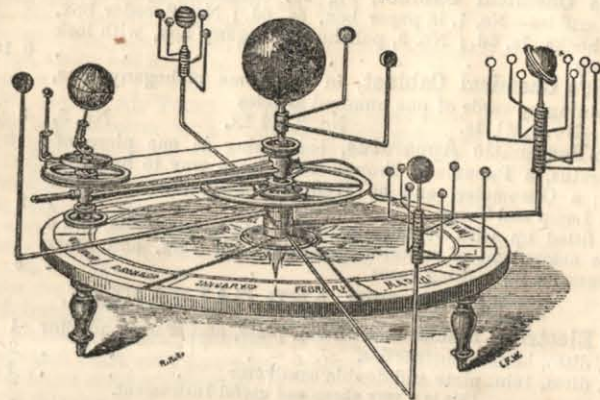


Fig. 21.

Complete Orreries, mounted on 17½ in. board, showing all the Planets and their Satellites, Diurnal and Annual Motions of the Earth, Revolutions of the Moon, Mercury, Venus, and all the Planets, to work by winch, in case complete	10	10	0
Ditto, on 17½ in. board, the Earth and Moon, and two Planets only being made to move by winch, in case	5	5	0
Ditto, having the same Motions, to move by bands, (Fig. 21), in case	3	13	6
Tellurian, showing the movements of the earth and Moon round the Sun, intended to explain the Phenomena of the Seasons, Tides, Day and Night, &c. Mounted on a 13½ in. board, in case	1	11	6

**NEWTON'S IMPROVED GLOBES.**

In introducing their List of Prices of Globes to the notice of the heads of Colleges and Educational Establishments, and the Public in General, the Publishers beg to state, that the greatest care has been taken to keep up the character which these Globes have attained for accurate and copious information during the last 150 years. The positions of the stars have been re-calculated, and the Maps on all the Globes laid down by Mr. W. NEWTON, Author of "Maps of the Stars," Editor of the "London Journal of Arts and Sciences," &c.—An attempt has been made to give to the Figures on the Celestial Globe a classical elegance, which, it is hoped, will be found an improvement upon the Constellations usually placed on the Celestial Globe.

In order to meet the increased demand for good and accurate Globes, at such prices as will admit of these instruments being more generally adopted in schools, the Publishers have, at considerable expense, made arrangements for manufacturing Globes especially for the use of Students in Schools; and, although the prices for these Globes are exceedingly low, the same attention is paid to accuracy as in the more expensive ones.

**NEWTON'S SCHOOL GLOBES.**

With Electro Brazen Iron Meridians, Brass Hour Circles, &c.



No. 1. fig. 22.

No. 1 A. fig. 23.

Fig. 24.

Black-stained Wood Frames for the Table.		Chair-high Mahogany Frames.		Globes for Suspension from the Ceiling.	
	per pair		per pair		each
25in. Globes	£18 0 0	25in. Globes	£21 0 0	25in. Globe	£7 7 0
20in. ditto	8 10 0	20in. ditto	10 0 0	20in. ditto	3 10 0
15in. ditto	4 10 0	15in. ditto	6 10 0	15in. ditto	1 15 0
12in. ditto	3 3 0	12in. ditto	4 10 0	12in. ditto	1 0 0
9in. ditto	2 10 0				

**NEWTON'S SLATE GLOBES.**

Mounted on Pedestals, and having the lines of Latitude and Longitude marked thereon. The surface of these Globes is so prepared that the Student may, with an ordinary slate-pencil, draw on the surface the outline of the Map of the Earth, or any part thereof, and any marks so made may with equal facility be removed by means of a damp sponge.

25in. Globes	each	£5 0 0	12in. Globes	each	£1 1 0
20in. ditto	"	3 0 0	9in. ditto	"	0 16 0
15in. ditto	"	1 10 0	6in. ditto	"	0 9 0



**NEWTON'S GLOBES FOR THE LIBRARY OR DRAWING ROOM.**

Highly finished, with engraved Brass Meridians, Double Hour circles Quadrants of Altitude, and Compass boxes, and containing all the most recent improvements, in handsome carved Mahogany and Rosewood frames,

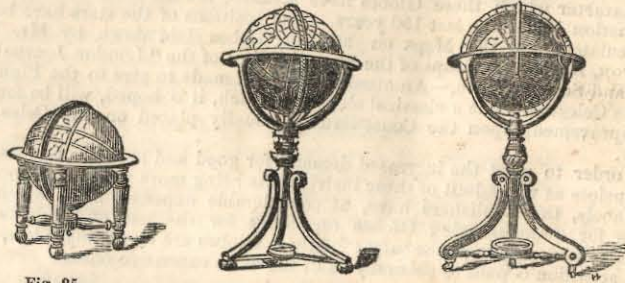


Fig. 25.

Fig. 26.

Fig. 27.

**Neat Mahogany Frames,  
Intended for Table Use.**

No. 2, fig. 25.

20-in. Globes, per pair	£10 10 0
15-in. ditto ditto	6 10 0
12-in. ditto ditto	4 10 0
9-in. ditto ditto	3 10 0
6-in. ditto ditto	2 2 0

**Polished Mahogany Frames,  
With Compass Boxes.**

No. 3, fig. 26.

25-in. Globes, per pair	£25 0 0
20-in. ditto ditto	13 13 0
15-in. ditto ditto	8 8 0
12-in. ditto ditto	5 10 0

No. 4, fig. 27.

**Best Carved Mahogany Pillar  
and Claw Frames.**

25-in. Globes, per pair	£31 10 0
20-in. ditto ditto	15 15 0
15-in. ditto ditto	10 10 0
12-in. ditto ditto	6 16 6

No. 5, fig. 28.

**Very Handsome Carved Tripod  
Frames.**

25-in. Globes, per pair	£36 0 0
20-in. ditto ditto	18 18 0
15-in. ditto ditto	12 12 0
12-in. ditto ditto	7 10 0



Fig. 29.



Fig. 28.

**Rosewood or Walnut Queen's Pattern.  
Extra carved and French Polished.**

No. 6, fig. 29.

25-in. Globes, per pair	£42 0 0
20-in. ditto ditto	18 18 0
15-in. ditto ditto	12 12 0
12-in. ditto ditto	8 8 0

**NEWTON'S READING OR REFERENCE GLOBES.**

Mounted on Mahogany Pedestals in Brass Meridians, with the Degrees of Latitude marked thereon.

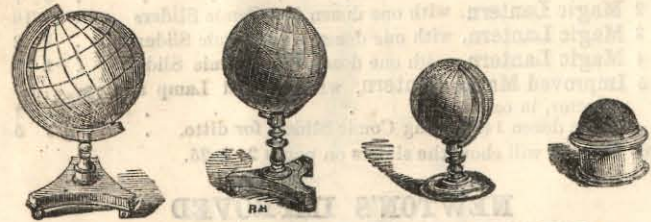


Fig. 23.

Fig. 24.

Fig. 25.

Fig. 26.

**Mahogany Pedestals  
with divided Meridians,  
Fig. 24.**

	each
25in. Globes	£8 0 0
20in. ditto	2 15 0
15in. ditto	1 15 0
12in. ditto	1 1 0
9in. ditto	0 16 0

**Mahogany Pedestals, Neat Mahogany Cases,  
Fig. 25.**

	each		each
	s	d	s
6in. Globe	6	6	3in. Globe
4½in. ditto	4	6	2in. ditto
3in. ditto	3	0	1½in. ditto
2in. ditto	2	0	1in. ditto
			1 0

**Armillary Spheres.**

Mounted on Mahogany Pedestals.

20in. diameter	£10 10 0	12in. diameter	5 5 0
15in. diameter	6 6 0	9in. diameter	3 10 0

Larger Sizes made to Order.

**Covers for Globes, of leather  
Cloth.**

<i>Short for Table Globes.</i>	
20in. per pair	£1 4 0
15in. ditto	0 15 0
12in. ditto	0 10 0
9in. ditto	0 6 0
<i>Long for High Frames.</i>	
25in. per pair	2 0 0
20in. ditto	1 10 0
15in. ditto	1 1 0
12in. ditto	0 14 0

**Quadrants of Altitude.**

	for
25in. Globes	10 6
20in. ditto	6 6
18in. ditto	6 0
15in. ditto	4 6
12in. ditto	3 6
9in. ditto	3 0
6in. ditto	2 0
3in. ditto	1 6

**RE-COVERING GLOBES.**

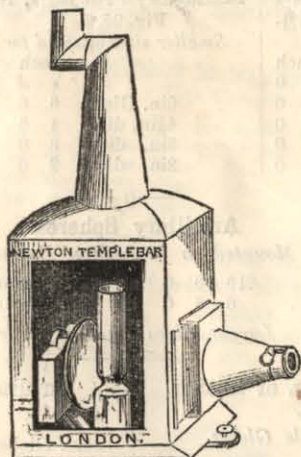
Old Globes may be re-covered with new maps, and rendered equal to new, at the price of £8 8s. per pair for 25in.; £5 5s. the 20in.; £3 3s. the 15in.; £1 15s. the 12in.

**Newton's use of the Globes.** Containing all the Problems, and various Examples illustrative of the same, for the Use of Students. Price 1s. 6d.

## MAGIC LANTERNS.

No. 1 Magic Lantern, with one dozen 6in. Comic Sliders, £ s. d. in box . . . . .	0 7 6
No. 2 Magic Lantern, with one dozen 8in. Comic Sliders . . . . .	0 10 6
No. 3 Magic Lantern, with one dozen 10in. Comic Sliders . . . . .	1 2 6
No. 4 Magic Lantern, with one dozen 12in. Comic Sliders . . . . .	1 12 6
No. 5 Improved Magic Lantern, with Argand Lamp and re- flector, in case . . . . .	1 15 0
One dozen 14in. Long Comic Sliders for ditto. . . . .	1 5 0

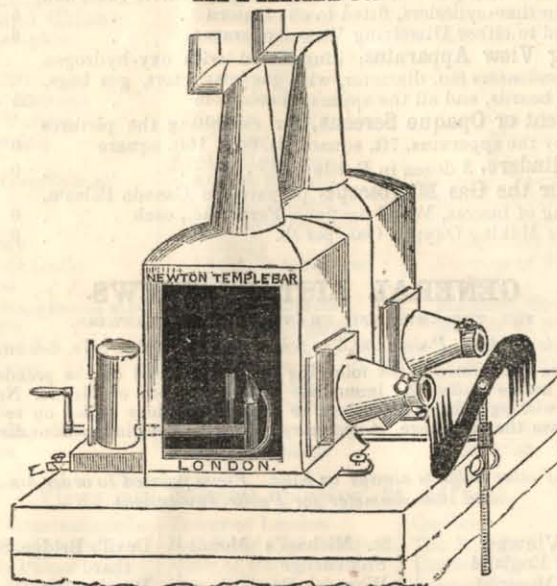
This Lantern will show the sliders on pages 24 & 25.

NEWTON'S IMPROVED  
PHANTASMAGORIA LANTERNS.

No. 1 Newton's Improved Phantasmagoria Lantern, with lenses 3in. diameter, mounted in brass cells, with sliding tube, capable of showing a clear disc of light 8ft. in diameter, packed in case . . . . .	2 12 6
No. 2 Newton's Improved Phantasmagoria Lantern, with lenses 3½in. diameter, and very powerful fountain Argand Lamp and reflector, suitable for Schools or Lectures . . . . .	3 3 0

Messrs. Newton *strongly recommend* this No. 2 Lantern to their customers, the difference in price over No. 1 being very small, and the superior size of the lenses enabling the exhibitor to show by it *any* of the pictures in the following list. No. 1 and 2 are fitted with rack and pinion adjustment to the focus tube for 10s. 6d. each extra.

No. 3 Newton's Improved Phantasmagoria Mahogany Lantern, with lenses 4½in. diameter, rack-work focus tube, packed in case . . . . .	6 6 0
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NEWTON'S IMPROVED DISSOLVING VIEW  
APPARATUS.

The Apparatus is here shown fitted with Newton's Improved Oxycalcium light,—a jet of oxygen gas is thrown through the flame of a spirit-lamp on to a lime-cylinder fixed at some little distance from it; by this means a most brilliant light is obtained, scarcely inferior to the oxy-hydrogen, with half the trouble, and without any of the danger—the oxygen alone being perfectly harmless. The great inconvenience of the lime shifting when hung on a small wire, as in the ordinary Oxycalcium Light, is here obviated by putting the cylinder on a fixed wire.

For private exhibition this Apparatus is fitted with powerful Argand Fountain Oil Lamps.

Dissolving View Apparatus, with condensing Lenses, 3in. diameter, with powerful Argand Fountain Lamp and reflectors, Dissolvers moved by rack-work, packed in case with room for sliders . . . . .	7 7 0
Dissolving View Apparatus, with Condensing Lenses, 3½in. diameter, Dissolvers moved by rack-work, suitable for Schools, and Lectures, and capable of showing the whole of the paint- ings in the following lists . . . . .	8 8 0
Ditto, ditto, with rack adjustment to focus tubes . . . . .	9 9 0

Messrs. Newton *strongly recommend* this Apparatus.

Dissolving View Apparatus, with Condensing Lenses, 4½in. diameter, with rack-work Dissolvers, and focus tube . . . . .	12 12 0
Newton's Improved Microscope, to attach to the Lantern for exhibiting water insects, wings, sections of wood, &c., with two powers . . . . .	1 10 0

This Instrument does not show satisfactorily with the oil lamps on account of its power and the amount of light required, but when the Oxycalcium Light is used, it is a very beautiful and efficient Instrument.

<b>Oxycalcium Light Apparatus</b> , consisting of a Fountain spirit lamp, india rubber gas-bag, with box and improved pressure boards, retort and purifier for making the gas, flexible tube, and one dozen lime-cylinders, fitted to one lantern . . . . .	5	5	0
Ditto, fitted to either Dissolving View Apparatus . . . . .	6	6	0
<b>Dissolving View Apparatus</b> , illuminated with oxy-hydrogen light, Condensers 6in. diameter, with gas jets, retort, gas bags, pressure boards, and all the apparatus complete . . . . .	35	0	0
<b>Transparent or Opaque Screens</b> , for exhibiting the pictures by any of the apparatus, 7ft. square, 8s. 6d.; 10ft. square . . . . .	0	15	0
<b>Lime Cylinders</b> , 3 dozen in Bottle . . . . .	0	6	0
<b>Objects for the Gas Microscope</b> , prepared in Canada Balsam, consisting of Insects, Wood Sections, Ferns, &c., each . . . . .	0	1	6
Mixture for Making Oxygen Gas, per lb. . . . .	0	1	6

### GENERAL LIST OF VIEWS.

FOR THE IMPROVED PHANTASMAGORIA LANTERN.

*In Single Sliders, Paintings 3½ inches Diameter, 6s. to 7s. 6d. each.*

The Views enumerated in the following lists are painted on the premises by competent artists under the immediate superintendence of Messrs. Newton. Customers wishing to have engravings or original drawings copied on to glass, can thus have the advantage, if necessary, of giving their instructions direct to the artists.

*A variety of other Subjects always on hand. Views painted to order 4in., 6in., and 10in. diameter for Public Institutions.*

<b>London Views—</b>	St. Michael's Mount	Devil's Bridge, St. Gothard
Bank of England	Stonchenge	Drachenfels
British Museum	Warwick Castle	Ehrenbreitstein
Buckingham Palace	Windsor Castle	Florence, Campanilla
Custom House	<b>Ruins and Abbeys—</b>	„ Ponte Vecchio
London General View	Conway Castle	Heidelberg
Greenwich Hospital	Dryburgh Abbey	Itri
Guildhall	Fountains „	Lake of Geneva
Hampton Court	Furness „	„ of Como
Houses of Parliament	Holy Cross „	Liebenstein
Mansion House	Kirkstall „	Martigny
Monument	Melrose „	Mayence „
Post Office	Netley „	Mount Etna, Catania
Royal Exchange	Newby „	Naples, Bay of
St. Paul's	Pembroke Castle	Oberwesel
Temple Bar	Tintern Abbey	Pisa, Leaning Tower
Thames Tunnel	Youghall „	Pompeii
Tower	<b>Germany, Italy, Switzerland, &amp;c—</b>	Rheinfels
Westminster Abbey	Amsterdam	Rome, Castle St. Angelo
<b>English Views—</b>	Ancona	„ General view
Balmoral	Athens	„ St. Peters
Bell Rock Lighthouse	Berne	St. Bernard
Ben and Loch Lomond	Bonn	Strasbourg
Birthplace of Burns	Braubach	Tivoli
Dublin	Brussels	Venice, Ducal Palace
Edinburgh Castle	Castle of Chillon	„ Greek Canal
Eddystone Lighthouse	Castle of Thurmberg	„ St. Marks
Noss Head Shetland	Coblentz	Vesuvius
Shakespeare's House	Cologne	Waterloo
Snowden, & Llanberis		

### General List of Views,—continued.

<b>Overland Route, India, and China—</b>	Tombs of Kings	Niagara Falls
Southampton	Source of Ganges	Water Spouts
Lisbon	Amoy, Street in	Mont Blanc and Chamouni
Gibraltar	Canton, General view	„ Glacier du Tacconay
Malta Harbour	Canton, Street in	„ Grand Mulets
„ Valetta	Great Wall of China	„ Mur de la Cote
Alexandria	Nankin Porcelain Tower	„ The Summit
Cairo	<b>Arctic Regions—</b>	<b>General Views—</b>
Nile, Overflow of	Aurora Borealis	Balaclava Harbour
Suez	Cutting a passage	Collecting Gutta Percha
Aden	Greenland Whalers	Constantinople
Bombay	Icebergs	Fortress of Ham
Point de Galle	Night Encampment	Madrid
Madras	Whaling	Malakoff, Storming of
Calcutta, general view	Winter Quarters	Mosque of St. Sophia
Benares	<b>Natural Wonders—</b>	„ of Sultan Achmet
Cawnpore	Adelsburg, Cave of	Place de la Concorde
Lucknow	Arta, Cave of	Quebec
Agra	Boiling Springs	Sebastopol
Delhi	Fingal's Cave	St. Petersburg
„ Taj Mahal	Giant's Causeway	Stockholm
Lahore	Glacier Tables	

### Views with Moving Shipping, 7s. 6d. each.

View of Constantinople	Tower of London	Quebec
Greenwich Hospital	Bell Rock Lighthouse	The Rialto, Venice
Lambeth Palace	View of Rome	Castle of Chillon
Custom House	Bay of Naples	Lake of Como

### Views in Holy Land, Egypt.

*Paintings 3½ inches diameter, 6s. to 7s. 6d. each.*

Adullam, Cave of	Jews place of Wailing	Pergamos
Antioch	Jericho, Ruins of	Plains of Lawgiving
Ajalon, Valley of	Joppa	Pool of Siloam
Baalbec, Ruins of	Jordan, Fords of	„ Hezekiah
Babylon	Lake of Tiberias	Philadelphia
Beirut	Laodicea	Ramah (Arimathea)
Bethany	Mount Ararat	Red Sea
Bethlehem	„ of Ascension	Samaria
Cana of Galilee	„ Carmel	Shechem, (Nablous)
Carnac	„ Hor	Sidon, from the Sea
Cedars of Lebanon	„ Horeb	Smyrna
Christ Church, Mount Zion	„ Steps leading to	Sardis
Church Holy Sepulchre	„ Moriah	Tyre, Ruins of
Corinth	„ Olives, from the Wall	Thebes, Ruins of
Damascus	„ Sinai and Convent	Thyatira
Dead Sea	„ Tabor	Tomb of Absalom
Defiles of Edom	Nazareth	Valley of Jehoshaphat
Ephesus	Nile, overflow of	Written Valley, Wilderness of Sin
Ezion Geber	Nineveh	
Gethsemane	Palmyra, Ruins of	
Jerusalem, Ancient	Patmos	
„ Modern		

## INTERIOR OF CATHEDRALS, &amp;c.

These paintings are beautifully and elaborately executed  $3\frac{1}{4}$  in. diameter, 12s. each.

Canterbury Cathedral	Lincoln Cathedral	St. George's Chapel,
Chapel of Nativity	Lyons ditto	Windsor
Church of Holy Sepulchre	Milan ditto	Temple Church, London
Entrance to ditto	Mosque of Sultan Achmet	Wells Cathedral
Durham Cathedral	Norwich Cathedral	Henry VIIIth's Chapel
Exeter ditto	Rheims Cathedral	Westminster Abbey
House of Commons	St. Paul's Choir	Choir
House of Lords	Ditto Dome during Wellington's Funeral	Westminster Hall
Lichfield Cathedral		Winchester Cathedral
		York Cathedral

## MISSIONARY SCENES.

Painting  $3\frac{1}{4}$  inches Diameter, 10s. 6d. each.

CHINA.		Interior of Rev. J. Crowther's Church
Entrance into Amoy		Thomas King meeting his mother after a separation of 25 years
Street in Canton		Native preaching before the King of Lagos
Opium Smoking		INDIA.
Sacrifice to the Harvest Moon		Self-torture
Consulting the Sticks of Fate		Swinging Festival
Temple of Pootoo		Dying Man at the Ganges
Interior of the Temple Honan		Worship of Juggernaut
Offerings for the Dead		Worship of Priest
Interior of an Idol Shop		Missionary preaching on the Ganges
AMERICA—NORTH-WEST.		Ditto ditto under Banyan-tree
Mr. West and Indian Boys		Native Catechist preaching
Bear Medicine Man		Infant thrown to Crocodiles
Cumberland Station—Summer		Idol-maker's Shop
Ditto Winter		Rev. J. Devasagayam's Church
Abraham and Indians		Devil Worshippers, Ceylon
Missionary Night Encampment		NEW ZEALAND.
Group of Indians and Squaws		Rangihoa
Death of George Jebb		Pahu, or the War Bell
Henry Budd in snow-shoes		Pukana or War Dance
Bishop travelling in dog-sledge		War Canoes
Departure of Missionary		Memorial Idols
Bishop preaching to Indians		Reconciliation of Hostile Tribes
Indians going to Church		Chief Lying in State
AFRICA.		Interior of Native Pa
Slave-catcher, or Capture of Thomas King		Wanganui and River, from Cave
Slaves marched down to Coast		Cave of Otaki, Night Encampment
Capture of Slave-ship		Interior of Otaki Church
Interior of Slave-ship		Baptism of Te Naghui
Sierra-Leone, in 1800		Interior of Turanga Church
Ditto 1856		Chiefs writing Jubilee Letter
Sunday-school, Sierra-Leone		
Natives of Abbeokuta		

## PILGRIM'S PROGRESS.

Twelve Scenes,  $3\frac{1}{4}$  in. diameter, 10s. 6d. each.

Christian addressing his family	Fight with Apollyon
Setting out from City of Destruction	Giant Pope
Knocking at the gate	Vanity Fair
The three shining ones	Giant Despair and the pilgrims
The lions in the way	Crossing the river
Christian being armed	The triumphant reception

## DISSOLVING VIEWS.

Tower of London by Day, then by Moonlight, then on fire, 3 slides	18s.
St. Peter's at Rome by Day, then illuminated by fireworks from the Castle of St. Angelo at Night	12s.
Ship in full sail, changing to a storm with lightning, then on fire, and then the survivors on a rock, 5 slides	26s.
Mount Vesuvius by Day, and Night with eruption	12s.
Old Royal Exchange by Day, then on fire, changing to New Exchange, 3 slides	18s.
The Soldier's Dream, Scene Wounded Soldier Asleep, the Harvest Home, The Recruit, The Storming Party, The Reward, 5 slides	30s.
Summer and Winter, with Slider to produce a snow-storm, 3 slides	20s.
A Windmill, with sails revolving	10s. 6d.
A Watermill, ditto ditto	10s. 6d.
A Fountain playing	10s. 6d.

## ASTRONOMICAL DIAGRAMS.

A series of 38 Paintings  $2\frac{1}{2}$  inches Diameter, £2 5s. per set.

No.	No.	No.
1 Figure of the Earth	14 View of Saturn	28 Eclipse of Sun—moveable
2 Rotundity of ditto—moveable	15 ——— Uranus	29 Orbit of Moon
3 Telescopic View of Mercury	16 ——— Neptune	30 Eclipse of Moon—moveable
4 Half Moon	17 Eccentric orbit of Comet	31 The Zodiac
5 Crescented Moon	18 Comet of 1811	32 The Seasons
6 Moon's Phases	19 ——— 1680	33 Spring Tides
7 The Sun	20 Ptolemaic System	34 Ditto ditto
8 Telescopic View of Mercury	21 Pythagorean System	35 Neap Tides
9 — Phases of Venus	22 Tyconic ditto	36 Constellation of Orion
10 ——— Mars	23 Newtonian ditto	37 ——— Ursa Major
11 ——— Asteroids	24 Shadow of the Earth	38 Milky Way and Nebulae
12 ——— Jupiter	25 Ditto ditto	
13 ——— Saturn	26 Cause of Eclipse of Moon	
	27 — of Eclipse of Sun	

The above 3 inches diameter, painted in a very superior manner, £3 3s. per set.

## MOVEABLE ASTRONOMICAL DIAGRAMS.

THE MOTION PRODUCED BY RACK-WORK

In a Set of Ten Sliders,  $2\frac{1}{2}$  inches diameter packed in a Box, £4 10s. per Set, or from 7s. to 15s. each.

- Slider 1, 15s. The Solar System, showing the Revolution of all the Planets and their Satellites, round the Sun.
- Slider 2, 13s. The Earth's Annual Motion round the Sun, showing the Parallelism of its Axis, thus producing the Seasons.
- Slider 3, 8s. Illustrates the cause of Spring and Neap Tides, and shows the Moon's Phases.
- Slider 4, 8s. Shows the Apparent, Direct, and Retrograde Motion of Venus or Mercury, and also its Stationary Appearance.
- Slider 5, 8s. Proves the Earth's Rotundity, by a Ship sailing round the Globe.
- Slider 6, 8s. Illustrates the Eccentric Revolution of a Comet round the Sun, and shows the appearance of its Tail at different parts of its Orbit.
- Slider 7, 10s. The Diurnal Motion of the Earth, showing the Rising and Setting of the Sun, illustrating the cause of Day and Night, by the Earth's Rotation upon its Axis.
- Slider 8, 15s. Illustrates the Annual motion of the Earth round the Sun, with the Monthly Lunations of the Moon.
- Slider 9, 8s. Shows the various Eclipses of the Sun and Transit of Venus.
- Slider 10, 8s. Shows various Eclipses of the Moon.

The above Set of Rack-work, 3 inches diameter, £7 7s.

## MOVEABLE COMIC AND OTHER SLIDERS.

2s. 6d. each.

Barber, shaving	Grand Turk, moving eyes	Peacock with opening tail
Bottled porter	Grimaldi's head	Punch Bowl
Black draught	Green's balloon, Night Ascent	Punch with growing Nose
Blacksmith at work	Girl skipping	Pear (Pair)
British Tar (a Sailor in a cask)	Harlequin in bottle	Patent Bedstead
Boy catching Butterfly	" Falling to pieces	Pair of Spectacles
Blue Beard's head	Hodge and his Hat	" Snuffers
Birth of Cupid	Impudent Monkey with Old Woman	Pretty Poll
Boy and Bird's-nest	Jim Crow dancing	Rowing Match
Boy jumping post	Jamaica Rum	Royal stout
Boy stealing jam	Kicking Donkey	Rum Bottle & Punch
Burglar and Miser	Lamp Black (sweep in cask)	Sailor riding a Pig
Cockney Fisherman	Light of other days	Snowballs
Cauliflower changes to Venus	Lion's head	Sonnambulist
Cook and Calf's head	Leap Frog	The Seranader
Combat	Man pulling off boot	Those horrid Knats
Cobbler at work	" with jumping Pig	Tiger's head
Cat following a Rat	" swallowing Rat	Tailor sewing
Cat and mice	" with Pie	Tailor and Goose
Cats on the Tiles	" wishing good night	Tailor and Cabbage
Chinese Jumpers	Meet me by moonlight alone	Tight-rope Dancer
Clown	Naval Engagement	Tartar's head
" headless	Navigation (boys sailing boat)	The Night-mare
" end Donkey's head	Opening Rose, Exposing Cupid	Tithe Pig
" tumbling	Opening Pink	Tumbler and Ball
" and dancing Dog	Pine-apple changes to a clown	Topsey's head (moving eyes)
" jumping Horse	Performance on two chairs	Wreath and Good night
" and Ladder		Woman beating Boy
Caterpillar, Chrysalis & Butterfly		" and Glass
Dishonest Customer		Windy Day
Equestrian at Astley's		Village Dentist
Falconer		Vegetarian
Farmer and Dog		United Service
Fakenham Ghost		

### Lever Slides, 6s. 6d. to 7s. 6d. each.

Horse drinking at a pond	Cow drinking
Children playing at see-saw	Shoeblick blacking a boot
Cobbler at work	Man breaking stones
Old man begging, takes off his hat	Ship at anchor
	&c. &c.

The following tales are painted on circles 2in. diameter, mounted 4 in each slide:—

Dick Whittington, 8 scenes	0 12 0
Tale of Tiger and Tub, ditto	0 12 0
Robinson Crusoe ditto.	0 0 0
John Gilpin ditto	0 0 0

## CHROMATROPES, OR ARTIFICIAL FIREWORKS.

2½ in. diam., 8s. 6d. each; 3 in. diam. 10s. 6d. each.

These ingenious and clever contrivances comprise a great variety of novel and elegant designs, and when put in motion in the Phantasmagoria Lantern, by means of the brass Rack-work, produce most astonishing and brilliant effects. These may be had in upwards of 40 different designs.

## NATURAL HISTORY.

Painted in circles 2½ inches Diameter, 4 in each slider, 4s. 6d.

- Mammalia—**
- No. 1 Ourang Outang—Long armed Ape—Blue-faced Baboon—Monkey.
  - 2 Striated Monkey—Opossum with young—Chinchilla—Sloth.
  - 3 Armadillo—Porcupine—Hedgehog—Vampire Bat.
  - 4 Squirrel—Flying Squirrel—Ermine—Ornithomiscus.
  - 5 Kangaroo—Jerboa—Civet Cat—Ichneumon.
  - 6 Bear Polar—Bear Brown—Beaver—Otter.
  - 7 Bull—Bramah Bull—Bison—Buffalo.
  - 8 Newfoundland Dog—Wolf—Fox—Mastiff.
  - 9 Cat Domestic—Rabbit—Hare—Sheep.
  - 10 Horse—Ass—Yak—Zebra.
  - 11 Camel—Dromedary—Llama—Tasmanian Wolf.
  - 12 Lion—Lioness and Cubs—Tiger—Panther.
  - 13 Leopard—Hunting Leopard—Lynx—Ant. Eater.
  - 14 Elephant—Elephant and young—Tapir—Hyena.
  - 15 Rhinoceros—Hippopotamus—Wild Boar—Hog.
  - 16 Giraffe—Gnu—Nil Ghau—Gazelle.
  - 17 Reindeer—Stagg—Wild Goat—Chamois.
  - 18 Seal—Turtle—Walrus—Whale.
- Amphibia—**
- 19 Crocodile—Chameleon—Rattle Snake—Frog.
- Fish—**
- 20 Electrical Eel—Flying Fish—Flying Scorpion—Globe Fish.
- Birds—**
- 21 Golden Eagle—Eagle and prey—Vulture—Dodo.
  - 22 Ostrich—Cassowary—Apteryx—Victoria Pigeon.
  - 23 Swan—Pelican—Albatross—Hoopoe.
  - 24 Crane—Balearic Crane—Heron—Flamingo.
  - 25 Owl—blue and yellow Macaw—Carolina Parrot—Lyre Bird.
  - 26 Pennant Paraquet—Peacock—Bird of Paradise—Roseate Cockatoo.

## DIRECTIONS FOR USING

### Newton's Improved Phantasmagoria Lantern, &c.

To prepare a single lantern for exhibition, the lamp must be furnished with a cotton wick, and trimmed in the usual manner. In order to supply the lamp with oil, the reservoir must be removed from the cistern, and a small quantity of oil poured into the latter, so as just to fill the hole at the bottom, and well saturate the cotton wick. The moveable reservoir should then be inverted and filled with the best sperm oil, and replaced in the cistern.

The lamp may then be lighted, and the wick turned up until an intensely bright light without any smoke is obtained. Before using the lantern, the lenses should be taken out and wiped, so as to remove any dust or moisture that might be on them; the lamp-glass must be also cleaned previous to placing it on the lamp, and care should be taken that the silver reflector is brightly polished.

The screen or medium upon which the picture is to be shown, may consist either of a large linen sheet, or a white wall if the picture is to be shown on the screen, or a fine semi-transparent muslin medium suitably prepared for the purpose may be employed; in which case the picture is to be shown through the screen.

The former is the most usual plan, but the latter possesses many advantages, and is therefore preferable. When the semi-transparent muslin medium is employed, the screen must be wetted with water, and kept in that state during the exhibition: it should be suspended from a beam or frame placed at a convenient distance from the wall, the exhibitor being on one side of the screen, and the spectators on the other. The lantern having been placed at a suitable distance from the screen, say, from eight to twelve feet, according to the size of the lenses, should it not throw a clear and bright disc of light on to the screen or medium, it may be corrected by moving the lamp a little back or forward, that is, a little nearer to or farther from the lenses. A clear and well-defined disc can by this means be obtained with facility by the most inexperienced person after a few trials, and when this has been satisfactorily effected, a slide or picture may be put into the groove and "focussed" by carefully moving in or out the brass "nose" or tube in front, until the picture is perfectly clear and distinct. This operation is considerably facilitated by the employment of a rack and pinion motion, whereby the position of the lenses may be instantly adjusted with great nicety.

A MICROSCOPE may be attached to these lanterns for the purpose of showing Natural Objects as with the Gas Microscope, but of course with an inferior light. Wings, sections of wood, ferns, parts of insects, &c., may be shown from 3 to 6 feet in diameter. Water insects, larvæ, &c., may be exhibited alive when placed in the water-box supplied with the Microscope.

When the Oxycalcium Light is employed, this is a very beautiful and efficient instrument; when used the front of the lantern carrying the small lenses is to be removed, and the Microscope front fitted in its place. It will be found necessary to draw the lamp back to get a clear disc of light, and when the highest power is used, further back still. The sliders are inserted and focussed in the same manner as the lantern sliders.

DISSOLVING VIEWS are exhibited by means of two lanterns, each of which must be prepared in the manner already explained. The two lanterns are then placed side by side on the top of the box, and are secured in their proper places by clamp screws, so as to prevent them from shifting forward or backward. Clear and well-defined discs of light having been obtained from each lantern, the rack-work dissolving apparatus must be attached to the front of the box, and the dissolving fans fixed on to the end of the rack bar, in such a manner that one of the fans may obscure or obstruct the light from one lantern, while the other fan allows the light from the other lantern to fall on to the screen. It is necessary to make the discs from both lanterns coincide perfectly on the screen, otherwise the illusion will be incomplete. Should the edge of one disc show beyond the edge of the other, in may be corrected by moving one of the lanterns slightly sideways, thereby causing it to turn on the clamp screws, until both discs are perfectly coincident. The lenses having been "focussed" in the way already explained, the apparatus will be ready for use. Pictures may be then introduced into the slide grooves of both lanterns; but one only of the pictures will be seen on the screen, the other of course being invisible, as it will be hidden by the fan that stands in front of the aperture. When the first picture has been exposed to view long enough, the exhibitor,

from behind the lanterns, must begin to turn the winch of the dissolving apparatus slowly, so as to obscure or cut off the light from the first picture and bring forward the second. By thus throwing some of the light from the second lantern on to the first picture, the latter gradually becomes dim or indistinct, and dissolves away slowly; and by continuing the operation, the second picture, by gradual and imperceptible degrees, assumes the place of the first, and comes out on the screen in a clear and distinct manner.

While the spectators are examining the second picture, the first may be removed and another slide introduced in its place, and the dissolving operation repeated, and so on until all the views have been shown. Many beautiful effects may be shown, such as falling snow in winter scenes, rainbows, lightning, and other atmospheric phenomena. For these purposes both lanterns must be used together; one to show the view and the other the effects.

THE IMPROVED OXYGEN LIGHT is produced by a jet of oxygen gas passing through the flame of a spirit lamp, and impinging against a cylinder of lime. The lamp used is one of the ordinary construction, but with a longer pipe, at the end of which is the burner, holding a small tuft of cotton which will seldom require renewing, as the flame does not consume it; about an inch from the burner is an upright pin on which the lime cylinder is placed, the jet through which the oxygen passes being exactly opposite to it. The gas is supplied from a wedge-shaped India-rubber bag, placed between pressure boards, on which is placed a weight of about 30 lbs.: the flexible tube whereby the gas-bag is connected with the lantern, is provided with a stop cock for regulating or cutting off the supply of gas. The lamp, after being supplied with spirits, is to be placed in the lantern and lighted, then attach the flexible gas tube, and gradually turn on the gas. If the jet of flame does not impinge exactly on the centre of the lime, it may readily be made to do so by turning up the cotton wick with a piece of wire; it will then produce an intensely brilliant and dazzling light, scarcely inferior to the well-known OXY-HYDROGEN LIGHT, at one half the expense, and without the slightest danger.

The oxygen gas is made from a mixture of chlorate of potass and the black oxide of manganese, in the proportion of two parts of the former to one part of the latter. A considerable quantity of these ingredients well pulverised may be kept ready mixed, and about 1½ lbs. of the mixture will be sufficient to make enough gas to fill the bag and to exhibit the Dissolving views for two hours or more, according to the economy with which the gas is used. The requisite quantity of the ingredients to make the gas is placed in the retort, and the connection between that and the purifier having been made, the retort may be placed on any common fire, and after a short time the gas will begin to come over, and bubble up in the purifier, which must previously be half filled with water. The first bubbles which come over will consist principally of common air! this must be allowed to pass off, but the presence of pure oxygen will be easily ascertained by holding a piece of partly ignited paper to the exit aperture of the purifier, as the pure gas will, if a spark exists on the paper, immediately cause it to burst into flame. The flexible tube should then be attached to the exit aperture of the purifier, and the gas allowed to pass into the bag. When the gas leaves off bubbling in the purifier it will at once be known that the ingredients are exhausted: the retort should then be taken off the fire, and when cool, all the residuum must be removed therefrom, by washing it with cold water, care being taken that the retort is well dried before the next operation.

Messrs. NEWTON will be happy to give their customers any further instruction or information regarding the apparatus manufactured by them, either by letter, or by practical demonstration, at their establishment, 3, Fleet-street, Temple-bar, London.

