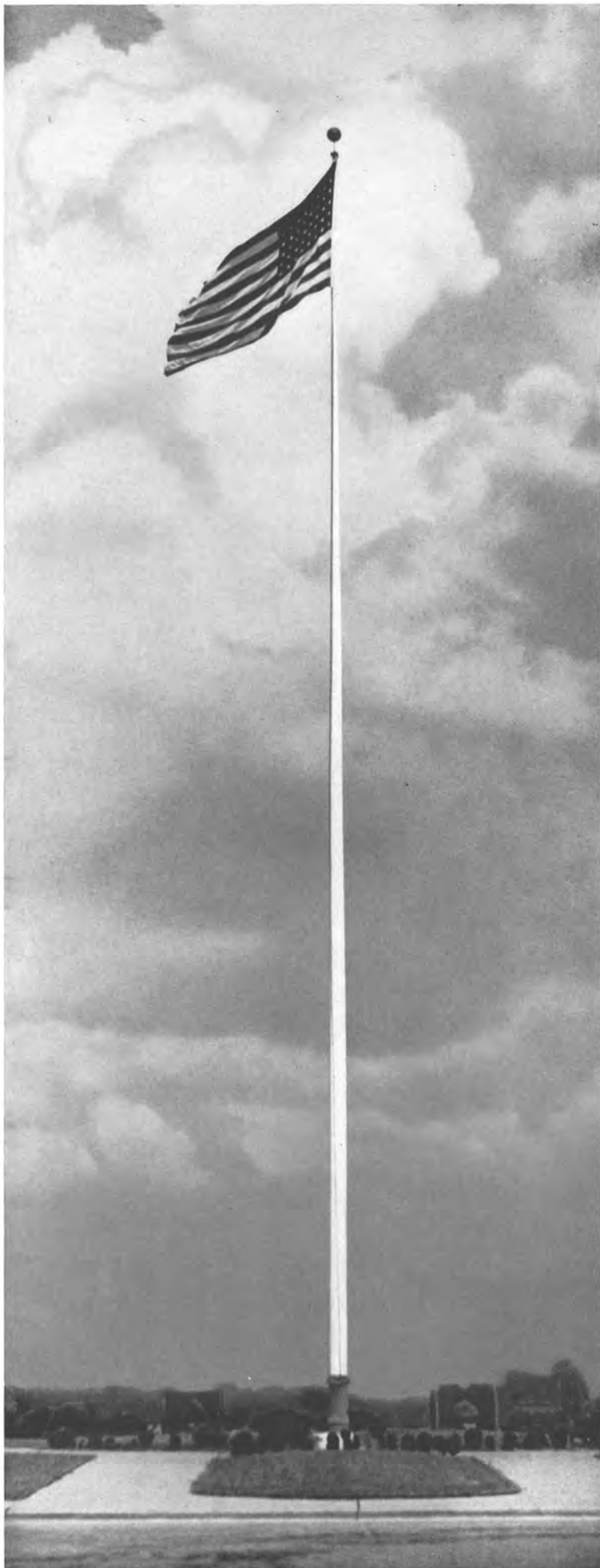


KODAK

*A Magazine
for
Eastman Employees*



FEBRUARY ★ 1944



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"Old Glory": A photograph by Captain James P. Reidenbach (Hawk-Eye), who tells us about photography at Fort Knox on page 12

A Report on Photography in 1943

As prepared by Dr. Walter Clark and published in fuller form in *Popular Photography* for February

PHOTOGRAPHY HAS GONE TO WAR. We should like to think that this is the last annual report on the progress of photography to be written while the war is on. The new knowledge that has been gained in adapting photography to the requirements of war will undoubtedly be applied to improving it for the amateur photographer in the era of peace.

Varied Output

The country's camera works and lens plants employ highly skilled workmen and accurate machinery, and it is natural that they should have been expanded and their facilities devoted to making instruments of war—telescopes, height-finders, and range-finders, parts of bomb sights, artillery-control devices, and so on. But, in addition, they are still making large numbers of the cameras which were available to the amateur in peacetime. They are being made, however, for Service use—in particular, certain types of miniature and amateur motion-picture cameras and press cameras—and, in addition, new cameras have been developed for special purposes.

The aerial camera is the eye of the Army and Navy, and the particular requirements of modern warfare have resulted in the development of new types of lenses. We have read of telephoto lenses of 40-, 50-, and even 60-inch focal length, for use in very high-flying aircraft, and of lenses of extra-wide aperture, $f/2.5$, in 7- and 12-inch focal lengths. These are made possible by the development of improved methods of making optical glass, particularly the Kodak glass of very high index that represents



Photo by U.S. Army Signal Corps
For such emergency examinations as the one pictured here, for routine examination of men for the armed forces, and for a wide variety of other uses, x-ray film is "out front"

probably the greatest advance in optical glass-making in over fifty years. A new advance announced during the year was a greatly improved lens cement. Formerly, the different glasses in a lens were held together by Canada balsam, but this did not stand up well in the extremes of heat and cold encountered in operations in different parts of the world and in the air. Lenses became broken, cloudy, and discolored. The new cement, developed by Eastman,

seems to have withstood every condition of extreme heat, cold, and humidity. There have also been marked improvements in the methods of designing lenses. All of these factors have put the United States in the forefront of lens-making.

The extraordinary advance made in films during the past ten years or so is being continued. Speeds undreamed of in the early thirties are now being achieved in special films for night photography, and the speed



Up goes a bridge, and the camera makes the record: taken in Italy—of the German-held railway bridge at Orvieto, near Rome—this aerial shot is a good example of photo reconnaissance and, incidentally, the bomb-burst pattern is near perfect, too

of infrared films has been so much improved that it approaches that of the faster panchromatic films. Moreover, they keep as well as the panchromatic films, so that there is no need to worry about special cooling more than is desirable for all fast films. This matter of film keeping is very important, especially when it is realized that films are now being used in all parts of the world from the Arctic to the Tropics.

Exposure meters are still only made for the Services, but the American Standards Association has brought out a very good exposure computer. First designed for the Army and Navy, it is now available

for all. It was compiled by a committee representing all interests and varieties of experience. Computers for developing film have also been designed and, in general, we may expect that after the war there will be a plethora of data sheets, computers, and other devices for aiding the keen photographer.

And what of color photography? Kodachrome is being used by the Army and Navy for combat and training photography in motion-picture form, and in cut-sheet and miniature sizes for still photography in a great variety of applications. Minicolor prints from miniature camera Kodachromes are being made by the tens

of thousands each week. For the amateur using the normal roll-film camera, there are Kodacolor film and prints. The color processes which were in use prior to 1943 are thus very active. But, during the year, new color materials were announced. In May, the Army and Navy released information about Aero Kodacolor Reversal Film, stating (we quote from *Life*): "Perfected and first used by the Army, it is also used extensively by the Navy in the South Pacific." Captions for published reproductions from the film state that it can be used at a shutter speed of 1/150 second at $f/8$. This is a great advance in speed for a color film. Moreover, it can be processed in the field in the normal equipment used for black-and-white developing, and the trouble due to haze when photographing from high altitudes has been overcome by use of special filters.

Strip Work

A very interesting new development announced by the Army Air Forces was a shutterless continuous-strip camera. Used on low-flying, high-speed planes, it makes not a series of separate pictures on a long strip of film but one uninterrupted long picture on the roll. In the camera, the film is drawn continuously across a narrow slit at a speed which is synchronized with the speed at which the image of the ground passes across the film. The shutters of normal cameras cannot operate at a short enough speed to permit sharp pictures from low altitude in very fast aircraft. Sharp pictures can be obtained in the strip camera under such conditions. Color photographs have even been made in this way. The long negatives are printed on a special printer—the so-called Sonne printer—onto a continuous roll of paper, and by using paper with a waterproof base, the time for producing prints is reduced to a few minutes. The printer can, naturally, be used for printing from normal rolls of aerial negatives carrying a succession of separate photographs.

A new laboratory, housing the most modern and efficient photographic facilities available, and known as the Naval Photographic Science Laboratory, has been opened at the Naval Air Station at Anacostia. It will be

(Continued on page 16)

Thanks to the magic of chemical research, a grim peril of the sea to sailor and airman is beaten

From Salt to Safe in 20 Minutes

SALTY ARE THE SEVEN SEAS—and therein has lain dread peril for many a hardy mariner, ever since that first daring Phoenician in his frail bark ventured out into the broad Atlantic more than two thousand years ago. The peril: thirst—that agonizing thirst so eloquently described in Coleridge's "Rime of the Ancient Mariner."

But the words, "Water, water, everywhere, nor any drop to drink," will not in the future hold for the shipwrecked sailor or the flier forced down into the ocean the fears they have held in the past. For, thanks to the magic of chemistry, a desalter has been perfected, and is already in quantity production, that makes sea water safe to drink. Kodak supplies to the manufacturer of the new desalination outfit—the Permutit Company—certain high-purity chemicals that are used in the preparation of this potential lifesaver.

The desalination outfit, which makes sea water potable in less than twenty minutes, has been approved by the Naval Medical Research Institute after extensive tests under actual operating conditions. It has been

adopted by the U.S. Army Air Forces and the Bureau of Aeronautics, Navy Department.

Designed specifically to prevent death from thirst and tissue-dehydration among fliers drifting on rubber life rafts, after being forced down at sea, the chemical desalter is carried in the form of briquets the size of a small candy bar. A plastic bag equipped with a cloth filter, drinking tube, and neck cord completes the outfit.

In Use

The downed flier scoops up sea water in the bag, drops in a briquet, which quickly disintegrates, and seals the bag. The chemical particles absorb the salts, and they are retained by the cloth filter as the flier sucks the water through the tube. Each briquet weighs only one-sixth as much as the drinking water it produces, and takes up only one-tenth as much space.

Chemical methods of converting sea water to drinkable water have been sought by scientists for centuries. Since man first went to sea,

thousands of shipwrecked sailors—and more recently airmen, too—have suffered and died from thirst, have known the awful frustration of "Water, water, everywhere, nor any drop to drink."

Attention has been focused on the problem of water supply for life rafts by the vast amount of over-water flying and fighting, especially in the Pacific war zones, where two and three weeks of "raft-sitting" has become commonplace. The Rickenbacker and Dixon-Aldrich-Pastula sagas describing the tortures of thirst aboard life rafts showed that lucky catches of fish, birds, and rain water were all that prevented their death from thirst. Medical opinion holds that water is more important than food for sustaining life, for dehydration of tissues is usually fatal.

Thus, in the new chemical briquet in which Kodak high-purity chemicals play their part, the wizards of the chemical laboratories have made yet another vital contribution to those who brave the perils of sea and air.

Here, in a demonstration of the chemical briquet that makes sea water potable, a sailor drinks "converted" sea water from the plastic drinking tube. Briquets weigh only one-sixth as much as the drinking water they produce, occupy only one-tenth as much space—highly important to airmen. The plastic bag from which the sailor drinks holds a pint. Below is the Permutit Seawater Desalting Kit, as made for the U.S. Navy. The picture at right, copyright by Popular Science Publishing Company, Incorporated, is published in Kodak by the kind permission of "Popular Science"



Panorama

WITH A LOOK BACK

GENERAL James Oglethorpe founded the city of Savannah, Georgia, on February 12th, 1733. The general had come from England as governor of Georgia, was victorious against the Spanish. . . . Daniel Boone, hunter, trapper, and pioneer extraordinary, was born on February 11th, 1735, in Pennsylvania. . . . On February 10th, 1763, Canada, by the Treaty of Paris, ceded to England, France retaining in this region the islands of St. Pierre and Miquelon. . . . Napoleon made his getaway from Elba on February 26th, 1815, but unfortunately, for him, ran into a soldier named Wellington a few months later, at Waterloo. . . . Florida, discovered and named by Ponce de León in 1513, ceded to the United States on February 22nd, 1819. . . . The First Confederate Congress met at Montgomery, Alabama, on February 4th, 1861, and four days later adopted a provisional constitution for the Confederate States. The states were: Alabama, Arkansas, North Carolina, South Carolina, Flor-

ida, Georgia, Louisiana, Mississippi, Tennessee, Texas, and Virginia. . . . Jefferson Davis was inaugurated as president of the Confederate States on February 18th, 1861. . . . The U.S. Weather Bureau opened its doors for prognostications on February 9th, 1891, taking over and expanding the work done up to that time by the Army's signal service. . . . On February 7th, 1892, just 25 years after Alexander Graham Bell invented the telephone, the first hookup between New York and Chicago was established. . . . On February 8th, 1904, the Japanese attacked the Russians at Chemulpo and Port Arthur, and the Russo-Japanese War was on. . . . On February 15th, 1898, the battleship *Maine* was blown up at Havana.

"Long Tom" Is Tough

Army Ordnance's famed 155-millimeter "Long Tom" gun, the hard-punching Rommel-router of the North African and Mediterranean campaigns, is spearheading Lieutenant General Mark W. Clark's steady drive up the Italian peninsula with

an incessant hail of high-explosive projectiles. The "Long Tom" is equipped with the Kodak-made M-8 Panoramic Telescope.

In the battle of Naples and in heavy artillery dueling on the Volturno River line, batteries of reliable "Long Toms" outranged the best Nazi field pieces, poured murderous fire into Marshal Kesselring's backpedaling defense line, and were so accurate that they smashed his bombers, fighters, and protective gun emplacements on airfields fifteen miles away.

The "Long Tom" is mounted on a split-trail carriage, which permits 65 degrees elevation and 60 degrees traverse. The carriage is equipped with six giant pneumatic tires and air brakes, can be towed behind a fast-moving truck or tractor. Weight of the gun in traveling position is fifteen tons.

Pictures Overseas

American soldiers in the African theater may miss many of the comforts of home, but there is one luxury which they may indulge to their hearts' content. They may view the latest Hollywood movies at approximately the same time that they are released in this country.

Central African Film Exchange, or "CAFE," as it is popularly known, covers approximately seven thousand miles of central and western Africa with its five film circuits and provides nightly entertainment for the personnel of the Air Transport Command's chain of air bases. Each week, three pictures are sent out by air on the five circuits. After the films have been shown at all the bases on one circuit, they are returned to headquarters and are started on the rounds of another. In all, about thirty theaters are supplied in this way with complete weekly programs.

Regular transport planes generally carry the films. Unavoidable delays occur at times, and then it is up to the special-service officer at the base to see that films are carried to the next circuit stop. Bombing and fighting planes are pressed into service occasionally to act as delivery agents. Bound on a mission which will carry them in the vicinity of the next base on the list, they often

Tribute

The following memorial has been inserted by hospital officials in the "Book of Remembering," of the Hospital on the Hill, Harrow. Mr. Webb's tragically sudden death was recorded in KODAK for May, 1943.

IN THE EVENING of April 16th, 1943, Mr. William R. Webb died suddenly while talking with friends with whom he loved to talk, possessing as he did the genius for friendship. He seemed to be in the prime of his powers when death came like a thief in the night, came in the midst of springtime in England which he loved. . . . Everywhere he won respect and affection, such the charm and distinction of the man. In Harrow he was esteemed and in London also, esteemed and honoured in all the circles in which he moved. A great sorrow fell upon the Kodak works and the Kodak workers when death brought silence to that warm and gracious and pulsing heart of his. It was Mrs. Webb's desire, feeling that it would have been his own wish, that from the fund subscribed to pay tribute at his grave a gift should be made to the Hospital on the Hill with which the name of Kodak is intimately associated. It is fitting that one who devoted his life to science and to doing good among his fellows and in the township where his duties lay should be remembered affectionately and reverently and tenderly in this Book of the Hospital.

land there long enough to unload one of the 16-millimeter film cases.

At the present time, a library of some three hundred and fifty films is being constantly rotated and circulated throughout central Africa. In addition to regular feature pictures, there are newsreels, cartoons, community sings, and the much-favored slapstick comedies in the collection. Six new films are sent each week from New York, and those that have served their purpose are returned there.

Prized Present

"Japs Gave City Library Photos Army Uses Now" ran the eye-catching headline in the New York "World-Telegram," and here, with the kind permission of that newspaper, is the story:

Everybody knows about the wily Japanese.

Not everybody knows that two months before Pearl Harbor a Jap tourist agency here turned over five or six thousand photographs of Japan to the picture collection of the New York Public Library. There were shots of bridges, of subways, of foliage, of terrain, and many others illustrating Jap ways of life.

The Army Air Forces snapped them up and later fondly wrote Romana Javitz, superintendent of the collection, that they had been "of immense value in the prosecution of the war."

A famous but not so wily Fascist newspaperman once said the collection represented "the sweepings of civilization" and illustrated America's mania for "the worship of useless things."

There's a footnote to that comment. Early last year the War Department requested of Miss Javitz "everything we'd accumulated for years on North Africa." Subsequent developments over there proved the files had been put to good use. The collection's 1,050,000 pictorial records—touching a great variety of subjects, including the color of a flea's eye—have gone to war.

Not only do the Army, Navy, Air Force, numerous Government agencies, and certain individuals in the War Department use the file, but men in distant camps write about animals for insignia or for authentic background for their camp shows.



International News Photos
Most battle plans of today are "built" on aerial photographs: here, Secretary of War Stimson is shown during a visit to England as he views samples from the photo-reconnaissance pilots' varied and extremely useful "album" of the European battle areas

Army and Navy artists all over the country have asked for pictures on America's past battles for incorporation into battle murals in barracks and mess halls.

The Quartermaster Corps wanted pictures illustrating food waste and examples of historical battles lost for lack of food. Camouflage units constantly want pictures of animals, the foliage of trees and shrubs.

The collection, says Miss Javitz, has had but one spy scare. A woman looking "like a cross between a poor artist and a housewife" once informed her the man sitting next to her had been sorting pictures of Hitler into two piles—those flattering and those not. The woman went on to say she'd tipped off the FBI before, knew a

spy when she saw one, and was waiting for Miss Javitz to do her patriotic duty. A check revealed the man was a cartoonist for one of the comic strips.

War Switch

What on earth can a pickle factory do to aid the war effort? A Boston pickle works which asked this question is now pickling incendiary bombs instead of cucumbers to meet a requirement of the Chemical Warfare Service of the Army Service Forces for a special preservative for incendiaries. The factory was converted within 72 hours, its pickling vats filled with an acid that provides the necessary coating for bombs, and production was soon ahead of schedule.

Colder Than . . .

Alutian Williaws!

At least, that's how one man has described the icy atmosphere of this testing room at Camera Works

"Well, son, I tell you . . . if you went up to the North Pole in the dead of December and stripped to the drawers and picked out the biggest iceberg up there and dug a hole right down to the heart of it and crawled in that hole and put a handful of snow under each arm and sat on a block of ice and et a dish of ice cream, why, you wouldn't be nowhere near as cold as you'd be in Peck Slip in a sheepskin coat with a box fire in the gutter."

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This aerial camera, made by Kodak for the Army, soon will be photographing enemy territory from altitudes of 40,000 feet and more. Here, in the Arctic Chamber at Camera Works, it is about to undergo low-temperature tests more severe than any it will meet in actual use. Other climates are also offered by the weather-wise Camera Works



The Kodak-made M-12 panoramic telescope, an important instrument of war, is brought to high-altitude temperature in the Arctic Chamber. Thermocouple wires, leading from the telescope to a testing instrument, measure the below-zero temperature of the room

ESKIMO OUTFITS" are among the newest work uniforms at Kodak. They are worn in a section of the Camera Works where the temperatures range from 45 to 70 degrees below zero.

In this section, where modern ingenuity has thus duplicated the piercing cold of polar regions, Kodak's war products get a scientific "third degree" to show how they will "take it" when used in the Arctic and at altitudes of 40,000 feet or more.

The men who put the products through rigid—and frigid—tests wear sheepskin outfits. Each outfit, consisting of a fleece-lined coat with fur-trimmed parka hood, lined trousers, thickly lined boots, and long, lined leather mittens, weighs 18 pounds.

Time Limits

With all of this protection, the men are allowed to work in the new climate-testing room only three minutes at a time, unless they wear rubber face masks. When wearing the masks, they may stay as long as 45 minutes at one time and may make repeated tests during the day.

Aerial cameras, aiming circles and other fire-control instruments, navigation instruments for aircraft, portable darkroom equipment, oil for use in instruments, parts, fabrications, complete and partial—all these and

many more items are put through the "torture chamber" to see how they will react when they get into the stratosphere or into the Arctic.

The size, or mass, of a product determines the length of time it must stay in the climate room. This may range from two hours to several days.

The Arctic Chamber is one of three product-testing rooms recently completed by Kodak. Others are the Tropical Chamber, kept at 96 degrees Fahrenheit with a relative humidity of 85 per cent; and the Sahara Desert Chamber maintained at a temperature of 125 degrees Fahrenheit with a relative humidity of 12 per cent.

Parts, assemblies of parts and complete products are taken from the production line periodically for climate-testing, to assure maintenance of quality. Tests are made for durability, corrosion, oxidation, degree of contraction and expansion, and for ability to withstand salt spray, direct rainfall, and other conditions.

The transplanted-climate rooms are large, insulated cabinets with airtight doors. An anteroom or air lock, precedes the Arctic Chamber to enable persons entering to become acclimated gradually.

Similar in operation are a series of climate-testing rooms at Kodak Park, where tests of photographic products run from three hours to three years.

To Darken Berlin and Tokyo Skies!

Demands of precision-bombing technique are described in official War Department release to KODAK

ACCORDING to the theory of aerodynamics, and as may be demonstrated through experiments, the bumblebee is unable to fly. That is because the size, weight, and shape of his body, in relation to his wing-spread, make flying impossible. But the bumblebee, being ignorant of these scientific truths, goes ahead and flies anyway—and makes a little honey every day—on the side!

This excerpt, from an old magazine clipping which he had come across as a student flier, was read recently by Brig. Gen. James M. Bevans, Assistant Chief of Air Staff, at an Induction Ceremony of the Army Air Corps in New York City.

“To you young men of seventeen,” he went on, “I am not implying, from the words of that old clipping, that you can learn to fly even if you ignore the rules or the truths of flying. But I do imply that you need not be supermen today to learn to fly, navigate, or bomb. Today, our airplanes are mightier than ever. They fly faster. They climb higher. They carry more bombs and guns. All this



Official Photograph, U.S. Army Air Forces
Important equipment within a plane is “interphone,” the telephone system by which all members of the crew may be contacted by the pilot. Here, the navigator of a Beechcraft is “hooked up” with his pilot by interphone, as he takes readings from dials at left

takes plenty of skill and perfect instruments. Plenty of training, plenty of hard work to master the details involved in flying, bombing, and navigating is necessary. American boys in our Air Forces are trained for

the ultimate purpose of darkening the skies over Berlin and Tokyo. But your training goes deeper than that.

“It is the American creed and purpose for our planes to destroy specific military objectives. We and our Allies do not kill civilians wantonly and at random. That is why you have a hard job ahead mastering your navigation, your bombing, and flying to pin-point precision.”

Crews of our big bombers work as a team, their mutual trust, respect, and confidence deepening as the number and danger of their missions mount. They are taught to handle each other's jobs, so that they can take over if necessary and successfully complete the mission. This is particularly true of the pilot. From the moment the student officer takes his place in the copilot's seat, until the day he is permitted to take over the controls in long-range, cross-country hops, he wrestles with all kinds of problems, mechanical and tactical, under conditions simulating actual combat operations.

If the navigator is killed or incapacitated, it is the duty of the pilot



Official Photograph, U.S. Army Air Forces
Radio links this jeep with a scout plane high over Mather Field, California. Working as a team, the wide-visions plane and sturdy jeep get places—and results—mighty quick!

(Continued on page 18)



"Photo Science Lab," at the Naval Air Station in Anacostia, D.C., is no misnomer. Photography is a science in this fully equipped establishment, where, night and day, a full staff of expert technicians, both officers and enlisted men and women, is at work. The building seen at the right houses the Navy's most modern and extensive photographic equipment.

Pictured left: aerial film from battle fronts all over the world—recorded for expert scrutiny—is dried on rapid, automatic blowers in lengths up to fifty feet.

Left below: part of a large complement of enlisted personnel who process and handle thousands of negatives and prints each day in the "still" division. Here, large tank washers and automatic dryers finish photographs in professional style



Highlights of Great

THE VALUE of photography in modern warfare was given particular emphasis, some time back, by the Navy's decision to build a great photographic science laboratory—a laboratory completely equipped for every type of photographic work.

Today, a handsome 3-story structure, covering approximately an acre of ground, has been completed at the Anacostia Naval Station. Perhaps the most elaborately equipped laboratory of its kind in the world, it offers imposing evidence of the Navy's foresight in preparing to do its tremendous wartime job. This new building is also another expression of Kodak's all-out war effort, for the Navy selected Kodak to act as architect and engineer for the project and to procure the equipment chosen by the Navy to be installed.

Within this single structure, every facility for making still and motion pictures and for interpreting and showing them is available. Complete processing equipment, provision for film storage and records, and the most modern photographic research and testing facilities have been provided.

Highlights of the Laboratory are its completely sound-proofed screening room and its studio for making pictures, its photomechanical printing equipment and photostat installations, and its "military interpretation" rooms where combat and reconnaissance pictures from many fronts are reviewed.



A corner of the projection-printing room in the Laboratory is seen below. Here, projection printing is a fine art. Right, Specialist (photographer) Third Class Wanda Marie Tempas, a former Kodak Park employee, examines positive film—negative is on the reel in the foreground—in the process of preparing and checking film for release printing





A skilled test and repair man, at right, checks an F 56, 20-inch aerial camera. All new aerial cameras are tested here, and repairs are made on those returned from the front. The giant camera at the left is a K 18, 24-inch type.

The camera has many assignments in war—making reconnaissance photos, recording the havoc of air raids and bombardments, preserving for history the progress and salient battles of the whole struggle. The Photo Science Laboratory works on many phases of photography, including motion pictures and “stills,” in black-and-white and in color. Over 100,000 negatives are filed in huge fireproof vaults.

Below right, naval personnel at work on microfilm copies of naval records and important documents. These minute films are easily kept in fireproof vaults



Naval Photo Center

Chemicals are stored and mixed within the building, while a refrigerating system provides water of the proper temperature for processing operations. Optical test benches, test cameras, and other equipment have been installed to insure the highest quality in the Navy's photographic work.

A large reception hall, a cafeteria, and an officers' lounge contribute to the comfort of guests and personnel.

In the preliminary stages of designing and construction, Kodak prepared more than 9,000 detailed engineering drawings. Many members of the Laboratory's personnel were trained at Rochester by Kodak experts in the operation of the special photographic equipment.

While responsibility for the construction and equipping of the Photographic Science Laboratory was placed in the hands of Kodak technicians and engineers, the wholehearted cooperation of the Navy, the Bureau of Aeronautics, and other manufacturers of photographic equipment played an essential part in the successful completion of the project.

At the Norfolk Navy Yard, a somewhat smaller, but equally modern, photographic science laboratory has also been completed. Here again, Kodak was chosen to assist in the designing and construction in addition to serving as the agent for procuring the equipment selected by the United States Navy.



In the "Arctic Testing Room," center below, aerial cameras are tested at temperatures they must undergo on operational flights—as low as 90 degrees below zero. Next, a Moviola screens motion-picture film in miniature, allowing any number of previews necessary to produce a finished film. Right: a "giant camera" used in photoengraving work



The Editor's Page

FOR EACH, HIS PART

LINCOLN'S BIRTHDAY, 1942: The Japs occupy Masbate in the Philippines. Jap forces are within three miles of Singapore. The German battleships *Scharnhorst* and *Gneisenau* and the cruiser *Prinz Eugen* are spotted on their successful dash from Brest to Kiel.

Washington's Birthday, 1942: Japs claim complete control of sea routes between Australia and Java. Jap troops cut the Burma Road railway. General Douglas MacArthur is transferred from the Philippines to Australia. It is the eve of the President's address to the nation: "We and the other United Nations are committed to the destruction of the militarism of Japan and Germany. Soon, we, not they, will have the offensive; and we, not they, will win the final battles; and we, not they, will make the final peace."

Lincoln's Birthday, 1943: R.A.F. pounds Nazi bases for 24 hours. Red Army captures Krasnoarmeiskaya, thereby shaping a giant trap for 500,000 Nazis. United States planes rake Jap bases in the Solomons—and Nipponese radio announcers sound soberer, less cocksure. Marines begin recruiting women all over the U.S. America's famous 19th Bomb Group gets a new assignment

"Vital Contribution"

NOW THAT the Navy's new Photographic Science Laboratory at Anacostia is in operation, we have the world's most modern and most complete plant for carrying on all kinds of photographic operations and research.

This is a most significant fact, for photography plays a very important part in modern naval warfare. Used for reconnaissance by our fliers, as an aid to shipbuilding by our navy yards, as a training medium in our naval stations, and in many other ways, photography contributes greatly to the fighting strength of the United States Navy—now the mightiest in the world.

The designing and equipping of the Photographic Science Laboratory has been very largely the work of the Eastman Kodak Company. Much of the credit for the realization of this project must be given to Kodak.

All the technicians and photographic experts from Kodak who helped to bring the Photographic Science Laboratory into being—and their fellow Kodak workers, as well—can take a real pride in this vital contribution to the Navy's work and to the winning of the war.



COMMANDER, U.S.N.

after a year during which they have covered themselves with glory against the Japs.

Washington's Birthday, 1943: Allied tanks stab deeper into Africa gap at Kasserine Pass. Russia reports that Nazi casualties number 9 million. In the "Buy a Bomber" drive, Rochester subscribes for her third Fortress.

And in this February of 1944, we—the "effete democracies," those "stupid British and Americans," the "military idiots,"—are on the offensive everywhere.

Yes, the tide of battle has turned. But let's not forget that this is our fight. We are all in it—to the finish. And, in the words of Kipling:

"It ain't the individual, nor the
Army as a whole,
But the everlastin' teamwork
of every bloomin' soul."

On Its Own

An abandoned Flying Fortress of the U.S. Army Air Forces, set on automatic control and hopelessly crippled, refused to quit the fight and cost Nazi pilots many rounds of ammunition at a critical time during an air battle over Germany recently. According to the ball-turret gunner on another Fortress, just after laying its cargo of bombs on an important factory, the Fortress, "We'll Never Know," lost two engines. It was so crippled that the pilot could not have made a crash landing or have flown it back to a friendly base. As the plane dropped out of formation, ten parachutes billowed out. Then, on automatic control, the empty Fortress flew on. About a mile out of formation, German pilots, eager for a "kill," and unaware that the Fortress was a "ghost" plane, kept swarming in, one after another. When last seen, "We'll Never Know" was chugging bravely along on its own, ignoring the fighters and steadfastly refusing to go down.

★ ★ ★

Some of the facts presented by the Government in formulating the conservation drive are presented below:

Coal. A 10 per cent saving in the use of coal will add 65 million tons each year to the amount available for war production. Coal is vital in

the manufacture of iron, steel, explosives, and synthetic rubber, and in the operation of railroads and the generation of electricity.

Oil. Last winter, the fuel-oil problem was largely one of transportation; this winter, actual shortages are expected. Economy in civilian use of oil not only relieves the drain on supply but the strain on transportation. Increased quantities of petroleum products are needed for war purposes—a destroyer burns 3,000 gallons of oil an hour.

Gas and electricity. Conservation of these means a saving of coal and oil. A 10 per cent reduction in use of electricity would save over 4 million tons of coal and more than 75 million light bulbs.

Water. Manufacture of steel, gunpowder, guns, planes, tanks calls for large quantities of water. Population shifts to industrial areas have added thousands of new consumers to city water systems.

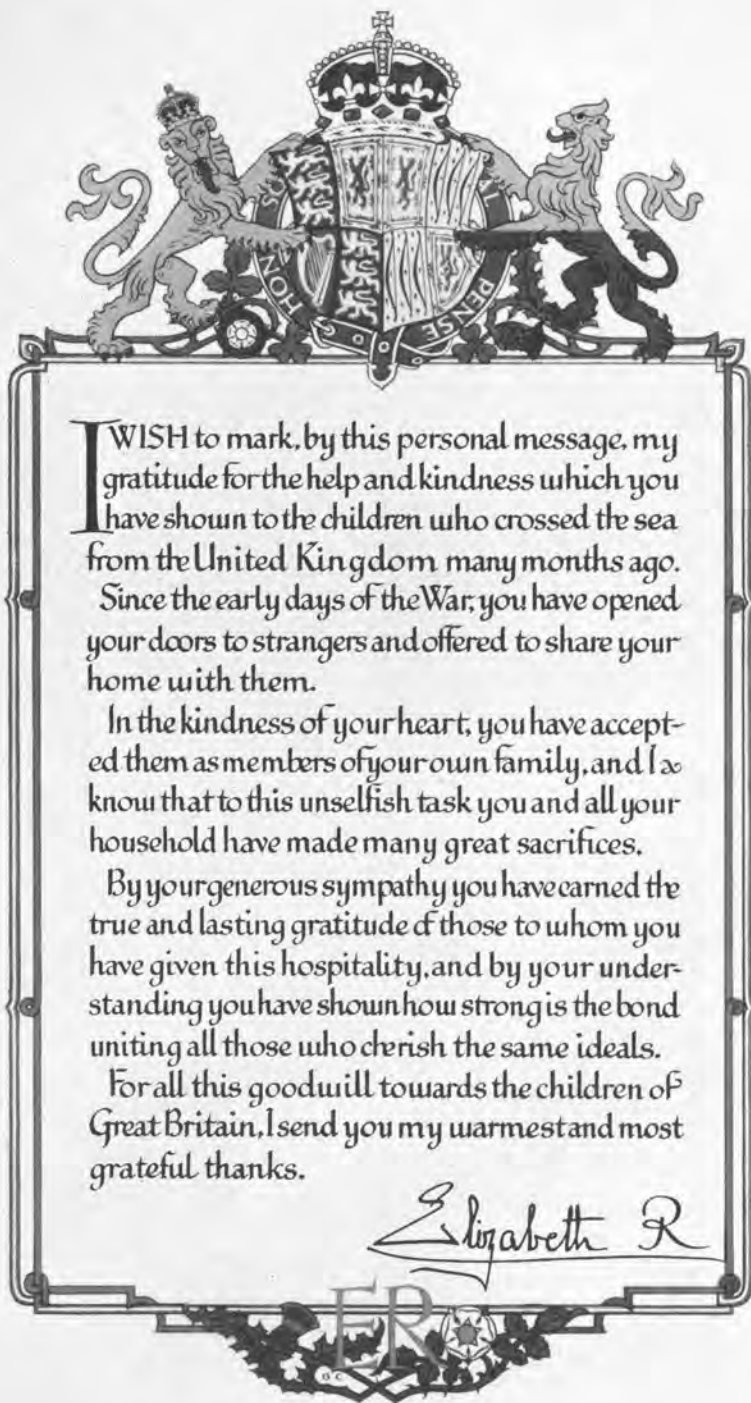
Transportation. Busses, trucks, streetcars, and railroad equipment are being manufactured in very limited quantities during the war. To maintain transportation caused by the war, it is essential that the most economical use be made of all equipment. This means there should be no unessential traveling.

Communications. Long-distance telephone calls have doubled since 1941 and are still increasing. There are shortages of man power and materials for repair and maintenance.

* * *

The Navy has announced development of novel paper cargo-parachutes to be used for dropping supplies from the air, as in cases where troops in combat areas are cut off from their lines of supply. The new cargo parachute is made from specially creped kraft paper and costs approximately one-fifth as much as the standard escape parachute, thus affecting a considerable saving in nylon and in the other fabrics used in ordinary escape parachutes. It will safely carry a load of 100 pounds when released from a plane flying at a speed of 180 miles per hour. It is 16 feet in diameter when open, and will withstand any kind of atmospheric condition, not being damaged by rain or other climatic factors.

A Salute from Queen Elizabeth



I WISH to mark, by this personal message, my gratitude for the help and kindness which you have shown to the children who crossed the sea from the United Kingdom many months ago.

Since the early days of the War, you have opened your doors to strangers and offered to share your home with them.

In the kindness of your heart, you have accepted them as members of your own family, and I know that to this unselfish task you and all your household have made many great sacrifices.

By your generous sympathy you have earned the true and lasting gratitude of those to whom you have given this hospitality, and by your understanding you have shown how strong is the bond uniting all those who cherish the same ideals.

For all this goodwill towards the children of Great Britain, I send you my warmest and most grateful thanks.

Elizabeth R

A salute . . . and a heartfelt "thank you" from England's Queen to each family that generously offered a "home-for-the-duration" to boy and girl evacuees from much-bombed Britain



"Up and Over": pictures of this type demand considerable nerve—and planning and timing, too. The tank weighs 15 tons, and the photographer was all but under it to get his shot

Shots *without* Bullets at Fort Knox

An officer of the Armored School describes important photographic schedule in this Kodak interview

THE ENTIRE FIELD of military subjects is being covered by training films and film strips," says Captain James P. Reidenbach. "They have been and will continue to be an invaluable medium in the rapid and thorough training of our soldiers."

Captain Reidenbach, who entered the Army from Hawk-Eye, is in the Training Literature Department of the Armored School at Fort Knox.

Each element of the armed forces has its own film-preparing agency, the captain reports, the Field Artillery, for example, producing films pertaining solely to that branch of the service. The various agencies vary in size of staff, but each has its own



A film lesson for a class of fighting men of the Armored School at Fort Knox. Here, a frame from a film strip—a series of "stills" on motion-picture film—is under study

scenario writers, photographers, retouchers, stenographers, and officer advisers.

"In the Armored Command at one time, we had on duty twelve officers, eleven enlisted men, four scenario writers, and three stenographers—and three motion-picture crews working on location," the captain relates. "The Training Film Department of the Armored School is about two years old, and, to date, we have released or have in production thirty training films and thirty-five film strips."

The Film Strip

A film strip may be compared to a series of lantern slides. It is a sequence of "stills" on motion-picture film, and it is used to aid instruction in subjects where no concept of motion is involved. Since any particular frame of the strip may be held on the screen for as long as desired, strips are of great value in that they enable the instructor to point out and to discuss in detail vital points of the subject.

"Experience has conclusively demonstrated that with the proper use of training films and film strips, we greatly shorten the time required for instruction," Captain Reidenbach emphasizes. "This is of primary importance in our Army, where the training objective is the welding of a great number of civilians into combat units with maximum efficiency in a minimum of time."

Strip Technique

For the production of a film strip, as described by Captain Reidenbach, the approved plan is turned over to the officer in charge of photography. He makes the necessary arrangements for equipment and locations where the individual pictures will be taken. As the pictures are secured, developed, and printed, they are turned over to the retouchers, who subdue all unnecessary details in each and, when necessary, intensify the portion upon which the eye and mind are intended to focus.

Next, captions are printed on each picture and the series is forwarded to the War Department. Upon approval by the War Department, the pictures are copied onto film and released to the Army instructors for camp use.

"It may be a matter of interest," adds Captain Reidenbach, "that these training aids are also released in the languages of our Allies so that they may use them in connection with lend-lease equipment."

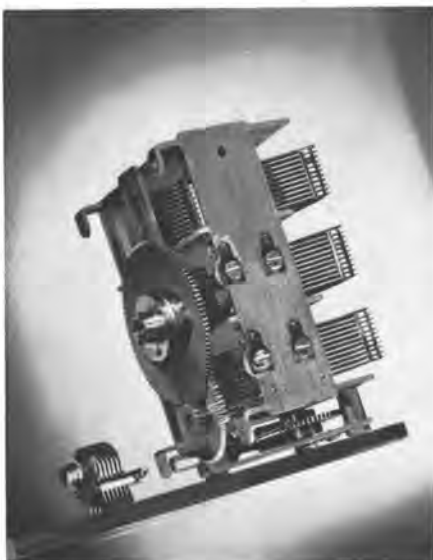
Terming the visual-education program "one of the most important war jobs the camera is engaged in," Captain Reidenbach adds: "In the classroom, the soldier can see on the screen what a certain tank, gun, truck, or part looks like and how it performs before he has ever been actually near it. That, I can assure you, makes a whale of a difference in his approach to the real thing."

To Darken Berlin

(Continued from page 7)

to take over as navigator—and our pilots are well trained to be able to handle any emergency. They are taught to read the intricate dials and meters, to read and interpret maps and charts of each type of projection, and, if need be, to make their own chart on a Mercator projection.

It is imperative that the navigator know where he is at all times, frequently within one-quarter of a mile. The entire crew owes a great deal of the success of the mission to the quick-thinking navigator, whose duty it is to chart the plane to the target, know where it is at any time, and provide a course to get it safely back to its base. He is able to perform



Kodak helps maintain the vital aerial-communications link: here, a subassembly for radios used by the Air Forces. Such units have long been in quantity production at Kodak



A Fort Knox movie-camera crew at work on location: extreme care is exercised in all stages of production, from the actual writing of the scenario to final review of the finished film

these duties only with the help of fine and delicate instruments. The lives of his crew members, the success of the entire mission depend on the accuracy of these meters, compasses, and other important instrument aids.

Communications

Our modern bombers have elaborate radio equipment, consisting of a number of radios each for a specific purpose. The Aircraft Command Set is used to contact the flight-control tower at the field, and also to communicate with other planes that might be in flight. The Command Set is also used to contact other landing fields during the course of the flight mission. Pilots are taught radio know-how, and should anything befall the radio operator, they must take over as radioman as well as pilot. Pilots are taught the operation and the maintenance of these sets.

A second use of radio is in the Liaison Radio Set, used principally for long flights to maintain liaison with his home base.

The Aircraft Life Raft Transmitter, nicknamed the "Gibson Girl," is the lifesaver for the crew in case they are forced down in the open sea. It is a device powered by hand and continues to function as long as the pilot is able to crank it. It has a medium long range for sending out SOS distress calls and bringing help.

Once over hostile territory, a radio operator only breaks silence at the command of the officer in charge of the plane. Breaking radio silence often can give the enemy the location of the plane. Controlled by radio, the life transmitter is so equipped that it can flash a visual signal which can be seen two or three miles, enabling it to give Allied planes vital information without the use of the radio sending set.

Very important within the plane is the interphone system, which is a telephone system within the aircraft in which all members of the crew can be contacted by the pilot. This interphone system keeps all members of the crew on their toes. A good pilot keeps the crew on the alert at all times.

There are innumerable switches and controls for the many moving parts of a big bomber. With the flip of an electric switch, the hydraulic system of the plane is set in motion; another switch starts the fuel-transfer system operating; still another switch sets in motion the flap mechanism, landing gear, brakes, bomb-bay doors, cowl flaps, oil-cooler shutters, the electrical system, propellers, the revolving gun turrets, etc.

All of these parts and instruments are helping our flying men apply their scientific formulas of death and destruction to the Axis nations.

❖ *Kodak Employees in the Armed Forces* ❖



Comdr. N. D. Hubbell, Kodak Park



A/C R. J. Eike, Camera Works



S 1/c Robert J. Moore, Hawk-Eye



Pfc. Patrick C. Regan, Kodak Office



Capt. H. N. Powell, Kodak Office



Capt. Rolla N. Carter, Kodak Office



Corp. M. G. Ainsworth, Kodak Park



Corp. D. G. Ainsworth, Kodak Park



Pfc. Sigmund Nowak, Camera Works



Corp. A. K. Olsen, Camera Works



Lt. Merle Reed, Kodak Park



Corp. D. J. Murphy, Hawk-Eye



Lt. James F. Welch, Camera Works



Pvt. R. F. Van Saun, Kodak Park



S 2/c H. F. Gleffe, Camera Works



Corp. J. W. Goodell, Kodak Park

★ *Kodak Employees in the Armed Forces* ★



S 2/c R. F. Olds, Camera Works



Pfc. Rudy J. Zink, Hawk-Eye



Corp. R. B. Smith, Kodak Park



Lt. Carl W. Wiles, Kodak Office



SM 3/c J. E. Noble, Camera Works



AMM 3/c W. R. Plinz, Kodak Park



Pvt. Charles R. Zahn, Kodak Park



Lt. Leroy P. Wilson, Kodak Park



AMM 3/c C. Skurski, Camera Works



MS 2/c R. D. Clifford, Kodak Park



Ensign G. A. Radford, Kodak Office



Pfc. R. A. Carreo, Camera Works



T/4 A. F. Fromm, Camera Works



Corp. J. E. McCormick, Kodak Park



Pfc. R. F. McCormick, Kodak Park



Pfc. Charles H. Green, Kodak Park



Official Photograph, U.S. Army Air Forces

Intent on their aerial maps—deleted by the censor for security reasons—members of a U.S. fighter group at an air base in French North Africa work out details for a mission

Photography in 1943

(Continued from page 2)

the nerve center of all the far-flung photographic activities of the Navy, and will set the standards for all the other Navy laboratories. It will

supervise the training and assignment of skilled technicians and photographers to the fleet and shore activities. It will check and test aerial and motion-picture cameras and other naval photographic equipment, and make new technical de-

Kings of Swat at Kodak Cubana



When it's February in Rochester, it's baseball time in sunny Cuba, where these stalwarts of Kodak Cubana Limited pose for the cameraman at the start of a brisk season. At right, front row, in the picture is Ivo Moneda, manager of Kodak Cubana, and a keen baseball fan

velopments and improvements in equipment, operation, and training.

The War Department, in conjunction with the Office of War Information, launched an all-out campaign to promote the use of V-Mail as the only safe and sure way of reaching the men who were stationed overseas.

Anniversary

The year 1943 saw the twentieth birthday of amateur motion pictures. What a way they have come as a means of fun and instruction since the first hand-cranked Ciné-Kodak appeared in 1923! The sub-standard film plays an extremely important part in the war, for it is used in enormous quantities in making training films for the Services and industry, for making records of combat action in the field, and for entertainment. These films are made by the motion-picture industry, by special Government agencies, and by the Signal Corps, Air Forces, and Navy.

One of the interesting adaptations of motion-picture equipment for the study of the operation of machines and of events which occur too rapidly to be studied in detail by the eye is the high-speed camera, of which several forms have recently been developed. The normal picture-taking rate of amateur motion-picture cameras is 16 or 24 frames per second. The high-speed cameras, in order to stretch out the time, operate at a much higher rate. The new Eastman High-Speed Camera, Type III, operates at from 500 to 3,000 pictures a second—fast enough to permit recording of most fast actions except those of exceptional speed, such as bullets in flight.

Special Papers

There has been some progress in photographic paper, particularly for industrial and service use. New recording and reflex copying papers have appeared, and large quantities of paper are being made on water-proofed base for the Air Forces and for the Navy.

All of the things we have talked about are good signs that the people responsible for progress in photography are on their toes. They have gone all out to help in the war, and their newly acquired experience will be of much benefit to the amateur in time of peace.



“The Birches: Winter”

by A. M. Koerner, formerly of Building 59,
Kodak Park, now of Tennessee Eastman



Official U. S. Navy Photograph

**The Navy
Commissioned
Kodak
Medalist
"as is"**

IN THIS WAR, the camera has full military status. From Admirals down, Navy men carry a Kodak Medalist as casually as binoculars. It is the impartial fact-gatherer and reporter of action. You have seen plenty of Medalist shots among the terrific pictures released to newspapers and magazines.

* * *

When the war broke, the Medalist had just been created—for civilian camera enthusiasts. Navy experts tried it out. It looked and acted "Navy"—clean, precise,

inherently fine—structurally as sound as a battle wagon, compact as a submarine.

The Navy bought every Medalist available "as is," ordered production stepped up. Since then, wherever units of our fleet have operated—from PT boats to capital ships and aircraft—the Medalist has seen action. Twice as many were on duty the second year as the first.

After the war, the battle-conditioned Medalist will be at your service in civilian life. Eastman Kodak Company, Rochester, N.Y.



A fistful of efficiency, the compact Medalist produces full-scale pictures—2¼x3¼ inches. The lens, Kodak Ektar *f*/3.5—incorporating Kodak's revolutionary new optical glass—assures pictures of incomparable clarity and brilliance, either in black and white or full color.

Lens and Kodak Supermatic Shutter are mounted in a unique helical gear focusing tube which provides hair-line focusing with unequalled rigidity. All operating controls, in "shooting" position, are at the fingertips. The eyepiece of the split-field range finder is directly below the view finder.



The Medalist, optically and mechanically, is an achievement of the Kodak experts responsible for the latest gunfire control apparatus used by our armed forces.

REMEMBER "TAKE HER DOWN"? . . . how the wounded submarine skipper, Commander Howard W. Gilmore, U.S.N., ordered his men to "Take her down"—leaving him outside the conning tower? His was a stern example to us at home. **BUY MORE WAR BONDS.**



Serving human progress through Photography