

MOTION PHOTOGRAPHY

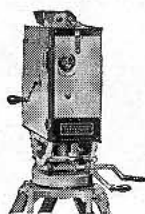


Motion Photography

with the

Universal Camera

A Description of Methods
and the Machine



Burke & James Inc
Manufacturers

Factory: 240-258 E. Ontario St., Chicago
Branch: 225 Fifth Ave., New York

Foreword



It is practically only a few years since the first motion picture camera was made. Viewed in the light of recent developments it was a crude machine, but it opened up a world of possibilities, recording life and nature for scientific, educational and entertainment purposes.

Hardly any event of importance now takes place without the "eye" of the motion picture camera recording it for the world and posterity.

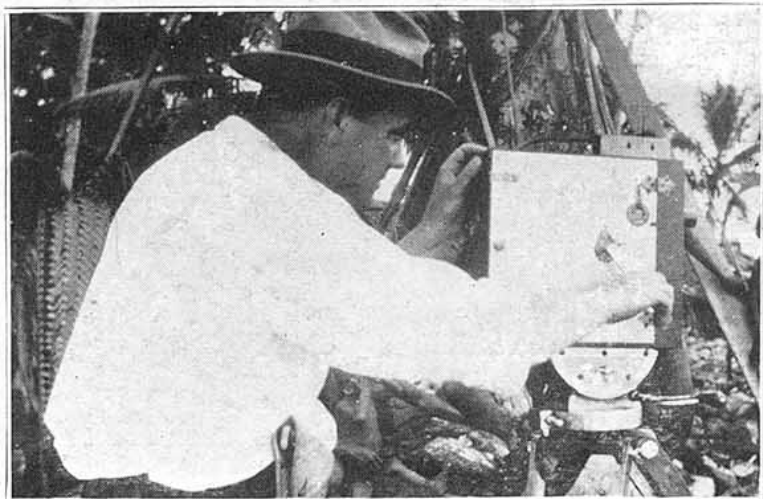
With the general application and use of the motion picture, have come perfections both in the cameras and the projection apparatus.

In the Universal Motion Picture Camera and the projection apparatus described in this book, we have arrived at a perfection and simplicity which enables anyone to take motion pictures and project them. This is of great importance, especially to the traveler, the scientist, the educator, and the industrial and news cinematographer.

The Universal Camera is the evolution of many years' experiment and experience. It has been developed to a point of perfection by the brains of a staff of men who set out to build in every necessary mechanical refinement and device, to take out every possible weak point, weight or complexity. The machine as it stands today is the evidence of their success. Each camera is actually built by instrument makers; each has the precision and adjustment of a watch; each has a strength and ruggedness that enables it to stand the hard wear and usage to which the Universal may be subjected on the far trails and lonely places of the world where it is the trusty "recording eye" of the explorer, the traveler and the alert news photographer.

It is as easy to make motion pictures with the Universal as it is to make "snapshots" with a folding camera. In fact somewhat similar technique is used. Anyone who can use a film camera can use a Universal successfully. Scenes, places and events can be recorded with certainty and ease. The certainty of taking beautiful film if a few simple directions are followed, the ease of operating an extremely simple cam-

era that is almost fool proof, and that will stand a great deal of hard usage without getting out of order.



Martin Johnson, the world famous cinematographer of primitive races, operating his Universal in the South Sea Islands.

The projection apparatus we describe represents the final development of the class of machine by which you are enabled to project the film in any lecture hall, or before any gathering without other special apparatus or equipment.

Motion Photography as a Sales Force



OMMERCE has been quick to recognize the value of motion pictures for sales propaganda purposes. The visual demonstration of apparatus, methods, uses and results is being used by dozens of the leading industrial concerns as the regular part of their advertising program.

Up to the present, the initial expense of making industrial pictures has been high, but with the introduction of the Universal it is possible for a firm to own a Universal and make its own exposures any time conditions are most suitable.

The saving on the first couple of films is sufficient to pay for the camera. Technical work, that is: developing of the film, making positive prints for projection purposes, etc., can all be sent to one of the firms who specialize in finishing this type of film. There are motion picture industrial finishers in all the larger cities.

Having a Universal on hand it is possible to make pictures on the spur of the moment and in this way many valuable films are added to the firm's collection, much would be lost perhaps, if it were necessary to arrange on each occasion for an industrial cinematographer.

The Universal is so simple that any member of the staff can make satisfactory pictures in the plant or on the road.

For projecting your films at sales conferences and to customers the Trans-Atlantic Projector described further on in this book is the ideal equipment extremely portable and simple, and on account of the water cooling cell it is possible with this projector to stop the picture at any time, where detailed description of some particular feature is desirable.



Mrs. Martin Johnson making pictures of a group of Cannibals on the Island of Malekula. This camera was knocked about in the bottom of a whale boat for weeks at a time, carried through dense brush and is still making perfect film.

The Universal for Current Events

The Universal is recognized as the leading Motion Picture Camera for taking pictures of current events, civic improvements, pageants, parades, conventions, etc. The News Cinematographer finds a ready sale for subjects of general interest among the various news weeklies which are released regularly by several of the leading producers.

The Universal is so quickly set up, so conveniently portable that it has no peer for this class of work.

In addition to a description of the camera and equipment, we give a few simple directions on the making of motion pictures which will be of value in enabling the beginner to get satisfactory film from the start.

Making the Picture

The Universal Motion Picture Camera is so constructed that every possible device is provided to take care of the mechanical part of photography. Of necessity the human element must enter into the actual making of the picture, and this comes under three headings; they are, first, the focus, second, the exposure, third, the composition.

Focus

The focus is obtained on the Universal by the prism finder which is set into the side of the camera. Through the eye piece you are able to view the image as it is actually reflected in the lens and by means of the focusing lever on the lens obtain the exact focus before you expose the film.

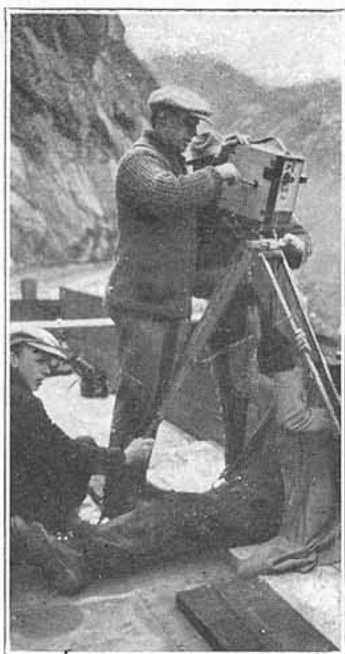
In addition there is a focusing scale on the lens in which the focal distances are given in feet. The focusing scale can be used when a change of focus is necessary during the making of the picture.

Exposure

Motion picture film is exposed at a speed of two revolutions of the crank per second. Faster or slower crank speeds are used for freak, or trick pictures. Slower turning of the crank results in exaggerated fast motion in the picture when projected on the screen. Faster turning of the crank results in exaggerated slow motion.

On the Universal a special trick crank is provided by which an exposure of one picture for each revolution of the crank is obtained. This results in very fast motion in the projected picture.

The exposure is regulated by the light, lens opening of diaphragm and the shutter opening. The motion picture shutter is adjustable by degrees. It is generally advisable to use the shutter wide open (180 degrees). In the tropics, where brilliant sunshine necessitates a very short exposure, smaller shutter openings should be used.



Ira J. Ingraham making pictures for Burton Holmes in the White Horse Pass, Alaska.

MOTION PHOTOGRAPHY

The following comparative table shows the difference in exposure speeds with various shutter openings, and the crank turned at the regulation speed of two revolutions per second.

| Degrees | | Degrees | |
|---------|------------------|---------|-------------------|
| 180 | 1/32 of a second | 60 | 1/96 of a second |
| 140 | 1/41 of a second | 45 | 1/128 of a second |
| 120 | 1/48 of a second | 30 | 1/192 of a second |
| 100 | 1/58 of a second | 20 | 1/288 of a second |
| 90 | 1/64 of a second | 10 | 1/576 of a second |

In addition to the shutter opening the lens opening or diaphragm is regulated to control the exposure. Naturally, the smaller the opening, the more exposure necessary. In dull light, or when the subject being photographed is close to the camera, a larger aperture must be used.

The following table gives the correct lens aperture for different subjects under different light conditions, with the shutter wide open (180 degrees.)

| | Cloudy | Clear | Bright |
|---|--------|--------|--------|
| Street scenes, open view and near landscapes..... | F-5.6 | F- 8 | F-11 |
| Buildings, all or part in shade..... | F-4 | F- 5.6 | F- 6.3 |
| Distant open landscapes | F-6.3 | F-11 | F-16 |
| Close ups 3 to 7 ft. from camera..... | F-3.5 | F- 5.6 | F- 8 |
| Aeroplanes in flight | F-5.6 | F- 8 | F-16 |
| Beach Scenes | F-5.6 | F- 8 | F-16 |
| Marine Views | F-5.6 | F- 8 | F-16 |

It is advisable to have a motion picture exposure meter. That most generally accepted and used is the Harvey Motion Picture Exposure Meter, by which you can calculate the correct lens aperture and shutter opening for every light condition and subject.



Frank W. Webster operating his Universal in an aeroplane.

When exposing a film a steady, even movement of the crank is essential, a little practice without film in the camera should be taken before the attempt at actual exposure is made. As already stated, the correct speed is two revolutions of the crank per second, as this is the rate at which the picture will be projected.

On the back of the Universal Camera there is a crank indicator which shows the actual number of revolutions made. For practice you can have this checked with a watch so that you can accustom yourself to turning the crank at the correct speed.

Composition

The actual composition or grouping of the picture depends upon your own good judgment and artistic feeling. You will study the composition of the picture through the direct view finder which is set on the top of the Universal Camera. The view as seen through this direct view finder corresponds to the field which is being recorded on the film. As the grouping of the picture changes, you can watch it through this view finder while you continue turning the crank. The view finder is divided by two lines into four equal parts which will assist you in securing balance in your composition.

In composing a picture a good general rule to follow is to observe whether the masses of your picture have a pleasing pattern. This is really the foundation of composition. A few experiments, observing various scenes through the view finder and then reducing the patterns of the scene to a few simple lines on a piece of paper, is good training.

Before taking an exposure, view your subject from different stand-points to determine which will give you the best effect. Moving the camera a few yards to the right or left often makes all the difference in the world between a mediocre picture and a good one.

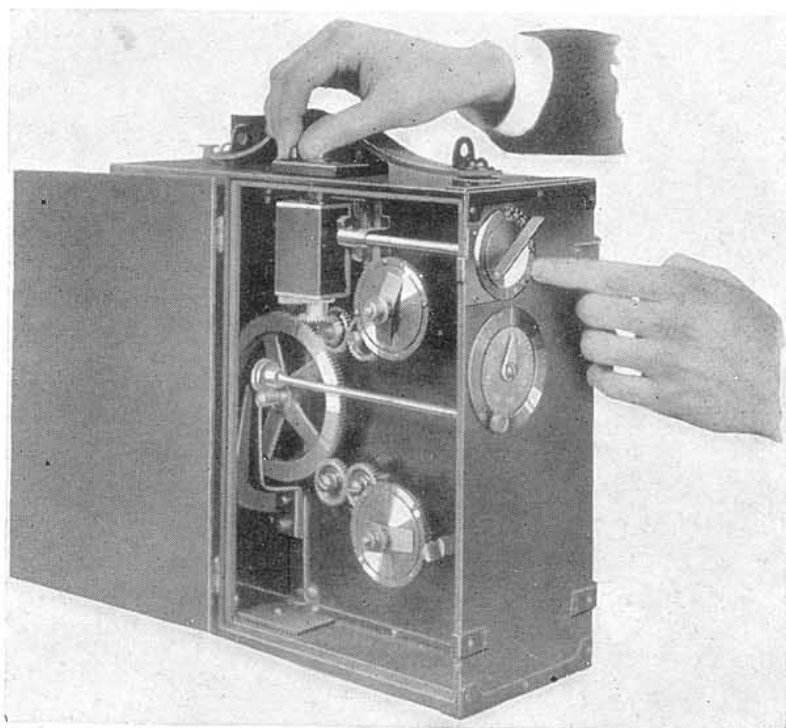
When taking pictures of groups close to the camera, it is well to determine the field covered through your focusing finder. Mark out the limits of the field by a couple of lines and warn your subjects to keep within those lines while the picture is being exposed.

When taking panorama pictures the operator can follow the subject in the view finder as he turns the panoram crank on the tripod while making the picture.



A Universal filmed the National Motor Truck Development Tour

The Universal Built-In Shutter Dissolve



On the Universal there is an automatic dissolve, by which fade in and fade out effects are secured. This is built into the camera and is very simple to operate. On the top of the camera is a control lever for the dissolve. To make a fade out you press the control lever back and keep cranking until your shutter indicator on the back of the camera shows that the shutter is closed.

To make a fade in you reverse the process; that is you start cranking with the shutter closed, keep the control lever pressed forward until the indicator registers the shutter opening you need for your exposure, the picture is then faded in, and you keep cranking. To secure double exposure with the dissolve, with mask in place, you fade out the picture, noting from the crank indicator the number of revolutions which it takes to close the shutter. With the shutter closed turn back the film the exact number of crank revolutions, and then change your mask, and turn the crank, again using the fade in to open up the shutter to the full aperture. There are masks provided for these various double exposure effects and the detailed technique depends upon the effect desired.



In the far places of the world the Universal is recording strange people and places.

Read What Universal Users Say

Charles J. Roos
NOTION PICTURES

Burke & James,
Chicago, Ill.

Gentlemen: Regarding the Universal Camera purchased some time ago. This camera is giving the best of satisfaction, and I consider it superior to other makes at double the price. Photographed 2000 feet of scenic throughout the Canadian Rockies and did not lose a foot of film. Have never had any static when using the Universal and have made film at 10 below zero. Wishing you success, I remain

Yours truly,
Charles J. Roos
Photo Editor
United Film, Ltd.

Rotheberg Film Mfg. Co.
Industrial Moving Picture Co.

Burke & James,
240 West Ontario St.,
Chicago, Illinois.

Gentlemen: - Attention Mr. J. T. Fanner, Adv. Mgr. In reference to our use of the Universal motion picture camera, wish to say that for a number of years we have been successfully using this camera in our title department. In fact, in our title department we use the Universal motion picture camera exclusively.

The results have been eminently satisfactory from every view point, and one of the big advantages of the Universal motion picture camera for title work is the fact that the frame line can readily be changed at any time.

We will be very glad to have any one of your prospective customers call at our plant and see this machine in operation.

Wishing you every success, we are

Very truly yours,
Rotheberg Film Mfg. Co.
W. Rotheberg

THE MILWAUKEE JOURNAL
EVERY EVENING AND SUNDAY
MILWAUKEE

Burke & James Inc.,
240 W. Ontario St.,
Chicago, Ill.

Gentlemen:

We have been using a Universal Camera in taking the Journal Weekly Movies, and have found it consistent in performance, and satisfactory in every way.

Very truly yours,

THE JOURNAL COMPANY
J. J. Cummings
Advertising Dept.

MARTIN JOHNSON
CANDLER BUILDING
NEW YORK

Burke & James, Inc.,
240 W. Ontario St.,
Chicago, Ill.

Gentlemen:

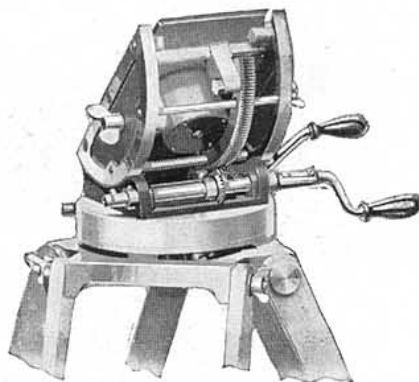
I wish to tell you how pleased I am with my Universal Motion Picture Camera. As you know I use my Universal to make all my famous "Connells of the South Seas" pictures in the South Pacific. The excellent results I obtained were, I frankly confess, due in great part to my Universal Camera. It performed in a wonderful fashion for me under any and every condition, and it stood successfully the rough and tumble bashing incidental to a hazardous trip of the kind I have just made.

My Universal was knocked around in the bottom of a whale-boat, was several times under water, and received the severest kind of usage. It came through the ordeal so well that I am taking it on my next trip without an adjustment or repair of any kind, together with your latest model with a built-in dissolve. In preference to any camera on the market. I think this speaks very well for your camera.

Throughout the entire fourteen months' voyage I never had the film buckle, my pictures are rock steady and I do not know what static looks like.

Sincerely yours,
Martin Johnson

Universal Tilting and Panoramic Tripod

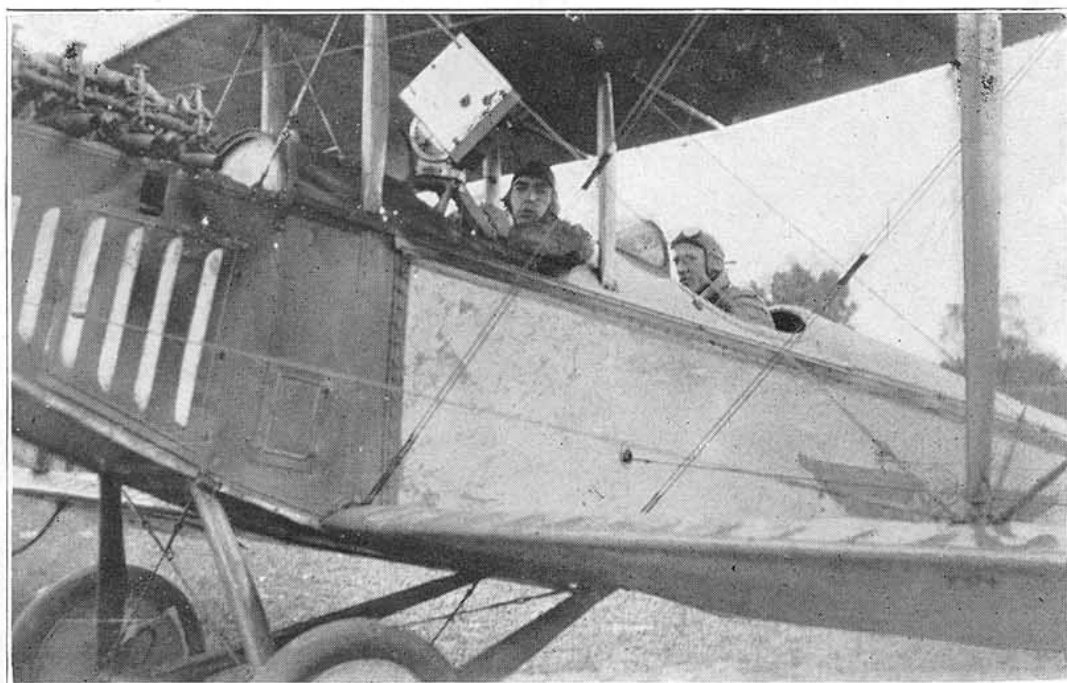


It is essential that you have a firm rigid tripod. The Universal Tripod described in this book is a rock steady apparatus with adjustments for tilting the camera up or down and securing a panoramic swing. When setting up the camera be sure that your tripod is standing on a firm, steady foundation where there will be no jar or vibration.

In this booklet we give a very complete description of the Universal Motion Picture Camera.

An inspection of the illustrations and a reading of the text shows very clearly the claims of simplicity in mechanical construction on which the Universal reputation is built. There are no untried principles, and we pride ourselves there is not a weak spot in the Universal. This camera has made pictures from the Arctics to the Tropics. Tumbled about in a whale boat in Oceania, or in a dug-out on the French battle front; it has given universally excellent service.

The durability of the Universal is a feature to which we wish to direct your special attention, one which recommends the camera very strongly to travelers, scientists, explorers, news and industrial cinematographers.



Venard the industrial photographer makes aeroplane views of factories with a Universal.



Universal Camera Feature

Built for long, hard usage.
Light in weight. No bulky protruding parts.
Easy to operate, quick to load.
Quick change, positive locking, lens adapter.
Built-in shutter dissolve.
Double dial footage gauge.
Large master gear operates all moving parts in perfect unison.
Adjustable framing device to raise or lower position of picture with reference to the film perforations.
Positive action take-up—with friction disc tensions.
Crank revolution counter. Prism focusing tube.

The Universal Camera

One Piece Machine

The Universal Camera is so constructed that every moving part is directly connected to one main casting, which insures permanent optical adjustment, perfect operating mechanism and protection against disarrangement through rough handling or climatic change.

The Case

The case is of reinforced aluminum and seasoned, selected hardwood, especially treated, to insure against warping, climatic changes, etc., with a durable waterproof enamel.

The latches operate without the use of a key. Every working part and adjustment is easily accessible, but thoroughly protected. There are no bulky protruding parts to interfere with handling.

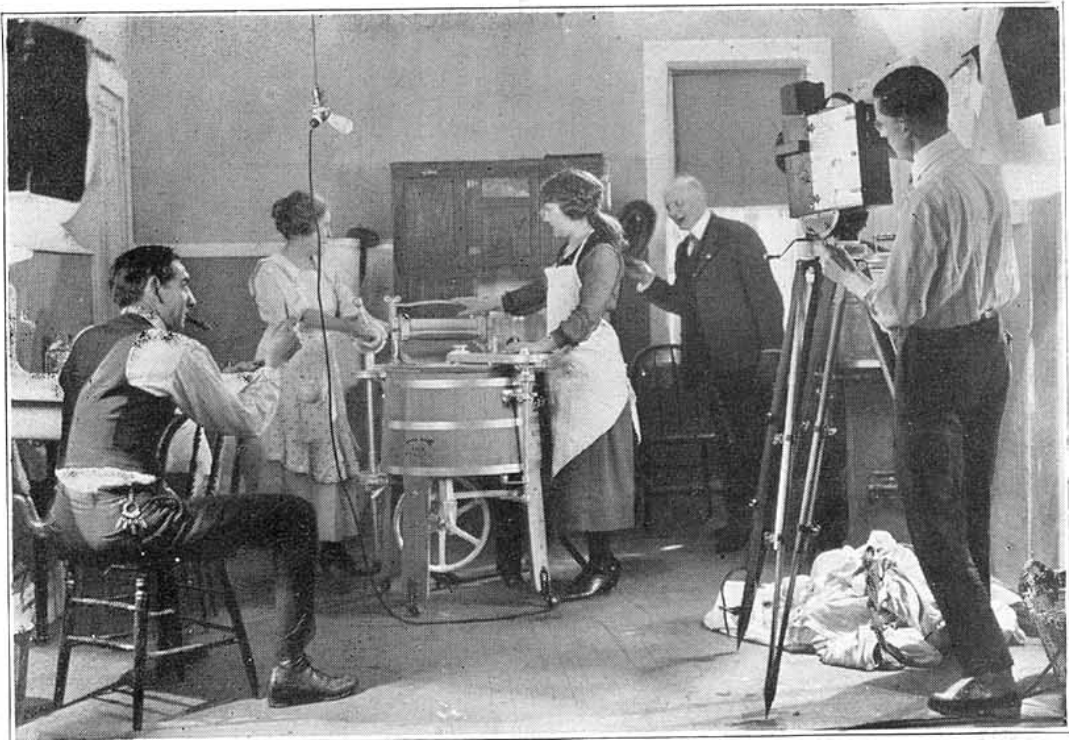
A black leather carrying handle is attached to the top of the case with strong brass screws. There are also brass rings for attaching shoulder straps.

The size of the 200 Foot Camera over all is $4\frac{3}{4}$ "x11"x12", and complete the weight is only 21 pounds.

The Mechanism

The mechanism of the Universal Camera is as carefully and scientifically constructed as the movement of a standard watch. There is one large master gear from which all moving parts are driven. This centralization of power simplifies the machine, gives the highest efficiency, and makes every piece accessible. The gears, both large and small, are cut with extreme accuracy. The effect is smooth, noiseless operation.

The method of applying the power, and the wide-face gears, are an illustration of the painstaking care with which every detail is built.



Filming an industrial picture with a Universal.

The Balance Wheel

The balance wheel is mounted on a strong pinion shaft with an out-board bearing to give it absolute rigidity. It is turned by the main gear, and by means of a positive action cam operates both the shuttle and pin yoke. There is not the slightest chance for them to get out of unison.

The Shuttle

The perfect registration of the film is secured by an intermittent shuttle movement propelled by a positive mechanical cam directly connected to the fly-wheel shaft. All of the parts are hardened and ground to insure long wear. The top and bottom of the shuttle are fitted with adjustable gibs to insure precision of adjustment.

The pins which engage the film move in a straight line and enter the perforation slightly above the point of registration with positive straight in and out movement which cannot mutilate the film in any way. It is made to operate forward or backward.

Adjustable Shutter

The shutter is instantly adjustable for any desired aperture. Under ordinary daylight conditions and ordinary speed, 180° is found to be the correct opening, but for quick action and extra strong light, or vice versa, the shutter opening can be instantly set to suit the condition, thus giving the best possible results for all occasions.

Lenses

One lens is supplied with the Universal Camera, a genuine B. & L. Tessar F 3.5, 50 m. m., in metal focusing mount with graduated distance scale.

The lens is mounted in a screw adapter of suitable length for proper focus which can be quickly removed or adjusted by a screw at the top of the camera. With this quick action locking device it is possible to change lenses of different focal length very rapidly. Perfect optical alignment and rigidity are always secured. We can supply other lenses in addition to the above at the manufacturer's list price with a nominal charge for special mountings when required, so that the Universal Camera may be used for telescopic or microscopic work, or any other desirable purpose.

Sun Shield

A metal sun shield or lens hood is supplied free with each Universal.

Carrying Case

A handsome leather carrying case fitted with lock and key, having compartments for camera, four extra magazines, and lenses, is supplied extra. A durable leather and canvas carrying case with properly located handle is supplied extra for the tripod.

Prism Focusing Device

The focus tube is located just back of the aperture and attached to the film gate, which when closed connects with a window in the main door. It is fitted with a magnifying lens and prism which enlarges the

image to several times its size, making it possible to get a sharp focus on a small object, and the eye is so near the focusing point that no detail need ever be lost. The lens can be focused either on a piece of ground film, or while the picture film is in place, which method is quicker and more desirable when the illumination is good.

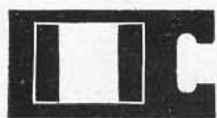
Exposure Adjustable to Perforations

An adjustment for instantly raising and lowering the position of the image in relation to the perforations on the film is supplied on the Universal Camera. This makes it a universal machine, enabling the camera man to adjust his camera to comply with the requirements of any producing company.

Some cameras are made to take the picture half way between the perforations, others on a line with the perforations. The Universal Camera can be used in connection with either, or for title work for pictures made on other cameras. Production concerns adopt either one or the other of these systems as standard and will not accept film that does not conform to their rule.

Mask Plates

Mask plates of all popular designs may be used and can be inserted from the outside of the camera without exposing any film. Each mask is grooved to prevent wrong insertion. This feature, together with a quick interchange of lenses, will enable the skillful operator to produce remarkable effects. There are six different masks to choose from.



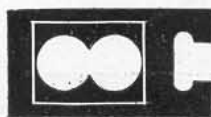
1a



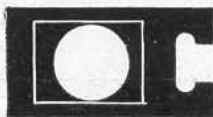
2



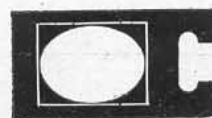
3



4



5



16

No Universal equipment is complete without a set of masked plates for securing novel effects in motion picture work.

Period Punch

A period punch is mounted on the film gate which may be operated by a push button outside of the front of the case. The perforation is close to the last picture taken.

Trick Pictures

The movement of the film may be reversed by merely turning the crank handle backward or toward the left, for specials, composites, dream and trick pictures. There is also a stop picture shaft for novelty effects. This device, making one exposure per turn, is on the left side and is operated by the regular handle so that it will never be used by mistake.

Perfect Control of View

A view finder is attached to either the top or the side of the case so that the operator can see the image at all times, enabling him to follow

and keep in view the object to be photographed. This feature, in connection with the Universal tilting head and panoramic tripod, gives the operator the fullest control; the panoramic attachment giving full horizontal movement, and the tilting head permitting of an angle either up or down of 45 degrees from level.

Film Channel

The film channel is made to open like a gate. It is made of steel carefully hardened and ground true. The tension block and shoes are of highly polished steel. There is also a self-adjusting side tension rail which guides the film in a perfectly straight line.

No Static

An important feature which should be carefully considered in the purchase of a moving picture machine, is that of static troubles. The Universal Camera is entirely free from this hindrance to successful film making, owing to its metal construction, the camera is thoroughly grounded at all times through the body of the operator.

Footage Indicator

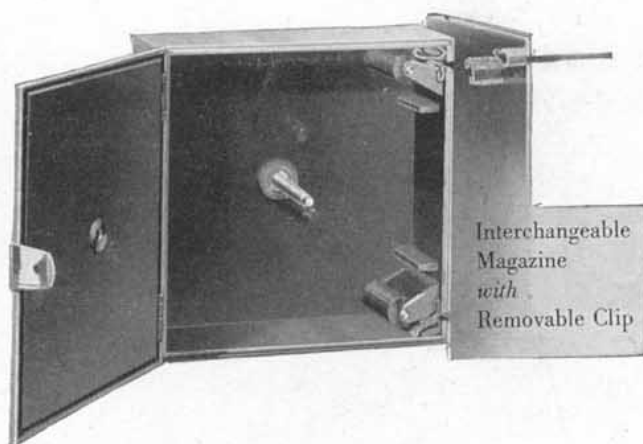
The footage indicator dial is unique in that it tells not only how much film has been used but also shows the amount used on the last scene. The figures are large and clear and easy to read. The dial is located on the outside of the back of the case in full view of the operator, who can ascertain at a glance how near is the end of the film.

Take-Up

The take-up mechanism is a positive mechanical gear drive which can be operated forward or backward. Friction disks with adjustable spring tensions are used on the take-up shaft which steadies the action and gives the desired tension.



Filming the operation of farm power machinery.



Universal Magazines.

Interchangeable Magazines

The magazines are made of cast aluminum with hinged doors. They are provided with two outlets and are interchangeable. Only one empty magazine is required no matter how extended a trip. Each magazine has a capacity of 200 feet, hence four extra magazines, making a total of one thousand feet, will be more than is required for an average day's work out-of-

doors. They are light in weight, easy to handle, and are held by a retaining spring. The outlets are velvet lined and have detachable brass clips, which render them absolutely light proof, and also permits of being taken apart for cleaning.

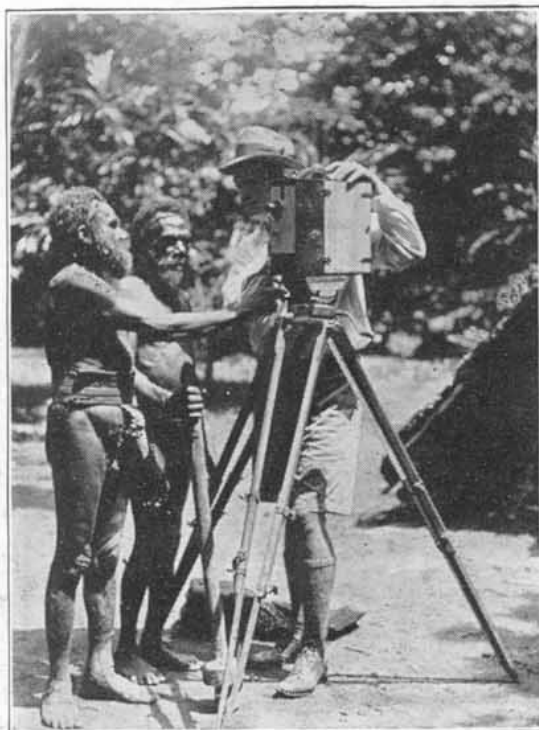
The spindle is arranged to receive the original spool on which the film comes from the maker. The spindle has a bearing at each end which keeps the alignment perfect and reduces friction. Two pins engage the spool, which makes the movement positive.

400-Foot Universals

Due to the unprecedented success of the 200-foot Universal, a demand has arisen for a camera incorporating the excellent features of the 200-foot model, but capable of taking 400 feet of film.

To meet this demand we offer the 400-foot Universal Camera. It is the model which was chosen by the United States Government for overseas use during the world war, the Universal being the only camera which was so built that it would stand the rough usage to which a motion picture camera must be put during actual warfare.


The 400-foot model is especially recommended for studio use or where a camera of larger than 200-foot capacity is required. Dimensions $4\frac{3}{4} \times 14\frac{1}{8} \times 15$ inches. Weight, 28 pounds.



Explaining the wonders of the Universal to the wild men.

Further Testimonials from Universal Users

FRED D. BRADLEY, President
 W. GEORGE COOK, Treasurer
Chippewa Film Co.
 PRODUCERS OF
Motion Pictures
 OFFICE: TIMBLE THEATRE BLDG.
 SAULT STE. MARIE, MICH.
 KENNETH R. EDDY, Secretary



Agents for Leading
 Makes of Cameras
 and Projectors, for
 Amateurs and Pro-
 fessionals.

Special Films Made
 for Theatres.

Commercial Films
 for Advertising or
 Demonstrating Pur-
 poses.

City Advertising and
 Industrial Films.

Motion Pictures
 Made at

Family Parties

Weddings

Birthdays

Anniversaries

Parades

All Work Done on
 Eastman Film.

Clear, Steady, Bri-
 liant Pictures Guar-
 anteed.

Estimates Quoted
 in Given on All Kinds
 of Motion Picture
 Work.

Correspondence So-
 licited.

Burke & James, Inc.,
 240-250 East Ontario St.,
 Chicago, Ill.

Dear Sirs:

I have used a Universal Camera for eighteen months during which time it has been used for making photographs, scenes, industrials, current events and title work and has proved its worth under actual working conditions.

It is quickly set up and threaded, an immense advantage in current events work, and its light weight with no protruding parts to catch unexpectedly, allow of rapid shifting of position. If the camera of rapid shifting of position, the work of a man is careful to remove the clips, the work of a moment only. I have had no scratches of lenses, lag, fresh stock, he will have no scratches of lenses, Other advantages are: Rapid interchange of lenses, smooth-running positive action mechanism, working equally well, backwards or forwards, out of the way, double crank on left side of camera, the hooded finder which registers on top of the side of camera, total film used and the side of camera, I wish to congratulate you upon obtaining this line and assure you of a prosperous New Year in the sale of these products.

Yours respectfully,
Kenneth R. Eddy

CLAYTON WILLIAMS, SPECIALIST
 1704 N. 45TH STREET
 PHILADELPHIA

Cinematography

Attention of Mr. J.V. Hanner,
 Burke & James Inc.,
 240-250 East Ontario Street,
 Chicago, Ill.

Dear Sirs:

It would take quite an item and a lot of time to explain the merits in the Universal Camera, so I will mention a few of the many good points I found in operating the above camera.

I have up to the present time run over 100,000 feet of film through the Universal Camera inside of five months and have found no trouble what so ever, where I have found in my other two cameras which I have discarded since using the Universal.

I appreciate the fact of working a camera all on one side, as it also makes the finest title machine. The Universal for size, weight, quality of material used and the work it turns out can not be had for the price, my other two machines cost me a great deal more money and trouble than the Universal which I would not trade for the best machine on the market, as it has proved satisfactory to me in every respect and I will put my negative alongside of those made with higher priced machines any time to prove a difference.

I also am in favor of the Universal tripod which is the best asset to a good camera. My lifts and Panaramas are perfect and in all I am and have been to your Company, and I will always be glad to give any prospective buyer a reference. I beg to remain,

Yours very truly,
Clayton Williams

Dr. H. W. HANCOCK
 101 West Adams Street
 CHICAGO, ILL.

Burke & James Inc.,
 240-250 East Ontario St.,
 Chicago, Ill.

Dear Sirs:

In reply to your inquiry as to how I like the Universal Motion Picture Camera, I will say that my experience with the Universal outfit has been very pleasing.

The camera is one of quality, having very good mechanical design and showing good workmanship in construction. The tripod is superior to anything I have seen on the market, it being perfectly rigid and having a perfect tilting and panoramic head.

A rigid tripod with smooth running head to keep the camera free from vibration and jerking is essential in the taking of moving pictures. A smooth running camera with a good lens is another essential. The Universal outfit has these good points, along with others, and a good picture on the screen is the result.

Even an amateur can turn out good smooth running pictures having great depth, using the Universal.

Respectfully yours,
H. W. Hancock

IRA JAY INGRAHAM,
 2119 ARCADE ROAD
 KANSAS CITY, MO.

Burke & James, Inc.,
 Chicago,
 Ill.

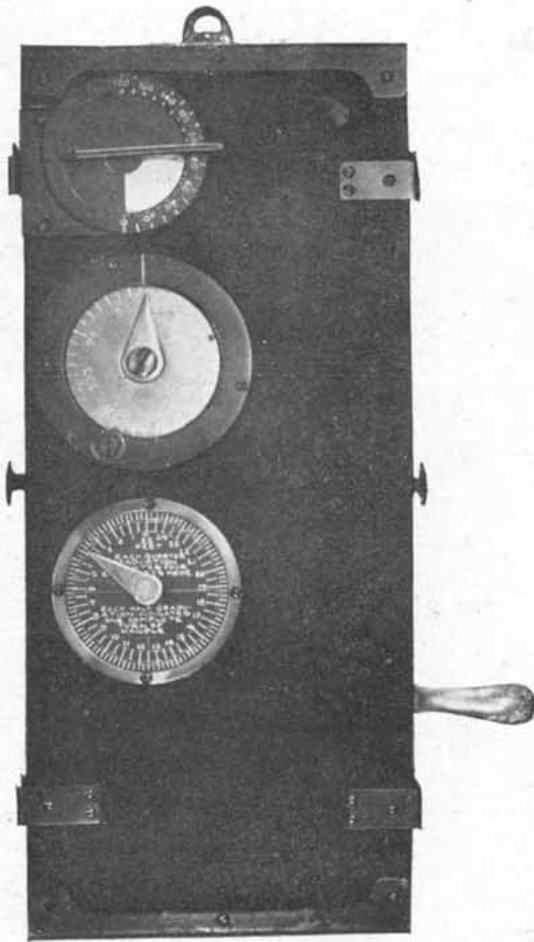
Gentlemen:

It will no doubt be of interest to you to know that I have used the Universal Camera in some thirty different states of the Union and under a great many different light and climatic conditions and can say that it has always given me perfect satisfaction.

Two years ago I was taking pictures on the northern river of Wisconsin. The boat in which my assistant and myself were moving was overturned in the rapids and our Universal Camera went to the bottom of the river. We finally recovered it there for forty hours. We finally recovered it and took it to a nearby lumber camp where it was taken apart and the parts dried out and replaced and it was then used for taking many successful pictures on the balance of the trip. Had this been a wood constructed camera, you can easily imagine what would have happened.

In all my experience with the Universal Camera I have never been troubled with static.

Yours very truly,
Jay Ingraham



The bottom dial registers the number of crank revolutions.

Crank Indicator

The crank indicator registers on crank dial located on the rear of the camera the number of crank revolutions up to 25 feet of film. There are two complete crank revolutions registered for each foot of film exposed. The numbers on the dial are in feet and by doubling same the actual number of revolutions of the crank is instantly arrived at. This device is of utmost importance in dissolve and double exposure work and is one of the recent refinements which are incorporated in the latest model Universals.

Loading

Reloading and threading is so simple that it makes the Universal Camera the best of all cameras for commercial use. The outlets in the magazines are slotted so that the film can be slipped into place from the side with one hand. It then passes over the sprocket wheel, the idlers having been thrown back, then through the film channel, which opens like a gate, then back

under the sprocket wheel into the lower magazine, where it is inserted in the slot of an ordinary film spool. The magazine is then closed, the idlers put into place, and the camera is ready for action. It can all be done in less than one minute.

It requires only 20 inches of film to load the machine for action. Other cameras waste from three to four feet.

Carrying Cases

The Universal Camera and Tripod Carrying Cases, from the point of convenience, weight and capacity are marvels of efficiency.

The Camera Carrying Case has locked corners and metal reinforcements, covered with a high grade leather, brass trimmed and lined with corduroy.

The Tripod Carrying Case consists of a cap of sole leather to protect the head and another with a hardwood block to protect the points, these are connected by canvas, equipped with handles, placed in such a position as to balance the instrument at all times.

It is also worthy of note that the two cases practically balance each other, so that when one is carried in each hand there is no strain on the body.

In the Camera Carrying Case there is capacity and compartments for the camera, four magazines, one compartment for all necessary lenses and other small accessories.

In the Tripod Case there is room for the tripod and handles and an open space to carry things that may be needed during the day's work, such as changing bags, chemicals, focusing cloth, etc.

No outfit is complete without these accessories.

The Tripod and Head



Wide spread top legs give truss strength and rigidity.

Segmental slide prevents twitching.

Panoramic table quickly changed to any position.

Positive locking devices. Snap-handles cannot fall off.

Deep cut worms and gears insure long wear.

The Universal tilting and panoramic head is unique, and introduces new principles that vastly facilitate the handling of the camera and increases the speed, enlarges the range of operation. The head is constructed to give the utmost rigidity and ease of manipulation.

Vertical Tilt

The vertical tilt is obtained by a segmental slide of our own invention and is a departure from the pivot action heads now so extensively in use.

The segmental slide operates in a U-shaped cradle which gives the maximum width of bearing surface. The full weight of the camera is carried on the grooved base piece, which insures smooth, steady action when in motion. All vibration, twitching and jerky effects are eliminated. The head tilts up and down through 90 degrees.

Panoramic Head

The panoramic worm box can be instantly disengaged when it is desired to turn the camera quickly to any position. The panoramic disk can be locked to prevent any accidental movement. The worm and worm gears are of special design with ample thread depth, which adds materially to their durability, and gives a high degree of accuracy and freedom from lost motion.

Automatic Lock Bolt

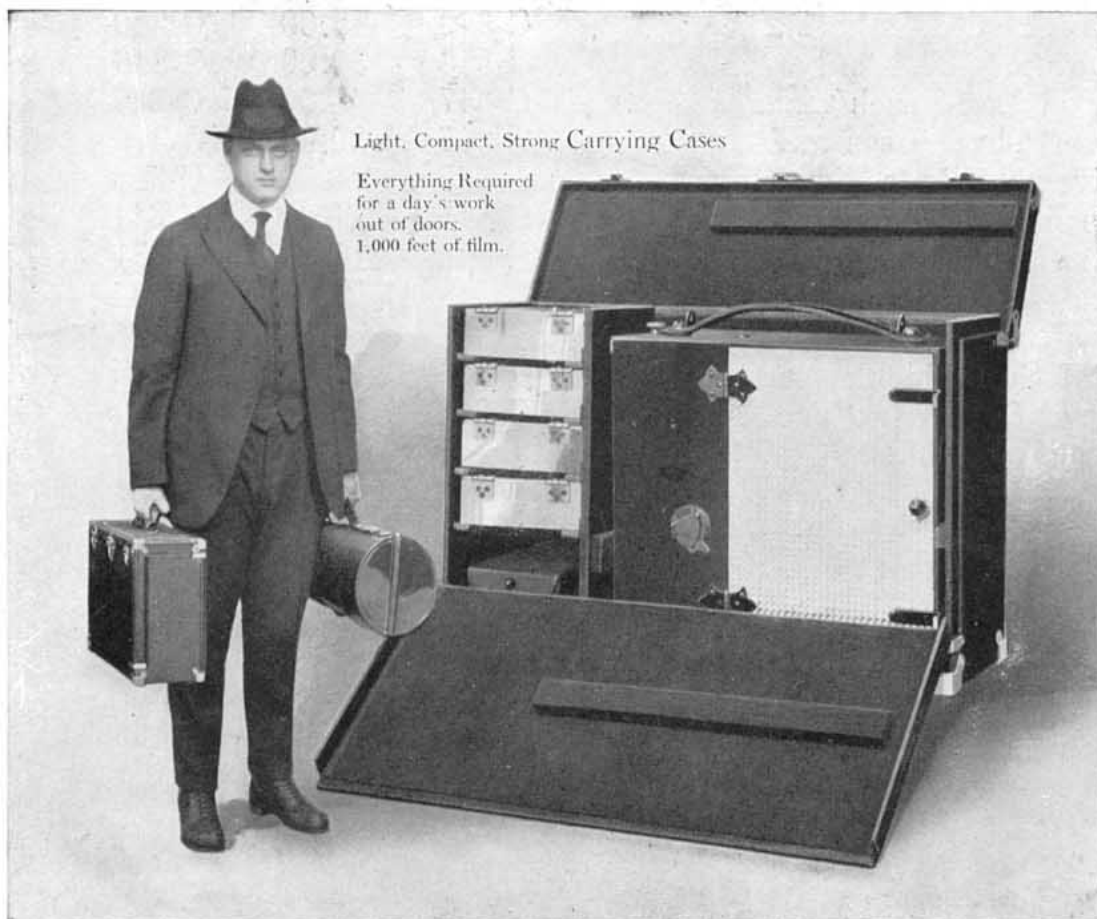
The lock bolt is provided with a compression screw which is depressed by the weight of the camera, so that it is easy to shift about and see when the screw engages the threads. It is a great *time saver*, and will be much appreciated for field and newspaper work, or wherever rapid preparations are essential. Instead of turning the screw from the bottom, it is *operated from the side of head*, which makes it accessible and easy to operate. Moreover, there is no danger of stripping the thread. In unmounting, the camera is known to be disengaged when a clicking sound is heard from the turning of the lock bolt. A Universal can be set up on this tripod in ten seconds.

Weight of tripod complete is 20 pounds.

Tilting Head Separately

The Universal tilting head can be used on any tripod and with any camera. Old and more limited machines can be vastly improved by fitting our tilting head to them.

The tilting head is sold separately, and may be attached to any other panoramic head on the market.



A Universal Will Save You Money

The Universal is the best machine because it is the *most economical to operate*. When it is considered that there are 16 pictures to a foot, and that a camera consumes an average of 60 feet of film a minute while in operation, it can readily be seen that unless the product is perfect, the waste in material alone will soon amount to more than the original cost of the machine. The public will not tolerate any but perfect pictures.

Since we have offered a machine for the lowest price at which a really efficient instrument can be built, and since every machine is backed by the manufacturer's guarantee, we believe any one contemplating a purchase may feel that for real, lasting satisfaction, the Universal is the safest possible investment.

The highest quality of material and workmanship is the foundation on which we build, and that means safety against costly accidents and long life to the camera.

Prices

| | Cat. No. | 200 Ft. | Cat. No. | 400 Ft. |
|--|----------|----------|----------|----------|
| | | Model | | Model |
| | | Price | | Price |
| Universal Camera with F3.5 B & L 50 mm. Tessar Lens, two maga- zines and Automatic Dissolve..... | G-371 | \$450.00 | G-372 | \$635.00 |
| Leather Carrying Case for Camera | G-338 | 45.00 | G-350 | 50.00 |
| Tripod Complete | G-339 | 100.00 | G-339 | 100.00 |
| Tilting Head only | G-340 | 45.00 | G-340 | 45.00 |
| Panoram Head only..... | G-346 | 30.00 | G-346 | 30.00 |
| Tripod Legs, each | G-347 | 10.00 | G-347 | 10.00 |
| Set of Three Legs and Top, only.. | G-348 | 30.00 | G-348 | 30.00 |
| Universal Three-Way Spirit Level | G-365 | 10.00 | G-365 | 10.00 |
| Carrying Case for Tripod | G-341 | 20.00 | G-341 | 20.00 |
| Extra Magazines, each | G-342 | 10.00 | G-351 | 15.00 |
| Metal Masks, each | G-344 | 1.25 | G-344 | 1.25 |
| Set of Six Masks | G-336 | 6.00 | G-336 | 6.00 |
| Metal Sun Shield, small, each | G-345 | 2.00 | G-345 | 2.00 |
| Turret Carrying Case..... | G-361 | 50.00 | | |

The War Tax is included in the above prices.

Satisfied Universal Users Say

The Venard Photographic Co.
Industrial Moving Pictures
Commercial Photographs
Chicago, Ill.

Burke & James, Inc.,
Chicago, Ill.

Gentlemen:

While you have not asked for this letter, I feel that it is really due you owing to the wonderful performance that has been shown by our Universal Camera. I can not speak too highly of this. I feel that it is really due you owing to the wonderful performance that has been shown by our Universal Camera. I can not speak too highly of this. I feel that it is really due you owing to the wonderful performance that has been shown by our Universal Camera. I can not speak too highly of this.

One of our machines has been used considerably for over two years without having been overhauled or had any repairs whatever. It has had the hardest kind of use. Our work is almost exclusively confined to the tractor, truck and farm implement industry. This work takes us into some of the very hardest places to work but we always come out with a perfect film when we use the Universal.

Personally I have used this machine in the making of considerable air-plane film and find that its sturdy construction and dependability is especially well adapted to this sort of work.

We have, in fact, had such good success with our air-plane photography that we are now putting in our gun plane for this class of work and can assure you that there will be no other but Universal Cameras.

You have my permission to publish this letter if you see fit and to refer any prospective buyers to me. Thanking you and wishing you every success, I am,

Very truly yours,
C. R. Venard
The Venard Photographic Co.

JAS. E. THOMPSON
PHOTOGRAPHER
OF STILL LIFE AND
MOTION PICTURE
INDUSTRIAL AND
COMMERCIAL SUBJECTS
1118 S. CHICAGO AVE.
CHICAGO, ILL.

Burke & James, Inc.,
Chicago, Ill.

Gentlemen:

Your kind letter of the 3rd came to hand while I was away. I am very much pleased to note that you have taken the manufacture of the Universal Motion Picture Camera, as I feel this splendid camera justifies the attention of your wonderful selling facilities.

I have been using a Universal for some time, and find this camera a superior to any other and special equipment, and I was wondering if the freighter lens were as scarce as ever.

In a few days I will want an extra lens of any improvement that might be added to the above camera.

Would be pleased if you would advise me.

Yours truly,
Jas. E. Thompson

MARTIN JOHNSON
200 WEST 42ND ST.
NEW YORK CITY

Universal Camera Company,
240 Ontario Street,
Chicago, Ill.

Dear Sirs:

On account of the hasty letter I wrote you just before I left for the New Hebrides, even months ago, I thought you would be glad to know that both Universals stood up great, we spent six months among the head hunters and cannibals of Melanesia, and used only the two Universals.

I have just finished printing the results. I have no doubt they are the finest films ever made—in fact there is not a foot of poor film among the twenty-five thousand feet.

The old camera that I used down here two years ago stood up as well as the new one, and out-stands through the jungles and over mountains, it is as good as new—in fact, it's like an old shoe, it is a part of me, and I will always use it in preference to any other.

Will send you some photographs on the next steamer.

Sincerely yours,
Martin Johnson

THE MISSOURI PACIFIC RAILWAY
ST. LOUIS, IRON MOUNTAIN & SOUTHERN RAILWAY
RAILWAY EXCHANGE BUILDING
ST. LOUIS

Burke & James, Inc.,
240 W. Ontario St.,
Chicago, Ill.

Gentlemen:

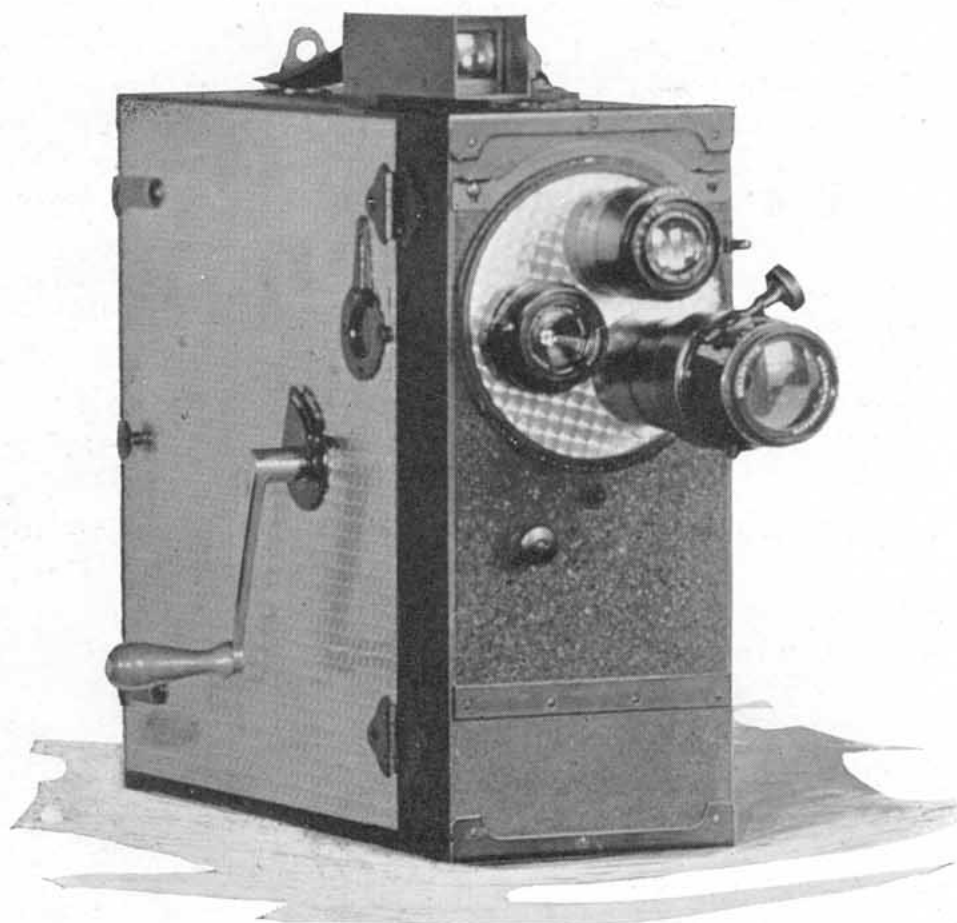
We are a little tardy in answering your letter of January 3rd, addressed to our Mr. H. L. Fuller.

The Universal Motion Picture Camera was purchased by our Advertising Department and used by Mr. Fuller as a representative of that department. Mr. Fuller took this camera and without any previous experience secured for us some very excellent films, films which we believe compare favorably with those taken by cameramen of much greater experience.

We have also had the opportunity in our work to compare films taken by this camera with other cameras and we have come to the conclusion that the results obtained by use of the Universal Motion Picture Camera are as good as any other we have ever seen. After using it for six months we are entirely satisfied with it and have no regret for purchasing same.

Yours truly,
J. B. Smith
Advertising Manager.

Universal Motion Picture Camera With Turret Front



We are now in position to supply the Universal Camera equipped with a revolving turret which will carry three lenses of varying focal lengths of from 32 mm. up, and it is so constructed that any lens can be brought into position instantly.

The Turret Front Universals are equipped with the Universal Triple Focus Masking Finder, which is fully described on the next page.

This is the ideal equipment for the operator who is required to take pictures of a wide variety of subjects.

The Turret Front is supplied on both the 200 and 400 foot Universals. The cameras are regular models, including built-in dissolve, crank counter and prism finder.

Prices

| | |
|---|----------|
| G-425—200 foot Universal with Turret Front and one 50 mm. 1C Tessar Lens F3.5..... | \$530.00 |
| G-427—Same with three lenses, 50 mm., 75 mm. and 112 mm.... | 630.00 |
| G-428—400 foot Universal with Turret Front and one 50 mm. 1C Tessar Lens F3.5..... | 715.00 |
| G-430—Same with three lenses—50 mm., 75 mm., and 112 mm.... | 815.00 |

The above prices include fitting. Quotations for fitting turret front to regular models on application. War Tax is included in the above prices.

Universal Triple Focus Masking Finder

This Finder is a combination of lenses which gives a brilliantly illuminated image of the objects under all conditions, even when the light is at the back of the operator.

It is adapted with masks so that it can be used for lenses of different focus. With the 2-inch or 50-mm. focus lens a very large view is obtained, larger than the actual size of the picture. When the longer focus lenses are used, one of the masks is placed in front of the brilliant lens, cutting down the size of the field corresponding to the exact area covered by the lens. This finder will be found extremely practical, quick accurate and convenient.

It is supplied with all Turret Model Universal Cameras for use with lenses having a focus of 2 inches, 3 inches and 4½ inches.

Cat. No. G-366—Universal Triple Focusing Finder, each.....\$22.50

Three-Way Spirit Level for Universal

We are now in a position to supply a beautifully finished three-way Spirit Level mounted in a nickel-plated brass holder with a track for attaching it to the camera body.

This is a highly developed level and will make an excellent accessory for Universal users. There is a demand among motion picture operators for a level of this type.

In addition to the level, we supply a sliding track which is attached to the camera and a V-shaped base has been attached to the level itself for sliding into the track.

Cat. No. G-365—Universal Three-Way Spirit Level, each, including fittings\$10.00

Books on Motion Picture Making

We especially recommend the following reference books on Motion Picture work:

Cat. No.

F-3197—Condensed Course in Motion Picture Making.

A profusely illustrated volume of 382 pages describing minutely every phase of motion picture photography.

By New York Institute of Photography.....\$6.00

F-3198—Behind the Motion Picture Screen.

By A. C. Lescarbours..... 3.50

This is an excellent treatise on Motion Picture Photography by one of the leading authorities. Fully illustrated.

F-3199—Cinema Handbook.

By A. C. Lescarbours 3.00

This is the best text book for the camera man, covering the selection, operation and application of motion picture equipment in the non-theatrical fields.

TAYLOR-HOBSON

COOKE ANASTIGMATS

SERIES I

FULL APERTURE F/3.1

For Motion Picture Taking

Hitherto it has been considered only possible to make extra rapid lenses at some sacrifice of definition. One example is the Petzval lens whose definition rapidly fell off away from the center.

In cinematography and press-work it is necessary to secure such definition as will stand considerable enlargement. In portraiture also, where some degree of diffusion is desirable, it is necessary that the definition should be equal throughout the field. These requirements call for the flat field anastigmat.

In the Cooke Lenses Series I, it has been possible to obtain critical definition at F/3.1 over the listed plate. The smaller sizes are especially suitable for cinematography and the pictures will stand any degree of enlargement on the screen. The medium sizes provide the press-photographer with a lens which will give good results under conditions that would be otherwise hopeless.

These lenses can be readily used on the Universal and other Motion Picture cameras at a moderate extra charge for fitting. Prices on application.

| Cat. No. | Equiv. Focus Inches MM | | Plate Covered Full Aperture | Price in Barrel | In Focusing Mount | Extra for Micrometer Mount |
|----------|------------------------------|-----|----------------------------------|--------------------|----------------------|----------------------------------|
| 150 | 1 $\frac{5}{8}$ | 40 | M. P. Film | \$43.50 | \$61.50 | |
| 151 | 2 | 51 | M. P. Film | 45.00 | 63.00 | |
| 152 | 2 $\frac{1}{4}$ | 58 | M. P. Film | 46.50 | 69.00 | |
| 153 | 3 | 76 | M. P. Film | 51.00 | 72.50 | \$24.00 |
| 154 | 3 $\frac{1}{2}$ | 90 | M. P. Film | 57.75 | | 24.00 |
| 155 | 4 | 102 | 1 $\frac{5}{8}$ x2 $\frac{1}{2}$ | 64.50 | | 24.00 |
| 156 | 5 | 127 | 2 $\frac{1}{4}$ x2 $\frac{1}{4}$ | 75.75 | | 24.00 |

B & L IC Tessar Motion Picture Lenses

The Tessars hold an enviable position in the lens field for taking motion pictures. They are very rapid and sacrifice in no way definition and flatness of field. We supply the 50 mm. regularly on Universal Cameras. It is the fastest practical lens for all round work. The 75 mm. gives a larger image at the same distance from the subject with a corresponding narrower angle of view. The 32 mm. lens is recommended for wide angle work. Quotation on longer focal lengths for telephoto work on application.

| Cat No. | Speed | No. | Focal Length | In Barrel | In Focusing Mount | |
|---------|-------|-----|------------------|-----------|-------------------|---------------------|
| B-90 | F4.5 | 0 | 32 mm. 1¼ inches | \$32.00 | \$35.25 | |
| B-91 | F3.5 | 1 | 50 mm. 2 inches | 26.75 | 30.00 | |
| B-92 | F3.5 | 1A | 75 mm. 3 inches | 37.50 | 40.50 | |
| B-89 | F4.5 | 13 | 112 mm. 4 inches | 37.50 | 62.50 | (Micro-meter) Mount |

Dallmeyer Motion Picture Lenses

Dallmeyer Motion Picture Taking Lenses are supplied in special focusing mounts fitted with iris diaphragm.

The No. 2 Dallmeyer Motion Picture Taking Lenses, working at an aperture of F/1.9, is the most rapid lens regularly made for any class of work in the world. At this enormous aperture exposures may be reduced to one-quarter that necessary with the lenses ordinarily fitted to Motion Picture Cameras. This lens is invaluable for taking films indoors and for outdoor work late in the evening, when an ordinary lens would be useless.

| Cat. No. | No. | Focal Length | Aperture | Price Focusing Mount |
|----------|-----|--------------|----------|----------------------|
| B-67 | 2 | 3" | F/1.9 | \$86.25 |
| B-68 | 3 | 3" | F/2.4 | 65.00 |
| B-69 | 6 | 4" | F/3 | 65.00 |
| B-74 | 7 | 5" | F/4 | 65.00 |

Dallmeyer "Pentac F/2.9"

The new Dallmeyer "Pentac" Anastigmat Lens having an aperture of F/2.9 creates a new standard in lenses of extreme aperture.

The "Pentac" is the only anastigmat lens produced having so large an aperture, and possessing such remarkable brilliancy and perfect corrections.

The field is exceptionally flat and the definition is critical to the extreme corners of the film.

The aperture F/2.9 is approximately 50% more rapid than the usual F/3.5 lens fitted to Motion Picture Cameras, with the result that films can be taken under most unfavorable conditions of lighting. This extreme aperture has been obtained without any loss of definition or the usual superb optical properties generally associated with the name of Dallmeyer for the last 60 years.

The "Pentac" can be supplied in a well-designed rigid or focusing mount, and is easily fitted to all types of Motion Picture Cameras.

| Cat. No. | No. | Focal Length | In Barrel | Focusing Mount |
|----------|-----|--------------|-----------|----------------|
| B-93 | 1A | 1½" | \$65.50 | \$75.00 |
| B-94 | 1 | 2 " | 65.50 | 75.00 |
| B-95 | 2 | 2½" | 72.50 | 82.50 |
| B-96 | 3 | 3 " | 78.75 | 88.00 |

Dallmeyer "Dallon"

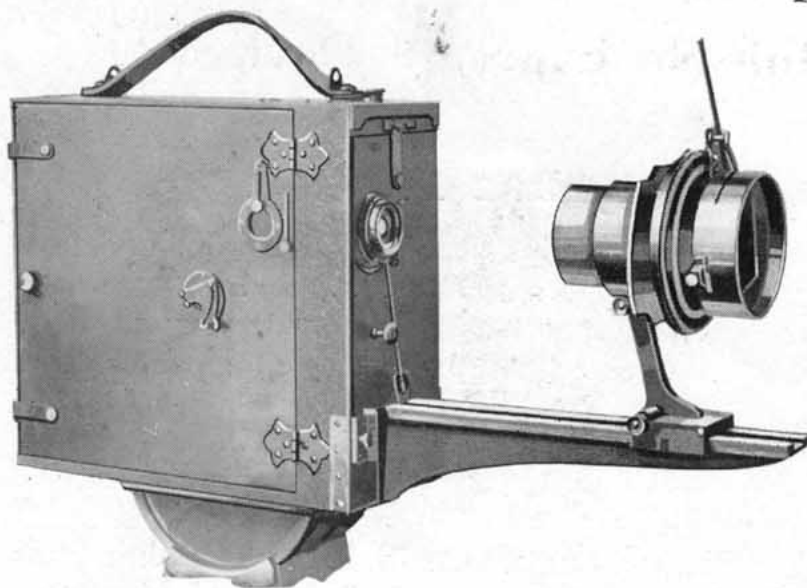
Telephoto Series

The "Dallon" Motion Picture Telephoto Lenses, which are entirely new in design, are the smallest and most portable fixed focus anastigmat telephoto lenses manufactured. They are perfectly corrected for astigmatism, color and distortion, and films taken with them are critically sharp to the extreme corners.

The "Dallon" is conveniently mounted in an aluminum helicoidal focusing mount and is complete in itself. It is as simple to use as an ordinary lens. Shutter speeds are the same as for all other lenses of the same aperture, i. e., F/4.5 and F/5.6 respectively, but the size of the image is about double. That is to say, films of a horse race taken at a distance of 20 yards with a No. 9 "Dallon" will show the figures the same size as those made at 10 yards with an ordinary three-inch lens.

| Cat. No. | No. | Focal Length | Aperture | Extension From Back Glass to Film | Price in Helicoidal Mount |
|----------|-----|--------------|----------|---|---------------------------------|
| B-70 | 9 | 6" | F/4.5 | 3 " | \$ 82.50 |
| B-71 | 10 | 9" | F/5.6 | 4½" | 105.00 |
| B-72 | 11 | 12" | F/5.6 | 6 " | 131.25 |
| B-73 | 12 | 17" | F/5.6 | 8½" | 202.50 |

Goerz Dissolve and Trick Exposure Devices



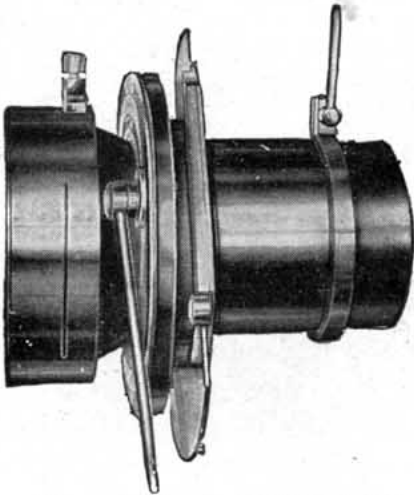
Striking and pleasing effects are today being demanded by motion picture producers. To meet these requirements we offer several dissolve and close-up devices which have met with favor among camera operators.

The accompanying illustration shows the Goerz Round Closing Dissolve attached to a Universal Camera.

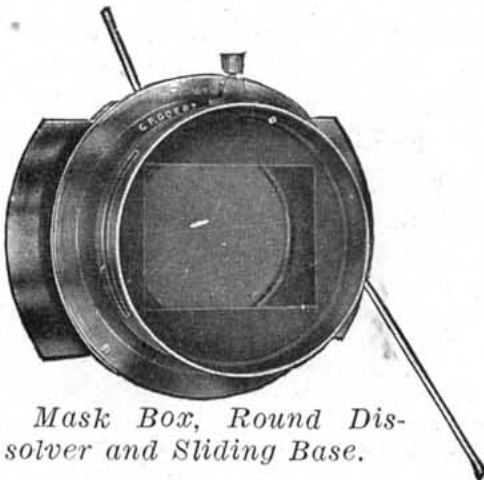
To use the Goerz Attachments with a Universal Camera an extension bracket, plate and device holder is necessary—see illustration.

G-373—Universal Extension Bracket for Goerz Devices..... \$30.00

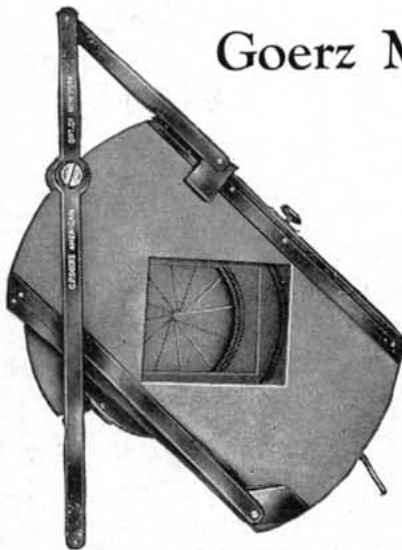
Goerz Dissolve and Trick Devices (Cont.)



*Round Closing Dissolver,
Mask Box, Sliding Base
and Extension Tube.*



*Mask Box, Round Dis-
solver and Sliding Base.*



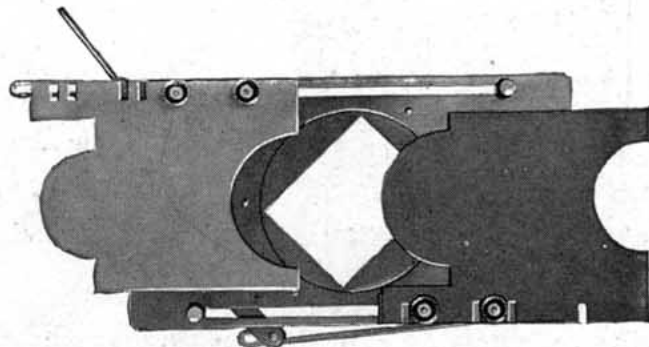
Square Dissolver

Prices

- G-375—Round Closing Dissolver and Vignetting Shutter (Opaque Leaves) including Extension Tube and Sliding Base.....\$44.00
G-374—Amber Leaves instead of Opaque, extra 3.00
G-381—Mask Box Attachment extra.. 15.00
(It is necessary to have a mask box if a Round and Square Dissolver are to be used together.)
G-376—Square Closing Dissolver including Extension Tube and Sliding Base 50.00
G-386—Square Closing Dissolver only 30.00
G-378—Special Adapter 4.00
(This Adapter is necessary for using both Round Dissolvers together.)

- G-377—Double Exposure Device for Closing Up, for Curtain Effects and for Double Exposure, with Extension Tube and Sliding Base 50.00
G-387—Double Exposure Device.. 30.00

Goerz Multiple Exposure Device



It is supplied with a set of 12 metal blades for dissolving, double exposure and trick work, as follows: Two square closing; two rhomboid shapes, for sliding door and curtain effect; two half circles; one with quarter aperture cut out and its opposite; two with star on one side and keyhole opposite; two with heart on one side and stereo on opposite.

- G-388—Multiple Exposure Device with masks only..... \$75.00

Taylor-Hobson Cinema Projection Lenses

THE LATEST ADVANCE IN THE MOTION PICTURE FIELD

Compare the picture to right with the same picture below and the great superiority of the new Taylor-Hobson Cinema Projection Lens will be instantly apparent. The National Physical Laboratory (London), reports that the Taylor-Hobson lens transmits 52% more light than the next best lens on the English Market fitting the standard $2\frac{1}{16}$ -inch jacket.

Price \$60.00



THE NEXT BEST LENS

Supplied in Mounts fitting directly the standard American Projection Machines, such as Simplex or Powers.

| Focal Length | F. Value | Focal Length | F. Value | Price |
|-----------------------|----------|-----------------------|----------|---------|
| $3\frac{1}{2}$ inches | F/1.8 | 5 inches | F/2.6 | \$60.00 |
| $3\frac{3}{4}$ inches | F/2.0 | $5\frac{1}{4}$ inches | F/2.8 | 60.00 |
| 4 inches | F/2.1 | $5\frac{1}{2}$ inches | F/2.9 | 60.00 |
| $4\frac{1}{4}$ inches | F/2.2 | $5\frac{3}{4}$ inches | F/3.0 | 60.00 |
| $4\frac{1}{2}$ inches | F/2.4 | 6 inches | F/3.1 | 60.00 |
| $4\frac{3}{4}$ inches | F/2.5 | $6\frac{1}{2}$ inches | F/3.4 | 60.00 |
| | | 7 inches | F/3.7 | 60.00 |



TAYLOR-HOBSON LENS

This wonderful luminosity is obtained by using the largest diameter lenses that can be used in a standard jacket and by a patented formula which permits of the rear lens being brought close up to the film gate.

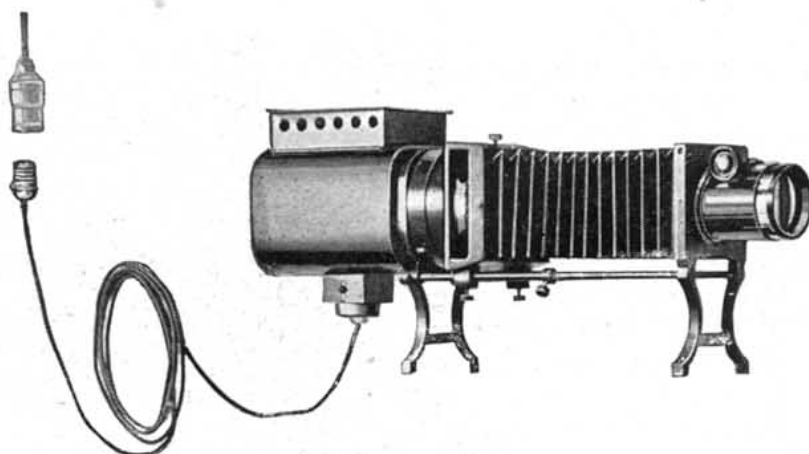
All the light passing through the gate is transmitted by this wonderful lens to the screen resulting in pictures of sparkling brilliancy.

The lens is made from the highest grade optical glass, scientifically ground and polished and beautifully finished.

It is especially recommended for use with Mazda installation. The increased clearness and brilliance of the projected image will prove the greatest drawing card for the progressive exhibitor.

Brenopticon Lanterns

For the Superior Projection of Lantern Slides



4B Brenopticon

The single 4B Brenopticon illustrated above is ideally portable and owing to its simplicity of operation and perfect projection, is an ideal instrument for schools, colleges, lodges, churches, Sunday schools or anywhere a highly efficient and yet simple projector is desired.

This 4B Brenopticon is supplied with either $1\frac{5}{8}$ " diameter projection lens from 8" to 14" focus or $2\frac{5}{16}$ " diameter projection lens from 10" to 24" focus.

The results produced are such that we can unreservedly recommend the equipment with the 400 watt lamp and $2\frac{5}{16}$ " diameter projection lens for any projection requirement up to a distance of 80 to 90 feet.

Complete equipment includes the 400 watt, 110 volt incandescent lamp, optical mirror reflector, 12 feet connecting cord with switch and plug, slide carrier with slide elevating device, and sheet steel carrying case, ready to operate. Finish is our standard ebony baked on enamel.

| | |
|---|---------|
| G-220—4B Brenopticon with $1\frac{5}{8}$ inch Projection Lens | \$48.00 |
| G-221—Same, but with $2\frac{5}{16}$ inch Projection Lens..... | 55.00 |

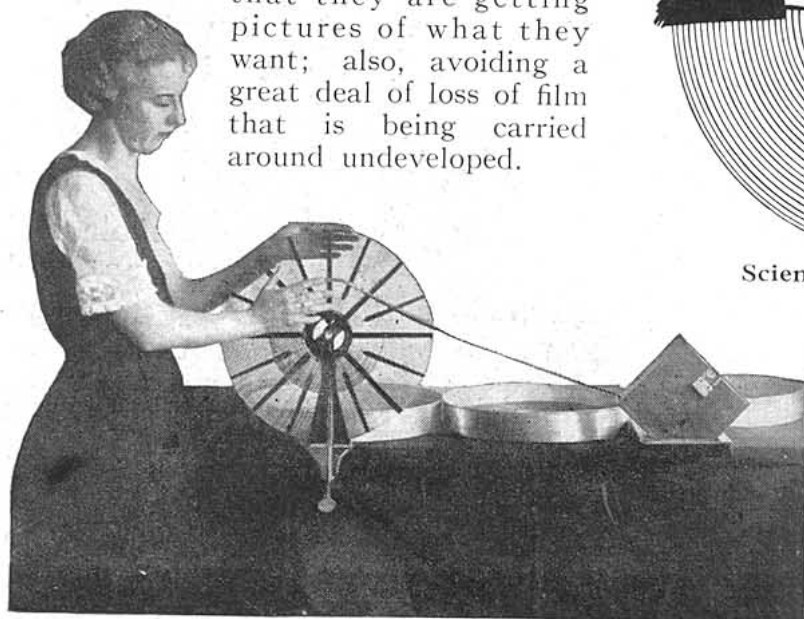
Brenopticon Electric Dissolving Lanterns

The 4BB dissolving Brenopticon is two single 4B Brenopticons with a patented electric dissolver, permanently attached to the lower unit, for properly controlling the alternate light intensities of the two lamps in such manner that dissolving results produced do not allow darkening of the screen at any time and are the results which cannot be produced with any other device.

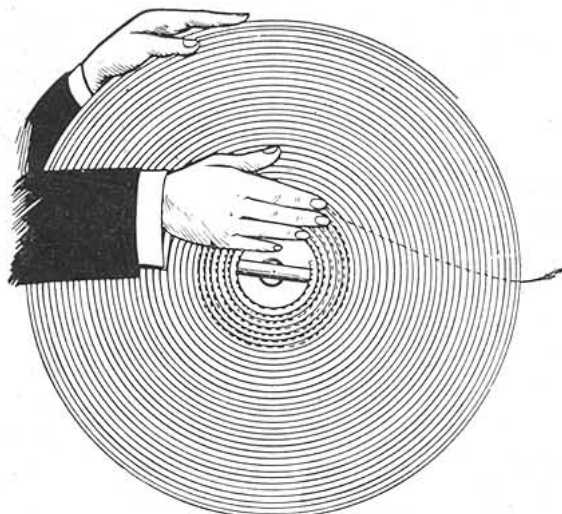
| | |
|--|----------|
| The 4BB dissolving Brenopticon is built in one complete unit and has but one adjustment, that of extending the bellows to focus the picture. | |
| G-222—4BB Dissolving Brenopticon with $1\frac{5}{8}$ inch Projection Lens | \$120.00 |
| G-223—Same, but with $2\frac{5}{16}$ inch Lens..... | 125.00 |

Stineman System for Development of Motion Picture Film

The Stineman System of developing and printing has been thoroughly tried out and proven successful and of practical value. It is now being used by many traveling expeditions to all parts of the world, thus assuring them, by enabling them to develop their film on the ground, that they are getting pictures of what they want; also, avoiding a great deal of loss of film that is being carried around undeveloped.



Showing Correct Method of Winding Film on Stineman Developing Reel



Scientific Method (Patented)

With a Stineman Tank 100 feet of film can be developed in two gallons of solution, why use forty? It is made of metal, light weight and portable, uses pyro or any other developing agent with equal success—acid proof. Emulsion not touched by hands.

Made in sizes to meet every requirement for developing 50 to 200 feet.

AMATEUR AND EXPERIMENTER'S OUTFIT

| Cat. No. | Price |
|--|---------|
| G-600—Three Nesting Tanks and Two 18-Foot Reels..... | \$35.00 |
| G-601—Three Nesting Tanks and One 50-Foot Reel..... | 30.00 |
| G-602—Three Nesting Tanks and Two 50-foot Reels..... | 50.00 |
| G-603—Three Nesting Tanks and Three 50-Foot Reels..... | 70.00 |
| Weight of reels, 3 pounds; of tanks, 4½ pounds. | |

SPECIAL TRAVELING OUTFIT

| | |
|---|---------|
| G-604—Three Nesting Tanks and One 100-Foot Reel..... | \$50.00 |
| G-605—Three Nesting Tanks and Two 100-Foot Reels..... | 82.00 |
| G-606—Three Nesting Tanks and Three 100-Foot Reels..... | 114.00 |
| G-607—Three Nesting Tanks and Four 100-Foot Reels..... | 146.00 |
| Weight of reels, 5½ pounds; of tanks, 10 pounds. | |

| Cat. No. | STUDIO EQUIPMENT | Price |
|---|------------------|---------|
| G-608—Three Nesting Tanks and One 200-Foot Reel..... | | \$86.00 |
| G-609—Three Nesting Tanks and Two 200-Foot Reels..... | | 136.00 |
| G-610—Three Nesting Tanks and Three 200-Foot Reels..... | | 186.00 |
| G-611—Three Nesting Tanks and Four 200-Foot Reels..... | | 236.00 |
| G-612—Three Nesting Tanks and Five 200-Foot Reels..... | | 286.00 |

ACCESSORIES

| | |
|--|---------|
| G-613—One 50-Foot Single Spun Tank with Lid. | \$ 4.00 |
| G-614—Three Nesting 50-Foot Spun Tanks.... | 10.00 |
| G-615—One 100-Foot Single Spun Tank with Lid | 7.50 |
| G-616—Three Nesting 100-Foot Spun Tanks.... | 18.00 |
| G-617—One 200-Foot Single Spun Tank with Lid | 15.00 |
| G-618—Three Nesting 200-Foot Spun Tanks.... | 36.00 |
| G-619—One Single 50-Foot Reel..... | 20.00 |
| G-620—One Single 100-Foot Reel..... | 32.00 |
| G-621—One Single 200-Foot Reel..... | 50.00 |
| G-622—One 100-Foot Wire Screen..... | 1.00 |
| G-623—One 200-Foot Wire Screen..... | 2.00 |

ORDER BY NUMBER

Rexo Developing Frames

For Moving Picture Films

These frames are made of aluminum and are especially constructed for the tray development of moving picture films. They have a capacity 50 feet. Studs are provided on the top and bottom to prevent the film from overlapping during development. Metal posts are also provided at each corner of the frame to prevent the film from coming in contact with the bottom of the tray. Size, 20½ x 24 inches, capacity 50 feet.

PRICES

| | | |
|-----------------|-----------------------------|--------|
| Cat. No. G-357. | Rexo Developing Frame | \$4.50 |
|-----------------|-----------------------------|--------|

Stineman Motion Picture Printer

The small developing outfit was originally intended for the experimenter—the man who works out new ideas in the making of motion pictures. It was made small and so constructed that it can be easily kept clean and conveniently packed away to carry around—in a suitcase, if necessary.

With this same end in view the Stineman Printer, a portable one, came into being. The printer weighs about eight pounds and is one that a man may work with anywhere in the world, where he can get into the dark for a few moments.

This printer is put out with the anticipation that those that use it will put forth their best efforts in finding new things in motion pictures, a business yet in its infancy and in which there is a great deal yet to be learned. The field is large.

With the combination of the Stineman Developing System and the Stineman Printer, it is quite certain that many new ideas will be developed in the motion picture field, and this printer will do everything that any other device in the business will do, and even more. It is scientific in principle. The combination of Developing Outfit and Printer make up a complete portable laboratory.

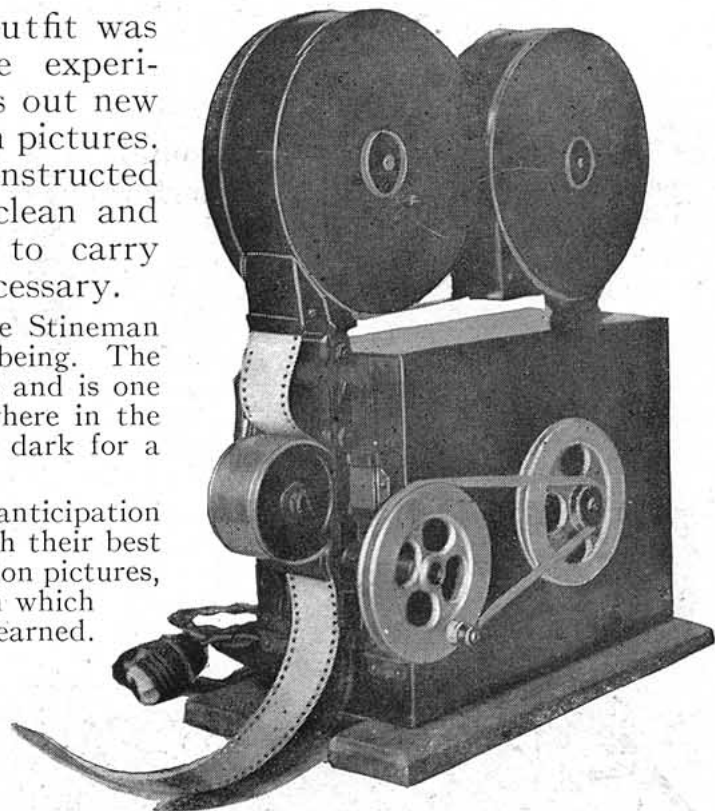
The Stineman Printer prints ABSOLUTELY IN CONTACT, and CANNOT SCRATCH THE FILM.

There is NO LIMIT to the number of prints that can be made from ONE NEGATIVE in the Stineman Printer.

The Printer may be driven by hand or any motor.

Both negative and positive film is carried in the magazines; the positive magazine being light tight, and the unused positive may be left in the magazines indefinitely, until used. Capacity of magazines is 200 feet of film each.

Cat. No. G-650. Stineman Printer, complete.....\$90.00



The Stineman Printer (Patented)
Weight, 15 Pounds. Capacity of Magazine, 200 Feet.

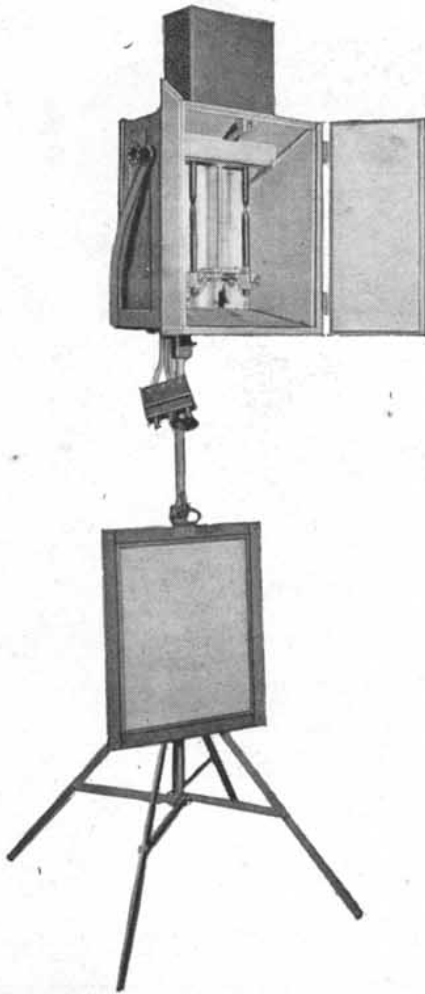
Goerz Kino Hypar Lenses F3.5

Goerz Kino Hypar Lenses F3.5 are ideal for use in making motion pictures. They are supplied in special sets of 10, 50, and 75 mm focal length in tubes to fit a specially designed micrometer mount use with the Universal Camera, permitting an instant interchange of lenses. They are also supplied in barrel and micrometer mounts for all standard Motion Picture Cameras.

| Cat. No. | Equivalent Inches | Focus Inches | In Barrel | Cat. No. | Micrometer A | Focusing Cat. No. | Mount B* |
|----------|-------------------|--------------|-----------|----------|--------------|-------------------|----------|
| B-110 | 1 $\frac{5}{8}$ | 40 | 32.00 | B-114 | 54.00 | B-118 | 58.00 |
| B-111 | 2 | 50 | 32.00 | B-115 | 54.00 | B-119 | 58.00 |
| B-112 | 2 $\frac{3}{8}$ | 60 | 34.00 | B-116 | 56.00 | B-120 | 60.00 |
| B-113 | 3 | 75 | 38.00 | B-117 | 60.00 | B-121 | 64.00 |

Cat. No. B-122 Set of 40, 50 and 75 mm lenses with micrometer mount and tubes \$145.00. *B accommodates lenses of focal length up to 7 $\frac{1}{2}$ inches, by means of tube adapters.

The New Portable Wohlite



This lamp has been especially designed to meet the constantly growing demand for a powerful, sturdy, dependable unit for portable use. Though weighing but thirty pounds it is capable of the same splendid performance and service for which Wohl Lamps are known the world over.

Wohlite will operate satisfactorily on either direct or alternating current (50 cycles or over), producing approximately 6,000 C. P. on low amperage and 15,000 on high amperage, which makes the Wohlite when two are used in series available for motion pictures in the home or studio. It requires no adjustment for voltages from 100 to 125 volts, and may be operated two in series on circuits of 200 to 250 volts. The lamp is instantly adjustable for either 12½ or 25 amperes by simply reversing the plug.

The price of the lamp complete, with 20 feet of cable and Wohl patented woven glass diffuser:

C-117—Wohlite, complete, each.....\$100.00
C-118—Trunk for two complete lamps 25.00

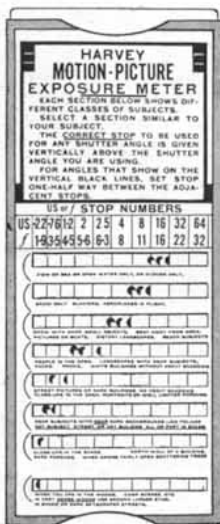
Ingento Changing Bags

For Daylight Magazine Loading

These bags should form a part of the equipment of every motion picture camera operator. The magazines can be loaded with film in daylight without danger of fog or the loss of time. The bag is closed with glove fasteners and the hands inserted through the sleeves, which have rubber wrist bands.



Cat. No. L-770—No. 4 Ingento Changing Bag\$5.00



Harvey Motion Picture Meter

The Harvey M. P. Meter shows at a glance the correct stop and shutter opening to use on all classes of subjects. It covers Motion Picture Lenses from F/1.9, F/3.5, etc. No calculations necessary. Endorsed by the leading camera men. Every operator needs a Harvey Meter. It solves every outdoor exposure problem. The meter costs no more than a few feet of spoiled film.

Cat. No. L-55—Harvey M. P. Meter.....\$2.00

Terms

THE prices quoted in this book are strictly net, except to dealers who carry our products in stock. OWING TO UNSETTLED CONDITIONS, ALL QUOTATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. We recommend that our customers make their purchases from their regular dealer. If he does not carry our products, kindly send us his name.

Burke & James, Inc.

Chicago New York