Vol. 12 — No. 140. JANUARY, 1901.

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16. Volunteer Turn-out at Shanghai. 65 feet.
17. Chinese Mill hands leaving a Cotton Mill. 65 feet.
18. Vancouver Station. Passengers, including Chinese, making for the Canadian Pacific Steamers for Japan, China, etc.
19. Panorama of Hong Kong Harbour. 65 feet.

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21. Station Yard Scene at Kioto, full of Life, with Jinrickshaw Hurrying away Laden with Pares. 65 feet.
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CONTENTS.

Notes ........................................ 1
Shadowgram or Silhouette Slides. No. XXI. 3
White Sheet Celebrities ........................ 5
How to Make Large Developing Trays .......... 6
The Use of the Electric Light in the Optical Lantern 7
The Optics of Trichromatic Photography ...... 9
New Apparatus ................................ 10
Patent Intelligence ................................ 12
Notes and Queries .............................. 12

NOTICES.

The Optical Magic Lantern Journal and Photographic Enlarger is issued on the 1st of every month, price Two Pence, and may be obtained from all News-vendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:

12 months, 3/- United States, 75 cents.

Exchange Column, General Wants, &c. (not Trade)—First 20 words, 6d.; and for every 3 additional words, 1d.

Small Advertisements must reach the office not later than the first post on the 24th of each month. All cheques and postal orders to be made payable to the Magic Lantern Journal Company, Limited.

Editorial communications must be addressed, J. Hay Taylor. Advertisements and business communications to the Magic Lantern Journal Company, Limited, 9, Carthusian Street, London, E.C.

American Agents:—The International News Co., 83 and 85, Duane Street, New York City.

NOTES.

A Happy New Year.

Suffolk Army Scripture Readers' Society.

An appeal is being made to provide and maintain a Scripture reader for each battalion of the Suffolk Regiment. Already two or three lantern lectures have been given in aid of the fund, and more are desired. Miss Holmes White, of Bourge Hall, has consented to act as hon. secretary and treasurer.

Auction Catalogue Illustrated by Photography.—An auction was recently held at Oldbury, near Birmingham, and the catalogue was illustrated by half-tone photographic illustrations of the principal lots of engineering plant. It is considered that the extra cost was amply repaid. We are personally acquainted with a gentleman who, at no distant date, is to offer for sale by auction a collection of art treasures of great value, and we are informed that it is his intention to make lantern slides of many of the articles, and project each lot upon the
screen for about 20 seconds immediately before bidding commences; the light being, of course, suitably arranged and controlled for the purpose.

"The Arabian Nights."—A correspondent, in a long letter, explains that the wonderful stories contained in "The Arabian Nights" hardly seem to be known to the present generation, and he states that an energetic lecturer provided with a good triple lantern, slides to suit each story, and some good effects, could make a fortune by touring the country with such a set. There are so many good stories contained in the book, that at least a week could be spent in every town of the slightest importance. With popular prices the same audiences would attend evening after evening. Who will take the hint?

The Streets of Bridport.—It appears that in Bridport, like many other towns, there seems a great wandering about of people in the streets on Sundays. In order to counteract this, Mr. F. J. Balson, with the co-operation of the rector, has inaugurated a series of lantern evenings to take place in the Town Hall immediately after the church services. The plan promises great success.

"Lor', Bil', that's me!"—An enterprising cinematographist, who was giving a series of lantern entertainments in a town up North, exposed a film at the gates of a large factory as the men were coming out for their dinner hour. This was in due course projected on the screen, when great amusement was caused to the audience by an enthusiastic member, who on recognising himself in the picture, shouted out to a companion, "Lor', Bil', that's me with the square basket!" We are informed that this small incident was the means of bringing a huge audience on the following evening of men engaged at the said works, and after this particular film had been projected, they insisted on an encore, which was, of course, honoured.

"Chapters from the Book of Nature."—A series of lectures, with the above as a general heading, are to be given by Sir Robert Stawell Ball, M.A., etc., at the Royal Institution, Albemarle Street, W., as follows:—December 27th, "The Sun and Its Heat"; December 29th, "The Earth and Its Heat"; January 1st, "The Evidence from the Stars"; January 3rd, "The Significance of Planetary Movements"; January 5th, "The Evolution of the Moon"; January 8th, "The Shooting Stars." Each of these lectures is adapted to a juvenile auditory. Numerous lantern slides will be projected by Mr. J. Brandon Medland at each lecture, which takes place at 3 p.m. each day.

Kodak War Pictures.—At the new branch of Kodak, Limited, 59, Brompton Road, S.W., a fine collection of bromide enlargements of Kodak records taken in South Africa is at present on exhibition. This exhibition will remain open to the public, on presentation of visiting card, daily from 9.30 a.m. to 6.30 p.m., until the 31st inst. Visitors cannot fail to be greatly interested.

Hull Photographic Society.—The membership of this society has been growing of late, and it is now able to boast of a membership of 252.

Slides of "Through Thibet."—We are informed by Messrs. Sanders & Crowhurst, of 71, Shaftesbury Avenue, that owing to the death of the author (at the front), the publication of the Thibet slides from T. Fisher Unwin's book is unfortunately postponed.

The Amateur Photographic Society of Madras.—The committee of this society, with the consent of the general committee, on November 13th decided to dissolve the society on the last day of the year just ended. The photographic journal issued by this society, of course, also ceases.

The Southsea Amateur Photographic Society.—The most popular and effective means of encouraging the development of photography, and of raising the standard of work throughout the country is by holding exhibitions with classes open to all competitors, and Southsea is not behind hand in taking her share of the responsibility. The arrangements for the Annual Exhibition, which the Southsea Society is to hold on January 29th, 30th and 31st, 1901, are rapidly progressing, and now that the committee have secured the services, as judges, of such experts as Messrs. H. Snowden Ward, H. Simonds, and W. West, this now well-known provincial exhibition must certainly repeat the success that has attended those held in pre-
GENERAL ADVERTISEMENTS.

A PROFESSIONAL lanternist and cinematographist of great experience is open to engagements, with or without his own apparatus, in town or country, on very moderate terms. Reference, Editor of this Journal.—Address, Optics, 13, York-street, Walworth, London.

WANTED, complete sets of lantern slides, second-hand, in good condition for hiring out trade.—Address, Optical, c/o OPTICAL LANTERN JOURNAL.

TO lecturers and public entertainers—A most powerful bi-unial lantern for sale cheap, 3-inch front lens, two most powerful high pressure jets, rolling curtain, etc., packed in travelling case, and 20-feet linen screen.—H. Wood, Nunhead Lodge, Nunhead-lane, Peckham, S.E.

FOR sale, a complete set of bound volumes of THE MAGIC LANTERN JOURNAL, volumes 1 to 10.—Apply at the Office of the Journal, 9, Carthusian-street, E.C.

CLOLLODION emulsion lantern slides, made from original negatives, photographs, engravings, book illustrations, etc.; for beauty on the screen, no process can touch collodion emulsion.—Dunning, Tynedale.

MESSRS. Casbury Brothers, Limited, of Bourneville, near Birmingham, will forward to any lanternist, free of cost, some attractively coloured lantern slides, copied from their striking show cards, to any operator who will undertake to exhibit same at lantern entertainments in his district.

MATOGRAPH, cinematograph and lantern combined for sale; perfect condition; new this season; may be seen working; £8, cost £12 12s.; also 30 second-hand films, cheap.—Poggate, 11, Vine-place, Sunderland.

FOR sale, about 60 fine slides, Scotch scenery—Ayr, Arran, Glasgow, Edinburgh, etc.; 36 by G.W.W. and J.V.; will clear at 6d. each; list.—McLeary, 18, Bedford-street, Belfast.

TRANSVAAL War lantern slides; set of 60, full size, well coloured, with lecture, for 15s.—J. Whittingham, 20, Church-street, Kensington, London, W.

GOOD bi-unial for sale; 60 slides China, with lecture (coloured); sell 25s.; lot of illustrated hymns and songs, cheap, or exchange for graphophone.—McMillen, 48, Walpole-street, High South Shields, Durham.

G. WYER'S high-power limelight safety jets (two); also two Board's regulators; lot £5; nearly new.—F. Legg, Bromsrovere street, Birmingham.

LECTURER-MANAGER required to work and share in an important optical entertainment.—Address, X., 223, Beekenham-road, S.E.

LECTURERS intending to give their own lecture would do well to communicate with C. Koenig, who has a magnificent collection of slides, being a life study, and been painted by all the best artists, Simpson, Dickson, Dabell, and Hill, each being a work of art, and can be hired with high-class triple lantern with oxy-hydrogen light to show pictures any size at any distance, with experienced operator taking the whole of the responsibilities; suitable for drawing-rooms, schools, institutions and public halls; terms moderate; list on application.—Koenig, 15, Monmouth-road, Bayswater.

To lecturers, etc.—Lantern operator (recommended by some of the best known public lecturers) is open for engagements in town or country; highest class of apparatus; for terms and open dates apply to R. G. Mason, 60, Park-road, Clapham, S.W.

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GENERAL ADVERTISEMENTS.—Continued

GRAND new effect sets in the finest miniature work.—"The Hidden Terror," submarine warfare of the future. Dawn on the ocean, submarine boat sinks into the depths and attacks ironclad, entirely destroying it; new and original movements of a novel character, just invented, a magnificent and thrilling effect in the finest hand work; The Great Fire in Jewin Street, with special mechanical movements invented by E. H. Wilkie, building seen to gradually fall in as the fire progresses; send for list.—Edmund H. Wilkie, as below.

PARIS Exhibition effects elaborately worked up on nature photographs from Mr. Wilkie's own negatives.—Edmund H. Wilkie, as below.

THE Luminous Palace (copyright), Old Paris from the river (copyright), the Belgian Pavilion (copyright), Rue des Nations (copyright), and others; all in the highest artistic finish and with new effects.—To be obtained only of Edmund H. Wilkie, as below.

A MAGNIFICENT series of 55 photos of the Paris Exhibition; price 1s. each or 10s. per dozen; send for list.—Edmund H. Wilkie, as below.

BOER War effects, with startling changes in finest work.—Battle of Dundee, Destruction of Boer gun at Ladysmith, Sigualing with Ladysmith, Buller crossing the Tugela, Boer-attack on Pietermaritzburg, Surrender of Cronje, An accident on Spion Kop, Triumph of Lord Roberts into Pretoria.—Edmund H. Wilkie, as below.

C. V.'s welcome to London.—Six special photographs from nature showing Crowd with large motto, Welcome to the C.V.'s, At the Marble Arch, In Hyde Park, Ambulances in Hyde Park, Crowd awaiting at Marble Arch, C.V.'s Battery in Hyde Park; a valuable series possessing lasting historic interest.—Edmund H. Wilkie, as below.

Edmund H. Wilkie desires it to be distinctly understood that these effects are produced by the identical artists who formerly painted the grand dioramic perfection in working; a comfort to the operator; beautifully finished in rich golden lacquer; will last a lifetime; price 18s. 6d.—Edmund H. Wilkie, as below.

Photographs worked up in oil colour, water colour, pu e varnish colours, or by the beautiful American process at most reasonable prices; the best work on slides prepared by photography or hand painting from negatives, drawings, prints from nature, or from written or verbal description; every class of mechanical movement supplied or invented for special purposes; see testimonials.—Edmund H. Wilkie, as below.

Please Mention this Journal when corresponding with Advertisers.
The Optical Magic Lantern Journal and Photographic Enlarger.

Cinematograph Films—a Reduction in Price.—On the 3rd of last month, the Warwick Trading Company, Limited, made a considerable reduction in the prices of certain of their films. According to subject, the prices now vary from 30s. to 50s. per 50 feet. The difference in prices between the various classes is gauged according to the initial cost of procuring the negative. Thus a negative in London may cost a few pounds, whereas if taken in a distant country the cost may be reckoned by hundreds of pounds.

The Late Mr. Leon Warnerke.—There are many who will hear with great regret that the death of Mr. Leon Warnerke has left his wife and daughter in very straitened circumstances, and in urgent need of immediate assistance. Mr. Warnerke's work in photography was so well and widely known, that a large number of those who were friends of his, or who appreciated his good services to photography and his kindly help to all photographers, will, if it is felt, be ready to take part in a subscription raised on behalf of his widow and daughter. A committee, comprising Sir W. de W. Abney, Sir Henry Trueman Wood, Mr. J. Cadett, Mr. T. R. Dallmeyer, Mr. G. Davison, Mr. F. Ince, and Mr. H. W. Teed, has been formed to assist in raising and administering a fund to assist Mrs. and Miss Warnerke. Contributions are earnestly requested. The Editor will be pleased to receive subscriptions on behalf of the fund, or they may be sent to the Treasurer, Mr. Francis Ince, 15, Netherhall Gardens, Hampstead, N.W.

Exhibition of Natural Colour Photographs.—An exhibition of excellent photographs in natural colour was held at the Queen's Hall, Langham Place, W., on the 18th ult., when a great number of pictures in the form of lantern slides—supplied by the Colour Photo Company, of Birkbeck Chambers—were projected on the screen. Mr. H. Snowden Ward gave a brief outline of the McDonough process, in which the picture was taken through a plate of glass ruled with fine parallel lines of alternately red, green, and violet; and further explained many of the pictures as they were projected on the screen. A series of interesting pictures in colour, taken at Oberammergau by Mr. C. N. Crewdson, were explained by the artist.
The Optical Magic Lantern Journal and Photographic Enlarger.

F is the long rod by which the movements of the parts are regulated. It works in a slot (x) cut in the end of the framework; this rod is pivoted to the wooden base by a screw (3). Two thin rods are pivoted to this rod at H, H, and to the arms of the figures at G, G.

The shape of the arms A, A, will be noticed and the spoons must not be forgotten. The arms are pivoted to the base at the points marked D, D. Two long thin rods C, C, are pivoted to the arms and connect them to the parts B, B, to which they are also pivoted in the positions indicated by black dots.

The jaw-bones B, B, with their peculiar, hammer-shaped projections, the use of which will be revealed presently when the slide is completed, are pivoted to the base at E, E, and as before mentioned, are connected to the arms by the rods C, C.

When the construction and fitting of the working parts is completed, a few lines representing the interior of a room are sketched on the fixed glass, as illustrated in the diagram. If desired or thought necessary, the working parts may be protected by the employment of the cover-glass mentioned at the beginning.

The slide is now completed, but before we notice what effect is produced by the movement of the extending rod or lever F, the reader will do well to pay particular attention to the following words of caution:—Unless all the working parts have been most accurately shaped and adjusted, the slide will fail in its object of representing "Punch and Judy Dining."

The proper relation between the size of the parts and the distances from each other at which they are pivoted must be carefully kept, or the slide will be of no practical utility. For instance, were the arm of either figure to be made too long, it would rise from a point outside the basin and go right up to the nose, producing a most absurd effect.

Equally ludicrous would be the sight of the arm being carried up to a point a few inches from the mouth, and there stopping, only to be repeatedly lowered and raised in fruitless endeavours to carry the spoon with its contents to the mouth. These words of warning are by no means unnecessary.

Very careful attention must be paid to the correct construction of this part of the slide. A reference to the diagram will be a great help to the reader, but, after all, the best way to ensure accuracy is to experiment with pieces of cardboard.

We will now consider what happens when the rod F is raised and lowered. When it is lowered, as in the diagram, the rod regulating the arm of Judy will be pulled down, thus causing the arm, which is pivoted at D, to be raised from the basin to the mouth. The rod connecting the arm to the jaw-bone will also be raised, causing the jaw-bone and the peculiar hammer-like projection to be lowered. The effect of this movement will be to open the mouth for the reception of the contents of the spoon and to partially close the eye. This partial closing of the eye will appear on the screen to be due to the person glancing down at the spoon. Now, at the same instant as these actions are taking place, Punch's arm will be lowered by the raising of the rod which connects it to the lever F; he will thus be seen dipping his spoon for another supply to carry to his mouth, when the rod is raised.

At the same time, by the action of the other connecting rod, the jaw will be shut and the eye again opened in exactly the same way as a person does when eating.

The raising of the rod reverses these actions; Judy will be obtaining another supply and Punch will be eating his portion, as represented in the heading.
GENERAL ADVERTISEMENTS.—Continued

R. W. C. HUGHES, the great specialist in optical projection; over 30 years' experience, and over 20 patents for improvements connected with lantern work; the inventor of the most perfect optical lantern effects extant, which have been supplied to the most eminent amateur and professional exhibitors. Professor Malden, Canon Scott, Dr. H. Grattan-Guinness, Madame Patti, Colin Docwra, Esq., Capt. Charles Read, R.N., Chevalier, Stuart Cumberland. Hundreds of the Clergy all over the world; also the late Polytechnic, etc., etc.

R. HUGHES' Docwra Maiden and Grand Triples and Bi-unials are superb instruments, and the effects unequalled. The marvellous Papamphenos still holds its own against the commercial productions. Gives beautiful 12 feet pictures. The £5 6s. reduced to £4 4s.; the £4 4s. to £3 10s. If you want a really high-class technical instrument, consult Mr. Hughes; if you want a good cheap lantern or cinematograph, see Mr. Hughes' grand show of instruments, etc., at the show rooms and art gallery, Brewster House, 82, Mortimer-road, Kingsland, North London. A sight to be seen.

R. HUGHES has produced the grandest mechanical effects ever shown upon a screen. Over 600 to be actually seen in stock, at all prices; the best value in quality and result. Among the most recent is the Boer war effects. Sorties from Ladysmith, Butler crossing the Tugela; Ladysmith signalling by searchlight; Naval gun at Ladysmith; Maunxung, Baden Powell, Battle of Dundie, etc., etc.

Great effects—Great fire in Jermyn—es, Earthquake at Arica, Life-boat rescue, Fairy Glen and Lake, The ship on fire, special; and over 400 others. Executed by the only artists who painted a number of the mechanical effects shown at the Royal Polytechnic years ago. Mr. Hughes has hundreds of pounds of this class of work, which may never be obtained again; and best of all, they are on view. Hundreds of testimonials. Grandly illustrated catalogues, 150 choice engravings, 6d., postage 4d., of lanterns and effects. 60,000 slide list, 6d.; smaller illustrated catalogues, 100 engravings, 4d.

PARIS EXHIBITION.—The finest photographs of any yet published, French, 1s. plain; coloured, 1s. 6d.; very artistic effects of ditto, 3s. 6d. each. Hughes.

OBER AMMERSBURG, over 50 subjects; fine set; 3s. 6d. each, artistically coloured. Lists free. Hughes.

CHINA.—A fine series from direct negatives. China and the war, 2s. 6d. and 3s. 6d. each, coloured. Hughes.

Boer War. Over 200 subjects; coloured, 1s. 6d.; artistically coloured, 3s. 6d.; litho series of same, 2s. 6d. per box of 12; five lectures in all. Hughes.

To Exhibitors.—Hughes' telescopic brass fronted bi-unial, three sets of lenses, £12 13s.; the Universal 4-wick lantern, 18s. 6d. Have no hesitation. If you want value, and want to see a fine collection, visit Brewster House. All kinds of effects made and invented by W. C. Hughes.

CINEMATOGRAPHS.—The finest collection in the world, and the most perfect for results; an innovation, see grandly illustrated list, price 6d., and large advertisement.

CINEMATOGRAPHS and Films, second-hand, from £4 10s. to £20. First-class machines allowed for when purchasing others; films from 10s. 6d. each; first-class quality, not rubbish, chosen selected. List, post free, 5d.—W. C. Hughes, Brewster House, 82, Mortimer-road, Kingsland, London, N.

PARIS Exhibition, 93 slides; cat studies; Air and Mrs. Kruger, and five others, very amusing, 4s. the six; flower studies, 100 slides; London views, the Zoo, Cantoosy, Winchester, St. Paul's and Exeter Cathedral, Westminster Abbey, etc.; thousands of slides, 6s. the dozen; catalogue, 3d.; lists free.—John Shabb, Babbacombe-road, Torquay.

Second-hand Slides, 4d. Each. Well painted Photo Slides, Popular Sets. In His Steps, Religious and Temperance Stories, Effects, Mottoes, Picture Hymns, Comic Sets, etc., 4d. per Slide. Boer War and other Sets for Sale or Hire. Slides Made and Painted from Customers' own Negatives, etc. Lists Free. 1. T. WING, CHATTERIS, CAMBS.

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is equal to anything on the market, giving a Clear and Steady Picture.

Our No. 2 similar to above without Cut-off. 35-

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Limelight may be adapted without alteration at an extra cost of 14/-, or in lieu of lamp, 7 6.

Incandescent Gas fitted at Same Price as Oil Lamp.

Each Magic Lantern is efficient for Exhibitions. The Lens gives crisp definition, being a superior Achromatic Photographic Combination with rack and pinion. It is fitted to a telescopic lengthening tube, so gaining increased focal accommodation. The condenser is composed of two plano-convex lenses of 4 inches diameter. The refugent lamp has three wicks, yielding a brilliantly illuminated picture. Each in box.

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We supply Lanterns of Every Variety and Every Accessory for Lanternists.

By using his judgment in raising, lowering, and, at times, stopping the arms in mid-air, the operator can give on the screen a very natural representation of two figures—Punch and Judy—dining.

White Sheet Celebrities.

By E. A. Josling.

It may be stated with some accuracy that 80 per cent. of the White Sheet Celebrities never touch a lantern, in fact, seldom give it a thought. 10 per cent. have been drawn into using it by their attaining notoriety in other grooves and thus furthering their lecturing powers and chances, and 10 per cent. are those who have built up reputations upon chiefly superficial knowledge, or the brain powers of others, by which means they enjoy a credit that only in part is their due. It may, therefore, be interesting to analyse briefly the constitution of the man or woman celebrity who forms the attraction on the screen.

Perhaps, the most popular—and deservedly so—novelist of the nineteenth century was Charles Dickens, who made more perfect word pictures of scene and character than any other writer either before or after him. Scores of the characters are to the present day household words. They are used in various ways, specially in describing the individuality or disposition of a certain somebody's "How like Pecksniff." "If I say he was Uriah Heep's double, you'll understand his temperament at once." "A regular Mrs. Gamp." "You would but liken her enchanting ways to Dora's." "Pickwickian to the letter," and so on, and so on. More than one eminent man of letters has dubbed the works of Charles Dickens as the most perfect library extant. Whether the author of those books ever handled or spent an hour with a magic lantern the writer is not in a position to say, but he certainly never did so publicly, yet, what an enormous amount of material he has furnished the white sheet with.

To enumerate them here would be an encroachment on the allotted space. Suffice it then, that though that evergreen Christmas carol made acquaintance with the lantern a quarter of a century ago, it still finds a welcome place in many a programme as the season rolls round.

Snapshot a mental picture in another groove. George Stephenson and his son, Robert, the railway kings. At first cow-boy—afterwards the great engineer. Here is a man who revolutionised the world without knowing it; he invented and introduced a machine which to us is river, bridge, road and canal all knocked into one, it saves the flesh of men, the flesh of beasts, carts, vessels, barges and the most important of all—time. The names of Stephenson will be known so long as the English tongue is spoken. Strange as it no doubt appears, unintentionally, the life work of these men has been the nucleus of hundreds of lectures and thousands of projected pictures on the white sheet. Optical projection was as unknown to them as a velvet cushion is to a hedgehog; but it is hoped due credit is always given to the celebrity who overcame "Chat Moss," and who was idolised by most all European monarchs.

From the dead to the living, from the past to the present, let us example one or two others who also provide—without parade—for the white sheet, and perhaps precedence may happily be given to two or three of the giants of the war, which is still hanging fire. War heroes are here chosen because fresh in every mind. Surely never in the history of our empire has so many pertinacious deeds of valour and heroism been accomplished, so how can it astonish anyone, that when a picture of General Baden-Powell is flashed on to the white sheet, audiences do not wait to be told something which they read a week ago in the newspaper, but burst forth into an enthusiasm veering on losing their heads. They know everything. It is a copy of the picture that hangs on their kitchen wall at home. A running commentary, passing through eye and brain, tells them all over again how this remarkable man, Horatius like, held—not a bridge for a few hours—but a township containing hundreds of human lives for days, for weeks, for months; and the story of Mafeking has added much to lantern lore, and is waiting, too, for a Macaulay to grace its memory. Another celebrity, Sir George White, recalls the sadness of the siege of Ladysmith, a sadness that will wear off as time advances, and the story appear in a fresher dress. But December 18th, 1899, already records Lord Roberts being appointed to South Africa; five days later the almanac states he left Southampton, and by the time these lines are in the
hands of readers, he will (D.V.) be again in English waters. For six months and more he has appeared on most all white sheets at home and abroad, and when the time is ripe for his stewardship to be chronicled in pictorial form, the lanternist will have a celebrity for his sheet whose every incident during a protracted campaign will rivet the enthusiasm of all who care to listen.

But there are those who, as above stated, have gained notoriety, first in becoming clever, and afterwards by the aid of the white sheet playing the philanthropist's part in teaching others. This class—if class it may be termed—is the very best of the lantern fraternity. Men in all walks of science and art, travel and adventure, have charmed audiences all over the world. It is so different to him who gives his geographical lecture—which in a degree is not his at all. Geography without travel is useless for teaching purposes. It savours of the smattering of knowledge of a musical instrument, without possessing or ever having practised the instrument.

Frederic Villiers, the great war correspondent and artist, a man whose record for the past thirty years creates envy in the lay mind. His travels and adventures in every land and clime, his meetings with hundreds and thousands of notable personages, makes his presence on the lecture platform an intellectual treat. In M.A.P. the other day he wrote, "I have done much lecturing all over the world, and one of my most successful attempts in that direction was "War on a white sheet."

Professor B. Malden, F.R.G.S., F.R.Z.S., some thirty years ago threw his knowledge in lantern lecture work, and carried all before him, until, it is assumed, every literary institution in the kingdom of any pretence whatever considered its prospectus imperfect without his name. And they couldn't all get it. It is safe to say he has had the most successful innings of the lecturers of his time, and well deserves his earned retirement, and while many have emulated him, the result has been "as the manufactured pearl, which is stuffed with wax," beside the "Oriental pearl of commerce, hard and stable."

Many more able lecturers could with profit be mentioned, but space forbids. Hepworth, Cheyne, King, Ball, etc., etc. It is hoped, however, that the above brief outline will be thought sufficient to mark the celebrity intended.

### How to Make Large Developing Trays.

By THE NOMAD.

The provision of suitable dishes or trays for developing enlargements and large sized plates is an item which demands some consideration. Of course, if one is able to do so, the easiest way is to order, and pay for, the size or sizes most suitable, either in porcelain or some kind of composition; and for anything up to say 10 by 8 inches, which is not very costly, this is perhaps the best thing to do. When the tray gets up to and beyond 15 by 12 inches, it is another story, generally. Porcelain dishes, though very excellent, are dear, and have to be treated with great care to avoid damage, which owing to their weight and brittleness they are very liable to. Another point is that owing to their size, large dishes are probably not often used, and therefore represent so much locked up capital. The alternatives, therefore, are to borrow dishes (which is a nuisance), or make them of some cheap material.

One way of making a tray is to make a wooden frame with a groove along the inside, all round, to hold a sheet of glass. The groove is filled with putty. The sides are put round the glass and then pressed gently in, afterwards being secured by screws at the corners. This arrangement seems more fragile than the porcelain. If moderately stout glass is used it is heavy, and owing to the opposite nature of the glass and wood the tray is seldom watertight, while if the frequent breakages are replaced, the cost mounts up.

One man to whom I mentioned the subject told me he had taken an old picture frame, made the joints and glass tight with putty, and then built the sides up with strips of wood. This is much more troublesome and unsatisfactory than the first way. A picture frame is weak at best, with its mitred corners, and I for one should not care for the bother of making it tight. Another man said he did without a dish at all—just developed, fixed, and washed an enlargement with brushes, while it was fastened to a board. He has a good deal of patience, and it might have been my want of care, but I got some splendid stains and unevenly developed prints through this method. At last, however, I made a tray to hold paper 15½ by 12½ inches comfortably, which has been, in my hands, a great success.
# INDEX TO VOL. XI.

<table>
<thead>
<tr>
<th>A</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylene companies, Why some have disappeared</td>
<td>86</td>
</tr>
<tr>
<td>Acetylene generators, Which to buy</td>
<td>102, 106</td>
</tr>
<tr>
<td>Acetylene installation at Hungary</td>
<td>2</td>
</tr>
<tr>
<td>Acetylene, Purification of</td>
<td>22, 106</td>
</tr>
<tr>
<td>Amateur’s lantern slide cutting board, An</td>
<td>42</td>
</tr>
<tr>
<td>Another field for lantern slide work</td>
<td>62</td>
</tr>
<tr>
<td>Binding slides</td>
<td>80</td>
</tr>
<tr>
<td>Bi-unial saturator</td>
<td>41</td>
</tr>
<tr>
<td>Calcium carbide explosion</td>
<td>2</td>
</tr>
<tr>
<td>Calcium carbide for transportation, Preparing</td>
<td>118</td>
</tr>
<tr>
<td>Calcium carbide (paper read at Paris)</td>
<td>160</td>
</tr>
<tr>
<td>Carbon process, Lantern slides by the</td>
<td>35</td>
</tr>
<tr>
<td>Certain good things</td>
<td>49</td>
</tr>
<tr>
<td>Cheap and effective lantern stand, A</td>
<td>128</td>
</tr>
<tr>
<td>Cinematograph, A new use for the</td>
<td>133</td>
</tr>
<tr>
<td>Cinematographic entertainments at sea</td>
<td>15</td>
</tr>
<tr>
<td>Cinematographic entertainments in Australia</td>
<td>96</td>
</tr>
<tr>
<td>Cinematograph fire at Farnborough</td>
<td>1</td>
</tr>
<tr>
<td>Cinematograph machines, How they work</td>
<td>3, 61</td>
</tr>
<tr>
<td>Correspondence</td>
<td>11, 27, 44, 56, 68, 79, 151, 168</td>
</tr>
<tr>
<td>Creed, A lanternist’s</td>
<td>2</td>
</tr>
<tr>
<td>Crude slides</td>
<td>14</td>
</tr>
<tr>
<td>Cycling and lanternising</td>
<td>3</td>
</tr>
<tr>
<td>Cylinder filling tables</td>
<td>19</td>
</tr>
<tr>
<td>Cutting board for slides</td>
<td>42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>PAGE</td>
</tr>
<tr>
<td>Darker, The late Mr. Chas.</td>
<td>69</td>
</tr>
<tr>
<td>Dissolving views, The decline of</td>
<td>48</td>
</tr>
<tr>
<td>Dry collodion process for slides</td>
<td>55</td>
</tr>
<tr>
<td>Dundee School Board and the lantern</td>
<td>82, 94</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eclipse of the sun and its photographic results</td>
<td>110, 119</td>
</tr>
<tr>
<td>Education by magic lantern</td>
<td>82</td>
</tr>
<tr>
<td>Enlarging, Rough and ready</td>
<td>143</td>
</tr>
<tr>
<td>Ethics of lanternism</td>
<td>162</td>
</tr>
<tr>
<td>Explosion of a cylinder at Detroit</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fake cinematograph films</td>
<td>30, 138, 154</td>
</tr>
<tr>
<td>Fitments for slide makers</td>
<td>60</td>
</tr>
<tr>
<td>Flat P.O.P. prints</td>
<td>105</td>
</tr>
<tr>
<td>Fogged plates, Slides on</td>
<td>55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>G</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas cylinders</td>
<td>12</td>
</tr>
<tr>
<td>Good apparatus and appliances</td>
<td>49</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hint to lantern slide makers, A</td>
<td>26</td>
</tr>
<tr>
<td>Hints and formulae</td>
<td>55, 65, 89</td>
</tr>
<tr>
<td>How cinematographic machines work</td>
<td>142</td>
</tr>
<tr>
<td>How I use the Lawson bi-unial saturator</td>
<td>41</td>
</tr>
<tr>
<td>How to mount snapshot lenses</td>
<td>109</td>
</tr>
<tr>
<td>How to solder</td>
<td>33</td>
</tr>
<tr>
<td>Hydroquinone developer</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impromptu show, An</td>
<td>139</td>
</tr>
<tr>
<td>Intensification and reduction of lantern slides</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lantern and kinetograph as aids to the teaching of languages, The</td>
<td>25</td>
</tr>
<tr>
<td>Lantern days, Reminiscences of</td>
<td>34</td>
</tr>
<tr>
<td>Lantern in business, The</td>
<td>120</td>
</tr>
<tr>
<td>Lantern screen for the lecture room, A</td>
<td>145</td>
</tr>
<tr>
<td>Lantern screens, sheets, and frames</td>
<td>5</td>
</tr>
<tr>
<td>Lantern slide cutting board, An amateur's</td>
<td>42</td>
</tr>
<tr>
<td>Lantern slide makers, A hint to</td>
<td>26</td>
</tr>
<tr>
<td>Lantern slide work, Another field for</td>
<td>62</td>
</tr>
<tr>
<td>Lantern slides by the carbon process</td>
<td>35</td>
</tr>
<tr>
<td>Lantern slides, Intensification and reduction of</td>
<td>69</td>
</tr>
<tr>
<td>Lantern slides, Reducing the density of</td>
<td>145, 159</td>
</tr>
<tr>
<td>Lantern stand, A cheap and effective</td>
<td>128</td>
</tr>
<tr>
<td>Lanternism v. khaki-ism</td>
<td>32</td>
</tr>
<tr>
<td>Lanternising and cycling</td>
<td>3</td>
</tr>
<tr>
<td>Lanternist as lecturer, The</td>
<td>90, 95</td>
</tr>
<tr>
<td>Lanternist’s creed, A</td>
<td>2</td>
</tr>
<tr>
<td>Lawson bi-unial saturator, How I use the</td>
<td>41</td>
</tr>
<tr>
<td>Lecturers' profits</td>
<td>37</td>
</tr>
<tr>
<td>Light systems for optical lanterns</td>
<td>47</td>
</tr>
<tr>
<td>Limelight slander</td>
<td>138</td>
</tr>
<tr>
<td>Limes</td>
<td>18</td>
</tr>
</tbody>
</table>
INDEX.

<table>
<thead>
<tr>
<th>Letter</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Making calcium carbide</td>
<td>46</td>
</tr>
<tr>
<td>Making lantern slides</td>
<td>169</td>
</tr>
<tr>
<td>Man and his relation to the optical system</td>
<td>127</td>
</tr>
<tr>
<td>Model workshop, A (Mr. F. Brown)</td>
<td>131</td>
</tr>
<tr>
<td>Mounting slides</td>
<td>147</td>
</tr>
<tr>
<td>N</td>
<td></td>
</tr>
<tr>
<td>New apparatus</td>
<td>10, 43, 66, 78, 91, 114, 132, 150, 165</td>
</tr>
<tr>
<td>New use for the cinematograph, A</td>
<td>123</td>
</tr>
<tr>
<td>Notes</td>
<td>1, 13, 29, 40, 56, 69, 81, 98, 105, 117, 137, 153</td>
</tr>
<tr>
<td>Notes and queries.</td>
<td>12, 28, 44, 56, 68, 80, 99, 104, 116, 136, 152, 168</td>
</tr>
<tr>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Oil lamps, Some points in regard to</td>
<td>9</td>
</tr>
<tr>
<td>Opaque folding screen</td>
<td>81</td>
</tr>
<tr>
<td>Opaque screen</td>
<td>31</td>
</tr>
<tr>
<td>Optical and mechanical effects for the lantern</td>
<td>16, 50</td>
</tr>
<tr>
<td>Optical lanterns, Light systems for</td>
<td>47</td>
</tr>
<tr>
<td>Optics of trichromatic photography</td>
<td>163</td>
</tr>
<tr>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Patent intelligence, 11, 27, 43, 55, 67, 80, 92, 115, 135, 151, 167</td>
<td></td>
</tr>
<tr>
<td>Pepper, The late Professor</td>
<td>58</td>
</tr>
<tr>
<td>Platform foodstuffs</td>
<td>127</td>
</tr>
<tr>
<td>Plea for scenic effect, A</td>
<td>77</td>
</tr>
<tr>
<td>Preaching with a lantern in Japan</td>
<td>139</td>
</tr>
<tr>
<td>Professor Pepper—a memoir</td>
<td>72</td>
</tr>
<tr>
<td>Profitable Christmas and New Year's occupation</td>
<td>158</td>
</tr>
<tr>
<td>Profits for lecturers</td>
<td>37</td>
</tr>
<tr>
<td>Prominent men in the lantern world</td>
<td>101, 155</td>
</tr>
<tr>
<td>Purification of Acetylene</td>
<td>23</td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Reminiscences of lantern days</td>
<td>34</td>
</tr>
<tr>
<td>Recruiting by means of the lantern</td>
<td>117</td>
</tr>
<tr>
<td>Reducer for slides and enlargements</td>
<td>65</td>
</tr>
<tr>
<td>Reducing the density of lantern slides</td>
<td>145, 159</td>
</tr>
<tr>
<td>Relation of man to the optical system of the human life of the universe</td>
<td>127</td>
</tr>
<tr>
<td>Ripple on waves</td>
<td>143</td>
</tr>
<tr>
<td>Rough and ready enlarging</td>
<td>143</td>
</tr>
<tr>
<td>Row about the Dundee school lantern, A</td>
<td>82, 94</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Letter</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Scenic effect, A plea for</td>
<td>77</td>
</tr>
<tr>
<td>Screen for the lecture room</td>
<td>149</td>
</tr>
<tr>
<td>Shadowgram or silhouette slides for the optical lantern, 7, 21, 40, 53, 63, 74, 83, 97, 112, 124, 141, 156</td>
<td></td>
</tr>
<tr>
<td>Short quantity of gas in cylinders</td>
<td>44</td>
</tr>
<tr>
<td>Slide makers, A hint to</td>
<td>36</td>
</tr>
<tr>
<td>Slide makers, Fitments for</td>
<td>60</td>
</tr>
<tr>
<td>Slides by carbon process</td>
<td>35</td>
</tr>
<tr>
<td>Slides on spools—a suggestion</td>
<td>68</td>
</tr>
<tr>
<td>Slides, On the mounting of</td>
<td>147</td>
</tr>
<tr>
<td>Slides, Intensification and reduction of</td>
<td>59</td>
</tr>
<tr>
<td>Slides, Warm tones on</td>
<td>30, 65</td>
</tr>
<tr>
<td>Slotted catch for lantern body</td>
<td>146</td>
</tr>
<tr>
<td>Snapshot lenses, How to mount</td>
<td>109</td>
</tr>
<tr>
<td>Soldering</td>
<td>33</td>
</tr>
<tr>
<td>Some points in regard to oil lamps</td>
<td>9</td>
</tr>
<tr>
<td>Soot for making astronomical slides</td>
<td>97</td>
</tr>
<tr>
<td>Stereoscopic effect</td>
<td>79</td>
</tr>
<tr>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Tables re filling cylinders</td>
<td>19</td>
</tr>
<tr>
<td>Teaching languages, Cinematograph as an aid to</td>
<td>25</td>
</tr>
<tr>
<td>Temperance teaching by means of the optical lantern</td>
<td>120</td>
</tr>
<tr>
<td>Texoderm</td>
<td>14</td>
</tr>
<tr>
<td>Thornton film</td>
<td>134</td>
</tr>
<tr>
<td>Title slides</td>
<td>144</td>
</tr>
<tr>
<td>Toning lantern slides and bromide prints by ferrocyanide of copper</td>
<td>76</td>
</tr>
<tr>
<td>Tone values in lantern slides</td>
<td>108</td>
</tr>
<tr>
<td>Total eclipse of the sun (28th May, 1900), and its photographic results, The</td>
<td>110, 119</td>
</tr>
<tr>
<td>Traill Taylor memorial lecture</td>
<td>163</td>
</tr>
<tr>
<td>Transparencies in aniline dyes</td>
<td>89</td>
</tr>
<tr>
<td>Trichromatic photography</td>
<td>163</td>
</tr>
<tr>
<td>Trick cinematograph films</td>
<td>153</td>
</tr>
<tr>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Unrehearsed effect, A</td>
<td>18</td>
</tr>
<tr>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Vote of thanks</td>
<td>11, 27, 88</td>
</tr>
<tr>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Wanted a camera</td>
<td>31</td>
</tr>
<tr>
<td>Waste calcium carbide</td>
<td>105</td>
</tr>
<tr>
<td>Waterproof screen bag</td>
<td>138</td>
</tr>
<tr>
<td>Which acetylene generator shall I buy</td>
<td>102, 106</td>
</tr>
<tr>
<td>Why some acetylene companies have disappeared</td>
<td>86</td>
</tr>
<tr>
<td>Window transparencies</td>
<td>65, 71</td>
</tr>
<tr>
<td>Wood, The late Mr. A. A.</td>
<td>119</td>
</tr>
</tbody>
</table>

ILIustrATIONS.

<table>
<thead>
<tr>
<th>Title</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>How cinematograph machines work</td>
<td>4, 61, 62</td>
</tr>
<tr>
<td>Stand for screen frame</td>
<td>6</td>
</tr>
<tr>
<td>Shadowgram or silhouette slides, 7, 8, 21, 32, 40, 54, 63, 64, 75, 83, 84, 97, 98, 99, 100, 112, 113, 124, 125, 141, 142, 156, 157</td>
<td></td>
</tr>
<tr>
<td>Some points in regard to oil lamps</td>
<td>9</td>
</tr>
<tr>
<td>The &quot;Guv'nor&quot; camera</td>
<td>10, 11</td>
</tr>
<tr>
<td>Crude slides</td>
<td>14</td>
</tr>
<tr>
<td>Optical and mechanical effects for the lantern</td>
<td>17, 51, 53</td>
</tr>
<tr>
<td>How I use the Lawson bi-unial saturator</td>
<td>41</td>
</tr>
</tbody>
</table>
**INDEX.**

**ILLUSTRATIONS.—Continued.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An amateur's lantern slide cutting board</td>
<td>42</td>
</tr>
<tr>
<td>&quot;Bon-accord&quot; generator and lamp for photomicrography</td>
<td>43</td>
</tr>
<tr>
<td>Adjustable sprocket for cinematographs</td>
<td>66</td>
</tr>
<tr>
<td>&quot;La Petite&quot; living picture camera and projector, 66, 67</td>
<td></td>
</tr>
<tr>
<td>Matthews’ &quot;Little Beauty&quot; lantern</td>
<td>78</td>
</tr>
<tr>
<td>&quot;Dreadnought&quot; acetylene generator</td>
<td>78</td>
</tr>
<tr>
<td>The &quot;Brownie&quot; camera</td>
<td>79</td>
</tr>
<tr>
<td>Soot astronomical slides</td>
<td>93, 99, 100</td>
</tr>
<tr>
<td>Portrait of Mr. E. Baker</td>
<td>101</td>
</tr>
<tr>
<td>How to mount snapshot lenses</td>
<td>109</td>
</tr>
<tr>
<td>The &quot;Panoram&quot; kodak</td>
<td>114, 115</td>
</tr>
<tr>
<td>A new use for the cinematograph</td>
<td>124</td>
</tr>
<tr>
<td>The relation of man to the optical system of the human life of the universe</td>
<td>127</td>
</tr>
<tr>
<td>A cheap and effective lantern stand</td>
<td>128</td>
</tr>
<tr>
<td>A model workshop</td>
<td>131</td>
</tr>
<tr>
<td>Revolving acetylene jet</td>
<td>132</td>
</tr>
<tr>
<td>Combination tank and carrier</td>
<td>132</td>
</tr>
<tr>
<td>Hughes' jet and cinematograph</td>
<td>132</td>
</tr>
<tr>
<td>Double action cinematograph and adjustable tray</td>
<td>133</td>
</tr>
<tr>
<td>Matagraphe arc lamp</td>
<td>133</td>
</tr>
<tr>
<td>The &quot;Riford&quot; oxygen generator</td>
<td>134</td>
</tr>
<tr>
<td>Title slides</td>
<td>144</td>
</tr>
<tr>
<td>Slotted catch for lantern body</td>
<td>147</td>
</tr>
<tr>
<td>A lantern screen for the lecture room</td>
<td>149</td>
</tr>
<tr>
<td>The &quot;B.P.&quot; combination set</td>
<td>150</td>
</tr>
<tr>
<td>Newtonian ether saturator</td>
<td>151</td>
</tr>
<tr>
<td>Portrait of Mr. Alexander Gunn</td>
<td>155</td>
</tr>
<tr>
<td>Maxwell's colour mixture curves</td>
<td>164</td>
</tr>
<tr>
<td>Prestwich cinematographic projector</td>
<td>165</td>
</tr>
</tbody>
</table>

**GUIDE TO PAGES OF VARIOUS MONTHS.**

<table>
<thead>
<tr>
<th>Month</th>
<th>Pages Range</th>
<th>January, 1900</th>
<th>from page 1 to page 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td></td>
<td>13</td>
<td>28</td>
</tr>
<tr>
<td>March</td>
<td></td>
<td>29</td>
<td>41</td>
</tr>
<tr>
<td>April</td>
<td></td>
<td>45</td>
<td>56</td>
</tr>
<tr>
<td>May</td>
<td></td>
<td>57</td>
<td>68</td>
</tr>
<tr>
<td>June</td>
<td></td>
<td>69</td>
<td>80</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td>93</td>
<td>104</td>
</tr>
<tr>
<td>August</td>
<td></td>
<td>105</td>
<td>116</td>
</tr>
<tr>
<td>September</td>
<td></td>
<td>117</td>
<td>136</td>
</tr>
<tr>
<td>October</td>
<td></td>
<td>137</td>
<td>152</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td>153</td>
<td>168</td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
First I got a piece of wood 1 inch thick, 18 inches long, and a little over 8 inches wide, from my favourite supply, i.e., an old packing case. This was sawn into four strips 2 inches wide, which formed the sides. The ends were squared carefully, two of the pieces being shortened to 14 inches; and then the longer pieces were fastened on to the ends of the shorter by two 1/2 inch thin screws at each corner, the heads of the screws being sunk flush.

I had now a frame measuring inside 16 by 14 inches. This I unscrewed again, and after smearing the joints with some thick paint, screwed up tightly. I had been very careful to keep the bottom edge of the frame level all round, so that the bottom would fit well; and now I spread paint all along this edge. The bottom was a piece of three-ply fretwood, which can, I believe, be obtained in sheets as large as 24 inches square.

The sheet I got was 18 inches square, 1/8 inch thick, and cost 8d. This thickness is quite stiff and heavy enough. If any difficulty is experienced in obtaining the stuff, I should be glad to give an address through the Editor. I took the sheet and fastened it to the frame with boot tacks driven in very closely all round, say every inch. This sounds tedious, but it was very soon done.

The superfluous wood was trimmed off level with the outside edge, and all the paint which had been driven out wiped off. Then I gave the inside a coat of glue, in which I had dissolved some bichromate of potash, and set the tray in the sun. In about an hour it was almost black and quite waterproof. Still its appearance did not please me, so I got a small tin of white enamel, thinned it down, and gave the inside and outside three coats, allowing each coat to dry thoroughly before the next was put on. The bottom had to be painted, as it might have suffered if it had got wet. The result was very good, as the enamel, put on as I have described, set almost as hard as glaze, and I have not had a single cause of complaint since. The whole cost was 1s. 3d. The tray being so light hangs when not in use on a nail in my darkroom wall, so saving shelf room. It would scarcely do to treat any other kind this way, but the straight sides keep it from slipping.

I know that the more workmanlike way of making the tray would be to let the sides one into the other, and the bottom into the sides; but my way is much simpler and quite as efficient. The thick sides were used to stiffen the bottom.

I have not yet made a second tray for fixing, but when I have developed a print, I pour the developer off, and put the tray and paper under the tap. The water is run into the dish for about five minutes, and after a swill out I pour in the hypo. When the print is fixed I pour the hypo off, and put the dish back under the tap for about an hour and a half (rinsing out once or twice just at first), and then I reckon the dish to be quite free from hypo and ready for another print. The theory may be all wrong, but I have not found anything wrong with the prints.

The drawback is, of course, that I can only finish one print of that size at a time; but then I do not generally make such large prints in dozens.

The Use of the Electric Light in the Optical Lantern.—No. I.

By W. H. Golding.

The electric light, until recently a scientific, curiosity, is rapidly coming into general use, and electricity as a means of illumination is in many public halls and lecture rooms, as well as in large open spaces, superseding gas, as that in its turn took the place of older illuminants such as the candles and oil lamps of by-gone days.

The lanternist, always desirous to move with the times and to avail himself of any method of illumination which may promise to be an improvement upon those to which he has been accustomed, or may seem to offer any advantages for his purpose, not infrequently or unnaturally inquires whether the electric installations which he finds being set up on every hand may not be pressed into his service, and be made available for the more effectual projection of his pictures or diagrams upon the screen. If this were practicable he might dispense with the use of the weighty and cumbersome cylinders containing compressed gases, and avoid the various inconveniences and anxieties attending their use, thus largely reducing his impedimenta, and saving his time and labour. He will further find, it may be to his cost, that the introduction of electric lighting has led to the entire disuse of gas in many buildings in which
he may be called upon to use his lantern, and if he is accustomed to employ a "blow-through" jet, as many lanternists do where a large disc is not required, and is dependent on a supply of gas from the main, he may discover to his dismay that no pipe or other fitting to which he can attach his tubes is within reach.

The cleanliness and convenience, as well as the brilliancy of the light yielded by the electric current, offer considerable advantages, and the lanternist will naturally enquire how he may most readily avail himself of so desirable a means of illumination, and how to set about it.

Obviously he will require to have the wire leading from the electric main or source of supply carried to the spot on which his apparatus is to be placed, and if this has not already been done, the electrician or the person in charge of the lighting arrangements will probably be able to supply the needed connections if a previous intimation be given to him that they will be required. Then the lantern must be fitted with a lamp capable of receiving and utilising the current. The lamps used in ordinary electric lighting are of two principal types; the arc lamps, which are employed for lighting the streets and large spaces, and which yield the extremely brilliant light with which we are rapidly becoming familiar in most large towns; and the incandescent form, used in domestic lighting and in comparatively small buildings as well as in those places where a considerable number of small lights are preferable to one or more large and brilliant ones. In these incandescent lamps the light is due to the intense heating by the electric current of a thread or filament, usually of carbon, enclosed in a small glass bulb from which the air has been carefully excluded, in order to prevent the filament being burned and the light extinguished, which would occur immediately if the atmosphere had access to it when heated. The incandescent lamp will be of little service for lantern illumination, unless a very small disc has to be covered and a feeble light will suffice, partly because the light given by such a lamp is usually small, and far from being white, and partly because the shape of the glowing filament is such that only a small part of the rays given off can be received by the condensers, and directed so as to pass through the focusing lenses of the lantern, and the rays which can be so utilised are not so distributed as to enable the disc upon the screen to be evenly illuminated. Special incandescent lamps have indeed been occasionally designed to obviate this difficulty. In these the heated filament, instead of taking the form of a loop or stirrup, as in those used for ordinary purposes, is coiled into a helio or corkscrew shape, so as to present a small and brilliant ring of light readily brought into the focus of the condensers, and thus this arrangement is only capable of being used on a very small scale; and the far more concentrated and intense light of the arc system may be regarded as the only one generally available for the purpose of projection by the aid of lenses.

In judging of the relative intensity of the light from any sources, two points have chiefly to be considered, the intrinsic brightness of the luminous surface, and its size or area. The flame from a gas jet, or from any form of lamp or candle with which we are familiar, is usually of considerable size, and the surface of such a flame may be regarded as consisting of an almost infinite number of luminous points, none of them extremely brilliant in itself, but the total light emitted owing its brightness to the combined effect of these numerous glowing spots forming or covering a considerable area.

Now it will be readily seen that since each point in such a flame is sending out rays in every direction, only very few of these rays can possibly reach the condensers and be so collected by them and refracted as to pass through the slide and focusing lenses, and assist in the illumination of the picture on the screen; and many illuminants, apparently of great brightness, prove almost useless for optical purposes because the light is given off from so large a surface that very little of it can be made use of. For lighting a room or any considerable space, this is of no importance; indeed, it possesses a positive advantage, since the purpose in view is to distribute the light as equally as possible over every part of a large surface or series of surfaces, and to prevent the formation of deep shadows by causing the spots which are shaded from one portion of the light to be illuminated by some other part of it. But when the object is to send all the light in one direction and to exclude all other rays, the smaller the source from which it comes the larger the share of it which can be utilised. It is for this reason that the limelight is so well adapted for lantern purposes, since the glowing spot upon which the gases are projected and from which the light proceeds, is not only extremely brilliant, but very small as compared with most other illuminants in common use. The ideal light for such a purpose would be one proceeding from a

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(To be continued.)

The Optics of Trichromatic Photography.—Part II.

The Traill Taylor Memorial Lecture.

Continued from page 105.

It follows from this that the absorption of the printing colours should not conform to the Maxwell curves, but should be greatest for the "pure" colours, and fall gradually to the position of the next "primary" in the spectrum. Such absorptions are shown in the diagram given herewith, the Maxwell curves being shown by dotted lines, and the printing colour absorptions by the full lines.

These three absorptions, added together, make a neutral black or grey in ordinary white light, but absorptions according to the Maxwell curves would make a dark purple, because the pure red and violet spectrum rays would not be all absorbed. This drawing, although imperfect, sufficiently illustrates a principle which I have long recognised and tried to make clear to others.

I hope the illustrations which I have now given will make it sufficiently clear that in negative synthesis the printing colour absorptions should differ from the photographic analysis curves for the same reason that in positive synthesis it is necessary to employ "pure colour" screens instead of "colour curve" screens; but it is also evident that the distinction cannot be as complete, nor the result as perfect, because of the different character of the white light in the two cases.

As I have frequently pointed out, and as analysis of all the absorption diagrams will prove conclusively, synthesis by colour prints introduces a perceptible though not necessarily offensive dilution or degradation of colours, which, however, should disappear altogether if the prints are viewed in a mixture of pure red, green, and blue light.

In short, it is not possible, in ordinary white light, to reproduce all of the spectrum colours undiluted by means of any three printing colours, for the same reason that it cannot be done in positive synthesis by means of "colour curve" screens; but the best approximation may be obtained by using the printing colours most specifically antichromatic to the respective colour elements in ordinary white light.

Let me here emphasise the fact that the slight degradation of colour which the spectrum test will disclose even with such printing colours as I have indicated is in no material degree the fault of the photographic analysis, but it is inherent in the printing colours. Analysis of the absorption curves of any three printing colours will demonstrate that by no means whatever can they be combined to reproduce the spectrum without some dilution or degradation which may be either general and reduced to the lowest minimum, as with the colours I have indicated, or localised, so as to introduce changes of hue, which would be far more objectionable.

It is also necessary to point out that the comparatively short scale of correct gradation of the photographic process is always working against a tendency to weaken colour contrasts which might otherwise be expected, but also that, just in proportion as the colour contrasts are thus intensified, other, and I think more important, qualities are sacrificed. It is generally far better to sacrifice something of the purity of colours than to alter their hues.

Synthesis by the positive method offers the advantage not only of far greater simplicity, but of yielding every other quality along with practically undiminished purity of colour.

When I originally stated these propositions, they were dismissed by many as "mere assertions," "speculations, unsupported by argument or experimental proof," "pretentious and unfounded judgments," "theories, which have nothing to do with practice," etc.

It has always seemed to me that they were such logical deductions from the experimentally verified facts of spectrum colour analysis that it would be an insult to intelligence to devote time and space to argument and illustration. I am of the same opinion still, but have, nevertheless, tried to fortify myself this time with some arguments and illustrations, which I think go as far as should be necessary for anybody who can comprehend a simple theory.

It was by adhering to the conditions which I have laid down that I succeeded, at a time when the capabilities of trichromatic photography were almost universally discredited, in reproducing test subjects to the entire satisfaction of a committee of scientists appointed to investigate the subject.

I shall now proceed to consider the genesis of the various methods which have been proposed, showing as
well as I can what elements of success were contributed by each worker, and wherein each failed, until all the conditions of success were realised.

The first suggestion was made by Prof. James Clerk-Maxwell, in a lecture at the Royal Institution, May 17th, 1861. This lecture was never published in full, but a report of it was printed in the Journal of the Royal Institution. According to this report, he proposed the production of three photographs to represent the three fundamental colour sensations, by exposing photographic sensitive plates through colour filters, and synthesis by triple lantern projection through the same colour filters. I am inclined to believe that the principle of colour-curve analysis and pure colour synthesis was fully recognised by Clerk-Maxwell, and that it was only by an oversight that this distinction was not set forth in the brief report of his lecture. In short, I believe that his invention may have been theoretically complete for the recording of colours by photography, and their reproduction by triple lantern projection, but that it was lost to the world by insufficient publication.

The next published suggestion was made by Henry Collen, in a letter to The British Journal of Photography (p. 547, Oct. 27th, 1865). Collen, who accepted Brewster's theory of three primary colours of light, red, yellow, and blue, proposed the production of a separate negative by the action of each primary colour, and negative synthesis by the production and superposition of transparent colour prints. He suggested that the negatives should be made on thin pellicles, and that they should be superposed two and two to print transparent images of the third colour; thus, the negative made by blue light and the negative made by yellow light should be superposed and used as one in making the red print, the red and blue negatives for making a yellow print, and the red and yellow negatives for making a blue print.

There were three defects in this proposition, any one of which would have been fatal. First, the wrong idea as to primary colours. Second, the fact that prints in true red, yellow, and true blue cannot be made to even approximately reproduce all colours. Third, that the combination of two negatives doubles the opacity of all whites and greys, without altering the opacity in the records of the pure colours.

The result of this would be that when the printing was carried far enough to show details in the whites (opaque in two negatives), the pure colours (each opaque in only one negative), instead of printing like the whites, as they should, would print half way down to the deepest shadows in density, and reduce the relative luminosity of colours by nearly 50 per cent. in the finished prints.

In a trichromatic colour record, only one of the three colour elements can be represented in each negative image in its proper relation to the whites and greys.

Collen's idea was to make one complete negative image by superposing two single element records.

Baron Ransonnet, in Austria, is also credited with a crude suggestion of trichromatic photography, in 1865.

Louis Ducos Du Hauron, in France, applied for a patent on the trichromatic principle in November, 1868. Duf Hauron elaborated the idea very much, suggesting not only triple negative colour records, positive synthesis by triple lantern projection, and negative synthesis by superposed colour prints, but also positive synthesis by a photo-chromoscopic apparatus, and a process in which a single screen made up of juxtaposed coloured lines was substituted for three separate colour screens, and the operation reduced to the production of a single photographic image.

(To be continued.)

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Rev. J. G. Birc, Limerick, writes Nov. 23rd, 1899:—”I have just completed a lecturing tour with the Praestantia outfit you supplied me with. It proved most satisfactory. I am much pleased with the unrivalled light that can be had with your 'Rilford' Oxygen Generator and Lawson Saturator.”

W. H. C. Barr, Esq., Woolton, writes March 25th, 1900:—”Let me again tell you of my numerous successes of the season with your 'Rilford' Generator. Ever since the first few times, when I was unfamiliar with its working, it has never failed me, and the light has been brilliantly maintained throughout my numerous entertainments. It is a gem, and beats cylinders and their increased cost and trouble out and out.”

Rev. C. H. Finnes-Clynt, of Blandford, writes March 5th, 1900:—”I am much pleased with the 'Rilford' apparatus; it works perfectly.”

Rev. K. Dunford, Esq., of Leicester, writes Dec. 23rd, 1899:—”I am delighted with it. It is the very thing necessary for one like myself, who is constantly visiting villages, and out of the way places. The automatic movement of the lamp is most ingenious, and the light produced far better than what I have been able to get with a mixed jet.”

G. H. Stephenson, Esq., of Worcester, writes Oct. 20th, 1899:—”I cannot too highly praise the invention.”

G. H. Elliott, Esq., of West End, writes Nov. 13th, 1899:—”With regard to the 'Rilford,' all I can say is, it is simply splendid, and I cannot speak too highly of it. It thoroughly deserves everything that has been said in its favour, and more too. Not only is the light most brilliant and steady, but the regular and unfailing supply of gas, the automatic action, and absolute safety of the apparatus give one the confidence which one doesn't often feel when working other appliances.”

IT SAVES LIFE TOO.

Rev. G. W. L'Estrange, of Caledon, writes Feb. 7th, 1900:—”I am much pleased with the 'Rilford Oxygen Generator.' The evening it arrived the Doctor here tried it with a bad case of Pneumonia, and the effect was most marked. With your Ether Saturator it works most satisfactorily.”

Another clergyman, who does not wish us to publish his name, but who will answer any questions by letter (name and address to be obtained from us), writes June 27th, 1900:—”I send you an account of a case of Pneumonia, in which the 'Rilford' was used with much success. The case in point was that of a boy aged twelve. Pneumonia showed itself on May 22nd. On May 25th oxygen was first used, a cylinder being obtained from the Cottage Hospital, where one is always kept ready. On Sunday, May 27th, this gave out, and as there was on that day no possibility of getting another cylinder, my 'Rilford' was taken down, and first used at 8.30 p.m. From 10 p.m. to 7 a.m. oxygen was administered every 45 minutes, then every hour, with the result that the boy, whose case seemed almost hopeless at 10 p.m., was decidedly better. The improvement continued, the 'Rilford' being used at longer intervals during the 26th and the nights of the 28th and 29th. The boy is now convalescent, and in the Isle of Wight. I think, humanly speaking, the presence of a 'Rilford' in the village saved his life.”

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"I yesterday sold my old Pendant Saturator so should like a new one in its place. The new Jet works very well indeed. I used it on Wednesday at a private trial in the Borough Hall here. It illuminated a picture at 50 feet distance with 15 inch lens. It worked quite easily and gave nearly as much light as the 10 ampere direct current arc lamp, and the arc lamp was not in the same street for evenness of light throughout."

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for tri-unial lanterns is well worthy of mention, and those who have had difficulty with the Star form of dissolver will welcome this particular dissolver, which controls the three lanterns separately by means of its own plug. The levers from each are close together and easily manipulated.

OTTWAY'S LIMELIGHT JET.

One of the latest forms of jet brought out by Messrs. Ottway & Son, of 178, St. John's Street Road, E.C., is provided with a cut-off, whereby the lanternist is enabled to turn down the gases after they have been adjusted by means of the controlling taps, and turn up the lights to the full volume without any further readjustment, simply by a movement of the lever and will be found very handy. A convenient method of using Velox developer is by means of a flat soft brush. This method ensures a portion of developer of full strength being used for each print.

CARTRIDGES—FLASHLIGHT AND CLEARING.

From Messrs. Fuerst Brothers, 17, Philpot Lane, E.C., we have received the above cartridges. The former is a convenient flash powder done up in cartridge form, together with a piece of fuse paper. The contents of the cartridge should be poured on a piece of tin, the fuse laid adjacent, and a light applied to the latter; as soon as the smouldering reaches the powder a short and intense light is emitted with practically no noise. The contents of the other cartridge when dissolved in 9 ounces of water serve for removing stains from paper caused by developer. The solution can be used repeatedly.

NEW CENTURY DEVELOPER.

This developer has been brought out for use with the Otto printing out paper, by Mr. Otto Scholzig, 31, Binfield Road, Clapham, S.W. With it the paper need be exposed for a very short time only, until the image is just discernible. The full details are then brought out by means of the developer mentioned. When making several prints in this manner they are thrown face downwards into a weak solution of hypo to arrest development, after which they can be finished in batches in a combined bath. The results are of warm and pleasing colour.

M.Q. MIDGET DEVELOPER.

For the greater convenience of amateurs wishing to mix a small quantity of developer at a time, Messrs. Griffin & Sons, Ltd., of Sardinia Street, Lincoln's Inn, W.C., are putting developer in powder form up for Velox, etc., these are sold in boxes of ten for 6d., dissolved in 9 ounces of water serve for removing stains from paper caused by developer. The solution can be used repeatedly.

NEW PANORAM KODAK.

Such has been the great success of the small Panoram Kodak, some time ago introduced by Kodak, Limited, that they have now placed on the market a larger instrument of the same class termed No. 4 Panoram Kodak, with which pictures 12 by 34 inches in size may be produced. This camera is of the "loading and unloading in daylight" class, and is capable of holding sufficient film for the exposure of five negatives of the size stated. The view taken includes an angle of 142 degrees. The scope of view is ascertained by means of lines on the top of the camera.
Patent Intelligence


No. | Recent Patent Applications
---|---
20310 | 13th November, 1900. Thomas Charles Twining. Improvements in devices employed in photography and for like purposes.
20349 | 12th November, 1900. Hugo Meyer. Improvements in and relating to photographic objectives.
20457 | 12th November, 1900. Alfred Wrench. Improvements in or connected with cinematography.
20506 | 14th November, 1900. John Bush Duckett. Invention in printing whereby the printed page presents to the unassisted eyes effects of the character perceived by means of the stereoscopes.
20508 | 14th November, 1900. John Atterbury. Improvements in automatic machines for the receipt of predetermined coins, and the exhibition of stereoscopic and other views or effects in exchange.
20651 | 16th November, 1900. William Avery and Abraham Burrow. Improvements in ophthalmoscopic and laryngoscopic lamps. (Complete.)
20776 | 17th November, 1900. Jean Antoine Pautasso. Improved roll camera. (Complete.)

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

Specifications Published.

16671 of 1899. Simpson. Machines for sighting pictures cinematographically.
18296 of 1900. Theobald and Theobald. Device for increasing the illuminating power of gas burners.

Questions and Correspondence

Correspondents must supply their names and addresses, but, if desired, queries can be replied to under a "nom de plume."

A. West.—You will find an article on the wet collodion process in this Journal for November, 1891, and also one in the number for December, 1894. If you have not got the copies, perhaps our publishers can supply you.

L. B.—In addition to the names which we have recently given in this Journal, the following firms will lend slides for certain exhibitions:—Eyre & Spottiswoode, Donald Currie & Company, Great Eastern Railway Company, T. H. Cook & Sons, and Harmsworth Brothers. The address "London" is sufficient for either. Also Cadbury Cocoa Company, Birmingham.

A. Boswell.—Your letter, with stamped envelope, has been sent to the writer of the article.

George E. Skinner.—Thanks for your long and interesting letter containing your experiences with the Injector jet. Although we have often heard very good accounts of it before, we have never had the opportunity of trying it, which we have several times been promised by the makers in Manchester.

E. Baker.—It is Lewistown, Ohio, U.S.A.—not Pennsylvania.

R. D.—The separated lenses towards the light—not the picture.

N. Pachkovsky.—There is only one saturator termed the "Pendant." It is made by Mears, J. S. Willway & Sons, St. Augustine's Parade, Bristol.

L. B.—The Injector jet, by the Manchester Oxygen Company, Great Marlborough Street, Manchester.

"Myop" writes:—I have, as you are aware, recently opened a shop for the sale of photographic and lantern apparatus. I am often asked for second-hand apparatus. I have replied to numerous advertisements of such both in your journal and others, but the price asked is always such that no margin of profit is left for me to resell. Can you oblige by assisting me in the matter of obtaining as quickly as possible a stock of second-hand apparatus of good class, as I find I often lose customers. I am at the present moment prepared to invest about £109 for a stock of this kind, but do not know how best to set about it. I have often noticed that you evidently take great pains to assist your readers with varied information, and although I have been a reader of the Optical Magic Lantern Journal for nearly 10 years, I have never before troubled you with questions, and I trust you will see your way clear to assist me in the matter referred to. Ans.—We can give you all the necessary information in a few words, but you must take a trip to London. Second-hand apparatus of all kinds, pertaining to your line of business, is sold by auction every Friday by Mr. Stevens, 38, King Street, Covent Garden, W.C. Said for one of his catalogues, and you will have a good idea of the style of goods offered.
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THE "INJECTOR" MIXED JET.
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PRICE 30s.

This is the only Mixed Gas Jet which will work at full power with coal gas taken direct from the town supply, and oxygen from a cylinder. In order to effect this the oxygen, on its way to the mixing chamber, is made to pass through the small Injector in the sketch at a pressure of about 12 lbs. per square inch. In passing through the Injector it sucks a supply of coal gas from the pipe H, which is connected with the house pipe, and forces it forward through the short pipe T into the mixing chamber M. Here the mixed gases meet the baffle plate B, which has the two-fold effect of silencing the passage of the gases, and ensuring their complete admixture. The mixed gases then pass through holes in the edge of the plate, and so to the burner. The requisite pressure of oxygen is obtained in the ordinary way by a fine tap on the cylinder, or an automatic regulator fitted with a high-pressure spring to deliver at about 15 lbs. pressure.

Five seasons' experience has fully established the superiority of this Jet over all others. It will yield THE FULL 1,800 TO 2,000 CANDLE-POWER (so-called) of the ordinary mixed jet when taking its supply of coal gas direct from the town's pipe, or even from a bag without any pressure at all. If a town's supply is not available, it will work just as well with coal gas from a cylinder. We cannot see why ordinary mixed jets should be purchased which cannot offer these alternatives. As for blow-through jets, ejector or otherwise, we do not know why they should be used at all, when with the same economy and convenience of working, the Injector Jet will give two or three times the light. By removing the Injector nipple the jet becomes an ordinary mixed jet. This can be done whenever it is desired to work with oxygen at low pressure, and coal gas from a cylinder.

The working of the Jet is simpler than that of an ordinary jet. When the H tap is once adjusted, it does not need to be touched again when using town gas. The turning off or on of the oxygen supply regulates automatically the supply of coal gas. This is a great convenience in actual use.

Most existing jets can be fitted with an Injector to enable them to take their coal gas supply from the house pipe.

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