



OAKEY'S WELLINGTON KNIFE POLISH,

Prepared expressly for the PATENT KNIFE CLEANING MACHINES, INDIA RUBBER AND BUFF LEATHER KNIFE BOARDS. Knives constantly Cleaned with it have a Brilliant Polish, equal to New Cutlery.

Sold in Packets, 3d. each; and Tins, with Perforated Tops (to prevent waste) 6d., 1s., 2s. 6d.; and 4s. each.

OAKEY'S Patent India Rubber Knife Boards

Prevent Friction in Cleaning and Injury to the Knife, the India Rubber forming an Elastic Medium between the Knife and the Board.

PRICE FROM 1s. 6d. EACH.

OAKEY'S WELLINGTON KNIFE POLISH SHOULD BE USED WITH THESE BOARDS.

OAKEY'S NON-MERCURIAL SILVERSMITHS' SOAI

Is expressly prepared for Cleaning and Polishing SILVER, ELECTRO-PLATED and BRITANNIA METALS, TIN, ZINC, PLATE GLASS, GAS GLOBES, ANY KIND of CUT GLASS, MARBLE, &c., &c.

The Manufacturers can with confidence recommend this Article for any of the above purposes, and guarantee its being perfectly free from MERCURY OR ANY OTHER OF THE INJURIOUS INGREDIENTS too frequently used in the manufacture of Plate Powder.

SOLD IN TABLETS, 6d. EACH.

OAKEY'S WELLINGTON BLOCK BLACK LEAD,

Manufactured expressly with a view to the Saving of Time and Labour. This Article imparts an IMMEDIATE, BRILLIANT, and LASTING POLISH to all kinds of STOVES, IRONWORK, &c.

Sold (to prevent waste) in Solid Blocks, 1d., 2d., and 4d. each, and 1s. Boxes.

*** NOTICE.—Purchasers should be careful to ask for "OAKEY'S," as inferior kinds are frequently substituted, Sold Retail by Ironmongers, Grocers, Oilnien, Brush-Makers and Druggists.

Wholesale: JOHN OAKEY & SONS,

MANUFACTURERS OF

Emery, Emery Cloth, Black Lead, Cabinet Glass Paper, Furniture Polish (in 6d. and 1s. Bottles, &c.,

WELLINGTON MILLS, WESTMINSTER BRIDGE ROAD, LONDON, S.E. The MANAGING DIRECTOR, DR. CROFT, attends at his office daily, between FOUR O'CLOCK and HALF-PAST FIVE.

NOTICE

108.

PROGRAMME.

Lectures by Prof. GARDNER, F.A.S., M.S.A.

1.—CHEMICAL MARVELS,

WITH BRILLIANT EXPERIMENTS.

2.-COOKS AND COOKERY,

A Lecture of Domestic Utility-(as soon as the necessary arrangements are completed.)

Lectures by Mr. J. L. KING.

3.—THE TRANSIT OF VENUS,

This Lecture has been written by Mr. W. H. ROBINSON, who will add to it from time to time, as authentic information arrives. The SECOND PORTION of the Lecture will contain the results of the various observations in different parts of the world.

4.—THE ISLE OF WIGHT AND ITS QUAINT LEGENDS. 5.—"SCOPES," OLD AND NEW.

By Mr. SEYMOUR SMITH. 6.—THE MYSTIC SCROLL;

THE STORY OF ALI BABA AND THE FORTY THIEVES. A New Incongruity, by Dr. Croft, author of "Zitella."

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162 BR OR,

MANY OTHER ATTRACTIONS.

For the Week commencing Feb. 8, 1875.

NOTICE.-The Times of the Entertainments will be adhered to if possible, but it may be necessary, when the building is crowded, that their order should be changed, or additions made to the Programme.

MONDAY Morning-Open from 12 till 5.

O'CLOCK.	met in the Duilding mage 11
12.0-General Inspection of Models and Objects of Inte	erest in the buildingpage 11.
12.45-Demonstration of New Inventions. Messrs. E	DMONDS &
GARDNER.	(Central Hall) see page 6.
115-Exhibition of Leotard the Automaton	(Central Hall)
1 90 Interval for Refreshments	see page 11.
1.45—Descent of Diver.	(Central Hall)
1.45-Descent of Diver.	KING (Lange Theatre) nage 8
2.0-Star Watching, and the Transit of Venus. Mr.	AING. (Large Incarre) page 0.
2.45-Performance by the Band,	(Central Hall)
3.0-Chemical Marvels. PROF. GARDNER.	(Small Theatre) see page 5.
9 90 Diving Bell (Fee for descending in the Bell, 1s.).	(Central Hall)
3.45-The Mystic Scroll. Mr. SEYMOUR SMITH. Misse	S FEEDEZ, HUBERT,
BARTLETT & WESTBROOK; Mr. W. FULLER	(Large Theatre) see page 9.
and are touristicated by any second second	

MONDAY Evening-Open from 7 till 10.

7.0-Promenade.

- 7.5-Exhibition of Leotard the Automaton(Central Hall)
- 7.15-Diving Bell. (Fee for descending in the Bell, Is.)(Central Hall)
- 8.0-Star Watching, and the Transit of Venus.
- Mr. J. L. KING. (Large Theatre) see page 8. 8.45-Interval for Refreshments. see page 11.
- 9.0-The Mystic Scroll. Mr. SEYMOUR SMITH. Misses FEEDEZ, HUBERT, BAETLETT & WESTBROOK; Mr. W. FULLER(Large Theatre) see page 9.

TUESDAY Morning-Open from 12 till 5.

12.0-General Inspection of Models and Objects of Interest in the Building page 11. 12.45-Demonstration of New Inventions. Messrs. Edmonds &

GABDNER.	(Central Hall)	see page	6.
1.15-Exhibition of Leotard the Automaton	(Central Hall)	
1.30-Interval for Refreshments.		see page	11.
1 45-Descent of Diver	(Central Hall)	and the second second	
20-Star Watching, and the Transit of Venus.	a state of the sta		
Mr. J. L. KING.	.(Large Theatre)	see page	8.
30-Performance by the Band.		The second second	

3.30-Diving Bell. (Fee for descending in the Bell, 1s.).....(Central Hall) see page 10.

3.45-The Mystic Scroll. Mr. SEYMOUR SMITH. Misses FEEDEZ, HUBERT,

BARTLETT & WESTBROOK; Mr. W. FULLER (Large Theatre) see page 9.

TUESDAY Evening-Open from 7 till 10.

7.0-Promenade.

7.5-Exhibition of Leotard the Automaton.(Central Hall)

7.15-The Isle of Wight and its Quaint Legends.

7.45-Star Watching, and the Transit of Venus.

Mr. J. L. KING. (Large Theatre) see page 8. 8.15-Diving Bell. (Fee for descending in the Bell, 1s.).........(Central Hall)

BARTLETT & WESTBROOK; Mr. W. FULLER(Large Theatre) see page 9.

For the Week commencing Feb. 8, 1875.

NOTICE.-The Times of the Entertainments will be adhered to if possible, but it may be necessary, when the building is crowded, that their order should be changed, or additions made to the Programme.

WEDNESDAY Morning-Open from 12 till 5.

12.0-General Inspection of Models and Objects of Interest in the Buildingpage 11	L.
12.45—Demonstration of New Inventions. Messrs. Endors al Hall) see page	
TTT E Libition of Lootard the Automaton,	
1 00 Internal for Dofroshments	1.
1.45—Descent of Diver	
Mr. J. L. KING Hunge Instance page	7.
2.45—Performance by the Band. 3.0—Chemical Marvels: a series of Brilliant Experiments.	
	5.
3.45-Diving Bell. (Fee for descending in the Bell, 1s.)	
4.0-Star Watching, and the Transit of Venus. Mr. I. L. KING.	8.

WEDNESDAY Evening-Open from 7 till 10.

7 0-Promenade.

715-Demonstration	of New Inventions.	Messrs. EDMONDS and	indition 21 2
1.10 Demonstrate		(Central Hall	see page 6.
GARDNER.		(Central Hall)	a card a card a card
and the second se	Davill	light Exportments	

7.30-Chemical Marvels: a series of Brilliant (Small Theatre) see page 5. PROF. GARDNER.

8.0-The Isle	OI Wight and its quarter hoge (Large Theatre) see page	7.
Mr. J. L.	KING(Large Incare) see page	11.
8.45—Interval for	Refreshments	0.8.

9.0-Star Watching, and the Transit of Venus. Mr.

THURSDAY Morning-Open from 12 till 5.

12.0-General Inspection of Models and Objects of Interest in the Buildingpage 11.
12.45—Demonstration of New Hivehrons. (Central Hall) see page 6. GARDNER. (Central Hall)
T actored the Automaton
2.0-Star Watching, and the Transit of Contact. (Large Theatre) see page 8. Mr. J. L. KING.
- 1 dl Dond
3.0-Performance by the Band. 3.30-Diving Bell (Fee for descending in the Bell, 1s.)
3.30-Diving Bell (Fee for descending in the Dirth. Misses FEEDEZ, HUBERT, 3.45-The Mystic Scroll. Mr. SEYMOUR SMITH. Misses FEEDEZ, HUBERT, (Large Theatre) see page 9.
3.45-The Mystic Seroll. Mr. SETADOR Sallin. Instance (Large Theatre) see page 9. BARTLETT & WESTBROOK; Mr. W. FULLER(Large Theatre) see page 9.
BARTLETT & WESTBROOK ; MIT. W. FULLER

THURSDAY Evening-Open from 7 till 10.

7.0-Promenade.

7.15-The Isle of Wight and its Quaint Legends.

8.15-Diving Bell, (Fee for descending in the Bell, 1s.) (Central Hall)

BARTLETT & WESTBROOK; Mr. W. FULLER(Large Theatre) see page 9

For the Week commencing Feb. 8, 1875.

NOTICE.-The Times of the Entertainments will be adhered to if possible, but it may be necessary, when the building is crowded, that their order should be changed or additions made to the Programme.

FRIDAY Morning-Open from 12 till 5.

12.0-General Inspection of Models and Objects of Interest in the Buildingpage 2.45-Demonstration of New Inventions. Messrs. EDMONDS &	1.8.
GARDNER	6.
15-Exhibition of Leotard the Automaton	h-h
30-Interval for Refreshments see page	11.
45—Descent of Diver	C.L.
2.0-Star Watching, and the Transit of Venus.	
Mr. J. L. KING	8.
1.45-Performance by the Band.	1.1
3.0-Chemical Marvels: a series of Brilliant Experiments.	
PROF. GARDNER	5.
3.30-Diving Bell. (Fee for descending in the Bell, 1s.)(Central Hall)	- AL
3.45-The Mystic Scroll. Mr. SEYMOUR SMITH. Misses FEEDEZ, HUBERT,	0
BARTLETT & WESTBROOK; Mr. W. FULLER(Large Theatre) see page	9.

O'CLOCI

7.5-Exhibition of Leotard the Automaton.	(Central Hall)	
7.15—Diving Bell. (Fee for descending in the Bell, 1s.)	(Central Hall)	NI-GEN
7.30-Chemical Marvels. PROF. GARDNER.	.(Small Theatre) se	e page 5.
8.0-Star Watching, and the Transit of Venus.	TREAM GATHERSTEIN	
Mr. J. L. KING.	.(Large Theatre) se	e page 8.
8.30-Interval for Refreshments	se	e page 11

8.45-The Mystic Scroll, Mr. SEYMOUR SMITH. Misses BARTLETT & WESTBROOK; Mr. W. FULLER.(Large Theatre) see page 9.

SATURDAY Morning-Open from 12 till 5.

12.0-General Inspection of Models and Objects of Interest in the Buildingpa 2.45-Demonstration of New Inventions. Messrs. EDMONDS &	ge 11.
GARDNER	ige 6.
.15-Exhibition of Leotard the Automaton(Central Hall)	
30-Interval for Refreshments see pa	ige 11.
.45-Descent of Diver	
2.0-Star Watching, and the Transit of Venus. Mr. J. L. KING	ana R
3.0-Performance by the Band.	ige io.
2 30—Diving Bell. (Fee for descending in the Bell, 1s.)	
45-The Mystic Scroll. Mr. SEYMOUR SMITH. Misses FEEDEZ, HUBERT,	
BARTLETT & WESTBROOK; Mr. W. FULLER(Large Theatre) see pa	ıge 9.

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7.0-Promenade.

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7.15-The Isle of Wight and its Quaint Legends.

Mr. J. L. KING (Large Theatre) see page 8.

DESCRIPTIVE DETAILS

OF THE CTURES & ENTERTA

Chemical Marvels!

BRILLIANT EXPERIMENTS,

A SERIES OF

By PROF. GARDNER. to hum without muttaring, even when exposed to a draught.

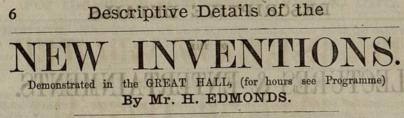
WETHERED'S FIRE ESCAPE.

SYLLABUS :--- Ancient Chemistry-Transmutations of the Alchemists-Ancient Philosophy - Modern Philosophy - Chemistry in everything - The Modern Science of Chemistry-Its invaluable services in Arts and Manufactures-In Manufactures generally-In the consideration and understanding of Domestic Hygiene-Chemistry is everybody's Science, and the Science of everything -Even to the exposure of pretended Magic, and the working of pretended Miracles-A practical knowledge of Chemistry is a safeguard against Mistakes in Manufactures and Deceits in Wonders.

Illustrated by a succession of brilliant Experiments.

ELECTRICAL AIR FIRE ALARM, PATENTED BY MESSRS. SPARKES & MARSH.

This new and ingenious arrangement will be explained and shown in illustrations, Hodels, Working Machinery, do.,



ZUCCATO'S PATENT PAPYROGRAPH.

The Art of Printing from Paper—An entirely new Process, compared with Typography or Lithography—This operation is simple in the extreme, and most economical—It can be learnt in an hour, and is so cleanly it can be operated in a drawing room, and by a lady without inking her fingers, as no inking is required—Shown practically in operation, and printing and fac-simile of writing made.

THOMPSON'S AUTOMATIC FIRE ALARM.

This new system of alarm and registration is so simple that an inspection will convince any person of its completeness and efficiency. It depends on actuating an alarm by means of a weight, which falls when the heat has become sufficiently great to soften a box, composed of an alloy of bismuth with some other metals. Shown in practical operation.

FIELD'S LYCHNOPHYLAX.

An ingenious method of preventing waste in Candles, and of causing Candles to burn without guttering, even when exposed to a draught. This ingenuity will be fully understood in the description and demonstration.

WETHERED'S FIRE ESCAPE.

A Compound Block Pulley, through which is rove a rope, and with which is connected a hand brake. A person can easily descend by this arrangement at any speed. One person can also easily take a second down, or can lower several at one time without inconvenience. An assistant will descend in the gallery, and illustrate the simplicity of the contrivance.

FISHER'S CHEERFUL GAS STOVES.

These Stoves are made so as to prevent the immediate escape of the production of combustion by a series of deflecting plates; the heated gases are caused to circulate in contact with the Stove, and, eventually, they escape when cooled. Considerably great economy is effected: a dinner can be cooked for 12 persons at a cost of 3d.

SMOKY CHIMNEYS COMPLETELY CURED.

The Cause of Chimneys Smoking—The Arrangement of the Draught— Various plans for Remedying Defects in Chimneys—Cowls—Patent Apparatus —The Milborne Patent Cowl fully Illustrated by Experiments, and in practical operation.

Halliday's Griffith's Patent Circulating Tube Boiler.

Importance of safely generating Steam—Economical considerations—The Cornish or Tube Boiler—The Multitubular or Locomotive Boiler—The Tube Boiler—Currents in heated water—Provision made for such circulating currents of water in this new Boiler—The economy, safety and durability of the Griffith's patent safety Boiler, as made by Messrs. Halliday & Co., of New Town, Manchester.

The new ELECTRIC TORCH will be also exhibited.

These demonstrations occur daily, and are assisted by Experimental illustrations, Models, Working Machinery, & c., & c.

Lectures and Entertainments.

THE ISLE OF WIGHT AND ITS Ouaint Legends,

The Lecture will be given by Mr. J. L. KING.

COD.

The series of beautiful photographic Views have been coloured by Mr. JOHN GREEN.

SYLLABUS: —The Start from Victoria —The Mid-Sussex Line —The Charming Scenery it passes through —Ryde —Brading and its Church —Little Jane — Sandown —Shanklin —The Chine —Luccombe Chine —Bonchurch —Ventnor — Blackgang Chine —Freshwater Bay and Rocks —The Needles —Newport — Carisbrooke and Castle —Newtown —Godshill —Arreton Church —The Dairyman's Daughter —Cowes —Osborne —The Marine Residence of Queen Victoria — Whippingham Church and the late Prince Consort.

"SCOPES," OLD AND NEW, By Mr. J. L. KING.

The Opaque Microscope—The Oxy-Hydrogen Microscope—The Astrometroscope —The Phenakistiscope—The Stroboscope—The Kaleidoscope and Kaleidographoscope—The Pedemascope—The Kukloscope, invented by Mr. C. Pilkington—The Darker Oxy-Hydrogen Polariscope and its beautiful effects.

THE BAND

Of the Institution, under the direction of Mr. E. FREWIN, will perform a Selection of Pieces at intervals. Violin, Mr. E. FREWIN. Cornet, Mr. W. TINNEY. Bass, Mr. INCE. Piano, Mrs. PEILE. Harmonium, Mr. GIBBONS, who will play upon one of Messrs. GLIBERT & BAUER'S grand improved doubletouch Harmoniums.

The Illustrative Made and the Direction of Mar. I. Enswere

Descriptive Details of the 8 "STAR WATCHING, OF TRANSIT (Written by Mr. W. H. ROBINSON,) New Lecture, by Mr. J. L. KING. PART ONE.

SYLLABUS :- STAR WATCHING-Importance of Astronomy in Practical Life-The Heavens a great Dial Plate-Our Planetary System-Theory of Eclipses and Transits-Motions of Mercury and Venus (Illustrated by moving apparatus)-GREENWICH OBSERVATORY-Importance of Greenwich Time-Vessels setting their Chronometers by the Time-Ball-Why they do this-The Transit Circle-A Use Found for Spiders' Webs-A Useful Clock at Greenwich that always points to the Wrong Time-What is an Altazimuth-Daily Life of the Greenwich Star Watchers-Enormous Amount of Computations-Registration by Machinery-A Telescope Worked by a Water-mill-The Chronometer-room -Baking the Watches-The busy Noise they make-Various other Work of the Observatory.

THE PLANET VENUS AND THE TRANSIT-(1.) DESCRIPTION OF THE PLANET-Its appearance as the Morning and Evening Star (Hesperus and Vesper) explained-Its Phases like the Moon-Its apparent Increase and Decrease in Size and Brilliancy (this part of the Lecture will be Illustrated by entirely new and moveable apparatus, specially constructed for this Lecture, and never before exhibited)-What would be an Englishman's Life if he were transported to the Planet Venus-(2.) THE TRANSIT-The Sun's Distance forms the Standard of Measurement for all the other Heavenly Bodies-An Error Recently discovered -Transit of Venus the only Certain Means of Testing this-Reason of this-Periods of the Transit-(3.) FORMER OBSERVANCES OF THE TRANSIT-A.D. 1631-Expected by Astronomers, but not observed-Why-A.D. 1639-Not expected by Astronomers, but observed by Horrocks-Horrocks and the Romance of Science-A.D. 1761-Observations by the Sea-horse Frigate-Its Capture by the French, Return, Re-fitting, and Second Voyage-Observations in London-A.D. 1769-Voyage of the Endeavour, under Captain Cook-(4.) THE TRANSIT OF 1874-Preparations begun in 1857-Artificial Transits constructed by the Astronomer Royal - Methods of Observation, viz., (a) the Measurement of Duration of the Transit, and (b) the Apparent Variation of Place of the Planet (Illustrated by familiar examples)-Phenomena of the Transit-The Change of Shape of Venus-Difficulty from the Black Drop (Illustrated by entirely new and moving apparatus, invented for this Lecture)-Overcoming the Difficulty-Photographic Observations-Observation by the Spectrum-(5.) DESCRIPTION OF THE VARIOUS STATIONS-Public Stations-Lord Lindsay's Station-Foreign Stations-Work for the Observers before the Transit, and Prospects of a Satisfactory Result-What may be hoped for from the Progress of Science-Conclusion. Introduced a reboard motor in a state in all edd 10

The Lecture will be fully Illustrated in every part by Beautiful Pictures and Moving Illustrations.

The Illustrative Music under the Direction of MR. E. FREWIN.

Lectures and Entertainments. 9

A NEW ENTERTAINMENT, ENTITLED MYSTIC SCRO

THE STORY OF ALL BABA AND THE FORTY THIEVES.

From a highly Educational and Scientific point of view.

AN ORIGINAL INCONGRUITY,

Written by DR. CROFT. The Entertainment will be given by

Mr. SEYMOUR SMITH,

Assisted by Misses FEEDEZ, BARTLETT, HUBERT, WESTBROOK, and Mr. W. FULLER.

The Musical Selections have been made by the Author from "Le Nozze di Figaro," "Fra Diavolo," "Il Trovatore." "Midas," "The Beggar's Opera," "Les Huguenots," "Der Freyschutz," "Sonnambula," "Martha," "Don "Les Hugnenots," "Der Freyschutz," "Sonnambula," "Martha," "Don Giovanni," &c., &c., and have been arranged by Mr. E. FREWIN, the leader of the Band. The wonderful Disc Pictures have been designed by Mr. FREM BARNARD, photographed by the Misses DAVISON, of the Polytechnic Studio, and painted by Mr. W. HILL. The Dresses by Miss WESTBROOK. The cha-racteristic Jewellery of Abyssinian Gold, designed and manufactured by Messrs. L. & A. PYKE. The elaborate Scenery by Mr. E. T. GREEN. The extensive Machinery by Mr. W. T. LOWE and Assistants. The Properties by Mr. WALTER LIGHTFOOT. The Optical Effects by Mr. STONE and Assistants. The whole of the Effects invented, and the Entertainment produced by the AUTHOR.

ARGUMENT:

ARGUMENT: The modern Highwayman—The Forest—The Robbers—Their attempt upon a Traveller—who happens to be an important member of the SCH00L BOARD—His terrific Lecture—Its effect upon the "awage breast"—The Robbers become affect down and the source and become virtuous and respectation of the school burst into tears—are taken away to School—and after some years of hard study—learn how many beans make five—and become virtuous and respectation when the Captain Cogia Hassan, utterly disguisted, and set impressed with the value of Knowledge, retires to the Forest. Here Ali Baba and Cassim, two brothers, wood-outlers, are pursuing their occupation, when the Capitain appears. They dissemble that is they go behind a tree—where they hear Cogia Hassan relate his story to Zée, the daughter of Morgiana, a former servant of their father. The history of the MYSTIC SCROLL—The approach of Morgiana—The hubbub—OPEN showledge—They read the advertisements in the "Awvut Dank"—They consult the Docrons—They try a box of Hornoway's ONTMENT—They go to a PENNY READING—To the BIRKBERK—To the Yourtrement, where they see the wonderful drop of water—and where they are instructed to within an inch of their lives—but to no purpose—they cannot read the Scroll. At last they go to a Sprintual Seance, where, assisted by Mir Socranze (deceased) they succeed—The Scroll interpreted—THE MYSTIC CAVERN—THE CHARM—THE STONE STATUE—it LIVES—and SPEARS—They to be Wealthy!—Ali Baba not quite satisfied—Explores the Caver—dig strings through the various the decease. The discover and the decides a down and there retorms, becomes virtuous and good, and they all live happing were atterwards.

Books of the Words may be purchased in the Building, price_3d.

10 Descriptive Details of the Lectures, &c.

THE CHOREUTOSCOPE; OR, LANTERN ACTOR.

The Choreutoscope (from $\chi_{ogcutns}$, a dancer), is the invention of Mr. J. BEALE, of Greenwich, and is the instrument used with such grotesque effect in the "Mystic Scoll" and other entertainments, to give life-like movements to gesticulating or dancing figures. The mechanism is exceedingly ingenious, and consists of a circular disc, made to revolve with great rapidity and force, the action of which is suddenly checked by an apparatus somewhat resembling the duplex action of a watch. Two Choreutoscopes are used in the abovenamed entertainment, one of which is an improved instrument, kindly lent by Messrs. BAKER, the Opticians, of Holborn, who have been entrusted by Mr. BEALE with the manufacture, and who state that they are enabled to adapt the mechanism to any lantern.

PRITCHARD'S PATENT KALEIDOGRAPH

This beautiful little instrument is the invention—after years of patience—of Mr. PRITCHARD, of Richmond, and is exhibited by the London Stereoscopic Company. Its object is to exhibit, in an appreciable and useful form, all the wonderful combinations to be met with in the well-known toy called the Kaleidoscope. A few (about twenty) pieces of broken glass are placed in a revolving slide, and are reflected on to a ground glass disc, by means of three slips of looking-glass fixed at right angles. The effect is beautiful in the extreme. It may please the curious to know that any enquiring person who is desirous of ascertaining how many changes of pattern may be made by one slide of twenty pieces of glass would have to sit in front of the instrument twelve hours a day for several millions of years before all the varieties could be seen : the number of changes being somewhere about 2432902008176640000 !

THE PATENT GAS & AIR ENGINE.

Common Coal Gas mixed with atmospheric Air, in such proportions as to form a mild explosive compound, is admitted under a piston, which slides airtight in a vertical cylinder open at the top. The compound is ignited by a simple gas jet, explodes, and the explosion drives the piston upwards against the pressure of the atmosphere. The ignited gasses being cooled, condense and form a partial vacuum underneath the piston, which the pressure of the atmosphere then causes to descend. The upward stroke of the piston is instantaneous and unresisted by the load upon the engine; but the work done during the return stroke yields the motive power, being transferred to the driving shaft by suitable mechanism. This utilization of the instantaneous force of explosion, is the basis of the wonderful economy of these engines; the cost of gas being guaranteed not to exceed one penny per horse power per hour, with gas at 4s. per 1000 feet. The gas used is exactly in proportion to the load upon the engine, the speed of the driving shaft being kept constant against variable resistance by regulating the number of explosions per minute.

variable resistance by regulating the number of explosions per minute. The Engineer will be happy to give any particulars of this remarkable engine, which is exhibited by the General Engine and Boiler Company, Union Court, Old Broad Street.

CENTRAL HALL.

THE CENTRAL HALL contains many objects of interest, amongst which will be found :--

1.—MACHINERY IN MOTION. (The Engineer is always at hand to afford information.) The GIANT PLATE MACHINE, and splendid Apparatus. 2.—GLASS MODELLING AND SPINNING, by Mr. HUDSON.

3.—The MAGNETO ELECTRIC MACHINES, presided over by Mrs. BAKER.
4.—The Stall for CONJURING APPARATUS, &c., &c. Mr. PROSKAUER is always ready to give a lesson, either at the Polytechnic or at Evening Parties.

5.—Stall for the celebrated POLYTECHNIC CEMENT, by Mr. G. DAVIES. 6.—PATENT GAS AND AIR ENGINE. See page 10.

7.—Case containing a collection of ARTISTIC PRODUCTS of India, China and Japan, exhibited by Mr. A. INMAN, Oriental Depôt, 17, Ebury Street, S.W.

8.—The GREAT TANK, with the DIVING BELL.—The MONSTER COIL. 9.—THE KALEIDOGRAPH.

10.-MANY USEFUL INVENTIONS DEMONSTRATED DAILY.

In the GALLERY round the Hall will be found :-

1.—The magnificent GEOLOGICAL MODEL, showing the working of Mines, &c. 2.—ART MODELS, by Messrs. HANCOCKS.

LITHOGRAPHIC PRINTING, & the Ceramic Petalocaust Process, by Mr. Cox.
 The Stall for PHANTOSCOPES and ZOETROPES, by Mr. WINDSOR.
 The Stall for MAGIC LANTERNS and SCIENTIFIC TOYS, by Mr. KENNETT.

6.- A Stand of ELECTRIC BELLS, by Messrs. OFFORD & Co., Tichfield Street.

THE REFRESHMENT DEPARTMENT

Is under the direction of Mr. COUSENS. It is as well that Country Visitors, and Visitors generally, should be aware that Refreshments of all kinds— Luncheon, Dinner, Tea and Coffee, can be had at all hours, without leaving the building. TARIFF.—NO CHARGE FOR ATTENDANCE.

soups.	s. (1.	TEA and COFFEE always read		
Ox-tail, Mock Turtle, Julienne		COROLL.	Cup Tea	s. 0 0	d. 6 4
Chop, Potatoes, Bread Steak "," Cold Roast Beef (per plate) Ham ",	1 01 1	0 4 0 0 2	" Moët and Chandon)		
Sandwich Roll and Cheese Roll and Butter	00	3 2	Blanche	514	0
Bun Bath Bun Sausage Roll	0 0 0	1 2 2	Do. do. pints Sparkling Moselle, quarts ", ", pints	52	009
And all other kinds of Pastry.	10 m.	14	Claret—good sound—quarts Do. do. pints Do. do. large glass	2 1	6 6 4
Bass' Ale and Reid's Stout on draught, per pint	0	4	Port, Sherry, &c., per glass		6
Bottled Ale (Bass) Imperial pint Guinness' Stout, Imperial pint Lemonade and Ginger Beer	0	6	SPIRITS. Brandy per glass4d. &	0	64
(H. D. Rawlings') Soda and Seltzer Water	0	4 6	Whisky, Gin & Rum " Cherry Brandy "	0	6

II

Experimental Science Department. Educational Department. 12 LABORATORY THE POLYTECHNIC CO. 309, REGENT STREET, AND DEPARTMENT OF IN CONNECTION WITH EXPERIMENTAL SCIENCE THE ROYAL POLYTECHNIC INSTITUTION, LIMITED, AND IN UNION WITH THE SOCIETY OF ARTS, THE SCIENCE AND ART DEPARTMENT UNDER THE DIRECTION OF KENSINGTON, AND THE CITY OF LONDON COLLEGE, E.C. E. V. GARDNER, ESQ., F.A.S., M.S.A., Lent Term will commence on the 8th January, 1875. COUNCIL: Professor of Chemistry to the Institution, and Professor at Berners College of PRESIDENT. Experimental Science, ASSISTED BY EFFICIENT MASTERS. THE RIGHT HON. THE EARL OF SHAFTESBURY, K.G. PRINCIPAL. REV. C. MACKENZIE, M.A., Prebendary of St. Paul's, (Chairman). THE WORKING LABORATORY VICE-PRESIDENTS. Open for Pupils, Morning and Evening, throughout the year. Students will E. A. OWEN, ESQ. REV. H. R. BLACKETT, M.A. find every convenience for the study of Technical and Analytical Chemistry. A. H. ROSS, ESQ., (Treasurer). REV. W. CADMAN, M.A. J. M. WEYLLAND, ESQ. DR. CROFT. PROFESSOR E. V. GARDNER. ANALYSIS, ASSAYS, AND PRACTICAL INVESTIGATIONS MEMBERS. DR. HELLEN, PH.D. MR. LARKE, (Hon. Secretary). CAREFULLY CONDUCTED. MR. J. A. ARCHER. MR. JAMES BENNY. MISS NARRAWAY. MR. THOMAS ELTOFT. EVENING INSTRUCTION IN LABORATORY WORK. MR. R. M. TERRY. MISS FOSSEY. MR. E. TROAKE. MR. J. HARDY. SEPARATE CLASS ROOMS FOR LADIES. MR. J. A. ARCHER. HON ACCOUNTANT, MR. J. F. OLIVER.

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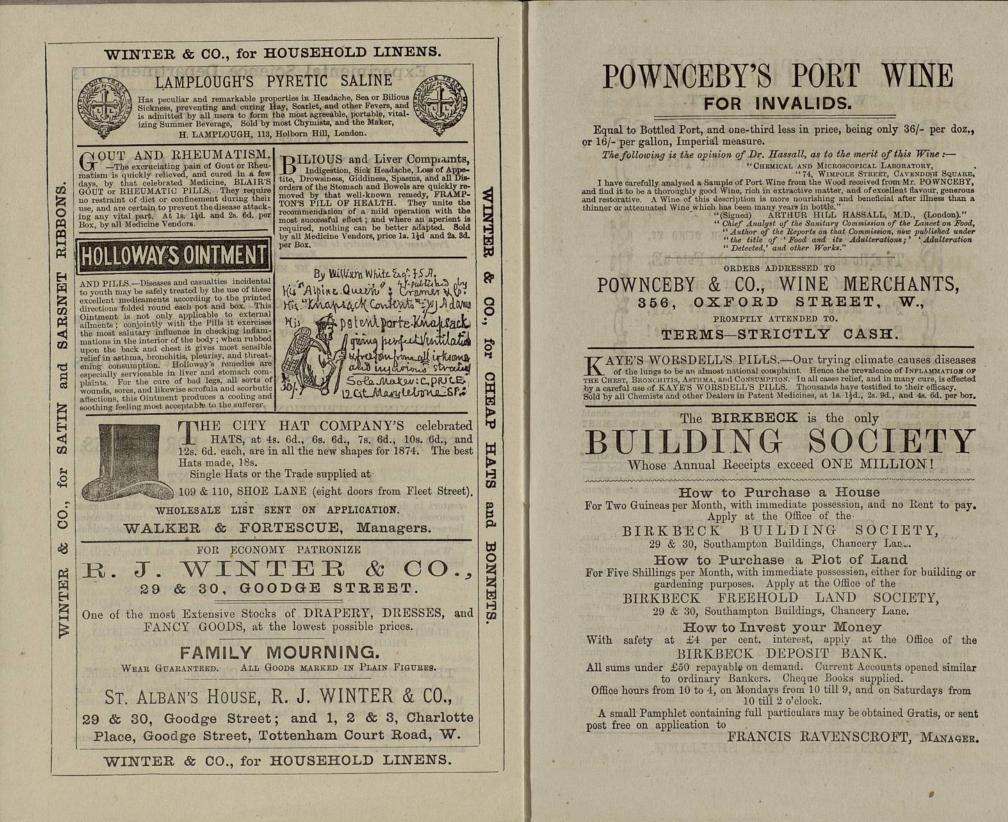
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