

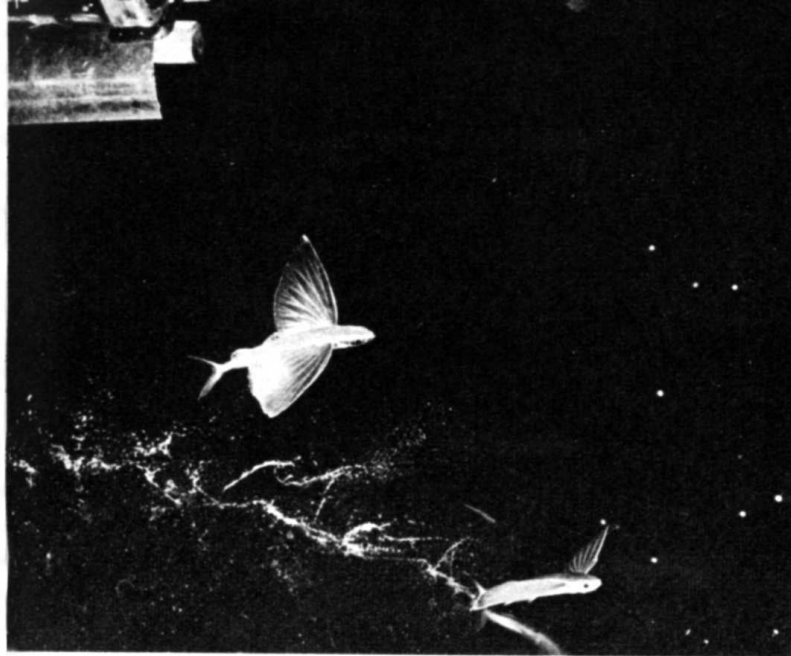
**War-time photography** is epitomized by this official U. S. Army Air Force aerial photo of atomic bomb burst over Nagasaki, Japan.

# A review of progress

## *Significant equipment and materials developments*

**FIFTEEN YEARS** is less than one eighth of the total life span of photography, first launched in 1839. It has progressed technologically in a series of spurts, each one novel in aspect and forceful in character and yet derived from the one behind it. The last great spurt started in the early nineteen-thirties, and has encompassed the full fifteen years of existence of this magazine. It is still spurting.

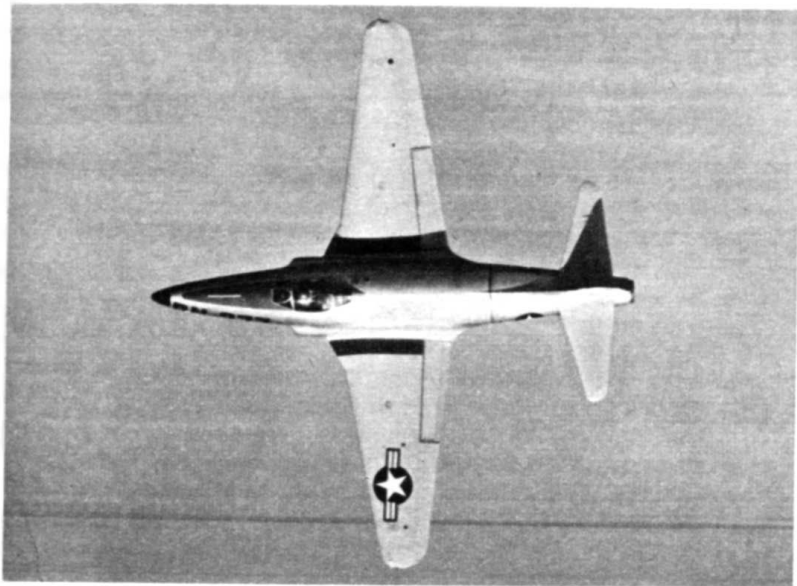
In 1937, we had felt the impact of modern color photography, for Kodachrome film had been brought out in 1935. We were feeling the growth of photography with the miniature camera touched off by the launching of the Leica back in 1924. Fine grain was a matter of concern to many photographers. Although panchromatic film had been available for quite a few years, it wasn't until **POPULAR PHOTOGRAPHY'S** inaugural year that the first really fast pan emulsions, Agfa's Ultra-Speed 35-mm film and Superpan Press sheet film, were introduced to the market. It was at this time that indoor photography at home by artificial light first came into its own thanks to newly available fast films and flood and flash lamps. The amateur was taking photography more seriously and darkroom hobbies were rampant again.



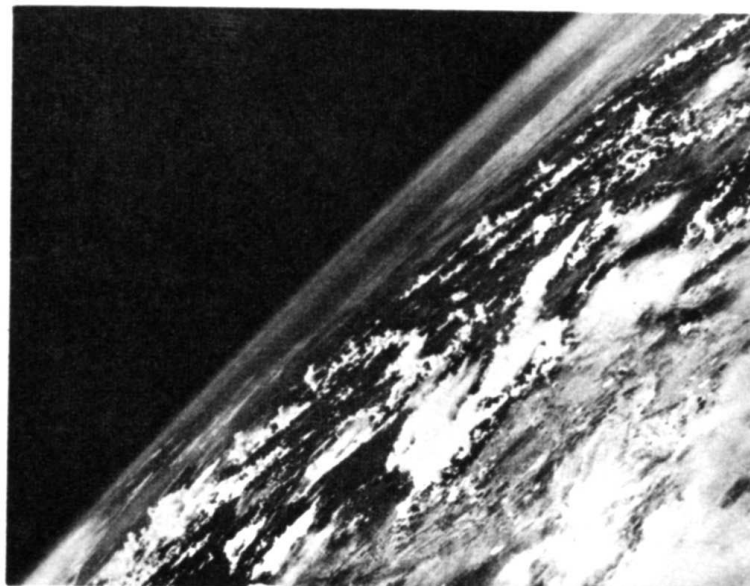
**Electronic flash** photograph of flying fish in full flight was exposed at 1/10,000 sec by Prof. H. E. Edgerton who developed light source.



**Diver-photographer** adjusts focus and lens diaphragm of Aquaflex 35-mm underwater motion picture camera, of French manufacture.



**F-80 jet plane** photographed with S-7 moving strip camera with 24-in. lens from second plane above it; relative speed is 1,000 m.p.h.

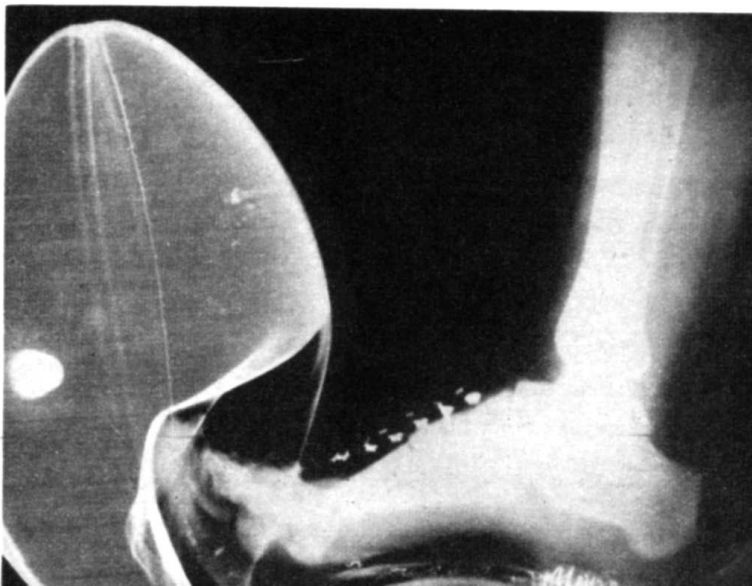


**Earth's curvature, haze, clouds, and "black-daylight" sky** are automatically recorded from 57-mile altitude by rocket-mounted camera.

**Audience-reaction** studies can be photographed in total darkness with infrared film using flashbulbs coated with an infrared dye filter.



**Classic high-speed x-ray** photograph of player kicking football was exposed by special electronic flash unit at 1 millionth of sec.



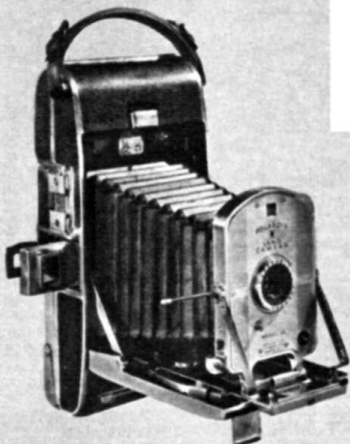
# Some of the important "firsts" . . .



**Reflector flood lamp** was introduced in 1939 by Wabash Corp., now part of Sylvania.



**B-C flash circuit** using miniature "B" battery and electrolytic capacitor was first used in Jen-Flash II in 1949.



**One-step, 60-second** photography became a reality with the perfection of the Polaroid-Land camera in 1948.

**In 1943, Ilex** introduced internally synchronized shutter with 0 to 23-ms delay range.



## continued

from preceding page

Color motion pictures appeared more frequently in the theaters, and the newspapers and magazines used more photographs.

The big thing, of course, was color photography, which has grown at an extraordinary rate recently and is continuing unabated. The first impetus came with the introduction of Kodachrome for amateur motion pictures in 1935, but this was soon followed by Kodachrome for 35-mm miniature cameras, the 8-mm type, and eventually the sheet film type for professionals. In 1936, Agfa in Germany brought out a somewhat different type of color film known as Agfa-color. Ansco, which at that time was the Agfa subsidiary in this country, later developed the process here as Ansco Color which became the first subtractive color material that could be processed by the user. (Additive color processes based upon lenticular and screen principles and which called for processing by the user had been around for many years.)

It was all very well for people with miniature cameras to be able to make color transparencies, but what would they do with them when they had them? Many people would want prints to put in albums or pass out to their friends. Attempts were therefore made to develop printing processes and services, the first of which was Kodak Minicolor. This manufacturer's color print service was based on the Kodachrome process and the name of the product was eventually changed to Kodachrome prints. Ansco later produced a print material for consumer processing known as Printon based on the Ansco Color film principle. This opened a new industry of commercial color finishing by independent laboratories which spread throughout the country.

The 35-mm color transparency actually produced a great impact in a number of ways. Kodak developed the idea of the Kodaslide Readymount—the cardboard



**Variable-contrast printing paper, Varigam, was launched here by Defender company in 1940 — now made by Du Pont.**



mount in which color transparencies are now returned to the photographer. Associated with the Ready-mount was the development of various 35-mm slide projectors and magnifying slide viewers. These factors, along with the introduction of relatively inexpensive 35-mm cameras having many of the features of the earlier deluxe models, greatly enhanced interest in miniature camera work and contributed much to the booming activity in color photography today.

There was still another color printing process which was being developed in the middle thirties known as the Wash-Off Relief Process—an imitation color printing process which later developed into the Kodak Dye Transfer process. Wash-Off Relief was used for a time in a service providing enlarged color prints from 35-mm color transparencies, but its principal use was among a group of fastidious amateur color workers, many of whom eventually turned to professional color photography.

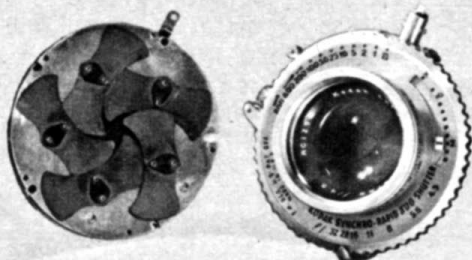
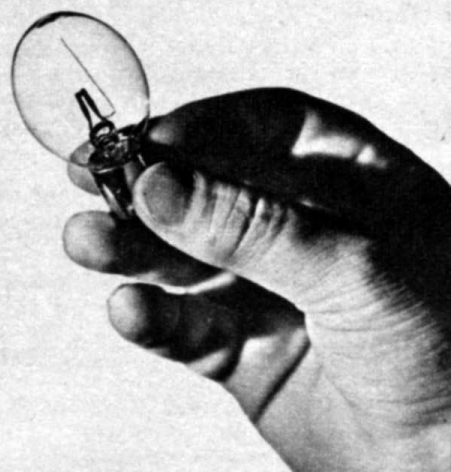
While all this was going on, the commercial advertising illustrators had been developing a high degree of skill in the production of color prints, principally by the historic trichrome Carbro process. The original three-color separation negatives were exposed simultaneously in one-shot color cameras and then turned over to the laboratory for the long series of processing steps that led to the final print. Later on, as professional sheet film color transparencies caught on, many commercial studios began to discard their one-shot color separation cameras. Commercial color prints today are being prepared by the Carbro and Dye Transfer processes from separations made in the laboratory from color transparencies, and in some cases from color negatives. Today, a number of leading commercial studios and publishing enterprises are using color prints prepared by the Kodak Flexichrome process, a semi- (Continued on page 230)

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**Incident-light method of exposure determination gained wide following with development of Norwood Director meter.**



**Speed Midget flash lamp introduced by G.E. in 1941, has 1/150 sec. flash duration, can stop moderate action.**



**Centrally-pivoting blades moving in one direction give Kodak "300" shutter top speed of 1/800 second, unprecedented in front shutters.**



# A review of progress

continued from page 45

mechanical hand coloring method offering considerable color control. The basic process had been developed before the war by Jack Crawford, who subsequently joined Kodak in Rochester, N. Y., where it was perfected in its present form.

In 1939, war broke out in Europe and there was great interest in the possibility that photography might serve a number of essential military purposes. Although war-time developments and applications of color photography had no marked effect on the progress of the war, many of them turned out to have long-range significance. For example, war hastened the debut of Ansco Color film which was released to the Armed Forces in 1942 and didn't reach the civilian market until 1944. Its military advantage lay in the fact that it could be processed in field laboratories immediately after exposure instead of being sent back to the manufacturer's processing laboratory. This was made possible by the incorporation of non-diffusing colorless dye couplers in the gelatin emulsion layers of the film, permitting the three subtractive primary dye colors (cyan, magenta, and yellow) to be formed in the respective layers during one color developing step.

Another development was Kodacolor Aero Reversal Film, a relatively fast, high-contrast color transparency material intended for aerial reconnaissance which was released in 1943 to the military establishment on a production basis. Like Ansco Color film, this material could be processed immediately in field labora-

tories, thanks to a unique "protected coupler" system devised by Kodak. This system was later incorporated in the user-processed Ektachrome and Ektacolor film processes as well as in Kodak's Kodacolor service for making low-cost amateur color prints on paper. A modification of Kodacolor Aero Reversal Film is now in general military use. It is known as Kodak Ektachrome Aero Film. A second modification, with partial infrared sensitivity, was worked out during the war for camouflage detection purposes.

Other war-time color developments were Ansco Color Paper and Gasparcolor opaque print material, both introduced in 1943 for industrial and military uses. Both were designed for processing by the consumer. The former was a print material used principally for military mapping purposes. It was printed either from black-and-white separation negatives or from color negatives. Gasparcolor, on the other hand, was a positive-to-positive print material based on the dye destruction principle (in contrast to reversal color development), characterized by the high color saturation that could be achieved, with its component azo dyes when brilliant color transparencies were printed.

In recent months there has been considerable interest in professional photographic circles in negative-positive color printing processes. This is largely attributable to increasing use of Ektacolor negative sheet film and Ektacolor Print Film. The most dramatic example of the possi-

bilities of these materials is the spectacular Colorama display in New York's Grand Central Station which confronts the tens of thousands of commuters and long-distance travelers who use the station every day. One of the important developments in this field that has contributed substantially to the high quality of the results obtained was the introduction several years ago of colored self-masking dye couplers in the structure of Ektacolor negative film. These colored couplers are also incorporated in the emulsion layers of Kodacolor amateur rollfilm and have produced substantial improvements in the quality of the prints obtained.

A color print material having novel principles was brought out by the Du Pont Company in 1949—Du Pont polymer-type color release material. In this process, which has been used for motion picture printing and experimentally for color sheet transparencies, one of the components which forms the dye is part of the film emulsion vehicle in which the picture is ultimately formed. The vehicle is a synthetic polymer instead of gelatin which is ordinarily used.

From a number of points of view, the camera has undergone changes in the past fifteen years. In Volume I of *POPULAR PHOTOGRAPHY*, in the issue for August, 1937, there was a debate on *Will the Miniature Survive the Candid Camera Craze?* Apparently there was doubt at that time, but there certainly is none now. For some years, the miniature camera, which was essentially a still camera using 35-mm motion picture film, was the exclusive possession of the "advanced amateur"—a device endowed with the utmost flexibility through the user's ability to change lenses and hang all kinds of gadgets on it. In recent years, however, the miniature camera has not only remained an instrument of precision but has also become available to many less demanding amateurs at low cost, and fairly simple to operate.

Other cameras than the 35-mm miniature have flourished during the past 15 years. Shortly before the war, the so-called twin-lens reflex camera won the favor of many magazine photographers and professional illustrators specializing in field work. A legion of advanced amateurs and many who were not so advanced quickly followed the professional trend. More recently there has been considerable interest in small single-lens reflex cameras which enable the user to view the subject on a groundglass screen in full size through a reflecting system, right up to the instant of exposure. Some of these cameras are equipped with prism systems to permit eye-level viewing while others are used at waist-level.

Right after the end of the war, there was a flurry of interest in "sub-miniature" cameras taking 16-mm and smaller film. Of these, only the prewar Minox, which has a shutter with speeds up to 1/1000 second and an *f*/3.5 anastigmat lens seems to have earned recognition as a photographic instrument for the serious worker. During the war, it had been used extensively for intelligence work.

Through the years, the press-type camera has grown in popularity as an ama-



Complete photographic kit developed for use by the O.S.S. during World War II consisted of matchbox camera (in hand), film, processing equipment, chemicals.

teur instrument. Film handling and changing has been facilitated by the development of sheet-film magazines and rollfilm backs. Its designers have borrowed liberally from the miniature-camera makers to invest it with operating conveniences and safety features so that some models are practically fool-proof.

The built-in coupled rangefinder, originally introduced with the precision miniature camera, is now supplied in many different types of camera, usually in the upper and middle price ranges. Practically all cameras made today have some sort of internal flash contact mechanism to fire flash lamps or electronic flashtubes at the time the shutter is operated. In the case of simple box and folding roll-film cameras, a simple set of wipe contacts attached to the shutter blades generally does the job. The synchro-shutters of most press and reflex cameras, however, have auxiliary switches and gear train mechanisms to provide adjustable time delays to accommodate different types of flash lamps as well as flashtubes with zero and 20-ms delay mechanisms. Before the first adjustable synchro shutter (the Ilex Acme No. 3) made its appearance in 1943, either mechanical synchronizers or solenoid shutter tripping devices were used for flash work. As for camera externals, there has been a trend toward body releases for shutter tripping to improve the steadiness with which the camera is held. Waist-level viewfinders of the brilliant reflecting type have all but given way to eye-level types, optical and otherwise, during the past 15 years.

The most significant development in between-lens or front shutter design has been the Kodak "800" Synchro-shutter which provides a top speed of 1/800 second, the result of using centrally-pivoting shutter blades which move in only one direction to effect an exposure. This shutter is available on the more expensive Kodak Tourist folding cameras and on 2 1/4 x 3 1/4 press cameras of different makes.

In lenses, too, there have been forward strides. Many new lenses of high aperture and good quality are now available. For example, apertures of  $f/1.4$ ,  $f/1.5$ , and  $f/1.9$  are now common in the 35-mm miniature field. Anti-reflection coatings which minimize internal reflections and ghost images and improve shadow definition are available on practically all new multi-element lenses. Coating creates a small but significant increase in the actual light transmission of lenses with many air-to-glass surfaces. This is much more important in cinematography where high-light densities must be precisely matched to create uniform screening quality than in still photography. Toward that end, many professional cinematographers have their lenses calibrated in T-stops, representing actual light transmission in which internal reflections and other light losses are accounted for. Some manufacturers have been offering their lenses calibrated in T-stops rather than the familiar  $f$ -numbers. Kodak's new silica-free glasses, developed just before the war, which have low dispersion and a high refractive index are now being incorporated in many lenses with a substantial improvement in lens quality and reduction in the manu-

May, 1952

facturing labor involved. A particularly important development in recent years is the zoom lens with straight linear movement perfected by Dr. Frank Back of the Zoomar Corporation. This type of lens which is extensively used in television and motion pictures performs the function of a lens of continuously variable focal length (without changing the aperture). It consists of fixed and movable lens elements, the latter controlled by an external lever.

One of the great revivals in recent years was stereoscopic photography. Everybody has seen Grandfather's old stereo pictures and enjoyed them. About the turn of the century, they were very popular, but then the interest lagged in spite of the persistence of a few hardy stereoscopic societies, particularly in England, and of the Jules Richard Company in France, which made the Verascope.

Since the war, however, there has been a marked surge of interest in stereoscopic photography. It has been due largely to the Stereo Realist camera put out by the David White Company along with a compact self-illuminated hand viewer and to the Sawyer View-Master which is an inexpensive stereo viewer using a ring of small color transparencies. Sawyer and others are now putting out new stereo cameras and the Verascope (imported by Busch) is again very much in the picture. T.D.C. of Chicago recently put out a stereo projector (based largely on the fundamentals of E. Leitz' prewar Stereoly-Polaroid projection system), and David White has one in-work. The Taylor Stereo Table Viewer, now in its second year, has made it possible for small groups to view stereo scenes together, and the inexpensive Nord adapter has brought the pleasures of stereo to the 16-mm movie maker.

An age-long problem in photography has been to make a camera which would deliver a finished photograph to the photographer. We are all familiar with the complicated machines in stores, railway stations, and other places in which a coin is placed in a slot and eventually a photograph is produced. It was not, however, until a few years ago that the amateur was provided with a camera from which a picture could be delivered with a minimum of effort and in a short time. Fulfillment came in the Polaroid-Land Camera, which produced a photograph in about one minute from the time the exposure was made. This camera has now had many special applications and has even been used for aerial photography and radiography.

As for enlargers and printers, a great variety of models have been produced in the past fifteen years. The aspect which appears to represent the greatest change is the introduction of cold-cathode grids and circular fluorescent lamps as light sources. This is largely the result of the impact of the Aristo Cold-Grid Lite which reached the market in 1948. The Navy has also described enlargers in which they use electronic flash in order to reduce exposure times to a minimum, to avoid the effects of vibration.

In the thirties, there developed a great interest in home photography at night

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time. This was partly due to the availability of fast panchromatic film and of special high efficiency lamps for lighting the subject. Extra bright light is provided by increasing the voltage on an electric lamp and advantage of this principle was taken in the development of various photoflood-type lamps. One of the handiest forms of photoflood illuminant is the reflector flood and reflector spot lamp which have their own built-in silver reflector and need only be screwed into a lamp socket for use. The Wabash Superflood Reflector lamp introduced in 1939 was the first of this type.

Flashbulbs were first developed in Germany in the late twenties. It was not long before they were manufactured in this country by General Electric and Westinghouse, first in the form of a lamp filled with aluminum foil, and a little later with a magnesium-aluminum alloy wire (Wabash Superflash), and eventually with shredded aluminum foil. Flash lamps are now made in vast quantities and are an important part of the kit of the amateur as well as of the press and commercial photographer. The two outstanding improvements in flash lamp design during the past 15 years that contributed to the almost hundred-fold increase in flash lamp consumption were (1) the midget flashbulb which was pioneered by G-E in 1939, and (2) the introduction of the Class F primer-burning flash lamp, the G-E Speed Midget or SM, in 1941, which enabled the user of inexpensive cameras with slow shutters to stop action at 1/100 to 1/150 second indoors by the quick flash of the lamp. Today all lamp manufacturers make compact midget flash lamps which, in properly designed reflectors, are as efficient exposure-wise as larger lamps, and the vast majority offer Class F lamps as well.

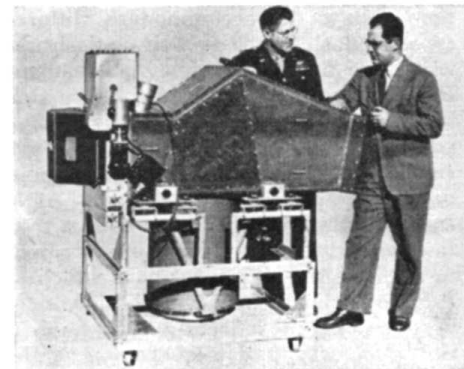
Very significant was the introduction of the repeating flashtube illuminant variously identified as electronic flash, speedlight, and strobe, which depends upon the discharge of a high-voltage electrical potential through a gas-filled tube. Originally developed by Professor H. E. Edgerton at M.I.T., in 1938, flashtube outfits have been made available for studio use, for night reconnaissance photography with military aircraft, and in portable form for press photographers, other professionals, and a substantial number of advanced amateurs.

An important recent development in the field of flash photography is concerned not with the flashbulb or tube but with the power supply. It is called the battery-condenser (B-C) unit. It employs a dry battery of high voltage and a condenser charged by it, the energy from the condenser being released to ignite a conventional flashbulb. The principle was first employed in the Kalart Multiflash extension unit around 1935 and made use of relatively bulky radio "B" batteries and condensers. Modern B-C units patterned after circuits published by Messrs. P. A. Marsal and W. H. Fritz of the National Carbon Company employ compact electrolytic condensers and tiny "B" batteries such as are used in hearing aids. The first B-C flashing unit to reach the market was the Jen-Flash II synchronizer

for the Leica and similar cameras—in 1949. Later that year, Forbees of Stamford, Conn., brought out the first B-C solenoid synchronizing unit, based on a modified circuit published by W. H. Fritz. Today practically all flash equipment manufacturers are offering either complete B-C flashing units and synchronizers or small B-C flash cartridges to replace the conventional flashlight battery power supply.

Fluorescent lamps have found some use in photography, both for general broad illumination and for light sources in enlargers, and special lamps and filters have been devised for use in color photography.

There has probably been more knowledge of photographic emulsions gained in the past fifteen years than at any other time in the history of photography. Manufacturers can now produce films, plates, and papers to meet a great percentage of



**Post-WW II aerial camera features 100-inch focal length lens with folded light path for shooting from 50,000 ft.**

the demands that are required of them, not only from the point of view of speed, grain, and resolving power, but also on the score of sensitivity to special colors and the ultraviolet and the infrared, improved keeping properties, better picture quality, and so on. A very interesting sensitized material developed in recent years was Corning Photo-sensitive glass, announced in June 1947. The picture is printed into the glass with ultraviolet radiations and developed by subjecting the material to heat in an electric oven. Applications have been decorative in the main.

A very important step which was fulfilled in 1950 was the transfer by the Eastman Kodak Company of its entire film output to safety support. The early films were made on a base of cellulose nitrate which was inflammable and provided a definite hazard in situations like motion picture film projection. This film, however, had many desirable properties, and for over thirty years research has been under way to try to find a film of low inflammability which would have the other required characteristics, including, of course, no great increase in cost. This has now been done. Quite recently, Du Pont has announced a new type of safety film support chemically different from the normal types, which is stated to be very tough and to have good dimensional stability.

There has been much progress in **PHOTOGRAPHY**

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tographic papers in the past fifteen years and some entirely new types have been developed. Some photographers have always been interested in a paper in which the printing contrast could be varied in the printer so that only one grade of paper was required. By far the most outstanding paper of this type here in the United States was Du Pont Varigam, developed in 1940 by the research department of the Defender Photo Supply Company (merged with Du Pont in 1945), under the direction of Dr. R. S. Potter. A year earlier, a somewhat similar paper, Ilford Multigrade, was brought out in England. The contrast is varied by altering the color of the printing light.

A few years ago, as a result of a very extensive study of the printing quality of amateur negatives and of the development of a new type of paper, it became possible to put in the hands of photo-finishers machines which processed continuous rolls of paper prints. This was only possible if one grade of printing paper could be used and developed for a single standard time of development. This was accomplished and Kodak Unicontrast Paper was put out and was later followed by products of other manufacturers.

During the war, there was need for printing papers on water-resistant supports which would retain their dimensional stability and also permit rapid drying after processing. A material of this type called Air Map Special, made by Grant Photo Products of Cleveland, had been used for aerial survey work from the mid-1930's on and found an immediate application in military photography. Water-proof papers made by Defender, Haloid, Kodak and others were also used by the Armed Forces.

There has been a significant trend in recent years in rapid copying of documents. Of the silver halide materials suited to this purpose, one of the most interesting is the recently introduced Kodagraph Autopositive Paper which gives a direct positive from a positive original and depends on the so-called

"Herschel effect." The first positive-to-positive (or negative-to-negative) silver halide material available in this country was Agfa Ansco's Direct Copy Film, introduced here in 1937. It had first been made available in Germany by Agfa in 1934 as *Direkt Duplikat* film. A document reproduction process based on electrostatic principles, which is known as Xerography, was recently developed by the Haloid Company and the Battelle Memorial Institute. This process has proven adaptable to photomechanical reproduction and has also shown some promise of being suited for continuous tone photography, with further development. A number of other photographic rapid-document copying processes have been announced in Germany, Belgium, and the United States, depending on transfer of an image or an image-forming substance from a sensitive layer to a receiving sheet—such as Agfa Copyrapid, Gevaert Diaversal, and Apeco Auto-Stat.

In the important field of exposure determination, there have been several important developments since 1937. As part of the notable photographic standardization program undertaken by the photographic committee of the American Standards Association in 1938 (replaced in 1951 by four committees), a standard method for the evaluation of speeds and exposure indexes of photographic films was arrived at. ASA exposure index numbers are now indicated on the dials of all but one of the modern American meters now on the market. During this time, meter sensitivity has been improved and there has been a notable shift in photographic practice toward exposure determinations based upon incident light measurement to the extent that public favor is about equally divided between the use of incident and reflected light measurement at this time. This is evidenced by the fact that practically all of the meters on the market designed for measuring reflected light are equipped with incident light attachments, whereas meters designed primarily for incident

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measurement can be readily adapted for reflected light measurements. First of the incident light meters available on the market was the Avo Smethurst Highlight exposure meter introduced in England just before the war. The Norwood Director which was used exclusively in Hollywood and was subsequently introduced to the amateur market by Director Products of New York was the principal proponent of the incident light trend in this country. It is interesting that with a few isolated exceptions, extinction type meters have practically disappeared from the American market, although they are popular in Europe and, two of the professional brightness meters favored by engineers, the SEI and the Luckiesh-Taylor, are based on this principle.

Color temperature meters, too, have been introduced in recent years, both visual and fully automatic photoelectric types. Kodak and Harrison visual type meters have been popular; the Spectra two and three-color photoelectric meters have been prominent among the automatic instruments.

There has been a general improvement in the formulas for photographic processing solutions. A variety of fine-grain developers has been evolved, an investigation has been made of possible means for accelerating the development of films and papers, and it has been possible to develop certain types of film—not high-speed negative materials—at temperatures of 125 F, in a fraction of a minute.

Attempts to produce photographic prints rapidly, provided long life is not an important matter, have resulted in the development of stabilization processing techniques, in which the silver image is developed and the undeveloped silver halide is converted into a more or less stable complex. This results in the elimination of the need for fixing and washing.

There has been a very great increase in the use of processing materials in the form of powder packages or concentrated solutions. Years ago it was felt that the photographer was more interested in buying individual chemicals and compounding his own solutions. This is not so at the present time, with the availability of a great range of packaged chemicals of great reliability. Quite recently some developers have appeared on the market in the form of single powder packages. It had usually been necessary in the past to segregate components of the developer into different parts of a package, but it is now possible to avoid this in some cases, with an increase in convenience to the user. Rapid fixing baths employing ammonium thiosulfate in place of sodium thiosulfate (hypo) have grown steadily in popularity in the past 15 years. It began with Agfa Ansco Rapid Fixer and received considerable impetus with the launching of Edwal Quick-Fix in 1939. Today there are many photographic chemical manufacturers offering rapid fixers of this type in proprietary formulas. Also interesting has been the increasing availability and use of organic restrainers or anti-fog compounds which permit overage materials to be used with minimum danger of chemical fogging.

The war, of course, had a great influ-

ence on photography. The bulk of our knowledge of the enemy was derived from photographs. We cannot go into details on the many applications of photography in the military sphere, but the following list of subjects will indicate some of its diversity: mapping, reconnaissance by aerial photography, aerial flash photography at night, the stereo continuous strip camera, color and camouflage detection, the moving film magazine for image movement compensation, training, combat and gun camera photography, special photography in the tropics and arctic regions, underwater photography, and photography of the radar scope.

In the amateur motion picture field, the greatest changes have been the preponderance of color over black-and-white film, and the rapid increase in the use of 8-mm film. Quite recently the possibilities of adding sound to amateur movies, both 8 and 16-mm, by edge coating the film with a magnetic oxide striping have been explored. This is largely the outgrowth of development work by Marvin Camras at the Armour Research Foundation. A striping service has been made available by Reeves Soundcraft in New York and Hollywood and by the Eastman Kodak Company. Magnetic (and optical) 16-mm sound projectors are now available from RCA and Bell & Howell and more are on the way.

Photography is the handmaid of science and particular impetus was given during the war to its application to scientific and technological study. In the atom bomb tests and the wide range of closely associated nuclear studies, in the probing of the universe by the astronomers, in the investigation of structural defects, in the storage of information, in the study of high-speed events, and in a great variety of other fields, photography is playing an indispensable part.

The first fifteen years of the life of POPULAR PHOTOGRAPHY have witnessed photography in all its aspects growing at a rate not attained at any other time in its history. The interests of the amateur and professional photographers are just as responsible as those of the scientist in stimulating this. From the correspondence that swamps PHOTOGRAPHY magazine in the wake of each new development of more than passing interest reported, it is apparent that the photographic magazines, too, are playing an effective though indirect part in this evolution.

The editors continue to be amazed by the flood of new product news that keeps rolling in despite materials shortages and defense restrictions. What a dizzy time photographic editors are going to have in the next 15 years, if things go on at this rate!—

#### Photographic Credits

United States Navy—one photograph: page 43, top right.

United States Air Force—two photographs: page 43, middle left; page 232.

United States Navy—Johns Hopkins—one photograph: page 43, middle right.

Eastman Kodak Company—two photographs: page 43, bottom left; page 230.

Dr. Slack, Westinghouse Research Laboratories—one photograph: page 43, bottom right.



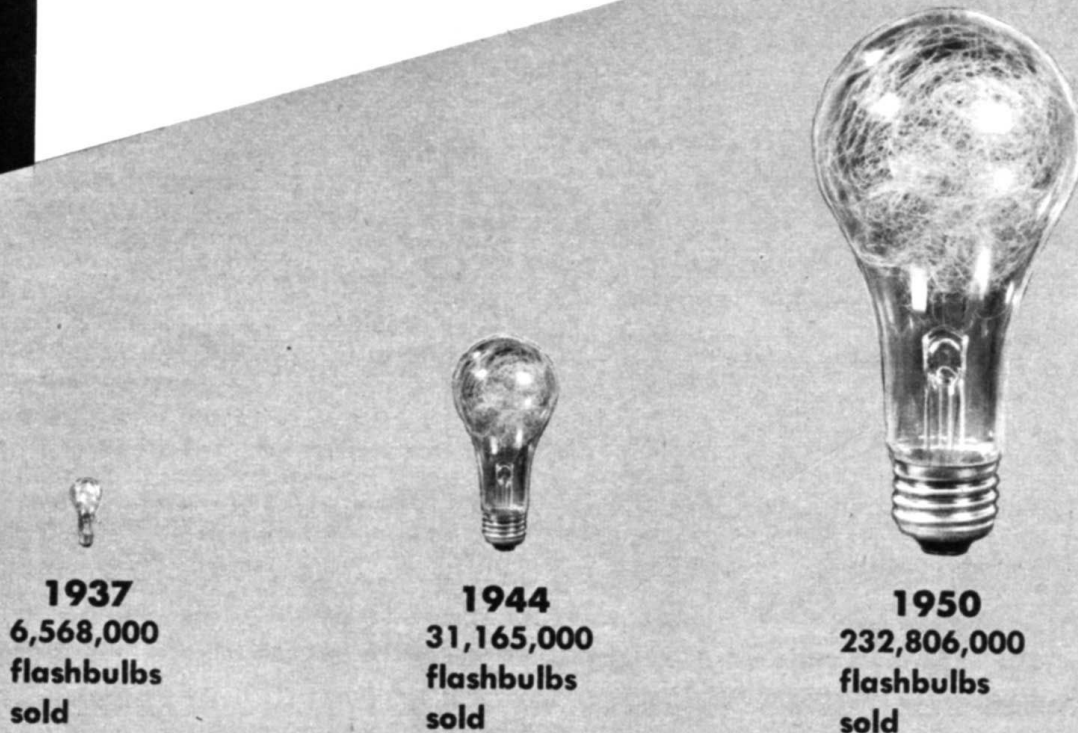


# WE LOOK BACK ON A GREAT ERA





## FLASH PHOTOGRAPHY AND HOW IT GREW



These figures do more than measure the amazing growth of flash photography—they also indicate the dramatic increase in all photographic activity.

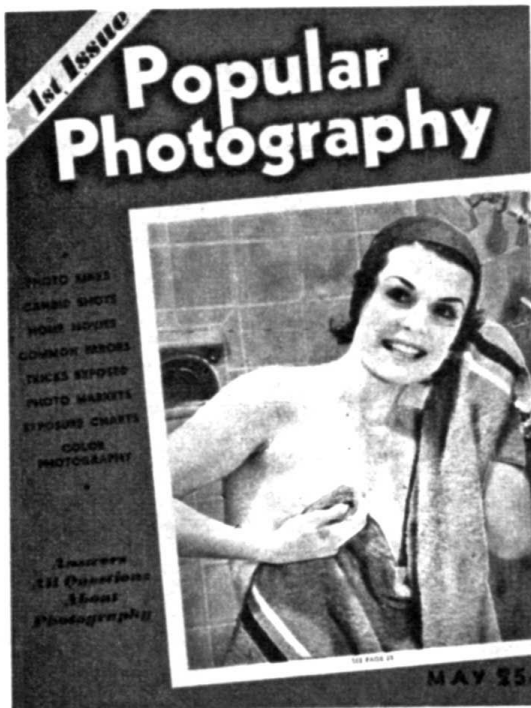
Symbolizing photography's popular appeal are huge crowd thronging National Photo Show in New York (left) and graph showing rise in sale of flashbulbs from 1937 to 1950 (above).

**Our magazine grew up in photography's greatest age of expansion—  
—as a hobby for millions, a vigorous art, a mammoth industry**

**W**HEN POPULAR PHOTOGRAPHY first hit the newsstands in 1937 it came as a journalistic trail-blazer, a magazine dedicated to the proposition—daring in those days—that photography belongs to everyone. “Pop Photo,” as it soon came to be nicknamed, devoted many of its pages to lively how-to-do-it articles, and spread the cheerful gospel that photography is a lot of fun. But it did more than that, or it never could have held the lead against the many imitators that soon arose.

From the first, POPULAR PHOTOGRAPHY chronicled the passing photographic scene, threw a spotlight on outstanding personalities in the field, reported the exciting new developments that came pouring from research labs and production lines of a fast-growing industry. It was a dynamic era of expansion for photography as a hobby, an art, and an industry. Just how tremendous that growth has been is shown by market surveys, sales figures,

# POPULAR PHOTOGRAPHY:



Our first issue, May, 1937, boasted cover in full color, promised answers to all questions about photography. It sold out in 48 hours.

**T**HE MAY, 1937 issue of POPULAR PHOTOGRAPHY was a sell-out. Why did it win such hearty approval from camera fans? The answer is not hard to find. Volume 1, Number 1 sounded a fresh note in photographic journalism, offered stimulating you-can-do-it-too articles and illustrations, made photography seem easy and enjoyable. Let's take a closer look at that first issue.

For one thing, POPULAR PHOTOGRAPHY boasted an eye-catching cover in full color—the first time a camera magazine ever had tried such a thing. And the teaser list of contents, printed in black against a green background, promised the reader a mouth-watering bill-of-fare: *Photo Kinks, Candid Shots, Home Movies, Common Errors, Tricks Exposed, Photo Markets, Exposure Charts, Color Photography.*

Inside, delighted camera fans found just the kind of practical, inspirational stuff they'd been hungering for—76 pages of it. The editors were generous: they squeezed in 22 feature-length articles plus more than 30 shorter items ranging from one-paragraph quickies to 300-word stories with pictures. They also ran more than 150 black-and-white illustrations plus several line drawings.

The result was a camera magazine quite unlike any existing publication. In 1937 most photographic

**continued**  
from preceding page

and—less exactly but more dramatically—by the impact of photography on every phase of modern life.

Here is the picture: In 1937 about 17 million cameras were in active use in the United States, according to a reliable estimate. Today the number is estimated to be anywhere from 30 to 50 millions, with nearly three-fourths of America's 43½ million households owning or using one or more cameras. This means that cameras have become almost as common as refrigerators or bathtubs!

Or compare the sale of flashbulbs. According to a recent survey by Sylvania Electric Products, the total consumption of flashbulbs in 1937 was about 6½ million. By 1950 the annual total had leaped to the startling sum of 232,806,000—an increase of more than 35 times!

Look at the yearly financial statement of Eastman Kodak Company, a mammoth segment of America's photographic industry. In 1937 the company reported net sales of \$136,114,878.42. In 1950 the total reached \$461,389,980.00. Although these figures include the sale of some non-photographic products, they do point out how greatly the photographic market has expanded.

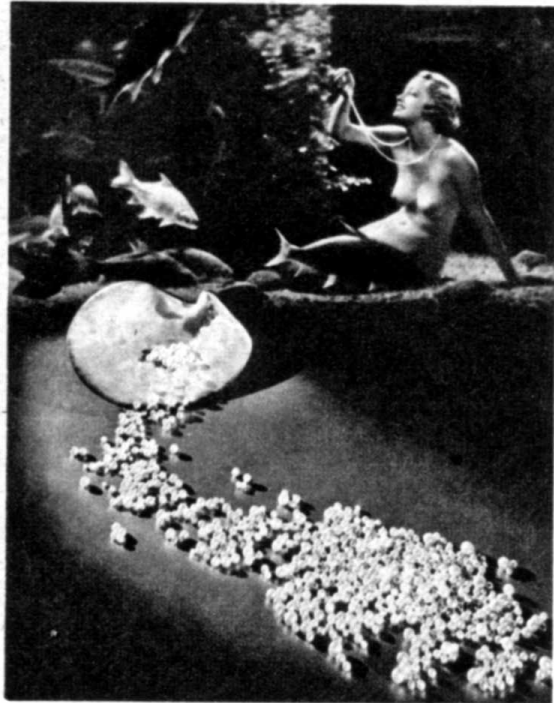
But that's not the whole story. To these figures add motion pictures, photographs made by professionals, microfilms, X-rays, the mighty volume of photography applied in industry and research. Think of the millions of pictures printed every day by newspapers, magazines, advertising agencies,

# VOLUME ONE, NUMBER ONE

journals were aimed at special little groups—salonists, technical-minded experts, and advanced amateurs. A great void lay between them and the millions of casual snapshooters who were contented with simple record shots of friends, family, and vacation scenery. How great that void was, not even the editors realized until they began hunting for pictures to fill the first issue. Aside from salon prints, most of which were too tame, they found very little they could use.

So the staff took to making its own photographs, experimenting with new ideas, manufacturing innovations right in "Pop Photo's" studio. They glamorized the unglamorous, thus introducing a camera activity that has continued in popularity through the years. They, for instance, brought in nondescript characters off the street, dressed them up in the studio to look like important personages. The first cover (reproduced with this article) itself was an experiment.

What the editors did in the studio, they described in the magazine. They felt that cameras were not being used enough and guessed that perhaps the reason lay in the scarcity of picture-making ideas. So they spread ideas around, pointed up the many possibilities offered by photography as a hobby, and tried to stimulate (*Continued on page 223*)



**Pearl Study**, famous montage by Harry K. Shigeta, ran in picture section of first issue. He combined three negatives to make this print.

educational institutions. Put them all together and the staggering total gives you some idea of photography's immensity and importance today.

POPULAR PHOTOGRAPHY kept pace with this mushrooming field and grew along with it. Forty-five writers and sixty-eight photographers, mostly from Chicago, contributed to the first year's issue. But it wasn't long before the list of writers and photographers grew to several hundred annually, and contributions poured in from the four corners of the world. The magazine gradually began to de-emphasize the "Popular" in its title, and eventually (with the January, 1952 issue) became simply PHOTOGRAPHY.

From the start, POPULAR PHOTOGRAPHY kept a sharp eye peeled for new talent, and the magazine was among the first to recognize and encourage many little-known photographers who later became world-famous as masters of the camera. In December, 1937, appeared a story about one Arthur Fellig, who, the writer pointed out, "is known to his colleagues as Weegee." (Today everybody knows Weegee, but who remembers him as Arthur Fellig?) In April, 1938, the magazine printed a sequence of five pictures showing a summer flirtation reflected in a pair of sunglasses. The contributor?—David D. (for Douglas) Duncan, at that time an "amateur photographer of Coral Gables, Fla." During World War II, POPULAR PHOTOGRAPHY beamed its editorial spotlight on a daring young combat photographer, put him on its staff as the first war correspondent ever accredited to a photographic magazine. Today he is acclaimed as (*Continued on page 224*)



# We Look Back On a Great Era

(Continued from page 41)

one of the truly great contemporaries. His name is W. Eugene Smith.

While scouting for new talent the magazine did not neglect the top-flight photographers of the time. Among the big names featured frequently on its pages were Edward Steichen, Alfred Eisenstaedt, Margaret Bourke-White, Anton Bruehl, Cecil Beaton, William Mortensen, George Hurrell, and many another photographic giant. Photography as an art and a means of communication was passing through a metamorphosis; **POPULAR PHOTOGRAPHY** both mirrored, and in some measure, stimulated the change.

Until the mid-thirties American journalists thought in terms of words rather than pictures. But with the birth of *Life* just six months before **POPULAR PHOTOGRAPHY**'s first issue, and *Look* in February of 1937, the picture magazine came into its own. Before long, many newspapers and magazines became more and more photography-minded, experimented with better ways of reporting the news through pictures, used photographs as never before. A new term was coined to fit this new kind of reporting—photo-journalism. And hard-headed editors began to concede that a man with a camera could be as valuable as one with a typewriter. The photographers themselves began to organize on a national scale: those years saw the growth of such influential groups as the National Press Photographers Association and the American Society of Magazine Photographers.

Not only in journalism was photography winning a greater measure of recognition. Some forward-looking museums and educational institutions began to build permanent collections of photographs and exhibit them on an equal footing with paintings. In 1940 New York's Museum of Modern Art founded a department of photography which made brilliant progress under the guidance of such people as Nancy and Beaumont Newhall, and Willard D. Morgan. When the museum opened a separate photography center in 1943 under the directorship of Morgan, **POPULAR PHOTOGRAPHY** hailed the event as a major cultural contribution. An even more exciting era began when Edward Steichen was appointed director of photography in 1947. Under Steichen's imaginative leadership there appeared a long series of

stimulating—and frequently controversial—exhibits that jolted both photographers and public into new ways of thinking. Today many other museums including Chicago's huge Art Institute run photographic shows that bring the public thronging.

Colleges and universities added photography to their curricula, and dozens of schools sprang up offering full-time courses in photography as a profession. They found no lack of students. The new interest in the wonder-working camera was both deep and wide-spread.

The public's enthusiasm was demonstrated by the success of huge trade shows where the industry displayed its bright new equipment and materials. The National Photo Show in New York, an annual photographic fair first held in 1947, draws enormous crowds each year.

How has all this ferment affected that nebulous character, the Average Camera Fan? Joseph G. Dombroff, a leader in the photographic industry, makes some interesting comments on that score. In the first year of **POPULAR PHOTOGRAPHY**'s existence, he said that photography was growing "by leaps and bounds because nowadays it's a hobby in which everyone can indulge himself—rich or poor, young or old." Interviewed for this issue fifteen years later, he was just as enthusiastic but inclined to feel that the hobby had matured.

"Today's camera store customer is more conversant with the merits of equipment than were his pre-war predecessors," said Dombroff. "He understands the mechanics better and is fairly discriminating in his purchases." Certainly the rise in sales of second-hand equipment indicates a new kind of customer—the photographer who knows values and wants the best but has to go easy on his pocketbook. And today's camera fan is much more style conscious than ever before.

Camera stores themselves have undergone a change. Within 15 years many small outfits have grown to huge proportions and now carry on a world-wide mail-order trade as well as a brisk local business. Modernization programs have put camera shop fronts and interiors on a par with important stores in other fields. To succeed, the dealer has to keep up with new products and developments with the result that nine times out of ten he becomes an expert able to hold his own with most professional photographers. Customers are demanding greater services

**PHOTOGRAPHY**

—and are accustomed to getting them.

Picture-taking habits, too, have varied during the past 15 years. The miniature camera won tremendous popularity, hit a temporary slump, and now is back in favor again—largely as a color camera, this time. The twin-lens reflex also won a large following both among amateurs and professionals. Flash photography opened exciting new vistas for camera fans, and millions of them adopted the technique. Today you can hardly find a camera in any price range that doesn't offer flash synchronization. Electronic flash units, first adopted by professionals for sport and action photography, have been reduced in bulk and price until they now are well within the reach of many amateurs.

Color was big news in 1937 and the fever is still running high. The use of color film by amateurs snowballed so greatly that today, it is estimated, at least 10 percent of all pictures taken are in color, and fully 90 percent of all movies shot by America's 3 million movie-makers are on color film. From the beginning, POPULAR PHOTOGRAPHY recognized and encouraged this trend by giving as much space as possible to color reproductions. The magazine was one of the first to use a color transparency for its cover, and recently opened its pages to 35-mm and larger color slides from readers. The overwhelming response to this last offer gave clear proof that devotees of color photography are as enthusiastic as they are numerous.

Another significant trend is stereo's amazing rebirth after years of gathering dust in grandma's parlor. Three-dimensional photography promises to open an entirely new field by drawing from groups that are now indifferent to photography. The biggest hitch today is the comparatively high cost of stereo equipment, but it's almost certain that the next few years will see new, lower-cost stereo cameras and three-dimensional projectors offered to a public that is eager to buy.

With all this activity it was only natural that camera fans should want an outlet for their work, a place where they could win recognition and a public audience. POPULAR PHOTOGRAPHY gave them one such opportunity in 1939 when it announced the first of its contests. Prizes for both black-and-white and color photographs added up to \$3,700 in cash and merchandise. The winning pictures were reproduced in a giant issue that included eight pages of full color and seventy black-and-white prints. The response?—enthusiastic, so enthusiastic, in fact, that the magazine has repeated the contest every year, except during World War II. To date something like half a million pictures have been submitted for the annual prizes which have run as high as \$60,000 for a single contest.

Yes, these have been exciting times—15 years of progress, growth, and vigorous activity. Photography is such a vital field, touching as it does every phase of life, that it holds a never-ending fascination. We of PHOTOGRAPHY are happy to have been part of its greatest era, proud to have worked with the men and women who made such progress possible.—►

**May, 1952**