

## The Finger Points » » »

THE opportunity to exploit a great modernizing influence upon portrait photography awaits the man who will take advantage of the exceptional speed and color sensitivity of Eastman Super-sensitive Panchromatic Film.

Instantaneous exposures of children or grown-ups are possible with a slight increase in the volume of Mazda light used. You can forget "still" warnings—catch animated expressions—put life into your portraits and make sittings enjoyable experiences. The better expressions secured give greater customer satisfaction.

A new and exclusive Eastman sensitizing process gives this new film its history-making speed, color sensitivity, and fine gradation quality.

Making portraits instantaneously is an accomplishment worth exploiting. Use this wonderful new film, make better portraits, and talk about it.

EASTMAN KODAK COMPANY

Rochester, N. Y.

The American Annual of Photography 1932

# The American Annual of Photography 1932

AMERICAN PHOTOGRAPHIC PUBLISHING COMPANY  
BOSTON, U. S. A.



# Capture the beauties of Color with Agfa Color Photographs

**D**ELICATE tints in landscapes, soft colorful overtones and undertones in subjects that black and white interpret but feebly at best, blue skies and white clouds, the crisp brilliance of clear sunshine—and glorious sunsets—color plate photographs of these and other effects produce a new yet lasting thrill.

Buildings and homes present many studies in color also—studies that may have few possibilities in black and white.

Indoors, the Photoflash bulb offers endless opportunities—portraits, family groups, still life, records of curios and innumerable scientific subjects, with the question of exposure reduced to its simplest terms. Flash one bulb at 3 to 4 feet from the subject, using stop F:4.5, and you know you will get a good color plate. Full information on this subject of Photoflash color-plate exposures is available.

The Agfa Color Plate Process is essentially simple. Anyone with a plate camera can utilize it. Prepared chemicals are supplied for finishing at home, or solutions may be compounded from formulas in the handbook, or exposed plates may be sent to Binghamton for finishing at economical charges.

The handbook tells the story. Send for your copy today and make a start with this easy, useful, and immensely practical process. Ask for special information if interested in projection for lecture purposes.

AGFA ANSCO OF BINGHAMTON, N. Y.

Adv. 2

The Advertisers Have Made the Low Price of the Annual Possible

# AGFA ANSCO PAPERS

These emulsions and surfaces  
will delight the eye of the  
photographic craftsman

## INDIATONE

**T**HE deep, rich quality of the Indiatone emulsion may be just what you are seeking for your prints.

Indiatone is well adapted to all types of subjects; producing from even a poor negative a print that has life and character.

Also, Indiatone offers real, natural warmth when it is desired; this adding greatly to the effectiveness of this fine paper.

Indiatone is marvelously adapted to both contact and projection work. It is available in many beautiful surfaces which include Smooth, Fabric Rough, Cyltex, Cylko, Porcelain Stipple and Crystal Stipple—all in white and buff.

If you have not tried Indiatone, you will not regret including it in your next order.

## BROVIRA

**T**HIS fast projection paper (of bromide speed) offers a combination of balance, latitude and quality, distinguishing it from regular bromide emulsions.

Brovira excels in brilliance and rich, deep, yet luminous blacks. It will tone by development in a beautiful manner that is not expected in a paper of this speed.

Also, Brovira sepia's wonderfully by re-development and the quality of print, with all these easily controlled manipulations, is uniformly fine.

It is a pleasing paper offered in many surfaces including Fabric Rough and Matte in white and buff, and velvet in white only.

Brovira is unique. It will make a good print from any printable negative.

Other Agfa Ansco Papers include Noko, for photo-finishing and commercial work, Professional Cyko, and Enlarging Cyko. Full information on request.

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Agfa Ansco Limited, 204 King Street East, Toronto, Ontario

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Adv. 3



# AGFA PROFESSIONAL FILMS

for every  
Photographic Use

THESE include Agfa Portrait, Commercial, and Process films in different degrees of color sensitivity from color-blind Process film to the most highly sensitive type of Panchromatic Commercial and Portrait film. In addition, Agfa Printon film—highly contrasty, for use in reproduction plants—is now available.

For every photographic job there is an Agfa film which will permit doing that job well with the least possible expenditure of time and effort.

If you have a film problem,  
let us make suggestions.

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Adv. 4

The Advertisers Have Made the Low Price of the Annual Possible

The Original high-speed Film



All  
the  
speed  
you  
need

*Plenachrome . . .*

AGFA Plenachrome film is ideally suited to all types of photographic subjects. Dull-day snapshots, night pictures by artificial light, photoflash pictures, pictorial work—in fact, the entire range of hand-camera subjects—are more easily and surely handled with this remarkable film.

It is fast—twice the speed of standard film in ordinary daylight, and three times faster in the yellowish light of afternoon. This is a great help in group pictures.

It is superb for landscapes, especially where greens, yellows, and cloud effects are a factor.

A film of great latitude with a special anti-halation backing that holds all the delicate contrasts and gradations of the difficult subject.

Agfa Plenachrome film is available in both rollfilm and packfilm. Every roll guarantees "pictures that satisfy or a new film free."

You will be pleased with this fine fast film. Use it for your next pictures.

**Agfa**  
**PLENACHROME**  
**VV**

**ROLL FILM • FILM PACK**

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Adv. 5



# BELL & HOWELL FILMO

## Movie Making Accessories



**B & H Photometer**

The B & H Photometer uses a scientific laboratory method of light measurement, and permits a full view of the object through the lens. Model A, for Filmo Cameras, gives lens stop readings for all camera speeds. Model B, for "still" cameras, gives lens stops for all shutter speeds, filter and emulsion factors. You sight through the lens directly on your object, exposing for high-lights, shadows, or average intensity. Reading in ten seconds! Either model \$17.50; leather case, \$2.50.



**The B & H Tripod**

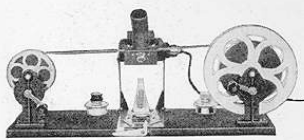
Sturdy, firm-locking, tubular legs, and an ingenious, smooth-working tilt and pan mechanism mark this finest of tripods. Tilt and pan may be operated together or separately. B & H All-Metal Tripod alone, \$36; leather, zipper-type case, \$12.50.

**Focusing Alignment Gauge**  
For precision photography, titles, etc. Sliding bed moves viewfinder and critical focuser over to aperture position for exact centering. Fits on any tripod. \$21.



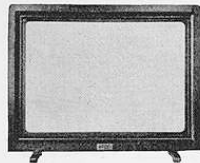
**Cooke Speed and Telephoto Lenses**

Cooke lenses, standard on Filmo, are made by English craftsmen with infinite care and precision. The famous 1-inch Cooke F 1.8 speed lens is specially corrected for Kodacolor. With Kodacolor filter, \$75. Without filter, \$60. There is a special compact model of F 1.8 lens and Kodacolor filter for the pocket-thin Filmo 75. Cooke telephoto lenses range from \$60 for the 2-inch F 3.5 up to \$95 for the 6-inch F 4.5.



**B & H Film Editor**

An excellent accessory for editing, cutting, and splicing your movie film. Film illuminated and enlarged for easy inspection. Reels in handy position with splicer block below. Complete with film cement, \$40.



**B & H Extra Bright Screen**

Special processed surface gives high reflective power, especially for Kodacolor movies. Surface protected when not in use. Also has folding feet. 20 x 27 inch size, \$21. 30 x 40 inch size, \$39.



**B & H Character Title Writer**

The handiest of all title devices. Filmo 70 camera fits on special mount in correct position for centering title. Hand may be photographed writing titles. Two powerful lamps. Complete with case, \$36.

*Write for full catalog*

BELL & HOWELL

BELL & HOWELL COMPANY, 1824 LARCHMONT AVENUE, CHICAGO, ILLINOIS  
NEW YORK, HOLLYWOOD, LONDON (B & H CO., LTD.) • Established 1907

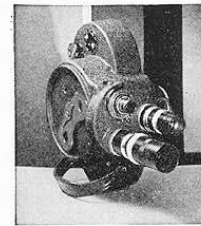
Adv. 6

The Advertisers Have Made the Low Price of the Annual Possible

# BELL & HOWELL FILMO

## Personal Movie Cameras and Projectors

The sustained leadership of Filmo 16 mm. motion picture equipment is the result of Bell & Howell's long experience in cinemachinery design and manufacture. In Filmo the simplicity of operation demanded by the amateur finds its very foundation in the practical design and scientific precision of manufacture which has for nearly a quarter of a century characterized every Bell & Howell product.



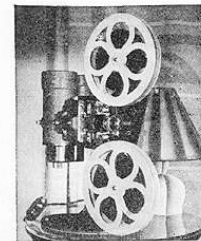
Filmo 70-D, "Master of all personal movie cameras." Seven film speeds—8 to 64 frames a second, three-lens turret, variable viewfinder, \$245 and up in Swivel-locked Masfair case. With critical focuser, \$270 up. Filmo 70-A, two speeds, \$140 up.

World preference has been accorded to Filmo. In every corner of the globe it is the equipment to be found in the hands of discriminating amateurs, sportsmen, and explorers—the equipment most seen among world travelers, at fashionable resorts and watering places. Filmo's unsurpassed picture quality and its constant dependability under all photographic conditions mark it as the world's foremost 16 mm. equipment.



The new Turret-Head Eymo 71-C Camera. Seven speeds—4 to 32 frames a second. Permanent built-in hand crank in addition to spring motor. Turret accommodates any lens ordinarily employed on the non-turret Eymo. Write for booklet.

• NO FILMO HAS EVER WORN OUT! •



Filmo 57 Projector. Powerful 375 or 250-watt direct lighting. Silent movement. Absolutely flickerless. Automatic operation. \$198 and up with carrying case.

This is a fact, not an idle boast. In selecting Filmo, you will provide yourself with equipment which will not only take and show the finest of personal movies, but be your prized and serviceable possession always.

All Filmos are adaptable (under license) for taking movies in full natural color by the Kodacolor process. Filmo 75, at \$149.50 complete with F 1.8 lens and Kodacolor filters, is the lowest priced Kodacolor-equipped camera.



Filmo 75, "The aristocrat of Personal Moviedom." Slender, compact, highly precise. Excellent for sports and outdoor use. Fits the coat pocket. \$92 and up. Carrying case, \$7.50.

*Write for booklet, "What you see, you get."*

BELL & HOWELL

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Adv. 7



# FOR PERFECT PICTURES DISCRIMINATING PICTORIALISTS EVERYWHERE, TO INSURE THE ULTIMATE IN QUALITY FOR THEIR PRINTS, SPECIFY **GEVAERT**



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**TORONTO**  
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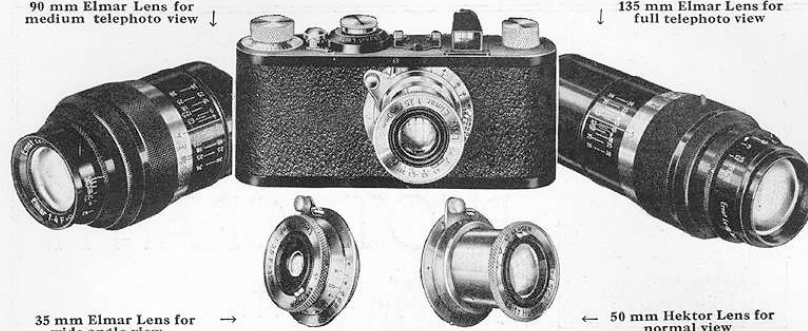
To translate the composition envisioned by the pictorialist into a photographic creation of permanent artistic value, the elusive highlights, the subtle shadow gradation, the intricate detail of the subject, must all be captured and held intact in the negative, faithfully reproduced in the print.

The world-wide reputation of GEVAERT plates, films and papers, earned through practical use under the most difficult conditions, assures the fine technical qualities which the pictorialist must demand of his emulsions for true pictorial success.

Write for catalogs.

90 mm Elmar Lens for medium telephoto view ↓

↓ 135 mm Elmar Lens for full telephoto view



## You Can Make Every Kind of Picture

and make it perfectly with the **LEICA Camera, LEICA'S Interchangeable Lenses, and LEICA Accessories.**

So small it fits the vest pocket—yet the LEICA CAMERA is so versatile that it opens up to you the entire field of photography—enables you to do things that were hitherto possible only with a great range of expensive equipment. Takes 36 pictures on a single roll of cinema film double frame size. Equipped with a focal plane shutter for exposures of 1/20 to 1/500 of a second, including time exposures. Fitted with the most highly corrected lenses ever put on a camera. Enlargements to 12x18 inches or more are wonderfully sharp and clear

# The Universal Camera *Leica*

### DOES THE WORK OF A DOZEN CAMERAS

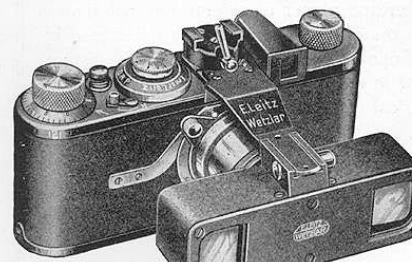
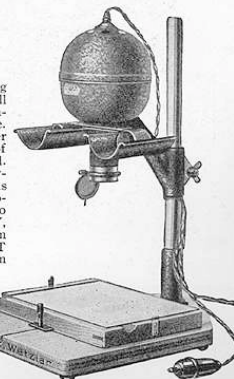
Leica Model permits the use of any of five different anastigmat lenses which are interchangeable, thus giving you, in one camera: A Speed Camera; An Aerial Camera; A Telephoto Camera; A Clinical Camera; A Three Color Camera; A Stereo Camera; A Micro Camera; A Panorama Camera; A Wide Angle Camera; A Portrait Camera.

### LEICA Accessories Include:

UNIVERSAL View Finder, FODIS Range Finder; LEICA Color Filters; WINKO Angle View Finders; STEREO Slide Bar; INSTAFOCU Range Finder; LEICA Front Lenses; LEICA Copying Stand; MICRO Adapter; ELDIA Printer; GLASS SLIDE Printer; LEICA Projectors.

### THE LEICA UNIVERSAL ENLARGING APPARATUS

The ideal enlarging equipment for small negatives. Permits enlargement to any size. Efficiency is far greater than any other type of enlarger manufactured. Fitted with highly corrected anastigmat lens having a maximum aperture of F:3.5. Two sizes: THE FILOY, with a lens of 50 mm focus; and the FILYT with a lens of 70 mm focus.



### THE NEW LEICA STEREO ATTACHMENT STEREOLY.

For all types of professional and amateur work, in making three-dimensional views of street scenes, travel subjects, animals, people at work or play, etc. With the STEREOLY it is possible to photograph action pictures as well as still subjects, and preserve all the natural depth of the scene just as viewed with the eyes.

Send for Free Descriptive Literature to

**E. LEITZ, Inc., Dept. D-32 60 East 10th St.  
NEW YORK**

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Adv. 9





Taken with complete Plasmalens



Taken with Plasmalens rear element



Taken with Plasmalens front element

## Better PHOTOGRAPHY WITH PLASMATS

THE normal human eye automatically accommodates itself to the various planes in an object possessing a third dimension so that these planes possess a practically uniform sharpness.

Photographic lenses that bring into sharp definition a given object, at a given distance, are not, at the same time, in focus for other distances within the range of the lens.

A striving for greater uniformity in definition between the various planes of objects has resulted in the calculation of the Plasmalens series designed by Dr. Paul Rudolph. Plasmats represent a distinct first advance in this direction, achieved through an equal spherical correction for all colors of the spectrum.

f:4      f:4.5      f:5.5

Catalog on request

If you are interested in 16mm cinematography, send for brochures on the Kino-Plasmalens f:1.5, the Trioplan f:2.9 and the Tele-megor f:4.

**HUGO MEYER & Co.** 245 West 55th Street  
New York  
Works: Goerlitz, Germany



## Exceptional Selections

Before you buy, compare every feature of the Herbert & Huesgen line of exceptional photographers' equipment. The selection of the right camera, lens and accessory means for greater pleasure and finer results.

**IHAGEE  
CAMERAS**



**CAMEO-  
ULTRIX**  
Newest de  
luxe small  
camera.  
Roll films  
1 3/8 x 2 1/2.  
With IHAGEE f 4.5 - \$25  
" CARL ZEISS f 3.5 \$45



**AUTO-  
ULTRIX**  
Touch the  
button and  
the lens is  
ready for ac-  
tion.  
Roll films  
2 1/4 x 3 3/4.  
with IHAGEE f 4.5 - \$28  
" CARL ZEISS f 4.5 \$37



**FOLDING REFLEX**—The  
utmost skill in construction  
and mechanical efficiency are  
clearly apparent in this finest  
of Reflex cameras.  
9x12 cm Carl Zeiss f 4.45 \$200  
9x12 cm Carl Zeiss f 3.5 \$250

**DALLMEYER  
LENSES**

DALLMEYER is the  
recognized Hallmark of  
the world's finest lenses.  
They are superlative  
from every angle.

**DALLON TELEPHOTO**  
f 4.5 12 in. \$105  
f 4.5 14 in. \$118  
f 4.5 17 in. \$158  
f 5.6 12 in. \$102  
f 5.6 14 in. \$124  
f 5.6 17 in. \$167



**FOCAL PLANE  
DUPLIX**

A two shutter camera of  
superb mechanical excel-  
lence giving perfect re-  
sults in every phase of  
photography. Truly a  
universal instrument.  
9x12 cm  
Carl Zeiss f 3.5 \$135



**CINEMATOGRAPHIC LENSES**  
These world famous lenses f 1.5 and f 1.9  
and the Telephoto series comprise the per-  
fect equipment for the movie camera.

**HEYDE  
INSTRUMENTS**



**EXPOSURE  
METER \$5**



**CINE-  
EXPOSURE  
METER \$7.50**

No one can deny  
the value of these  
instruments to the  
photographer, for  
they quickly give  
him the proper  
distance, length of  
exposure, and stop  
required to make  
faultless pictures.



**DISTANCE  
METER \$7.50**

**LIFA COLOR  
FILTERS**



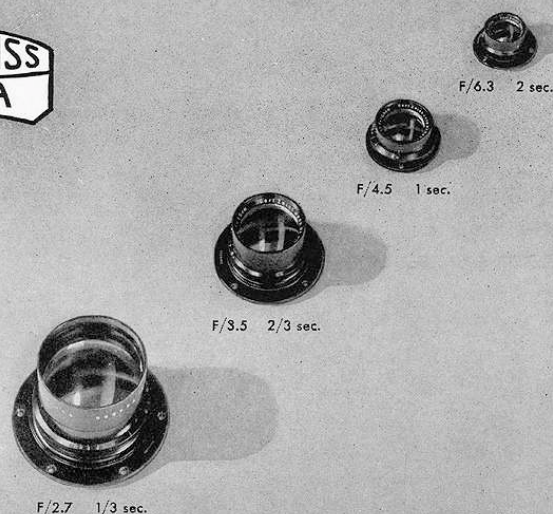
With a set of these filters  
the subtlest values in col-  
or, light and shade are  
captured as they appear  
in nature. Set in three—  
light, medium and dark.

Complete catalogues of each line sent upon request

**HERBERT & HUESGEN CO.**  
SOLE U.S. SALES AGENTS  
18 EAST 42<sup>nd</sup> STREET • NEW YORK CITY



**CARL ZEISS  
JENA**



F/2.7 1/3 sec.

F/3.5 2/3 sec.

F/4.5 1 sec.

F/6.3 2 sec.

# THE ZEISS TESSAR LENS

Versatility is what every photographer has a right to expect of a *universal* lens. For it must serve equally well for sport pictures, portraits, landscapes, or natural color work. Because of its versatility, the Zeiss Tessar has maintained an enviable position of leadership throughout the world. Relative sizes and exposures at full aperture for different Tessars, compared with the F/4.5, are shown in the illustration above. Write for booklet Ph-267 which contains interesting information.

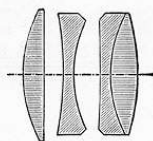


Diagram of types of Zeiss Lenses

Tessar F/4.5

likewise F/2.7, F/3.5, F/6.3

**Carl Zeiss, Inc.**

485 Fifth Avenue New York  
728 So. Hill St. Los Angeles

NO CAMERA CAN BE BETTER THAN ITS LENS

at every price ~ Zeiss Ikon Cameras ~ for every purpose

## Zeiss Ikon Cameras

Here is a representative group of Zeiss Ikon Cameras at new reduced prices. You can see these cameras at your dealer's. He will be glad to show you their many points of superior construction.

**Kolibri**  
For Rollifilms: 1 1/4 x 2 1/4" making 16 exposures of 1 1/4 x 1 1/4"  
Zeiss Tessar F/3.5 or Novar F/4.5, 8 speeds T & B  
Price: Tessar F/3.5—\$52.00  
Novar F/4.5—\$32.50

**Ikoma C & D**  
For Rollifilms: C: 2 1/4 x 3 1/4" D: 2 1/4 x 4 1/4"  
Novar Anastigmat F/6.3  
Dervall shutter: 3 speeds T & B  
Price: C: \$14.00 D: \$16.50

**Trona F/3.5 & F/4.5**  
For Plates and Film Packs: F/3.5—9 x 12 cm. F/4.5—3 1/4 x 4 1/4"  
Zeiss Tessar F/3.5 or F/4.5  
Compur shutter: 8 speeds T & B  
Price: F/3.5 — \$115.00  
F/4.5—\$56.00 and \$68.00

**Cocartette C & D Special**  
For Rollifilms: C: 2 1/4 x 3 1/4" D: 2 1/4 x 4 1/4"  
Zeiss Tessar F/4.5  
New Compur shutter: 8 speeds T & B  
Price: C: \$85.00 D: \$39.00

**Ideal A & B**  
For Plates: A: 2 1/4 x 3 1/4" (6 1/2 x 9 cm.) B: 3 1/4 x 4 1/4" (9 x 12 cm.)  
For Film Packs: 2 1/4 x 3 1/4"  
Zeiss Tessar F/4.5  
New Compur shutter: 8 speeds T & B  
Price: \$64.00 to \$85.00

**Miroflex A & B**  
For Plates: A: 2 1/4 x 3 1/4" B: 3 1/4 x 4 1/4"  
For Film Packs: A: 2 1/4 x 3 1/4" B: 3 1/4 x 4 1/4"  
Zeiss Tessar: F/2.7-F/2.8-F/3.5-F/4.5  
Price: \$170.00 to \$280.00

**Icartette C, D, and L**  
For Rollifilms: C and L: 2 1/4 x 3 1/4" D: 2 1/4 x 4 1/4"  
For Plates: L: 2 1/4 x 3 1/4"  
Zeiss Tessar F/4.5  
New Compur shutter: 8 speeds T & B  
Price: C: \$52.00 D: \$56.00 L: \$60.00

**Maximar A & B**  
For Plates: A: 2 1/4 x 3 1/4" (6 1/2 x 9 cm.) B: 3 1/4 x 4 1/4" (9 x 12 cm.)  
For Film Packs: A: 2 1/4 x 3 1/4"  
Zeiss Tessar F/4.5  
New Compur shutter: 8 speeds T & B  
Price: A: \$40.00 B: \$48.00

For descriptive booklet on  
Zeiss Ikon Cameras write to



**CARL ZEISS INC**

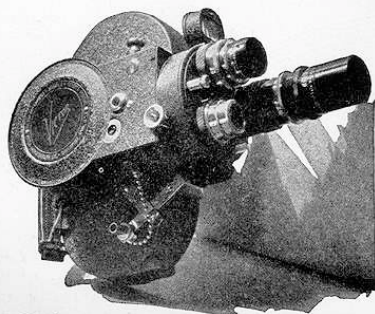


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# Why Your Movie Camera Should be a VICTOR



## The FINEST CAMERA MONEY CAN BUY VICTOR MODEL FIVE with Full-Vision Visual Focusing

In addition to embodying all the desirable features of the Model 3, the Model 5 provides for FULL-VISION VISUAL FOCUSING—by a direct method of proven superiority. Eliminates all guesswork, and the necessity for determining focusing distances. By focusing directly thru the lens, clear, sharp pictures are a certainty . . . giving positive assurance of "NO MORE OUT-OF-FOCUS PICTURES." A Multiple-Lens Turret Front and a Full Range of Operating Speeds, including SLOWER Slow Motion, are additional features that make the MODEL FIVE VICTOR the World's FINEST and MOST COMPLETE 16 mm MOVIE CAMERA.



## The POPULAR MODEL 3 VICTOR CAMERA

Features: Variable Speeds for making Normal, S-L-O-W Motion and Quick Action pictures . . . Duplex Spring Motor responds instantly and noiselessly with smooth, constant speed . . . Hand Drive Crank for trick work and emergency . . . Built-in Exposure Meter . . . Compensating View Finder . . . Operating Lock . . . Self-Setting Film Measure . . . Tripod Socket . . . Interchangeable Lenses of numerous types and makes . . . Small and Conveniently Shaped . . . Rugged Construction combined with a beauty of design and richness of finish that reflect genuine QUALITY.



YOU will want the camera that will do the most with the greatest ease. There will be times when you will want Slow Motion, Quick Action, Close-ups of Distant Objects, Interior Shots, Scenes in Poor Light, Pictures in Natural Color . . . and so on. Then you will want the Victor Camera because it will do all of these things with an **Ease of Operation** that is almost uncanny.

**Superlative Performance, Great Flexibility and Utter Simplicity**, such as the Victor provides in one small, compact, moderate-priced unit, would not be possible except for Alexander F. Victor's skillful designing and ingenious simplification. It was Victor's creative genius that conceived the first 16 mm ciné camera, as well as the modern equipment which is representative of the amateur movie camera in its highest development.

But you will wish to prove all this to your own satisfaction. Ask to see a Victor. Get the "feel" of it . . . test it for efficiency, convenience and easy operation . . . and compare it, for it is by comparison that the Victor best proves its supremacy.

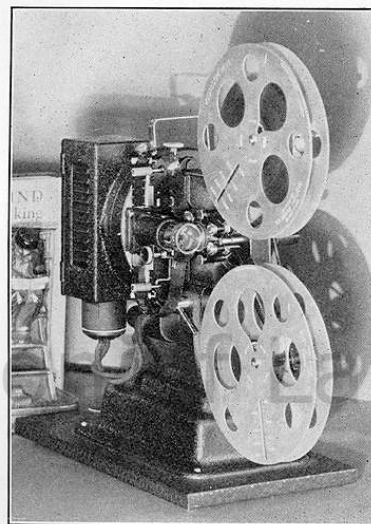


Manufactured By  
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VICTOR DEALERS ARE LOCATED IN THE IMPORTANT CITIES OF 42 COUNTRIES

Distributors for U. S. A.  
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(Wholesale Division)

BRANCHES IN 31 PRINCIPAL CITIES

# The VICTOR PROJECTOR For PERFORMANCE Plus!



## THE MASTER PROJECTOR

### ANIMATOPHONE FOR 16 MM TALKIES

The ANIMATOPHONE is the only complete 16 mm equipment which has been especially designed and constructed throughout for sound and picture synchronization. It is without equal for performance because no other 16 mm equipment embodies any of the several notable features that are responsible for the visual and phonetic excellence of its presentation.

Every need of the user has been anticipated. A combination Gear Plate permits the use of both the regulation phonograph record and of the 16 inch movie record. Silent films may also be run.

Write for Literature and Prices.

THE safety of your projector investment lies in the care with which you select your instrument.

If you buy with the view to securing the greatest possible returns by way of brilliant performance, full adaptability and maximum utility over a period of years, Victor guarantees far greater value than any other Projector at any Price!

In addition to insuring the finest quality known to motion picture projection, the Victor embodies a number of exclusive mechanical refinements and operating conveniences, the full value of which can be properly appreciated only after a prolonged period of use.

The Victor's *Perpetual Safeguard* against "jumpy" pictures, its *Permanent Quietness*, *Positive Protection* against excessive wear and the mangling or breaking of films, *Variable Illumination* to provide the right amount of light for every purpose, and *Extreme Ease of Operation* have a cumulative value that makes it a "Paying Proposition" to select a Victor—the Master of all 16 mm Ciné Projectors. Let yours be a Victor.



Manufactured By  
**VICTOR ANIMATOGRAPH CORPORATION**  
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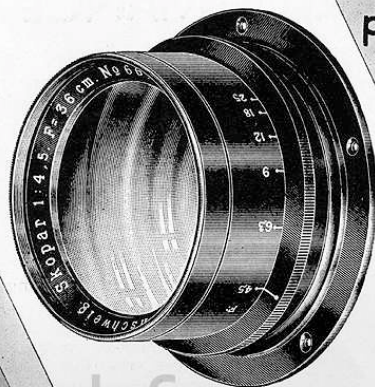
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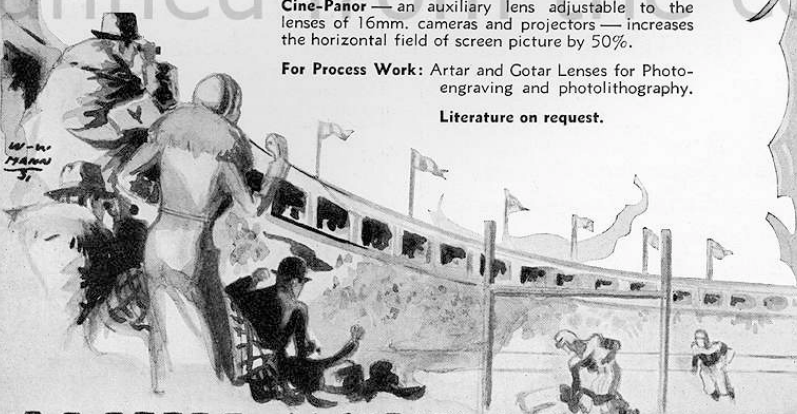
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# The American Annual of Photography 1932

Volume XLVI

*Edited by*

Frank R. Fraprie

Editor of *American Photography*



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## CONTENTS

	PAGE
Contents .....	3
List of Pictorial Illustrations .....	4
Index to Advertisers .....	6
The Choice of a Printing Paper .....	Dr. B. T. J. Glover 7
Making the Most of Your Exposure Meter .....	Robert R. McIlwaine 14
Thoughts on Composition .....	Raymond E. Hanson 23
Aerial Snapshots .....	Roscoe C. Hill 27
The Control of Halation .....	Frederick Bush 30
Pictorial Photographic Salons .....	Dr. K. Koike 36
Making Salon Prints .....	C. W. Gibbs 41
Snow from a Pictorial Standpoint .....	William S. Davis 43
Tricks with Tripods .....	David Charles 49
Cloth Backing for Photographs and Snapshots .....	T. F. Ellis 55
Telephoto Definition and Enlarged Images .....	Ray Filter 56
The Use of Drawing Instruments in Photography .....	Emery G. Gregory 60
Human Nature in Press Photography .....	H. Rossiter Snyder 67
Art in Press Photographs .....	A. Lockett 71
Permanency in Bromoil Pigmenting .....	H. G. Cleveland 73
Cine Trickery .....	Karl A. Barleben, Jr. 75
Recent Outstanding Advances in the 16 mm Movie Field .....	R. Fawn Mitchell 79
Our Illustrations .....	Frank R. Fraprie 177
The Third Perspective .....	Hillary Goodsell Bailey 184
An Amateur's Darkroom .....	L. D. Youmans 188
Capturing Shadows in Stageland .....	Robert R. Miller 193
An Outline of Pictorial Photography .....	Warwick Barse Miller 200
Simple Stereoscopic Photography .....	Louis Nell 213
Stereo Photographs with One Lens .....	E. K. Emslie 218
Fingerprint Photographs .....	A. Lockett 222
Color Photography .....	A. Palme 225
Photographing Subterranean Wonders .....	Russell T. Neville 230
What Camera, What Price, Why? .....	H. Crowell Pepper 236
The Photography of Minute Objects .....	W. Stephenson 243
Amateur Copying .....	George Francis Hogan 247
Seasonable Reminders .....	Perry D. Frazer 253
Photographing Arrangements of Flowers, Fruits, and Seeds .....	Arthur E. Gleed 257
Selling Exhibition Pictures .....	B. H. Chatto 261
Who's Who in Pictorial Photography 1930-31 .....	262
American Photographic Societies .....	275
American Annual Formulary .....	286



## LIST OF PICTORIAL ILLUSTRATIONS

	PAGE
Tiddlywinks	Bruce Metcalfe 13
Baie de Douarnenez	Ch. Hurault 26
At Myconos	Nelly's 35
Gühhampengestelle	Richard Träger 40
Sun Bathing	Dr. Alfred Grabner 48
Triangle	H. Richardson Cremer 72
The Heavens Declare the Glory	H. G. Allen 78
Astrid	Jan de Meyere 81
A Group of Pine Trees	John H. Anderson 82
In the Country of Roses	J. Em. Borrenbergen 83
White Sails	Dr. Frederic W. Burcky 84
Autumn in Alameda	S. Nakagawa 85
The Dancer	F. E. Geisler 86
Cognito — Mrs. James Baghino	Yvonne Gregory 87
Spring	Karl A. Baumgaertel 88
Back o' Beyond	J. M. Whitehead 89
Lily Pads	Ralph Rex 90
The Padlocks	P. Dubreuil Van Assche 91
Vers le Marché	Paul E. Guillot 92
What Was That?	S. W. Liddell 93
Winter in Poland	Jan Bulhak 94
The Brook in the Ravine	Frank R. Fraprie 95
The Escape	James Treloar 96
Abandon	Neil Kirby 97
Cossack	Alvin C. Greiner 98
Arab Woman	J. Ortiz Echague 99
The Lady in White	Fred P. Peel 100
Tallulah Bankhead	Dorothy Wilding 101
Promesa	Julio Matutano 102
Good Friday — Spain	Alexander Keighley 103
The Ice Grotto	Lieut.-Colonel F. D. S. Foyrer 104
Topfmarkt.	Maximilian Mayer 105
Simla Hills — Monsoon	Ronald Beauchamp 106
In Autumn	Henry Howard Kirby 107
Kaktus	Hubertus Flöter 108
Calla Lilies	Samuel Capuano 109
A Canadian Girl	Charles Aylett 110
Mrs. Chauncey Deming	Lew and Marion Tyrell 111
Japanese Jar	T. Nohira 112
Glass	Lowrey-Sill 113
Porcelain	H. Evansmith 114
Composition	Frantisek Drtikol 115
Auf der Wiese	Alfred Lechter 116
Doubt	William Harold House 117
From Under the Eaves	Virna Haffer 118
Wintermorgen	Franz Mairhofer 119
Down Spinnaker	G. L. A. Blair 120
Vele	Guido Balanzino 121
April Breeze	Charles Clayton, Jr. 122
Daddy's Boy	William Clive Duncan 123
Despair	Gilbert B. Seehausen 124
The Mask	C. W. Gibbs 125
Waiting	P. Douglas Anderson 126
Doorway	Paul Freiburger 127
Wildbach	A. Koch 128
A Dutch Canal	Murry Barford 129
Spadaro of Capri	C. J. Cray 130
Professor Albert Einstein	Martin Vos 131
Motivo Per Paravento	Guido Pellegrini 132
Summer	Harvey B. Wobbe 133
Gulls	F. Schensky 134
Playing with the Sea	T. Kobayashi 135
Fisherman's Corner — Villefranche	W. A. Blanchard 136

## LIST OF PICTORIAL ILLUSTRATIONS

	PAGE
Above the Pacific Coast	K. Nakamura 137
Queen of the Crystal Pool	Severo Antonelli 138
Bondage	Robert A. Officer 139
Winternebel	Franz Freund 140
Vers la Vallée	Cesare Giulio 141
Terpsichorean Artists	Louis Fleckenstein 142
Girls	Erich Angenendt 143
Spring's Awakening	Herbert T. West 144
The Dragon Fly	L. B. Mayo 145
Still Life	T. K. Shindo 146
Gedenkblatt	Franz Feiler 147
Rome — Castello di Sant' Angelo	Dr. D. J. Ruzicka 148
Castles of Manhattan	Thomas O. Sheckell 149
Waschttag	Lothar Schröder 150
Accueil Frais	Léonard Misonne 151
Our Elevator Man	Alexander Leventon 152
Llewelyn Powys, Esq.	Wilfrid Cumming 153
Skyline Trail	I. Matsushita 154
Man and Nature	Dr. John C. Lupton 155
Hof	Ernst Kreisler 156
The Mountain Stream	Raymond E. Hanson 157
Lathe Tool and Chip	John P. Mudd 158
Perpetual Motion	A. Kono 159
Akt	Franz Fiedler 160
In the Nets	C. B. Seifert 161
An Ocean Wanderer	Arthur Ford 162
Solent Raters	E. J. Mowlam 163
The Race	Zoltan Herczegh 164
Gables	Charles K. Archer 165
Enchantment	Dr. George C. Poundstone 166
Carl Milles — Sculptor	Dr. H. B. Goodwin 167
Pasture	Italo Bertoglio 168
Circus Friends	W. Fisk Moore 169
Eggs	Achille Bologna 170
Drops of Grease	Kurt Seifert 171
Toilet	C. Stuart Tompkins 172
Composition	Nickolas Boris 173
Builders	Boris 174
Skimming	Allwater & Bro. 175
Hiawatha	H. Douglas 176
Tennis Ball	Dr. Jan Lauschmann 177
Mink Brook	Robert Keene 178
Raindrops	Paul L. Miller 179
Zan Setu	Riso Itano 180
Prayer	László Papp 181
Birch Vista	Harold I. Orne 182
Seiners at Rest	H. A. King 183
Dust	Masatoshi Mizuno 184
Calla Lilies	Harry A. Newman 185
Bridge Builders	Bruce Metcalfe 186



## INDEX TO ADVERTISERS

	PAGE		PAGE
Agfa Ansco Corporation .....	2, 3, 4, 5	Henry Greenwood & Co., Ltd. ....	43
Alvord Opaque Co. ....	34	Halldorson Co. ....	28
American Photographic Publishing Company		Hammer Dry Plate Co. ....	24
	36, 40, 42, 44	Ralph Harris & Co. ....	34
Bachmeier & Co., Inc. ....	32	Herbert & Huesgen Co. ....	11
Bass Camera Company.....	38	Chas. M. Higgins & Co., Inc. ....	24
Bausch & Lomb Optical Co. ....	27	Holliston Mills, Inc. ....	39
Bell & Howell Company .....	6, 7	J. W. Johnston .....	33
Burleigh Brooks .....	31	E. Leitz, Inc. ....	9
Central Camera Co. ....	40	Mallinckrodt Chemical Works.....	35
Abe Cohen's Exchange, Inc. ....	36	Mechling Bros. Chemical Co. ....	38
E. I. Du Pont De Nemours & Co., Inc. ....	30	Medo Photo Supply Corporation .....	28, 32, 33
Eagle Pencil Co. ....	40	Hugo Meyer & Co. ....	10
Eastman Kodak Company .....	19, 21, 46	George Murphy, Inc. ....	45
Eastman Kodak Stores Co. ....	20	National Carbon Co., Inc. ....	29
Elliott & Sons, Ltd. ....	34	New York Camera Exchange .....	41
Elwood Pattern Works .....	26	New York Institute of Photography .....	37
A. W. Faber, Inc. ....	26	Norman-Willets Co. ....	36
R. J. Fitzsimons Corp. ....	28	Pinkham & Smith Company .....	17
General Electric Co. ....	25	Roehrig-Bielenberg Co., Inc. ....	30
General Electric Vapor Lamp Co.....	22, 23	Victor Animatograph Corp. ....	14, 15
Gevaert Company of America, Inc. ....	8	Willoughbys .....	16
Gilbert Supply Company .....	32	Carl Zeiss, Inc. ....	12, 13
C. P. Goerz American Optical Co. ....	18		

# The American Annual of Photography -- 1932

## THE CHOICE OF A PRINTING PAPER

DR. B. T. J. GLOVER

THE production of a photograph which is satisfactory from a technical viewpoint is, in the main, a matter of the successful choice and application of a correct exposure to the plate or film, the development of the negative for a time which is necessary to produce a chosen degree of contrast (total negative density-range) and the choice of a printing paper of characteristics which are suitable for the density-range of the negative thus produced. It is true that no matter how carefully the exposure be calculated and no matter how accurately the time of negative development be gauged to suit the printing paper it is proposed to use, false tone values will result unless panchromatic plates or films which are sensitive to red and green light as well as blue light are made use of, and unless their sensitiveness to ultra-violet light as well as the excessive residual sensitiveness to blue light is cut down by the aid of a suitable light filter. Nevertheless, the correct timing of the exposure and development of plate or film and the choice of a suitable printing paper are fundamental to the problem of the production of technically good prints.

In the paragraphs which follow it is proposed to discuss the factors which need to be considered when choosing a printing paper. It will transpire that both the subject and the negative influence that choice. Before doing so, however, let us refer briefly to some of the considerations which govern the steps taken before a negative is ready for printing.

Subjects which can be photographed are made up of a number of tones of which some are colored and some possess little or no color and are, therefore, white, grey or black in tone. The task is to produce a

print possessing tones which imitate the relative *brightness* of the subject-tones, either on a similar tone-scale, or on a contracted tone-scale, or on an expanded tone-scale, according to needs and the photographer's wishes. The colored subject-tones cannot, of course, be reproduced as colored tones in an ordinary photograph, but the print-tones which purport to imitate them can and should be made to imitate approximately the brightness of the colored tones. For example, a blue object tends to possess rather a dark tone, partly because blue light is light of a wave length to which the eye is not particularly sensitive, and partly because a blue object reflects but little of the light with which it is illuminated, but absorbs and changes into heat the remainder. So far as the eye and a photographic plate are concerned, the light absorbed by an object is lost, and only the light reflected by an object is useful. Blue objects, therefore, are best represented by dark print-tones and not by light print-tones, as is so commonly the case. On the other hand, red objects are usually exceedingly bright, partly because red light possesses a wave length to which the eye is highly sensitive, and partly because red objects possess marked power of reflecting any red light which falls upon them, and absorb and turn into heat but little of it. Red objects, therefore, should be represented as light print-tones comparable with the bright impression that a red object produces, and not by dark and dismal print-tones, as is seen so often. Similarly, green objects are brighter than blue objects, but darker than red ones, and yellow objects are the brightest of all, by reason of their double reflection



## WEIGHTS AND MEASURES

Photographic formulas are almost invariably given in the avoirdupois system, in which the ounce, dry measure, contains 437.5 grains; the liquid ounce contains 480 minims. Occasionally the word "drachm" or "dram" is used, and this usually refers to the apothecaries' system of 60 grains or 60 minims. The avoirdupois "dram" contains 27.34375 grains. The use of this term, as well as "pint" and "gallon" should be avoided as far as possible, as the U. S. pint contains 16 fluid oz., the U. S. gallon 128 fluid oz., and the British pint is 20 fluid oz., the British gallon 160 fluid oz.

The metric system should always be adopted. It is easier in practice, as all multiples and subdivisions are in powers of 10. The gramme or gram, and it is not advisable to use this latter form because of the possibility of its being mistaken for grain, is written "g," or "gm.," and is the unit for solids. The cubic centimeter, written "ccm.," "ccs" or "cc," this last being usual in Europe, is the unit for liquid measures.

The subdivisions are designated by the Latin prefixes "deci" (1/10th), "centi" (1/100th) and "milli" (1/1000th); the multiples by the Greek prefixes "deka" (10), "hecto" (100) and "kilo" (1000). These are rarely used, and 0.1, 0.01 and 0.001 g are general; "kilo" being used for 1000 grammes.

The following tables facilitate with the least trouble the conversion of the one system into the other:

## LINEAR

Inches	Centimeters	Inches	Centimeters
0.3937	1	1	2.540
0.7874	2	2	5.080
1.1811	3	3	7.620
1.5748	4	4	10.160
1.9685	5	5	12.700
2.3622	6	6	15.240
2.7559	7	7	17.780
3.1496	8	8	20.320
3.5433	9	9	22.860

## AREAS

Square Inches	Square Centimeters	Square Inches	Square Centimeters
0.155	1	1	6.452
0.310	2	2	12.903
0.465	3	3	19.353
0.620	4	4	25.807
0.775	5	5	32.258
0.930	6	6	38.710
1.085	7	7	45.161
1.240	8	8	51.613
1.395	9	9	58.065

## MASSES

Grains	Grams	Grains	Grams
1	0.0648	15.4324	1
2	0.1296	30.8647	2
3	0.1944	46.2971	3
4	0.2592	61.7294	4
5	0.3240	77.1618	5
6	0.3888	92.5941	6
7	0.4536	108.0265	7
8	0.5184	123.4589	8
9	0.5832	138.8912	9

## LIQUIDS

Cubic Centimeters	Minims	Cubic Centimeters	Fluid Ounces
1	16.230	29.574	1
2	32.460	59.147	2
3	48.690	88.721	3
4	64.920	118.295	4
5	81.150	147.869	5
6	97.380	177.442	6
7	113.610	207.016	7
8	129.840	236.590	8
9	146.070	266.163	9

The U. S. gallon = 3785.43 ccm; one liter = 33 fluid oz., 394 minims.

The above tables apply to the English weights and measures, with the exception of the liquid measures; the English gallon measures 160 fluid oz. = 4545.96 ccm. The English pint = 20 fluid oz. = 568.245 ccm. The following, therefore, must be used for the conversion of the same:

Cubic Centimeters	Minims	Cubic Centimeters	Fluid Ounces
1	16.894	28.4123	1
2	33.788	56.8245	2
3	50.682	85.2368	3
4	67.576	113.6490	4
5	84.470	142.0613	5
6	101.364	170.4735	6
7	118.258	198.8858	7
8	135.152	227.2980	8
9	152.046	255.7103	9

In writing formulas it is generally understood that the quantity of water given refers to the total bulk of the solution after the salts have been dissolved.

## PARTS

Sometimes a formula is given in "parts"; it can then be read either in the metric or duodecimal system, as long as a "part" is taken as the units which may be grains, ounces, pounds or tons, or grammes or cubic centimeters.

As it is unusual to weigh liquids, the grains or pounds of water must be converted into liquid measure, hence 1000 gr. = 2 fluid oz., 137 minims.

## PERCENTAGE SOLUTIONS

Photographically a percentage solution is one containing  $x$  parts of a solid or liquid in 100. In the case of liquids this is easy of attainment, as it is only necessary to measure out a given number of minims, ounces, or cubic centimeters and add enough water or solvent to make 100 in all. When dealing with solids, which are weighed, confusion may arise from the difference between the dry avoirdupois ounce and the liquid ounce. Thus the former contains 437.5 grains, and if this be dissolved in 10 fluid oz. of water, and it is required to use 1 grain of the salt, if 10 minims be measured, we have actually  $437.5 \div (480 \times 10)$  grains = 0.9144 grains. Therefore, in making a 10 per cent solution, using an avoirdupois ounce, the total bulk of the solution should be  $437.5 \times 10$  minims = 9 oz. 55 min. (approximately 9 oz., 1 drachm).

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Model M, or the \$150 Model K equipped with the faster  $f.1.9$  lens that makes Kodacolor (movies in full, natural color) as well as black and white pictures. Eastman Kodak Company, Rochester, N. Y.

## Ciné-Kodak...Simplest of Home Movie Cameras

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# COOKE LENSES

Professional Photographers seeking the ideal instruments for their work find complete satisfaction in COOKE LENSES. » The advanced Amateur also finds Cooke Lenses the best for his work



The Cooke Telic illustrated on this page is a wonderful Telephoto Lens that can be fitted to Graflex and Graphic Cameras as well as other types of hand Cameras.

They give images twice the size of ordinary Lenses and can be used for either time or instantaneous exposures.

## Telic f:5.6

Series	Approximate Equivalent Focus	Plate Covered at Full Aperture	Camera Extension at infinity (Approx.)	R.P.S. Standard Flange Screw	Price
	8 1/2"	2 1/2 x 3 1/2	5 1/4	1 1/2	\$ 99.50
F:5.6	11"	3 1/4 x 4 1/4	6 3/4	1 3/4	107.50
Telic	12 1/2"	4 x 5	7 1/4	1 3/4	115.00
	15"	5 x 7	9	2 1/4	148.00
	20"	6 1/2 x 8 1/2	12 1/4	2 3/4	296.00

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are furnished in the following Series for various classes of photographic work

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" IIa,	Portric f:3.5	
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Verichrome is a film so fast, so sensitive, that even the most casual snapshot, made under adverse conditions, is crisp, clear, delightful. Good light or poor, dark days or fine, early mornings, late afternoons—in winter as well as in summer, Kodak Verichrome Film gives pictures that delight you.

Verichrome is made by an exclusive Eastman process, and no other film is "the same as Verichrome." It costs but a few cents more than ordinary film. Stock up at your Kodak dealer's. Get ready for a happy week-end.



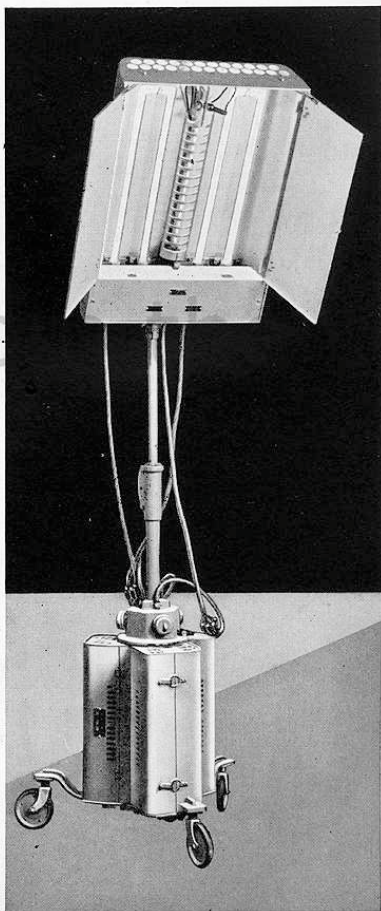
THE CHECKERED STRIPE on the familiar yellow box is the distinguishing mark of Kodak Verichrome Film. It means crisper negatives, better pictures, no matter what camera you use.

EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

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Balanced  
and NEON here give  
for  
panchromatic  
photography



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GENERAL  ELECTRIC  
VAPOR LAMP COMPANY



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Hammer has made it possible for your negatives to have strength and at the same time a softness that will produce prints with brilliancy and detail.

Hammer supplies Special Brands for Special Work, and will mail you free of charge a portfolio of prints showing results you may expect. *Write for your portfolio to-day—also for folder on "How to Make and Sell Gold Dorytypes."*



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OHIO AVE. and MIAMI ST.,  
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**FINE MOUNTING**  
The Finishing Touch  
They Deserve!



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## HIGGINS' PHOTO MOUNTER

and WHITE INK



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### With **MAZDA** Photoflash Lamps

**P**HOTOGRAPHS like these, taken with MAZDA Photoflash lamps give a new kick to camera ownership—a new interest to photography. You can now catch pictures of children in their various moods, in different situations—any time—indoors day or night—without any other special equipment or special fussing. You see the baby. You think "this would make a peach of a picture"—and you steal out and get your camera and your Photoflash lamps and reflector—and, flash, in 1/50th of a second the picture is yours forever!

Before eyes have had time to blink or baby has had a chance to get frightened, the picture is yours.

There is no noise, no smoke, no smell, no

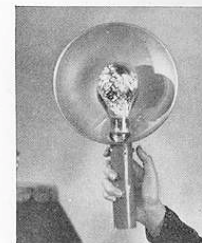
dust—and the pictures are great!

MAZDA Photoflash lamps have taken the lid off indoor and outdoor photography. You can now take pictures—good ones too, in rain, snow, wind. Pets, animals, bird life, plants, trees, garden scenes, all yield superbly to Photoflash.

Send us your name and address and you will receive an illustrated booklet telling the complete story of the new MAZDA Photoflash lamps and its many uses for amateur photographers.

General Electric Company, Nela Park, Cleveland, Ohio.

**MAZDA PHOTOFLASH LAMPS**  
PRODUCT OF  
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# "CASTELL"

## Photographic Retouching Pencils THE FINEST MADE

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No. 9000 "CASTELL" Hexagon, wood encased, green polish, made in 17 degrees of hardness.

No. 9022 "CASTELL" Retouching Artists' Pencils, metal point, and leads No. 9030 made in 16 degrees of hardness.

No. 9030 "CASTELL" Refill Leads, 5½ inches long, for No. 9022, six leads in a box, made in 16 degrees of hardness.

The above pencils and leads are suitable for retouching all kinds of negatives.

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No. 9019 "CASTELL" Retouching Pencils for black and white positives. Round, black polish, made in six degrees.

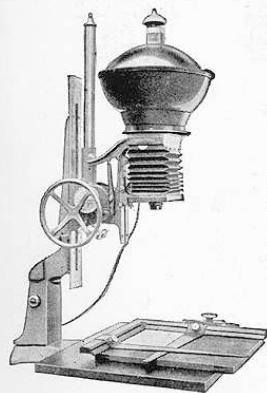
No. 9024 "CASTELL" Retouching Artists' Pencils. Round, black polish, metal point and leads No. 9025.

No. 9025 "CASTELL" Refill leads, 5½ inches long, for No. 9024, 6 leads in a box.

No. 9031 "CASTELL" Retouching Pencils for Sepia positives, round, sepia polish, one degree only.

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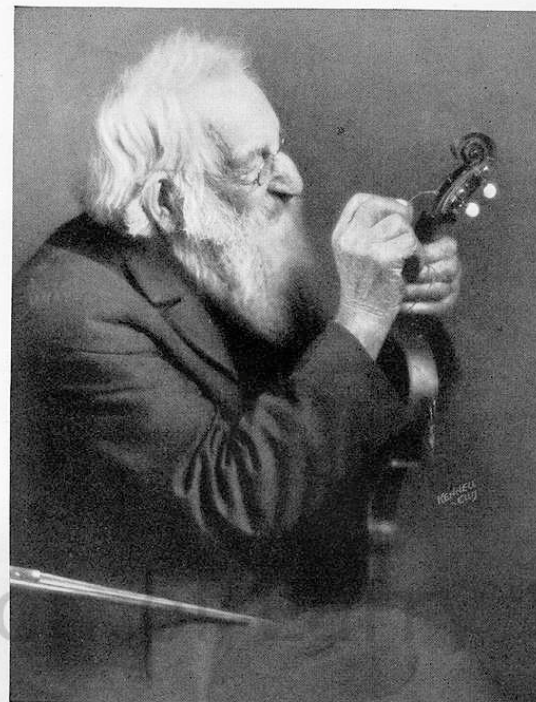
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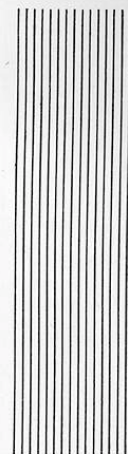


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Adv. 27



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PANCHROMATIC  
PLATE

700 H. & D.

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Home Portrait  
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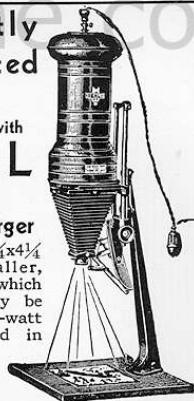
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**Lumière Autochrome Plates**

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Projected  
rints  
with  
**IDEAL**  
Automatic  
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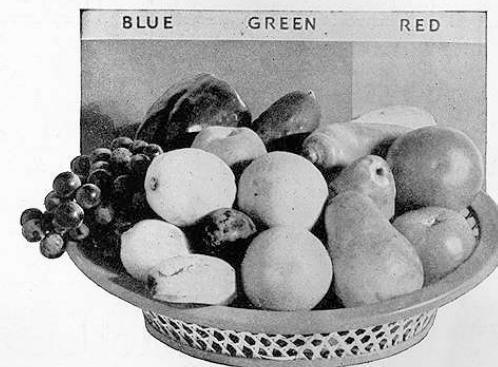
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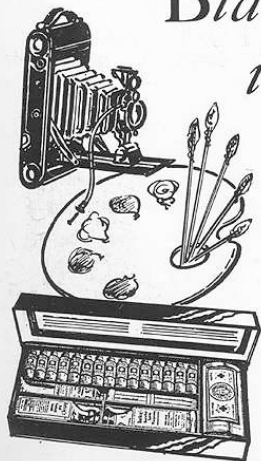
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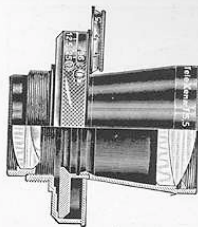
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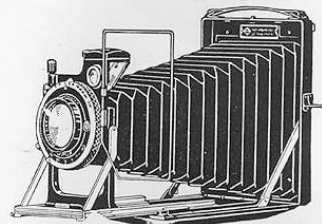
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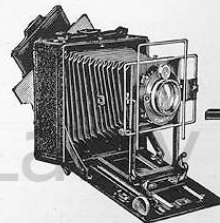
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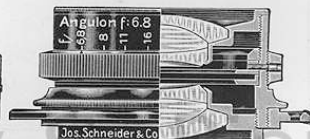
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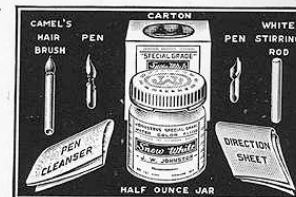
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Contents Will Stir Easily.  
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PAPERS

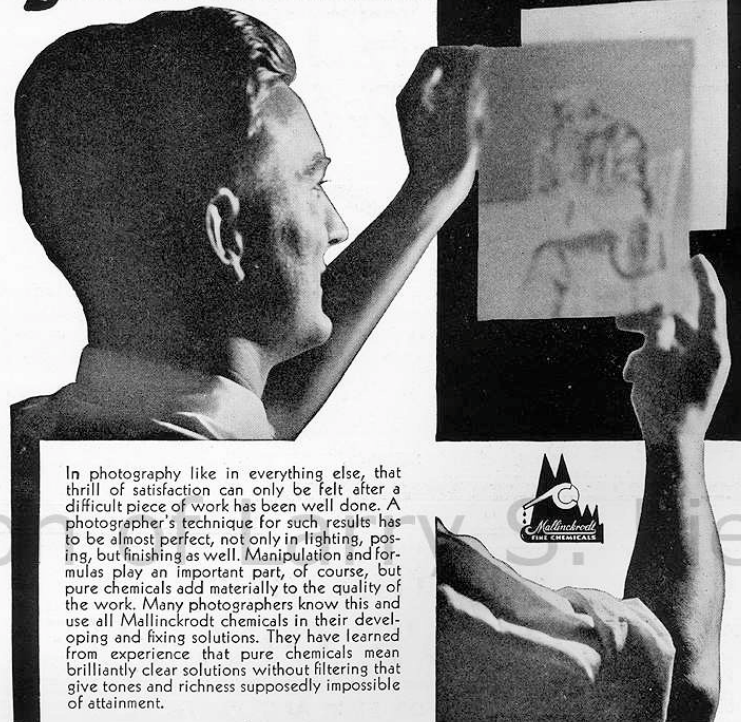
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- No. 3. How to Choose and Use a Lens.
- No. 4. How to Make Prints in Color.
- No. 5. How to Make Enlargements.
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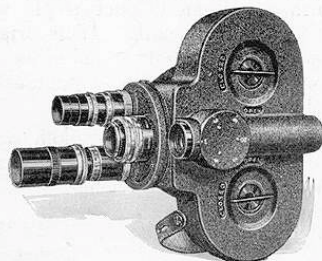
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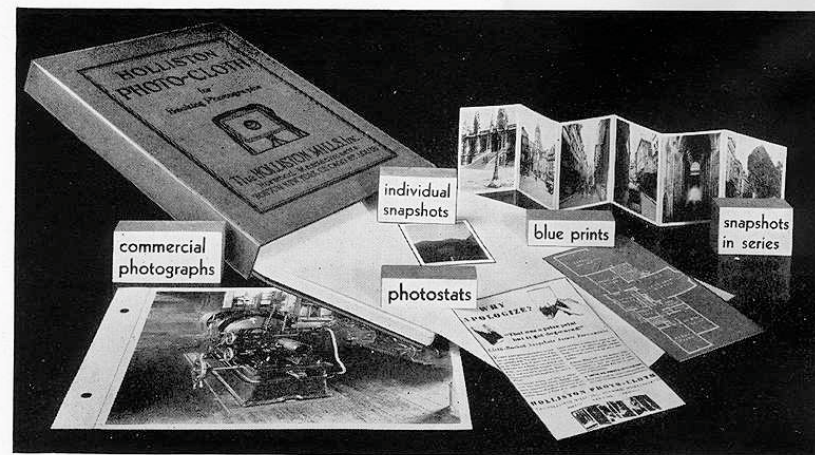
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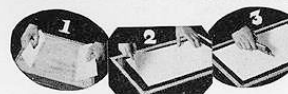
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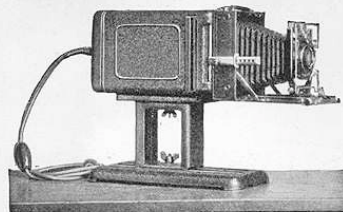
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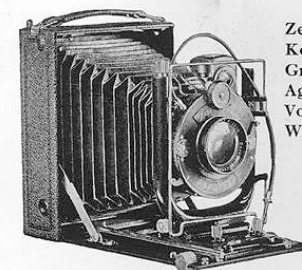
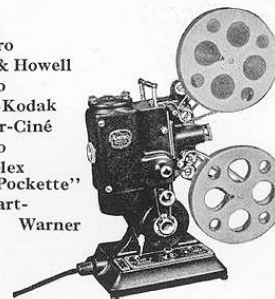
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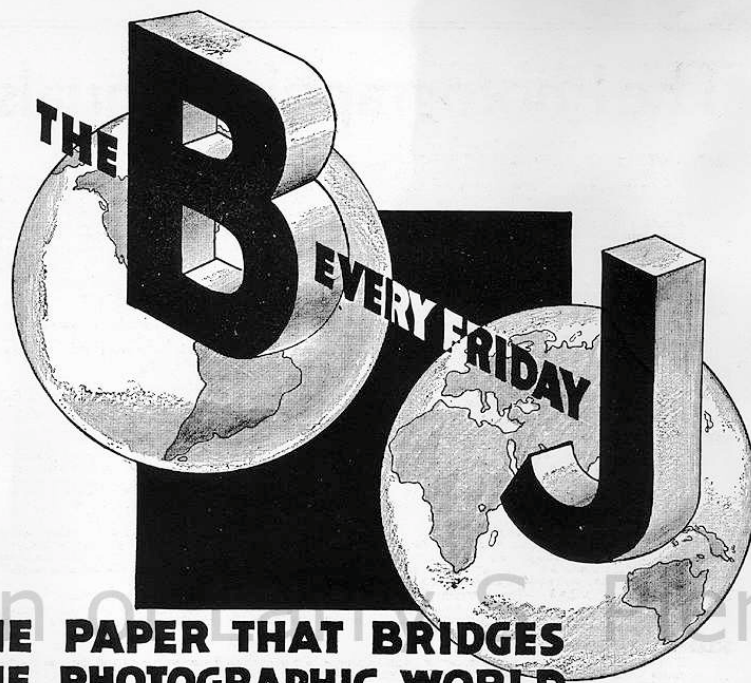
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