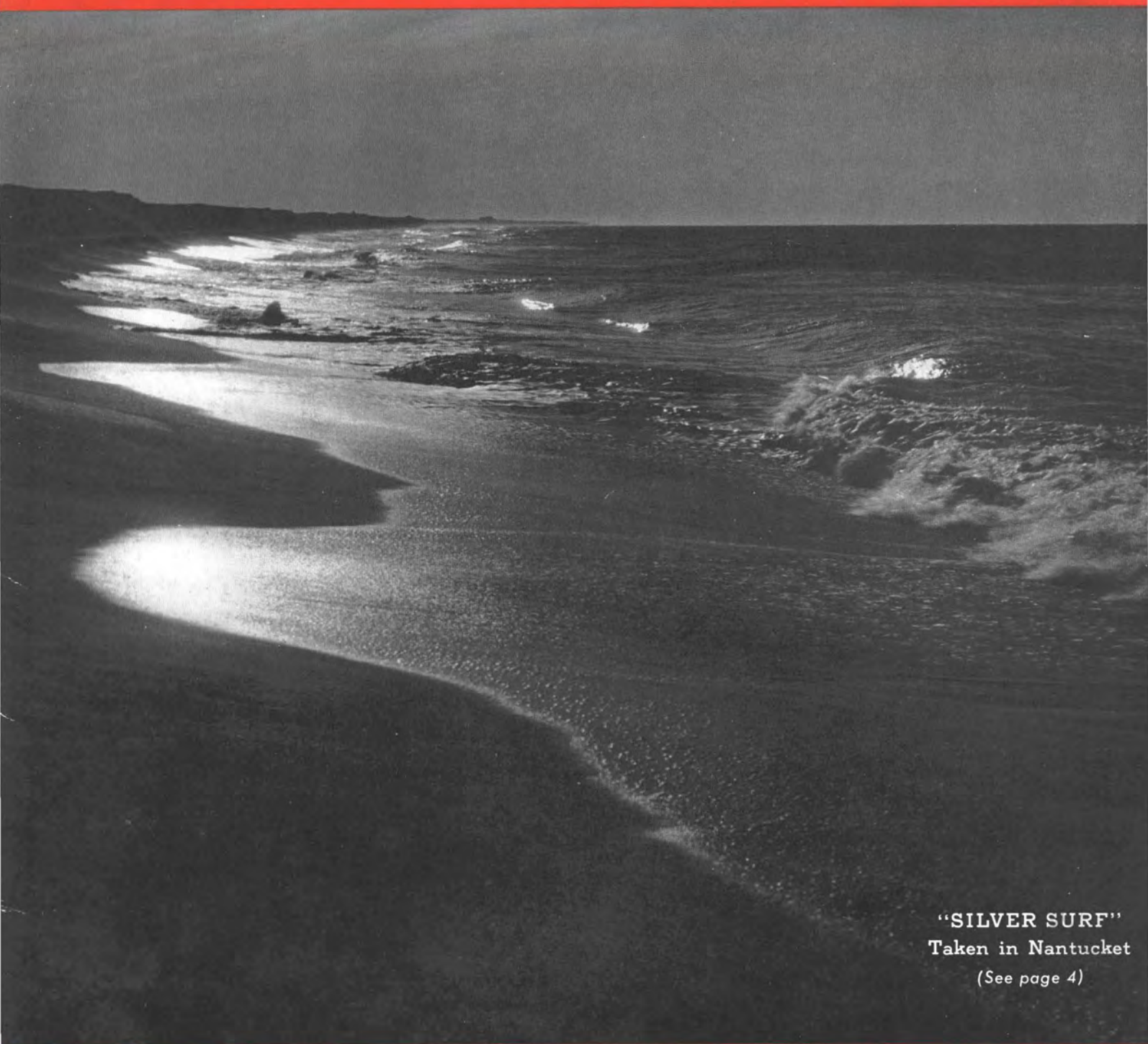
KODAK

A MAGAZINE FOR EASTMAN EMPLOYEES



"SILVER SURF"
Taken in Nantucket
(See page 4)

FEBRUARY 1939

"ABYSS": this picture by Henry B. English, of Kodak (South Africa) Limited, is included in the 1939 Kodak Exhibit, now on tour. The exhibit consists for the most part of pictures taken by Kodak employees in many parts of the world, together with examples of many important phases of amateur photography

IN THIS ISSUE

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KODAK

Volume 18 FEBRUARY 1939 Number 2

Photography: the Doctor's Helper

In Operating Room and Clinic, Still and Movie Cameras Are Contributing to Medical Science

Use of Ciné-Kodaks and Eastman cameras in the operating room is contributing greatly to medical progress. Many of the pictures are used later to instruct student doctors and nurses in operating technique

THE LIGHTS of the operating room flash on in a modern hospital. White clad nurses enter and hurriedly make preparations for an emergency operation. The patient is wheeled in. As a nurse administers the anesthetic, the head surgeon enters with his assistants. He carefully checks the arrangements; makes last-minute suggestions to the others. We are surprised, now, to see one of his assistants setting up photographic equipment which had previously been made ready in a corner of the room. Under the surgeon's direction he quickly places an Eastman Clinical Camera and tripod at the head of the operating table. Kodaflectors with powerful Photoflood lamps are arranged and connections made with a near-by electrical socket. The photographer focuses his camera on the ground glass, closes and sets the shutter, and slips a film holder into place.

As the surgeon deftly and gently performs his work, he occasionally signals the photographer. A dozen exposures are made without interrupting the progress of the operation. When the surgeon has completed his delicate work, the photographer removes his equipment to the hospital studio and sets about developing his negatives.

Educational Uses

The scene changes to the lecture amphitheater of a medical college. A large class of students is listening to a lecture on a tropical skin disease. Far from the equatorial regions where the disease is found, the professor can hardly produce an actual case for the students' inspection. How is he to round out his lecture with a visual demonstration of the disease? Photography supplies the answer. A screen is lowered at the rear of the lecture platform, the room is darkened. Throughout the talk, an assistant projects lantern slides showing not one but many cases to demonstrate the various appearances of the disease. Black-and-white or full-color pictures, greatly magnified on the screen, give the student almost as clear an understanding of the pathological aspects of his subject as he could gain by observing actual cases.

Thus, we find photography serving as the doctor's valued helper. The photographing of surgical operations and the use of photographs for educational purposes are extremely important, but these two examples scarcely indicate the wide and growing applications of photography in the field of medical science.

Photographs of patients can be used to record anything visible to the naked eye. Infrared-sensitive plates are sometimes used to reveal conditions of the veins which are actually invisible to the eye. Photographs serve to record the progress of individual cases. Pathological specimens, laboratory setups, and medical apparatus may be photographed for the files. Copies can be made of radiographs, drawings, printed materials, and many other subjects which the doctor may wish to have duplicated. Enlargements are often made for teaching and exhibit. Lantern slides and film transparencies are put to valuable use.

Before the days of photography, anatomists and surgeons considered the graphic recording of their work so important that they often learned to draw in order to depict their observations in pictures. Sometimes artists were employed to do this work. Many old-time doctors developed great skill in sketching anatomical subjects. But the work was time-consuming, and often when done from

Cellular structure and very small pathological subjects must be studied under the microscope. What the doctor sees, movie and still cameras record for later study—here, the hair and roots in the human scalp

memory, as in the case of surgical work, it was inaccurate.

With the introduction of photography, medical workers immediately recognized the possibilities opened to them by this new and accurate method of graphic reproduction. Early photography, however, involved many practical difficulties. The equipment was bulky, lenses and films were very slow, artificial lighting inadequate. Furthermore, there was a quite natural prejudice against having outside photographers and unsterilized equipment in the operating room.

These difficulties and objections have been almost completely overcome. Equipment is now light in weight, compact, and easily portable. The speed of both lenses and films has been multiplied to an astonishing degree. Modern Mazda lighting is highly efficient. And today, photographic technique has been so simplified that the doctor himself can quickly learn how to expose his film and develop and print his negatives.

The Eastman Kodak Company takes considerable pride in its many contributions to medical science. A really surprising number of our products are adapted in one way or another for use in the medical field. Cameras, films, papers, lighting and darkroom equipment, some designed specifically for the doctor's use, are serving as powerful weapons in the war that is ceaselessly being waged against sickness and disease throughout the world.

Eastman Equipment

We have developed the Eastman Clinical Camera expressly for all-round medical work. The Kodak Recomars "33" and "18," and the miniature-size Kodak Bantam Special and Kodak Retinas are also being widely used. With its Ciné-Kodak Special, our company offers the finest 16-millimeter movie camera available for filming the important phases of medical practice and research.

Many Eastman films, with their wide range of characteristics, are used in medical photography. Very often reproduction in full color is highly desirable to show the nature and condition of certain cases. The gradation of color in a skin disease, for example, may be important in diagnosis and only by showing it in color can the condition be accurately presented. In such cases, the medical photographer will choose Kodachrome Film to get a satisfactory picture. Simple to expose and requiring no special equipment for its use, Kodachrome Film is proving invaluable in medical work.

Movies in Medicine

The use of 8-millimeter and 16-millimeter Ciné-Kodaks and Ciné-Kodak Film by doctors is rapidly increasing. The value of a movie record, particularly for teaching purposes, is readily apparent. By shooting through a telephoto lens, the cameraman can secure brilliant close-ups which, projected on the screen, bring the scene to the onlooker even more vividly than if he were present as an eyewitness. The actions and the motions involved in surgical technique can be shown very clearly in motion pictures, whereas the still picture often leaves much to the imagination. In making movie records, as in making "stills," the doctor may choose between black-and-white and color films.

Photography plays a growing part in medical research as well as in medical practice. Where the research worker once looked into his microscope and then attempted to draw what he saw there, he now uses a still or movie camera to capture the microscopic picture. The filming of the action that takes place in living tissues is an important example of this work. Such microscopic studies, by enlarging the original subject onto the film and then projecting the film to many times its size on the screen, permit a final magnification of 120,000 times or more. If a six-foot man were magnified to the same proportions, he would be a full 136 miles tall!

The Medical Staff

Both at Rochester and on the road, a large staff of Eastman employees are devoting their time exclusively to the medical profession. Field demonstrators call on the doctor and give him direct assistance. Correspondents at the Kodak Office answer many of his technical questions by mail. The Advertising Department

(Continued on page 16)

The Newsreel Dons Seven-League Boots

THE WHOLE CONTINENT of Australia is agog over the running of the Melbourne Cup. Shepherds in the bushlands, stevedores on the docks of Perth, government workers in Canberra drop their work and tune their radios to the Flemington track outside Melbourne. For this grueling horse race is to Australians what the world series is to Americans—the greatest sporting event of the year.

The horses parade to the post—the starter works them into position—the barrier goes up—and at the cry, "They're off!" a battery of movie cameras begins to whirl. From a high perch, the entire two-mile race is filmed for the newsreels.

In Sydney, an overnight train ride from Melbourne, excited listeners are following the radio story. A roar comes over the air as the race ends. As the excitement dies down, the people of Sydney finish their dinner, then walk through the warm summer evening to the theater. They have hardly settled down to enjoy the show when, to their complete astonishment, newsreel pictures are shown of the race—a race that was run only three hours ago on a track 550 miles away.

How could this be possible?

If it takes, let us say, two hours to develop, print, and edit the film, and then nearly three hours more to fly it by fast plane to Sydney—a total of five hours—how do we account for the fact that the film is actually being shown in three hours?

The Fox Movietone News Company, through its Australian subsidiary, Filmcraft Laboratories, had solved that problem by developing and printing the film at the same time that it was being flown to Sydney. In other words, they had transported their pictures in a flying darkroom—the converted cabin of a fast Australian National Airways plane.

The film was rushed to the flying field immediately after the race. As the ship taxied across the field for its take-off, two operators had already begun to develop the negatives. While their speeding plane roared across the state of Victoria, they dried the negatives, printed the positives, and edited the final pictures. Imagine working in a darkroom while it was winging its way across country.

So far as is known, this is the first time that movie film has been processed in the air. It is a striking example of the lengths to which the newsreel companies will go in releasing pictures before the passing of time has lowered their news value.

The pictures give a clear idea of how the plane was converted into a movie-film processing station. They are reproduced by courtesy of Fox Movietone News.

The first act in our mystery, "How to Show Movies of a Horse Race in Record Time." The Eastman Super X Negative Film is rushed aboard a fast airplane

The cabin of the plane has been converted into a complete darkroom for processing movie film. Here, the negative film is being dried before printing

After printing, the sound film is edited on a Moviola. Soon the plane will land at Sydney and race fans will have their pictures in record time

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Annual Report

As we were coming into work the other morning, "Ben" Knight, who superintends the take-offs and landings of the four passenger elevators at the Kodak Office, gave us his annual report, hot off his desk pad.

The total mileage of the elevators during 1938 was 13,945 7/10—just 26 7/10 miles more than the distance from Colón in the Republic of Panama to Colombo in Ceylon. Total stops were 1,774,624.

Daily average of stops and miles was 6,932 and 54.5, respectively. Sundays, Saturdays, holidays, and nights were not included in the genial starter's reckoning.

The "Time Capsule"

Most of us think of capsules as the tiny gelatin cases in which we take medicines of one kind or another, but there's a capsule fifty feet underground on the site of the New York World's Fair that is 7½ feet long and 8⅜ inches in diameter. And it's not gelatin, but a copper alloy lined with a pyrex glass container that's set in a waterproof wax. Its contents: a "cross section of our time."

The "Time Capsule," as it's called —you've read about it, no doubt— was constructed by the Westinghouse Electric and Manufacturing Company. When it is opened, 5,000 years hence, within its glass crypt will be found some thirty-five articles of common use, some seventy-five samples of common materials, and a 10,000,000-word essay on our life and times. The essay is on Eastman Micro-File Film.

"On three and a half small reels," says David S. Youngholm, of the Westinghouse Company, writing in *Science*, "there are reproduced books, articles, magazines, newspapers, reports, circulars, catalogs, pictures; discussing in logical order where we live and work, our arts and entertainment, how information is disseminated among us, our general information, our religion and philosophies, our education and educational systems, our sciences and techniques, our earth, its features and peoples; medicine, public health, dentistry and pharmacy, our major industries, and other subjects. This 'Micro-File' comprises more than 22,000 pages of text and 1,000 pictures; a total of more than 10,000,000 words. It includes instructions for making, among other things, a motion-picture projection machine. For use with this are three spools of newsreel, made up especially by RKO-Pathé Pictures, Inc., showing about twenty characteristic significant or historical scenes of our times, complete with sound. A magnifier is, of course, included for reading the microfilm. Instructions are provided for making a full-size reading machine."

On Their Toes

When our inquiring reporter interviewed Thomas J. Craig, of the Kodak Office, for our December "Out of the Hat" feature, he got much more copy than space permitted our using.

One of the stories Mr. Craig told reveals Mr. Eastman's passion for accuracy. During the War with Spain, one of the great newspapers got out a chart of the war area and small battleship cutouts so that people could follow the conflict closely.

"We put the chart on the wall," Mr. Craig recalls, "wondering what would be Mr. Eastman's reaction when he saw it. He soon came along and halted in front of it. 'This ship is in the wrong position,' he said, moving one of the cutouts. We checked and found he was absolutely right. Every morning after that, he came down and inspected the chart. It kept us on our toes."

"Silver Surf"

Second-prize winner in the January competition of the Kodak Camera Club, and one of the prints chosen from hundreds for the 1939 Kodak Exhibit, our front-cover picture was taken in Nantucket by Joseph B. Hale, of Kodak Park. Two more pictures from the exhibit are shown inside the front and back covers.

Memorable Journey

The opening of the Panama Canal to traffic, a perilous trip by pack train across the snowbound Andes, imprisonment for six days on a small cargo boat within five miles of the Equator, loss of a detailed picture record of an extended South American tour, a 3,392-mile voyage during which he slept on deck at night—these were among the highlights of a business trip made by Harry D. Haight, industrial relations manager of the Company, back in 1914.

At that time, the Company's business in South America was handled through a few jobbers and dealers, distribution was uncertain, competition was intense, and complete representation of our product line was desirable. With the late export sales manager, Domingo E. Delgado, Mr. Haight made a detailed survey to determine whether it was advisable to establish distributing branches.

"We reached Colón on August 14th," Mr Haight recalls, "and next day we saw the first large vessel, with government officials and prominent citizens aboard, pass through the locks of the Panama Canal. From Colón, we sailed down the west coast to Valparaiso, and from there went inland to Santiago. Argentina was next on our schedule but owing to heavy snows there was no train service, so we formed a pack train and crossed the Andes on mules."

After surveying Argentina, Uruguay, and Brazil, they sailed for New York on the British steamer, *Vandyk*. An unusual course was steered to avoid enemy ships, but when about five miles from the Equator and five hundred from Brazil, they were intercepted and captured. Passengers and crew were transferred, bag and baggage, to a small cargo boat and the *Vandyk* was sunk. They drifted about for six days, under a broiling sun, before being landed at Pará.

"First chance I got, I went to my trunk to examine the pictures I'd taken during the trip," Mr. Haight recalls. "They were ruined by sea water during the transfer. However, my memories of the tour are vivid."

A Personnel Worker Speaks to Parents

Miss Florence A. McAnaney, of the Kodak Office Personnel Department, was recently asked to talk to one of the groups of the Parent-Teacher Association. It was thought that some of her comments dealing with the aspects of boys and girls going from school into employment—not only into manufacturing industry, but into other lines of work—would be of interest to employees having children, and in consequence they are reproduced below.

Miss Florence A. McAnaney, head of the Kodak Office Personnel Department, whose recent address before a Parent-Teacher Association group is reproduced on this page

YOUR CHAIRMAN, when she asked me to talk to you, kindly suggested that I choose my own subject. I have chosen to speak about my own job, that of a personnel worker in industry, because I believe that many of the problems which you and I are called upon to deal with have common points of contact.

The home and the school both exist for and revolve about the children and their development. A large percentage of young people after leaving school, however, are then confronted with an entirely new experience, that of presenting their qualifications for employment to an organization that exists primarily for a different reason—industry, for example, for the purpose of manufacturing and selling a product at a profit; and the professions, to serve science, the arts, or society, where the development of the individual must of necessity be a secondary aim.

From School to Job

It is one of the functions of a personnel department to establish standards which will insure as far as possible success in placement. At the same time they are ever mindful of the problems necessarily involved in the adjustment of the young man or woman from the environment of the school to that of the job and every assistance is given by the Personnel Department to the individual during this adjustment period.

Selection and placement are made with a view to fitness as to aptitude, training, personality, and health, and a careful follow-up is made as to progress. I should like to say something here regarding aptitude. It is my opinion that we have possibly emphasized it in the wrong way, that we may have made young people too self-conscious about it. In our anxiety to discover an aptitude, we have led them to believe that it is some special endowment of ability that manifests itself immediately without preparation or acquired knowledge. I suppose that this does happen, but when you have that rare case it is an occasion for thankfulness and rejoicing and probably comes closer to indicating genius than mere aptitude. Mothers who have watched anxiously from the cradle for some sign of genius or talent know how rare and fortunate it is to discover, before their children are ready for college, in what field their interest is apt to lie.

I believe that there are a number of things that the average intelligent person can do well and enjoy doing if he or she develops the ability to do them. Now, of course, I do not mean that you should encourage a boy who has no liking for mathematics to become an accountant, an engineer, or an astronomer; or one who has no manual dexterity to be a surgeon. Those things are obvious. I hear so often the statement which has almost become an axiom from young and old alike, that "you cannot do a thing well unless you enjoy doing it," and because I think this is misleading, I have an axiom of my own which I like to substitute for it; it is, "you are apt to enjoy doing the things which you can do well"; that you must acquire some skills and knowledge of a particular kind of work before you can say definitely that you do not enjoy it; and that no matter how interesting you find a job, there may be some phases of it that are dull or disagreeable. Looking for work that you will enjoy instead of work that you can do well is apt to leave out the elements of perseverance and concentration which are so important. A person should not too quickly decide that a particular job is not interesting because of some phases of it until he or she has been at it long enough to judge accurately.

I need not enlarge on personality and health. Their appraisal is no different with us than with you. The only difference is that the same allowances will not be made for failure in them in the business and professional world that have been made at home and in school. Frequent absences on account of illness may excite sympathy but will not make for a reputation for reliability. Neither can you expect the same tolerance and patience with behavior problems.

At Kodak

Now, I should like to tell you something about our efforts at the Eastman Kodak Company to help in the development of those who enter our employ. First of all, they must be interested in their own development. Opportunities are made available but there is no compulsion about them. There are refunds of partial

(Continued on page 14)

From Kodak Park to Hollywood

Responsibility For the Smooth Performance of Motion Pictures Rests Squarely upon Our Ciné Film Department at Kodak Park

MOST OF US think of professional motion-picture film as a rather narrow and very long strip of pictures which can be projected onto a screen to give the appearance of continuous action. As far as it goes, this definition is entirely correct. It indicates that the motion-picture camera exposes 24 "frames" or pictures a second on a negative film, and, in turn, a projection machine throws these images from a positive film printed from the negative, onto the screen, again at the rate of 24 frames a second.

But if you visit the Ciné Film Department at Kodak Park, you'll probably decide that this definition is entirely too simple. For it falls far short of indicating those characteristics of motion-picture film which make it so very difficult to manufacture.

We can understand these production difficulties better if we spend a moment comparing the exposure of motion-picture film with the exposure of still film. When you load your camera with a roll of Kodak film, you proceed to make each exposure individually. After each exposure, you wind the film forward in preparation for the next exposure. Your subjects for consecutive exposures may be entirely different—may, in fact, be taken a month and a thousand miles apart. Each exposure of still film is obviously a complete operation in itself.

Ciné Film Problems

With motion-picture film, this is not true. And precisely because it isn't true, the toughest problems connected with Ciné film-making bob up, like mischievous imps, to plague the film maker. What is the nature of these problems?

If we expose a roll of film in a motion-picture camera, we are recording action by means of a very rapid succession of still pictures. Later on we project positives of these still pictures onto a screen at the same rate [illegible] easy to see that every one of these still pictures must be in exact register with the ones that precede and follow it. By that we mean that the fixed lines of a building, for example, must remain absolutely motionless on the screen while all action in the scene moves smoothly from one point to another. To produce this effect, every frame of the motion-picture film must be moved into place with the greatest precision both for exposure of the negative film in the camera and for projection of the positive film in the projection machine at the theater. If you stop to consider that the film image is magnified enormously on the screen, you can more readily understand how difficult it is to produce this result. Early movies certainly lacked smoothness. We can remember how jumpy and eyestraining they were. Not only would the whole scene flicker up and down and sideways, but the action within each scene was very irregular. You will recall how amusingly the actors jerked their melodramatic way through the picture.

Smooth movement and precise placing of each frame of the film both for exposure and projection is, then, the characteristic for which the film maker must strive. His job demands workmanship of almost unbelievable accuracy. This is the problem of making motion-picture film, and we should keep it in mind as we follow the work of the Ciné Film Department.

The Film Base

The making of the film base and the coating of this base with a light-sensitive emulsion is about the same whether it is to be used for still or motion photography. Often the emulsion characteristics of snapshot and motion-picture film are identical. So we can begin our story of the Ciné Film Department at that point where large rolls of the sensitized film are received from the Emulsion Coating Department.

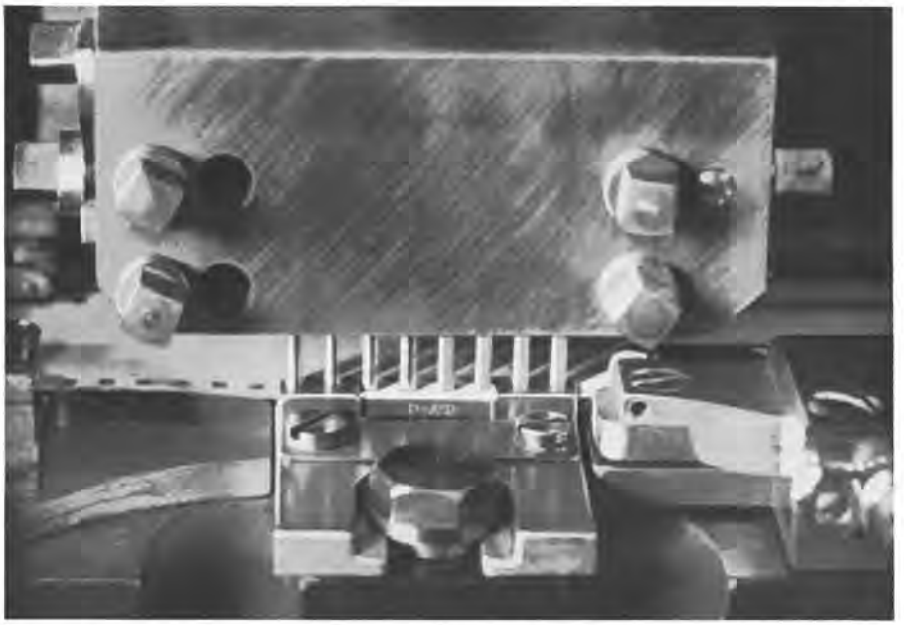
These rolls are delivered in various sizes, approximately 3½ to 4½ feet wide and either 1,000 or 2,000 feet long. The first step toward making them into motion-picture film is that of slitting them into standard 35-millimeter widths.

As the film unrolls and passes into the slitting machine, an operator carefully examines its surface under a safelight. If he finds any imperfections, he marks the film and later on, as we shall see, these imperfections are removed and the film is spliced.

Rotary knives on the slitting machine cut rolls of film into 35-millimeter widths. The film is reeled in 1,000- and 2,000-foot lengths, removed from the machine, and stamped with emulsion code numbers

Before the film comes to the slitting knives, it passes over a device which prints the words, "Eastman Kodak Nitrate Film," and a code number at 17-inch intervals along what will be the edges of each 35-millimeter strip. This printing is done by allowing light to pass through a stencil onto the film and produce a latent image which shows up when the film has been developed. After printing, the film passes between rotary knives which slit the film into its final 35-millimeter width. As the slit film leaves the knives, it is wound onto a reel. When the slitting is completed, each roll is removed from the machine and stamped with emulsion code numbers which serve for later identification. Any defects found by the operator of the slitting machine are now removed by cutting out the section of film containing the defect and splicing the ends together. The work here is done, by women, with such care that the splice does not affect the performance of the film. The ends of the splice are scraped to an exact depth, treated with a cementing fluid, and held under pressure at a moderate heat long enough to obtain a perfect joint.

If we examine the film at this point, we see a roll about ten inches in diameter containing 1,000 feet of 35-millimeter film. But it would be quite inaccurate to refer to this roll as motion-picture film. Before it can be used in the camera or projector it must be perforated, that is, punched along its edges with small holes which will engage the sprocket teeth of the movie camera or the projector. On this important operation, as we have indicated, largely depends the smoothness and quality of the final motion picture.



A close-up of a perforating machine in action. The four pilot legs at the right are holding the film in position while the four punching pins at the left perforate it. The opposite margin is also punched

Great stacks of tin containers waiting to be filled with 1,000 feet of motion-picture film. Thousands are used each day. After receiving the film, they are sealed with adhesive tape and properly labeled

Precise Perforations

The perforating machines must, therefore, operate with great accuracy, and years have been spent in developing them to their present degree of operating precision. As the film moves through them, eight punch pins—four on each side—neatly perforate the margins as eight pilot legs hold the film firmly in position by engaging the four holes just previously perforated on each side.

The spacing and shape of the punch pins are, of course, vital to this operation. These pins are made and very carefully measured in the machine shop of the Ciné Film Department before they are used on the machines. An accuracy of .0001 inch is maintained in the perforating tools.

As the film leaves the perforating machine, a vacuum system removes any punching dust which may have been deposited on the film. From here it continues on to a printing machine. If the film is of the panchromatic negative type for use in the camera, it is printed with footage marks which help the customer to locate any particular section of the exposed film or to indicate how many feet have been used in any one scene or sequence. In the case of positive film used for projection, frame marks are printed to indicate the proper position of the film when it is placed in contact with the negative for printing. Sound and duplicating films are printed with both frame and footage marks.

Final Tests

Our motion-picture film is now ready for final inspection, packing, and shipping. It has been slit and perforated by the most accurate machines that can be made. Every step in production has been made with such infinite care that we could reasonably assume that the quality of the final product is beyond question. Yet this quality is not taken for granted. A testing department, as constantly alert as a sentry on guard, demands proof that the high standards of quality have been steadfastly maintained. This proof is obtained in several ways.

A test piece is cut from the end of every roll that comes off the perforating machines. It is placed in a special light and examined through a magnifying lens. The slightest scratch on the emulsion

(Continued on page 16)

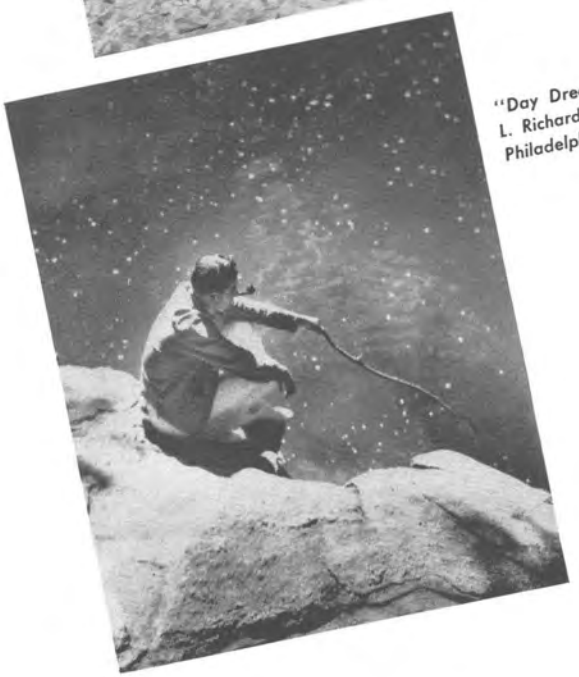
These Pictures Were Prize Winners in Ko

"Jacqueline," by Wescott Burlingame, Jr., Kodak Office, won a certificate

The Adolph Stuber Trophy went to Donald M. Gordon, of Glasgow, for his print, "Eilean Donnan Castle"

"Out of the Sea," drew a bronze medal for Dr. H. C. Staehle, Research Laboratories

"Wendy," entered in the salon by G. Gayler, Harrow (certificate)



"Day Dreaming," entered by L. Richard Brittingham, Jr., of Philadelphia, won a silver medal

"Lazy Weather": entered in the salon by J. Bright, of the Harrow Works, this print was among the certificate winners

dak's Thirteenth Annual International Salon

"Over the Sticks": entered by E. W. Johnson, of Harrow, this print was a certificate winner

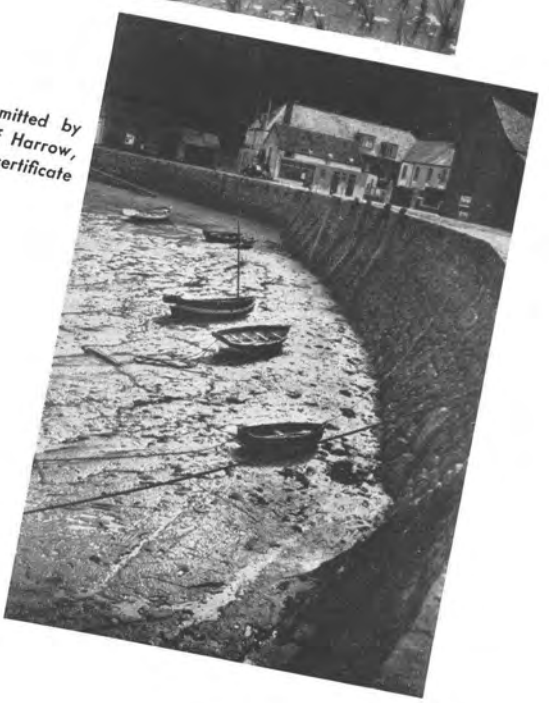
"Caroline," by William E. Sillick, Kodak Park, was among the certificate winners

"Glee," by A. Chambers, Sydney, Australia, received a certificate

Entered by W. L. Thomas, of Honolulu, "Rice" drew a certificate in the salon

This print, titled "Who Will be the Stronger?" was entered in the salon by J. Berkovics, of Budapest, Hungary (certificate)

"Eventide," submitted by H. E. Lassam, of Harrow, received a salon certificate



THE EDITOR'S PAGE

Looking Forward

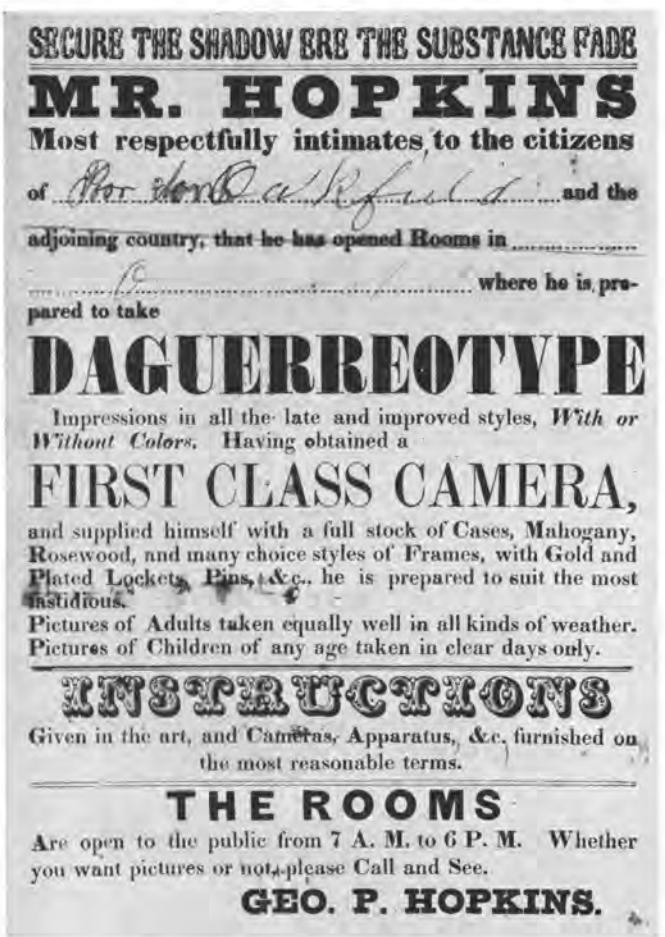
THAT BUSINESS in general during the year will show an increase over last year's volume was the prediction of Frank W. Lovejoy, president of the Company, in a statement issued to the press at the close of last year. Mr. Lovejoy's statement, which emphasizes the need for better co-operation and understanding between industry and government, is reproduced here:

"There has been an upward trend of business since the early summer of 1938. In some lines the recovery has been at an unusually rapid rate. For instance, the Federal Reserve Board index of industrial production reached a low point of 76 in May and rose to above 100 at present. The average for the year 1937 was 110. Even if no further gains were made during 1939 and business held its present level, the coming year would show a substantial increase over 1938.

"While the rapidity of the rise in the past six months suggests some leveling off or irregularity in the next few months, we believe that the fundamental trend will be upward during 1939.

"Among the important factors necessary for a sustained recovery are better co-operation and understanding between industry and government. Such developments, accompanied by concentrated efforts to reduce Federal expenditures and to balance the budget, would engender confidence and would do much to stimulate the flow of both capital and labor into productive enterprises.

"Eastman Kodak Company's sales during the past year have been sustained by the continued growth and interest in amateur photography, and have consequently shown a smaller decline than many other lines of business. This company will undoubtedly share in the business recovery which is looked for in 1939."



SECURE THE SHADOW ERE THE SUBSTANCE FADE

MR. HOPKINS

Most respectfully intimates to the citizens of Port Hope & Peterboro and the adjoining country, that he has opened Rooms in ..... where he is prepared to take

DAGUERREOTYPE

Impressions in all the late and improved styles, *With or Without Colors.* Having obtained a

FIRST CLASS CAMERA,

and supplied himself with a full stock of Cases, Mahogany, Rosewood, and many choice styles of Frames, with Gold and Plated Lockets, Pins, &c., he is prepared to suit the most fastidious.

Pictures of Adults taken equally well in all kinds of weather. Pictures of Children of any age taken in clear days only.

INSTRUCTIONS

Given in the art, and Cameras, Apparatus, &c. furnished on the most reasonable terms.

THE ROOMS

Are open to the public from 7 A. M. to 6 P. M. Whether you want pictures or not, please Call and See.

GEO. P. HOPKINS.

An interesting relic of the daguerreotype era, the handbill that is reproduced above is a much-prized possession of Kenneth R. Edwards, of the Kodak Office

Retired Employees

ON THIS PAGE and the next, we list the names of thirty Kodak employees who have recently retired from the Company's service. Twenty-three were Kodak Park employees, five worked at the Kodak Office, and two at Hawk-Eye.

Portraits of the following were not available as we went to press: Clara DeWolf and Melvin Beebe, of the Kodak Office; John Grinnan and Edward J. Greeley, of Kodak Park; and John C. Eiseman, of Hawk-Eye.

KODAK congratulates these men and women on their completion of many years in the service of our company. Many—and happy—years of leisure is our wish.

Safety Awards

RESULTS of the fourteenth annual state-wide accident prevention campaign of Associated Industries of New York State have just reached us.

The Chemical Plant, Kodak Park, had no lost-time accident during the campaign and received a trophy. The Sundries Manufacturing Division likewise reported no lost-time accident and received a certificate of merit (another plant with a record of more hours of exposure drew the trophy). Kodak Park General Division received honorable mention.

Hawk-Eye, Camera Works, and the Kodak Office manufacturing departments also received certificates of honorable mention in the campaign.

More than five hundred industrial concerns participated in the state-wide safety drive. The total number of employees participating was 170,000; and the total number of hours worked was in excess of 95,000,000.

Employees Who Have Recently Retired


Patrick J. Dowling, Kodak Park


George Carson, Kodak Park


Charles Dearling, Kodak Park


William McColl, Kodak Park


Louis O'Donnell, Kodak Park


Thomas Hopkins, Hawk-Eye


Arthur Spencer, Kodak Park


John Damaske, Kodak Park


Samuel Moore, Kodak Park

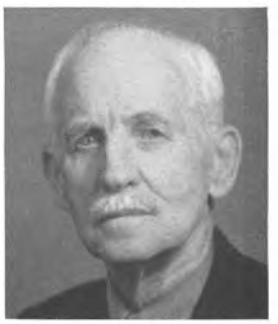

Frederick Gray, Kodak Park


William Walker, Kodak Park


Mertie Broadhead, Kodak Office


J. Frank Clark, Kodak Park


Lillian Patrick, Kodak Office


Charles Hall, Kodak Park


John Braun, Kodak Office


James Neary, Kodak Park


Weston Rowe, Kodak Park


Julian Welvaert, Kodak Park

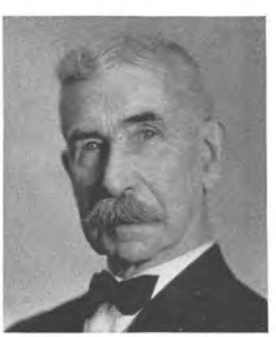

Cornelius Fernaays, Kodak Park


Irving Tennison, Kodak Park


John Yurgelaitis, Kodak Park


Michael McGrath, Kodak Park


Charles Sweet, Kodak Park


Thomas B. Gray, Kodak Park

Hawaii: the Picture-Taker's Paradise

Popular Events Are the Kodak Hula and Eastman Camera Train

The Eastman Kodak Stores in the newly built theater block opposite the Royal Hawaiian Hotel at Waikiki. One of the world's loveliest beaches, Waikiki is noted for its breakers. Its name means "spurting water"

"THE LOVELIEST FLEET of islands that lie anchored in any ocean," is how Mark Twain described the beautiful home of the ukulele and the leis, the hula and the humuhumunukunukuapuaa (triggerfish, to us).

Five and a half days by boat, or eighteen hours by Clipper, span the two thousand-odd miles of ocean that lie between San Francisco and the city of Honolulu, capital of the Territory of Hawaii. Modern transportation has brought the islands much nearer the mainland than in the days when the early Californian settlers sent their children in sailing ships to study at Punahou School, in Honolulu.

Hawaii, with its total population of 396,715 and its total area of 6,435 square miles, consists of six major islands and several smaller ones. The islands were created an integral part of the United States in 1900. Honolulu, the "Crossroads of the Pacific," is on the island of Oahu, third largest in the group.

The name, "Oahu," means "gathering place"—an apt description of the island that is the starting point for all Hawaiian tours.

Catering to Hawaii's picture-taking public is Kodak Hawaii, Limited, one of the Company's export subsidiaries. Opened as a distributing unit in May, 1928, it has since established two retail stores—one on Fort Street, in the heart of Honolulu's retail district, and the other at Waikiki Beach.

The Kodak hula show is one of two picture-promotion ideas that have become among the most popular items on Honolulu's activities calendar. Instituted two years ago, it proved an instant success. The show lasts an hour and everyone with a camera is given a preferred position.

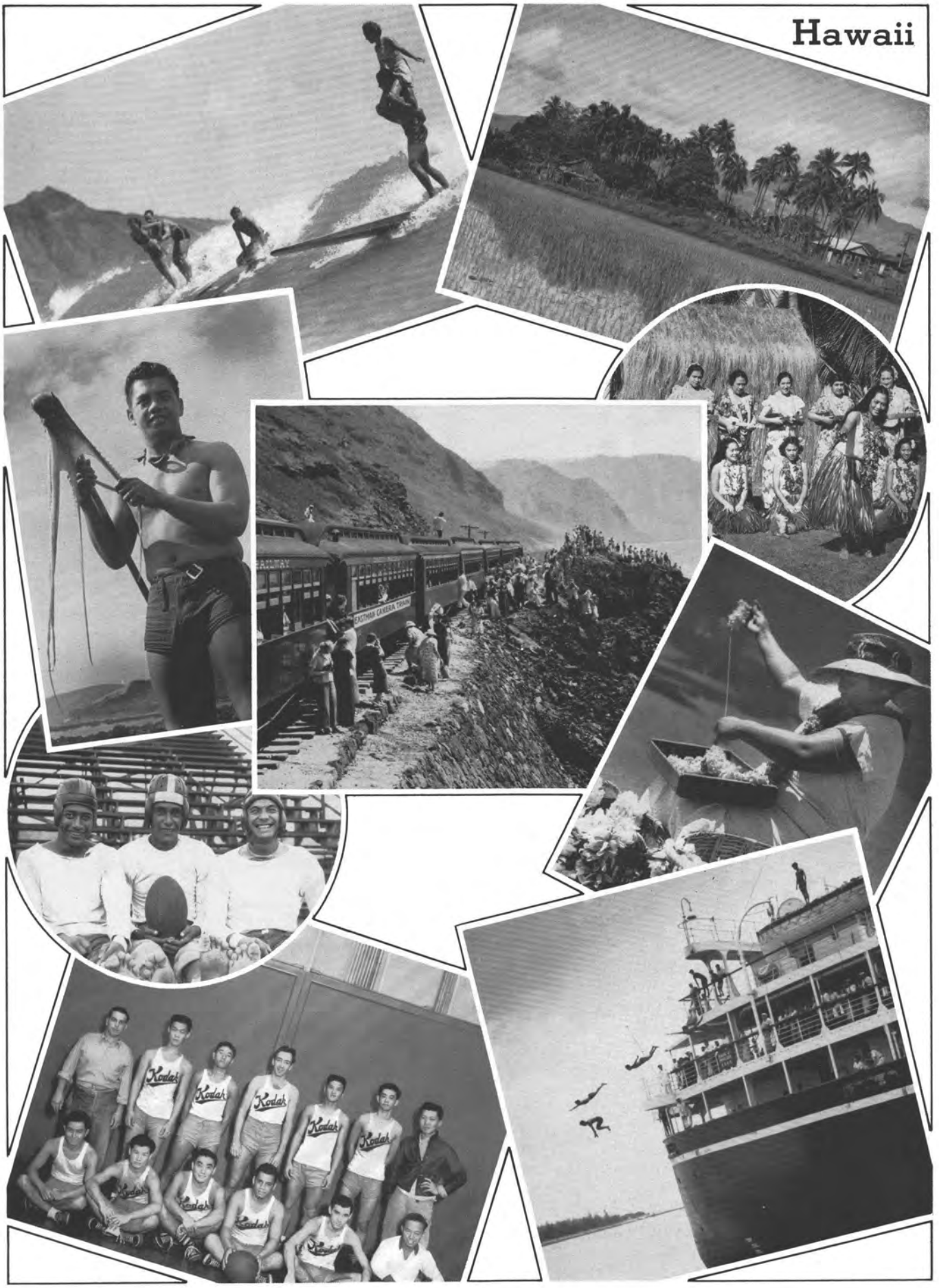
Last year, through the co-operation of the Oahu Railway, Kodak in Hawaii ran the Eastman Camera Train, taking camera enthusiasts on a 110-mile, round-trip excursion from Honolulu to Haleiwa over a portion of the island that is accessible only by train.

"We try in every way possible to encourage tourists to take more pictures while they are visiting here," says Frederick B. Herman, manager of Kodak Hawaii. "Two factors which we believe help this a great deal are, first, our complimentary cartographs of the island of Oahu upon which are listed some fifty-odd places which we believe are the best scenic spots to be found on the tour of the island; and secondly, our laminated exposure guides, which we pass to visitors arriving here."

Diving boys . . . barefoot football . . . the second largest ranch in the United States . . . the world's largest dormant volcano (all Manhattan Island could be placed within its vast rim with room to spare) . . . Uncle Sam's largest Army Post . . . the barking sands and the musical salt-water geyser of Kauai . . . the steaming highway in Hawaii National Park (the park is comprised of two separate tracts of lands lying on different islands) . . . surfboard riding . . . ti-leaf sliding . . . coral beaches . . . seagoing cowboys. Surprising sights, delightful contrasts—the home of Kodak Hawaii, Limited, is a picture-taker's paradise.

Interior view of the Eastman Kodak Stores, Waikiki: not only cameras and photographic supplies are sold, but also examples of native handiwork. The store is typical of Honolulu's up-to-the-minute shops

Hawaii



New Eastman Directors

Raymond N. Ball

Paul Strong Achilles

RAYMOND N. BALL, of Rochester, and Paul Strong Achilles, of New York, were elected directors of the Company on January 12th, filling vacancies on the board caused by the deaths of Dr. Rush Rhees and Francis Russell Hart.

Mr. Ball is president of the Lincoln-Alliance Bank and Trust Company and chairman of the finance committee of the University of Rochester. He succeeds Dr. Rhees on the board.

Mr. Achilles, managing director of the Psychological Corporation and lecturer on business and industrial psychology at Columbia University, is a grandson of Colonel Henry Alvah Strong, Mr. Eastman's early business partner and the first president of the Company.

A native of Wellsville and a graduate of the University of Rochester, Mr. Ball has been president of the Lincoln-Alliance Bank since 1929. He served as president of the New York State Bankers Association in 1936, and he was a member of the board of the Federal Reserve Bank of New York—at the Buffalo branch—during the years from 1931 to 1935.

Mr. Achilles is a native of Tacoma, Washington. He is a graduate of Yale and he received the Ph.D. degree from Columbia. Upon completion of his graduate work, he served as an instructor at the latter university. Subsequently, he became secretary-treasurer of the Psychological Corporation, a large organization active in marketing and advertising research, educational and vocational guidance, and other applications of scientific psychology. He has been managing director since 1931.

A Personnel Worker

(*Continued from page 5*)

tuition for courses taken which will be of value in their work for the Company. The refunds are conditioned on scholarship and attendance. Every endeavor is made to provide good working conditions. A Medical Department with a staff of doctors and nurses is maintained for first aid and consultations on matters of health. This department also carries on a well developed program of health education. Employees are urged to consult at any time with supervisors and the Personnel Department on plans and problems.

We cannot, unfortunately, employ everyone who applies for a position. We do, however, try to give to every applicant courteous attention, thoughtful consideration and counsel. And when there are opportunities for employment, an applicant must expect to be judged on the basis of his or her ability and on the requirements of the job—and not because they come from any particular group.

We do feel a responsibility for these young people after they have been employed by the Company. We want them to succeed. Indeed, we feel that it may be a reflection upon our own judgment in selection when they do not. But it is always important for any young man or woman to remember that lack of success in one job does not mean lack of success in another. You can find many cases of people who have failed in one organization and yet have made outstanding successes in other organizations.

Worth Investigating

WITH SPRING just around that proverbial corner, many of us are thinking of securing a home of our own. Well worth investigating are the opportunities offered on the Company-owned tracts—Meadowbrook, Koda-Vista, and Bonesteel.

For the first time in several years new homes will be available on the Bonesteel tract, which is within walking distance from Kodak Park. A model house is now under construction on Bonesteel Street, and attractive plans have been prepared from which houses will be built to order. The prices range from $4,500 to $5,200, with a 10 per cent cash payment required.

Among interesting opportunities on the Meadowbrook tract, where a number of houses are under construction, is a six-room house and garage, well insulated and with conditioned air and oil heat, complete with lot for as low as $7,500, with a down payment of $900.

In Koda-Vista, houses ranging from $5,500 up will be built to order, and there are many attractive plans.

Prices of used homes owned by the Eastman Savings and Loan Association have just been materially reduced and many real bargains are offered.

The association's building service is available to employees desiring to build either on the Company tracts or on other lots. The service assists in drawing up plans and specifications and in letting contracts. Inspections are made during building.

For full information concerning the building or purchasing of homes, see William R. Challice, of the Kodak Office, who has charge of the service.

OUT OF THE HAT

Wanderer

Clifford H. Ruffner: his duties were varied

From Rochester to Fargo and on to Seattle, down the coast to San Diego, inland to El Paso, and northward through Denver and Salt Lake City, with frequent pauses in smaller towns through the middle and far West—in the early days of the Company, a salesman's travels often read like an extended Cook's Tour of America.

That is the route which Clifford H. Ruffner, of the Kodak Office, used to follow during his early years with the Company. His duties were pretty varied: he visited professional photographers as a demonstrator, called on dealers in his capacity of salesman. His baggage included a trunkful of advertising display materials for distribution. Frequently, he made public demonstrations of printing and developing. He even acted as a credit adjuster. "But outside of all that," he explains with a smile, "my time was entirely my own."

In recent years, Mr. Ruffner has been in the Advertising Department, where he edits two publications dealing with professional photography. His articles are highly valued by photographers as helps both to more efficient business management and to better operating technique.

Away from the office, "Cliff's" chief interest is sailing. Any week end during the lake season, you'll find him and his two sons racing their boat, "Snapshot," off the Canandaigua Yacht Club.

Amateur Archeologist

A chance encounter with an arrow point some twenty years ago marked the beginning of a fascinating hobby for Albert J. Hoffman, of the Camera Works.

"I was on my way for a swim," Mr. Hoffman recalls, "when I stepped on something sharp. I pulled it out—to the accompaniment of some appropriate expressions, no doubt—and saw that it was an arrow point. Then I gave up all thoughts of the swim and I hunted around for some more."

Mr. Hoffman has been hunting around for arrow points and other Indian relics ever since. His collection to date includes more than fifteen hundred arrow points and thirty-two pipes, some of them made of stone. Besides, he has arrow-making outfits, combs, beads, and—prize of the lot—a wampum belt that graced a brave more than two and a half centuries ago. The belt—43 inches long and 4 inches wide—contains 3,600 beads set in hourglass designs. It is intact, and is probably the only one of its kind in existence. He found it under three feet of ground.

Albert J. Hoffman: he gave up the swim

Most of Mr. Hoffman's finds have been made on old Indian burial sites in Monroe County. He has examined more than three hundred ancient graves within the last two years alone. The equipment for his expeditions includes a shovel, a steel rod (which he pushes into the earth to see whether the site has been explored by some other archeologist), a trowel, a broom, a small paintbrush, a grapefruit knife, a spoon, a small sugar scoop, a compass, and a notebook.

Restoration of damaged items is a major, and delicate, part of his hobby. He acquired a sure touch during two years when he was a member of the Rochester Museum staff.

A member of the Lewis H. Morgan Chapter of the New York State Archeological Association, Mr. Hoffman devotes most of his week ends to his hobby; but he also finds time for hunting, fishing, skating, and skiing.

Activities Calendar

Early February—Kodak Park, opening of ping-pong doubles tournament

—Kodak Office, opening of shuffleboard tournament

February 8—Camera Works girls' party, at the Powers Hotel

February 11—Interplant bowling tournament, for the Lovejoy Trophy

February 12—Kodak Choral Society concert, at the Eastman Theatre

February 15—Camera Club print critique and monthly competition

February 16—Camera Works men's smoker, at Convention Hall

—Camera Club ciné group, regular meeting

February 20—Camera Club, opening of course in Advanced Composition

February 27—Kodak Office Bridge Club, individual tournament

March 2—Camera Club meeting

March 6—Kodak Office Book Club

Death Closes Varied Career

Dr. Rush Rhees

A LONG AND VARIED CAREER ended with the death, early last month, of Dr. Rush Rhees, president emeritus of the University of Rochester, Kodak director, and notable contributor to Rochester civic affairs.

A native of Chicago, Dr. Rhees was born in 1860. He was graduated from Amherst in 1883, and he later attended the Hartford Theological Seminary, from which he was graduated in 1888. In the following year he was ordained a Baptist minister. He joined the faculty of the Newton Theological Seminary in 1892, and he taught there until 1899, when he was invited to head the University of Rochester.

Before Dr. Rhees retired in 1935, after 35 years' service—he was the university's third president since its founding in 1850—he had seen that institution expand under his efforts from a small college with an enrollment of 198 students to its present enrollment of more than two thousand students in three main divisions: the College of Arts and Sciences; the School of Medicine and Dentistry; and the Eastman School of Music.

A close friend of Mr. Eastman, Dr. Rhees gave the address at the dedication of the memorial to our company's founder at Kodak Park.

Dr. Rhees was elected a director of the Eastman Kodak Company in 1932, succeeding Mr. Eastman.

From Kodak Park

(Continued from page 7)

surface is easily detected by this means.

A short test piece is taken from each perforating machine every two hours. It is subjected to several tests. The distance between the outer margin of the film and the outside edge of the perforations is measured. This distance is not allowed to vary more than .0005 inch from the standard. The distance from an edge of one perforation to the corresponding edge of the next perforation is also measured and held to a tolerance of .0005 of an inch. Even the quality of the cut, the neatness with which the perforation has been punched out, is carefully examined under a binocular.

A special test piece is taken from each perforating machine every eight hours. In addition to receiving the same rigid tests given the short pieces, this long strip is tested for "squareness" to see that the perforations on one margin are directly opposite those on the other margin. A "center" test is also given as an additional check on the distance of the perforations from the margin.

The work of the Emulsion Coating Department is also checked in various ways. A long strip is taken from one of the coated rolls in each emulsion and examined under magnification for dirt and threads, while another strip from both edges of the first roll of each new emulsion is examined for emulsion bubbles.

Every two hours a sample splice is taken from each splicing machine and its strength given a severe test.

Does all this testing seem carried to an extreme? You may be very sure that it isn't when you consider how the smoothness of the motion-picture shows you see depends on film that meets the standards demanded by the Testing Department. There can be no compromising with quality.

All films, after approval by the Testing Department, are given a final inspection in the roll and then stamped with their identification numbers. They are wrapped in black paper, placed in tin containers made at Kodak Park, and sealed with adhesive tape. The film is now ready for crating and shipping to Hollywood—where a large part of our 35-millimeter motion-picture film eventually goes.

There are many noteworthy features to be found in the activities and appearance of the Ciné Film Department. Most of the operations are necessarily carried on under safelights. To the unaccustomed eye, work on the panchromatic films appears to be going on in complete darkness. The positive films, being less sensitive to light, permit the use of safelights of fairly high intensity. The cleanliness of the entire department rivals that of the proverbial Dutch kitchen. Gleaming floors, dust-free machinery, the white frocks worn by everyone in the building point to an unrelenting warfare against dust and dirt. Even the machine shop, a place ordinarily thought of as untidy with metal shavings and waste, is spick-and-span.

Great air-conditioning units keep the temperature and humidity of the building at a constant level all through the year. Filtered and humidified air throughout the building is changed every five minutes. Constant atmospheric conditions are vitally important in film manufacture.

The exposing and printing of motion-picture film call for several different types of film. Highly sensitive negative films are exposed in the camera. After exposure and development of the negative film, a master positive is printed from it. From the master positive, duplicate negatives are generally made. The positive film we see projected in the theater may be printed from either the original negative or a duplicate negative.

The Doctor's Helper

(Continued from page 2)

publishes magazines which serve to keep him informed of developments that may affect his work.

It is interesting to consider that the great advancement of photography in recent years has done much for the relief of physical suffering and the prolonging of life. In the field of medical science, scarcely noticed by the public at large, photography is quietly contributing to human welfare.

"STREET SCENE IN VIGO": photographed by William E. Barr, of the Kodak Office, and included in the 1939 Kodak Exhibit. A coastal town in northwestern Spain, Vigo is an important fishing center. Its bay extends inland for nineteen miles and is one of the finest of the Galician fiords

PRINTED IN U.S.A.
AT KODAK PARK

KODAK PANATOMIC-X

Eastman's new extremely fine-grain film for enlargements of great magnification

NOW AVAILABLE IN ALL POPULAR AMATEUR SIZES ***(both rolls and film packs)***

PICTURES made on Kodak Panatomic-X can be enlarged to amazing proportions—to the point where the detail of the negative is completely exhausted—without showing objectionable graininess. Phenomenal fineness of grain makes Panatomic-X the outstanding film for big, brilliant enlargements.

Now this new Eastman film, recently announced in miniature sizes, is available in all of the popular sizes—both rolls and film packs. Its remarkably fine grain, its great resolving power, full panchromatism and other features lend superb quality to every black-and-white picture, from the everyday snapshot to the salon subject. At your dealer's . . . Eastman Kodak Company, Rochester, N. Y.

Panatomic-X pictures can be "blown up" to a degree only partially indicated by this eight-times enlargement from part of a miniature negative.

In all popular amateur sizes

EXTREME SPEED

KODAK SUPER-XX FILM

. . . in miniature and other popular amateur sizes. Yields good negatives under trying light conditions. Ideal for snapshots at night.

In miniature rolls and magazines

HIGH SPEED AND FINE GRAIN

KODAK PLUS-X FILM

. . . combining both increased speed and fine grain, the ideal all-round film for miniature camera use.

Use Panatomic-X for brilliant enlargements, says this Eastman advertisement in the March issue of "Popular Photography"