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LAKE ARROWHEAD

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Magic Eye for American Industry

New Eastman Industrial X-Ray Film Probes the Inner Secrets Of Metals and Other Materials

THE PASSAGE OF LIGHT through a glass window is such a commonplace phenomenon in our everyday life that we accept it very much as a matter of course. Yet the manner in which light rays are able to travel through solid glass is not an easy thing to explain. The ability of the x-rays to pass through body tissue is another common phenomenon which most of us take for granted, and yet this power of the x-rays to pass through solid matter is equally difficult to explain.

The important thing is, of course, that light rays and the x-rays do have these properties and that men have gone right ahead and taken advantage of them even though they couldn't easily explain them. As a result we have windowpanes and camera lenses, x-ray diagnosis and x-ray treatment, and many other things that depend upon this property of radiation for their value.

Penetrating Ability

It appears that the x-rays can, to some degree, penetrate every known substance. They pass through wood and plastics with the greatest of ease. Aluminum offers fairly easy going for them, too, but they have to push and puff considerably to force their way through iron and steel. Lead offers even tougher resistance—to such a degree, in fact, that it is commonly used as a protective shield against the x-rays.

In the years immediately following Roentgen's discovery of the x-rays, applied research in this new field was devoted primarily to medical work. The fact that bone is somewhat more resistant to the x-rays than are the other tissues of the body made it relatively easy to obtain valuable results.

But the x-raying of metal was a tougher nut to crack because the x-rays don't readily pass through these substances. Roentgen, it is true, did succeed in x-raying very thin metal objects, but it wasn't until the early twenties that x-ray machines were developed which could successfully radiograph thick metals. Since that time, Eastman scientists have been carrying on extensive research to develop more sensitive films to react faster to such rays as did manage to get through metal. This research has culminated in the high-speed Eastman Industrial X-Ray Film, recently announced.

Most radiography of metal utilizes a so-called "intensifying screen," which becomes fluorescent when exposed to the x-rays. These screens are placed in contact with the film so that their fluorescence greatly enhances the action of the x-rays themselves upon the film. The idea of using an intensifying screen goes back to the very early days of the x-rays, and their first application is attributed to Michael Pupin. Later, Thomas Edison made an extended search for the most suitable chemical. The Eastman Kodak Company and other concerns have contributed to gradual improvement of intensifying screens since that time.

Other Developments

Coincident with Eastman developments has been the development of more and more powerful x-ray machines designed to produce short-wave rays of great penetrating power. As a result of all this research, industrial-

How a Magazine Ciné-Kodak looks to piercing eye of the x-rays. Notable improvements in x-ray technique during the past twenty years have made possible x-raying of thick metals on Eastman Industrial X-Ray Film

The x-rays are now doing their part in speeding the national-defense program. These radiographs of castings, for use in planes manufactured by the Bell Aircraft Corporation, serve to reveal any defects within the metal

ists are now able to x-ray metals of considerable thickness.

In appraising the value of x-rays in industry, it is well to remember that the image on an x-ray film is not a photograph. Photographs are made by the light reflected from an object and show, therefore, only its surface. X-ray technique, on the other hand, calls for the passage of rays through the object onto the sensitized material. The resultant image is called a radiograph, and it is nothing more or less than a "shadow picture" in which light and dark areas reveal differences in the thickness or structure of the metal. The value of such a picture can be readily understood.

Suppose, for example, that we wish to examine the casting for a bomb-release control to be used on one of our fighting planes. The failure of this control due to some internal porosity, for example, would certainly be serious, and so it should be examined to see that it is free from such defects. The casting is placed between an x-ray tube and a sensitized film, the exposure then being made. In passing through the casting, the x-rays encounter more or less metal and register on the film with an intensity inversely proportional to the resistance they have encountered. If there should be an air bubble in the metal, the rays passing through that spot would encounter less resistance than other rays passing through the surrounding areas. In the developed shadow picture, a dark spot would appear, indicating the presence, size, and position of the air bubble.

Another important industrial use of the x-ray is found in the examination of welded seams. Such seams are subjected to terrific pressures when they appear, for example, in the turbine casings or the boilers of a destroyer. Any weak spots in those seams could lead to serious results. An x-ray examination, by disclosing these faults, can provide for their correction.

In such ways as these, Eastman Industrial X-Ray Film has contributed to safety.

This film also offers economies in industry hitherto unattainable. In our own Hawk-Eye plant, aluminum castings for lens mounts are x-rayed before being finished for use. Defects in these castings that would result in a poor finish or structural weakness are easily spotted. Without this preliminary examination by x-ray, much time and labor would be spent on defective castings.

The great beauty of x-ray inspection lies, of course, in the fact that it permits solid metal objects to be examined without breaking them open. Before this nondestructive method was available, it was sometimes necessary to take samples from a production batch and break them open to determine whether or not they contained internal defects.

Tenite Bracelets

Once again, Tenite makes the headlines. This time, it's a new type of bracelet, molded of Tenite plastic coils. The wide, flattened coils stretch like elastic to five or six times their normal size and spring back to fit the wrist snugly. This flexibility is possible because of the resilience and toughness of this famous plastic. Feather lightness of the coils—they weigh less than half an ounce—plus their smooth, cool texture make the bracelets particularly suited to midsummer wear. Because of the simplicity of their design, they are effective accents for all types of costumes. The bracelets come in jewel tones ranging from deepest ruby or sapphire to silvery crystal. Since the color is an integral part of the plastic, it will not fade, chip, or rub off; and the finish cannot tarnish or become dull. Shatterproof as well as color-fast, the bracelets can "take it"

Peary—the Man Who Refused to Fail

Eighty-Five Years Ago This Month, the Future Conqueror Of the North Pole Was Born

Robert Edwin Peary, discoverer of the North Pole, was made a rear admiral in recognition of his splendid achievements. His life is a truly inspiring record of dauntless courage and perseverance

On May 6th, 1856, a son was born to Charles and Mary Peary in Cresson, Pennsylvania. Losing his father soon after birth, little Robert Edwin Peary was taken to his mother's former home in Maine and there grew to young manhood.

In the fall of 1885 we find him, now a lieutenant in the U.S. Army, stationed temporarily at Washington. He has just returned from Nicaragua where he served with brilliance as second in command of a surveying party. Through unexplored jungles and under difficult tropical conditions, he has successfully marked out a route for a transisthmian canal—a route that is later to be abandoned in favor of another across Panama. But Peary's restless nature cries for other adventures. One day, browsing in a Washington bookstore, he runs across some papers dealing with the little-known interior of Greenland. Immediately, as he is to explain later, "A chord, which as a boy had vibrated intensely within me, was touched again. I read all I could on the subject . . . and felt that I must go see for myself what the truth was of this great mysterious interior."

From that moment we can trace the years of struggle, disappointments, and final victory which make up the story of the future admiral and one of the greatest of American explorers.

First Expedition

Obtaining a six-months' leave from official duties and borrowing $500 from his mother to cover expenses, Peary set out in the summer of 1886 on his first journey into the Far North. He was put ashore by a whaler at the little Danish settlement of Godhavn and from there, accompanied by a young Dane, he ascended the great ice barrier of western Greenland and penetrated 120 miles into its unexplored interior.

This first successful assault upon the frozen wastes of Greenland, accomplished with a minimum of equipment and no previous experience, whetted the young lieutenant's appetite for further adventures in the North. Even now, he began to dream of reaching the Pole—the unattained goal which had claimed the lives of so many explorers during the previous three hundred years. Peary fully understood the magnitude of the task he was to undertake, but he could scarcely have foreseen the ill fortune that was to dog his efforts.

Returning from Greenland, Peary went back to Nicaragua to complete field work on the canal project. But in 1892 he again started for Greenland with a large, well-equipped party. With him, on the barkentine *Kite*, were his bride of a few months and Matthew Henson, his faithful colored servant, who were to remain steadfastly at his side during the years of struggle that lay ahead.

This second expedition, the first to cross the northern tip of Greenland, seemed to foreshadow the troubles that beset Peary throughout his career. Even before he had touched land, an accident aboard the *Kite* resulted in a double fracture of his leg. But the courageous leader refused to turn back. Carrying on despite his almost crippled condition, he supervised the construction of a base camp. On February 14th, he set out on a brilliantly executed dash

(Continued on page 16)

The "Roosevelt," named for the popular "T.R.," was designed by Peary for the last of his expeditions to the North. Its construction enabled it to rise onto the ice under crushing pressures. Pictures: Underwood & Underwood

PANORAMA

Cab Ride

THERE HAVE BEEN TIMES when, being in a dreadful hurry, we've hailed a taxicab, informed the driver of our destination (usually only a few blocks away), and settled back to enjoy the ride. But our enjoyment always gets cut short as our attention is drawn to the relentless ticking of the taximeter. It's a bloodless and calculating pickpocket which, in no time at all, can run up a figure that brings sweat to our brow and anemia to our purse.

So you can image our astonishment when Ray Walsh of the Billing Department at Kodak Office dropped in recently, looking very fit and tanned, and gaily explained that he had just arrived from North Carolina by taxi.

"By taxi?" we repeated incredulously. "But. . . ."

Ray waved aside our amazement and went on to explain.

Seems that he's currently stationed at Fort Bragg while doing his stint in the Army under the selective-service program. He had been granted a 4½-day furlough on a lovely Thursday afternoon, and immediately cast about for a means of getting to Rochester as quickly as possible. With four Rochester boys serving in his company, Ray unearthed a private cab driver who, it appears, had a great yearning to see the Northern States. He offered to take the boys to Rochester, some 750 miles away, and back for less than the fare by train or bus.

They made the trip in nineteen hours.

Origins

INTERESTING indeed are the origins of some of the words we use in the world of photography. Camera, for instance, comes from the Latin word for a chamber or room. Thus, the *camera obscura*, ancestor of the camera, was simply a darkened room into which a lens in one wall transmitted light to form an image on the opposite wall. . . . When we speak of "tone values" in a picture, we're echoing a word used by the Greeks—who always have a word for it—and meaning a rope. It eventually came to mean the sound emitted by a stretched string, and so on until its present application in describing the general effect of light and shade. . . . The original meaning of focus was a hearth or fireplace. . . . Film comes from the Medieval English word *fell*, which means a "thin skin." . . . Emulsion is derived from the Latin word *emulgere*, meaning to milk out—hence, it is used to describe a milklike mixture. . . . Photography is derived from two Greek words, meaning "light" and "writing." . . . The lens gets its name from the seed of the lentil plant: a double-convex lens resembles a lentil seed in shape. . . . Panorama comes from two Greek words, *pan* meaning "all," and *horama*, "that which is seen."

Encounter

"THE FISHING is really excellent around our islands," Fredrick B. Herman, manager of Kodak Hawaii, Limited, was telling us. "But it's a strenuous sport out there because the fish run so big. We go after barracuda, tuna, dolphin, black marlin, and other large species. Not long ago, a tourist from the States boated an 840-pound marlin—the largest ever taken on regulation tackle."

But Mr. Herman has himself had a hair-raising encounter with even bigger denizens of the deep, and he good-naturedly told us all about it.

Not far from Waikiki Beach, famed in song and travel literature for its beauty, there is a reef where Mr. Herman frequently casts his line. He wades out about a quarter of a mile to where the reef drops off abruptly and there fishes over the edge.

But on the occasion with which our story is concerned, Mr. Herman accepted the invitation of two young Filipinos to ride out to deeper waters in their motor-powered boat.

Once in deep water, the boys shut off the motor and invited their guest to troll with a makeshift rig which they ingeniously fashioned for him on the spot. In no time, our Kodak Izaak Walton had hooked a nice-sized dolphin—a fish large enough, indeed, to cause him some concern about landing it, since there wasn't a gaff hook in the boat.

"But the boys just told me to reel it in," Mr. Herman reports. "As I brought it alongside the boat, one of them thrust his left arm elbow-deep down its mouth, grabbed just above its tail with his right hand, and deftly yanked it aboard.

"My line became badly tangled as the fish flopped around, and I was busily engaged in straightening out the mess when there was a great woof and puff just to starboard. As I glanced up from my job to look for the cause of the commotion, a huge whale broke to the surface not fifty feet away.

"Those Filipinos were scared half out of their skins—and I wasn't exactly at ease as that behemoth slapped the water with its tail. As soon as the boys could collect their wits, they worked frantically to get the motor started, bungling the job badly in their confusion. Just as they got it to sputter feebly, there was a great frothing of water to port, and another whale rose to the surface. There we were in our cockleshell of a boat, right smack between them.

"We had some very uncomfortable moments until the boat got up speed and carried us out of that ticklish spot."

For the next four or five days, islanders watched the capers of those two gargantuan companions as they frisked around in the offshore waters. Then they were seen no more, and Mr. Herman, though safe ashore, appears to have noted their departure with immeasurable relief.

About Roses

MORE than half the world's supply of rosebushes is grown commercially in Texas. That State produces some 20,000,000 bushes a year.

Recreation Roundup

A strike or a split?—Interplant bowling tournament

At the Camera Works Supervisors' clambake

Camera Works bowling banquet—they eat as well as roll

Kodak Office girls view fashions—at their annual party

Lovejoy-Trophy scores, Interplant tournament

Kodak Park girls believe in keeping up-to-date

K. P. girls check up—Interplant tournament

A fair round—at the Camera Works bingo party

Kodak Office Recreation Club dance—at Oak Hill

Kodak Park men enjoy a good game

"Information Please!"—Hawk-Eye Camera Club banquet

A rubber—Kodak Office Bridge Club party

At the Hawk-Eye Camera Club's 12th annual banquet

The Department of Commerce

The Port of Rochester: here, lake freighters discharge and load cargoes of many kinds and, during the spring, summer, and fall, a regular passenger service is maintained. Note coal mound at right

Its Job: Planning for a Better City and Co-ordinating Related Functions of Local Government

FROM A VILLAGE of a few hundred souls in 1817 to a city of 320,000 today is rapid growth, even in these fast-moving United States. Such is Rochester's record.

By very reason of this speedy evolution from the tiny village stage to large city, the community is faced with many problems—geographical, economic, industrial, and municipal. To aid in meeting them is the responsibility of the Department of Commerce, which was created in 1938 "to promote the industrial welfare of the city and to co-ordinate related functions of the city government."

The department is headed by a commissioner, whose duties, as outlined by *Municipal Research*, are: to supervise and control public relations; the city-owned public markets; terminals; ports; railroads; transportation systems; all real property owned, acquired by, or leased to the city; and the inspection of weights and measures.

Youngest of the seven main branches of the city government, the Department has consolidated five divisions: planning and zoning; municipal enterprises; public relations; real estate; and weights and measures. Even a quick review of the activities of each division demonstrates the important role the department plays in the civic scene.

Planning and Zoning

In many ways a modern development, city planning has been made necessary by the swift growth of population and the sometimes haphazard development of urban areas. Its aim is improvement of the physical layout of the city, especially with regard to zoning for residential and business districts.

Rochester's division of planning and zoning performs a threefold task: physical planning; long-term financial planning; and enforcement of local zoning regulations. The director of planning serves as secretary to the planning board, which is comprised of three representative citizens, together with the commissioner of commerce and the city engineer.

The zoning office, functioning under the director of planning, enforces local restrictions on the use of land and buildings within the city limits. These restrictions are mainly concerned with the height and bulk of buildings, the area of yards and courts, the location of trades and industries, and the location of buildings designed for specific uses. A board of appeals passes on all pleas against decisions of the zoning office.

Municipal Enterprises

The city of Rochester owns four businesses, which are operated under supervision of the division of municipal enterprises. These businesses are the public market and food terminal, the municipal airport, the Port of Rochester, and the city subway.

His Retirement Is Announced

Edward H. Woodworth, whose retirement was recently announced by the Canadian Kodak Company, Limited

AFTER ALMOST 42 YEARS' SERVICE with the Kodak organization, Edward H. Woodworth, general superintendent of Canadian Kodak Company, Limited, during the past 29 years, retired recently.

Mr. Woodworth was employed at Kodak Park in 1898 as assistant to Mr. Lovejoy, who was superintendent of the Film Department at that time. Some few months later, he left Rochester to fill a position offered by the American Aristotype Company in Jamestown, New York. In August, 1899, that concern was acquired by Kodak. Later, Mr. Woodworth became assistant manager, and subsequently general manager, of the Aristotype division.

In 1912, Mr. Woodworth went to the Canadian Kodak Company, to become the general superintendent.

Ten acres in area, the public market—center of food distribution for the city—is equipped with sheds and administration buildings, curb stalls, and a railroad siding. The market is open daily from five o'clock to noon. Stalls are rented by the day, week, or year; and the rental payments more than meet the cost of running the market.

The municipal airport—most recently established of the city-owned businesses—is a 303-acre field, equipped to handle the largest air liners (one of its hangars will house six air liners or about forty smaller ships). It operates on a 24-hour basis, handling passengers, mail, and express goods.

A bustling place through spring, summer, and fall is the Port of Rochester, with its 800-feet quay and its extensive warehouse facilities. Here, large lake freighters load and discharge cargoes of all kinds; and regular passenger and car-ferry services are maintained.

The city-owned subway is operated under contract by the Rochester Transit Corporation. A recent campaign staged by the Department of Commerce and showing the worth of the subway as a medium for swift passenger and freight transportation has resulted in definite gains.

Public Relations

Promoting the commercial and industrial welfare of the city and keeping the citizens as well as the various branches of the city government informed on all civic matters of moment are the main functions of the division of public relations. From this clearinghouse of information come quarterly, annual, and special reports, in addition to hundreds of press releases each year. Here, too, is prepared municipal advertising and general promotion material for the various civic enterprises. And, in addition, the division operates a central license bureau, handling 68 classifications of licenses and permits, and a municipal reference library.

Real Estate

"The size of the modern city and the accompanying growth of government have given municipal administration—want it or not—large dealings in real estate," said Rochester's first annual report to its citizens. "This real estate takes the form of buildings, housing the various units of government, such as the City Hall, City Hall Annex, and Convention Hall; it means structures and lands foreclosed for nonpayment of taxes; it means leased buildings, such as the parks concessions or homes owned by the city and rented."

In addition to its functions as the buying, selling, and management agency for city-owned real estate, the division of real estate negotiates and manages all city insurance policies and surety bonds.

Fresh food for a city: the public market and food terminal is the subject of this aerial shot. Roofs of the market sheds, which house hundreds of stalls, make an interesting pattern

Weights and Measures

Consumer protection is rendered by the bureau of weights and measures. This bureau's year-round job is guarding purchasers against short weights and measures, as well as misleading advertising, packaging irregularities and, to quote an official statement, "myriad other sharp dealings which a small minority of persons chooses to carry on."

The bureau proudly announces that its inspections prove Rochester to be an honest city indeed. "Out of 25,505 gallons of gasoline pumped in tests, for instance, a total shortage of only 25 gallons was found—less than one-tenth of 1 per cent," it revealed in a report published last year. "Only 352 of 14,325 scales were found to be incorrect, while only 87 were condemned," the report stated.

The Rochester Municipal Airport: comparatively recent addition to the city's enterprises, this 303-acre field is ranked as one of the finest in the eastern section of the United States

The visitor at the laboratory learns that after the correct weight of stock has been selected and then blanked out to proper forms, the sheet is scored or creased by a heated bar (above left). This bar, as it presses downward, pushes the stock against a sponge-rubber pad. The machine is operated by a foot treadle. Most important factor in successful fabrication is properly controlled heat—preferably by means of thermostats.

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Making an undecorated square or rectangular container is easy (below left). After the blank is creased, the operator simply glues the edges together and the box is finished. The gluing is done on a box-setup form, consisting of parallel heated bars. The bars facilitate squaring-up of the container and speed the cementing operation. The solvent adhesive is applied by a cementing pencil or a small camel's hair brush. Aided by the heat in the bars, it produces a strong weld immediately.

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Sometimes, more than a plain edge is desirable for a container—either because of appearance or because the box needs greater rigidity (as in the case of large canisters, hat boxes, and blanket boxes). When this is so, straight edges are rolled or "beaded" on a unit like the one below. A clamp holds the stock in place and a motor-driven, heated die curls the edge of the sheet. Interchangeable dies make it possible to produce beads of different dimensions. The operation is very simple.

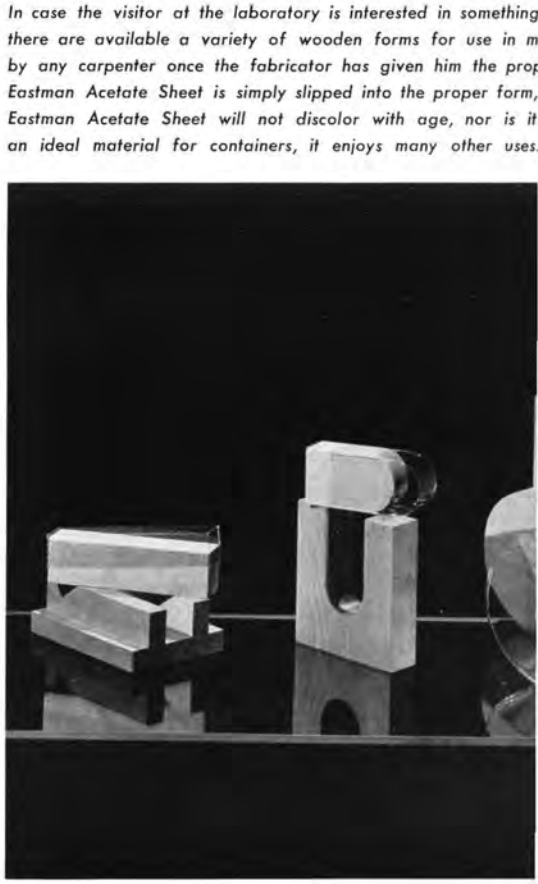
School Is On

How to Make Containers from Cellulo Company's Recently Opened Transpa

YES, SIR, there's no magic about it. Literally simple as A B C are the steps taken in the production of cellulose-acetate containers, as the skeptic will vividly learn during the course of a visit to a Kodak Park "schoolroom." The schoolroom is the recently opened Transparent Packaging Laboratory, in Building 12.

Designed to aid the Company in disseminating knowledge as to methods of fabricating transparent materials, the laboratory is probably the first experimental workroom of its kind in the country. Its equipment includes a representative cross section of the machines and accessories developed for the production of cellulose-acetate containers. Mechanical

In case the visitor at the laboratory is interested in something there are available a variety of wooden forms for use in m by any carpenter once the fabricator has given him the prop Eastman Acetate Sheet is simply slipped into the proper form, Eastman Acetate Sheet will not discolor with age, nor is it an ideal material for containers, it enjoys many other uses.



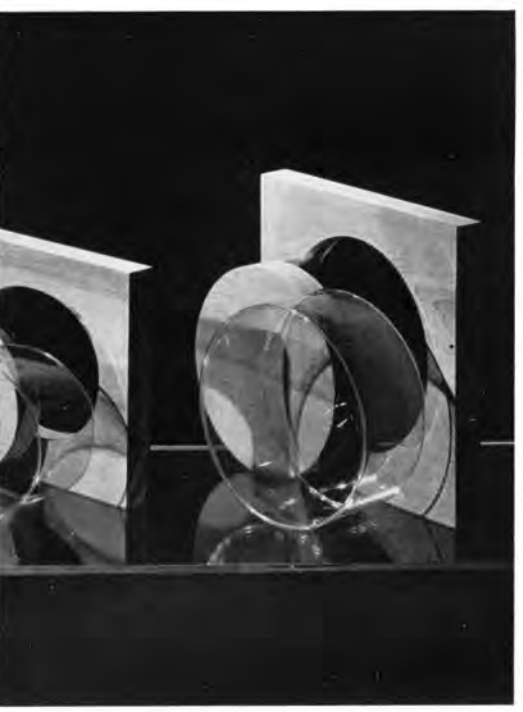
t Kodak Park

icetate Sheeting Is Demonstrated In Packaging Laboratory in Building 12

units have been simplified, however, to illustrate what actually occurs during each operation. In this respect only does the equipment differ from that used for actual production in the plants.

The visitor to the Park schoolroom is not only permitted but ardently encouraged to make containers on the laboratory equipment, under guidance of experts. Just take some Eastman Acetate Sheet and—well, here's how, in pictures and text, as described in the current issue of *Packaging Parade*. (Eastman Acetate Sheet is made at Kodak Park from Tennessee Eastman cellulose acetate. It's on the preferred list of the trade because of its remarkable transparency, durability.)

more intricate than the usual rectangular or cylindrical box, odd-shaped containers. Such forms can be cut from wood tterns. To make the box, a plain or beaded-edge piece of ides or bottoms glued on, and the container is ready to go. ted by extremes in temperature or humidity. Besides being sold in either roll or cut-sheet form, in various gauges.



Cylindrical containers are fabricated from cut-size sheets (above right). Cement is applied along one edge of the blank, which is then squared against the shoulder at the back of the mandrel. The uncemented edge is then placed over the heated center section and the cemented edge brought into contact with it. As soon as the operator smooths the seam by running a finger over it, the cylinder is removed. The fabricating device that is used by the operator is a cement fount—made by punching holes in the top of a two-ounce can and then inserting a small piece of felt or woolen cloth to act as a wick. To her left are the finished cylinders.

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Beading can be done on a small unit like that shown in the picture at bottom right. It is an ordinary electric stove, thermostatically controlled and surmounted by a couple of dies. To bead, the cemented cylinder is slid over the metal mandrel, which is then pressed down onto a grooved metal plate or die heated to the proper temperature—and controlled, as always, by thermostats.

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Bottoms of cylindrical containers may be produced in several ways. One of the least expensive, according to experts, is embossing acetate discs in a small kick press (below). The die stretches the material into shallow cups, which are then attached by hand to the cylinders with solvent cement. Adhesion takes place at once. Like the rest of the fabrication equipment, this press is easy to operate.

THE EDITOR'S PAGE

Photography in Journalism

Last month, one of America's great newspapers, the New York "Herald Tribune," published a special supplement marking the hundredth anniversary of its founding. One of the articles in the supplement traced the rise of photography in journalism. Because we believe it makes interesting reading, we are reprinting it here, in part:

When Horace Greeley was squinting at the first damp copies of The New-York Tribune in an April dawn of 1841, the American people only were beginning to be stirred by the new art of photography which had been brought to practical use by the two Frenchmen Joseph Nicéphore Niepce and Louis Jacques Mandé Daguerre, and the Englishman Henry Fox Talbot.

A few blocks from where the anxious Greeley was starting his newspaper another young American, Samuel F. B. Morse (who was to perfect the telegraph), was making daguerreotypes and instructing one of the first classes in photography in the country.

Today, when picture news is rushed by cable, radio, airplane and telephone, it is difficult to imagine a world in which there was no mental conception of a photograph and readers had to be told in simple terms just what a photograph looked like.

In 1839, Lewis Gaylord Clark, editor of "The Knickerbocker Magazine," attempted to explain the new art of Daguerre to New Yorkers in the following manner:

"We have seen the views taken in Paris by the 'Daguerreotype.'. . . Their exquisite perfection almost transcends the bounds of sober belief. Let us endeavor to convey to the reader an impression of their character. Let him suppose himself standing in the middle of Broadway, with a looking glass held perpendicularly in his hand, in which is reflected the street with all that therein is, for two or three miles, taking in the haziest distance. Then let him take the glass into the house and find the impression of the entire view, in the softest light and shade, vividly retained upon its surface. This is the Daguerreotype. . . . Think of that!"

Morse, on whom the title "Father of American Photography" has been bestowed (Morse had word of the process direct from Daguerre in Paris in March, 1839), made his first photographs on the roof of New York University, and in February, 1841, opened a daguerreotype studio at Nassau and Beekman Streets. Here he took portraits and at the same time instructed a class in photography. Significantly, Aug. 19, 1840, he took the first picture of a college class reunion (Yale—1810) in the "yard north of the president's house," at New Haven.

At first there were few attempts to reproduce photography in magazines and newspapers, the reverse printing in daguerreotypes and the lack of negatives presenting stumbling blocks. By 1850 the publication of "The Gallery of Illustrious Americans" (biographies and portraits) was accomplished by copying daguerreotypes on lithographic stones. Most of these daguerreotypes were by Matthew B. Brady, an upstate New Yorker with lots of ginger, who had come to town and made his shop at Broadway and Fulton a famous spot. Brady's work as a portraitist and Civil War photographer and his sense of recording history earned him a place among the great and helped to start pictorial journalism in the United States. He photographed every President from John Quincy Adams to McKinley, save William Henry Harrison.

By 1875 "The New York Daily Graphic" made its appearance in New York, with a policy of full illustration of the news. The next year Stephen H. Horgan, on the "Graphic" staff, started experiments which were to lead to an important step in American photographic reporting.

In 1880, by using Horgan's method, "The Daily Graphic" reproduced, rather half-heartedly, a halftone screen cut of a New York scene. Mr. Horgan continued his experiments at The New-York Tribune, and by 1897 established an important date in American journalism when The Tribune reproduced the first halftone screen on modern high-speed presses.

Within the next month The Tribune augmented its regular illustration with many halftone illustrations. Other newspapers followed with this method, and the week-end picture section as part of the newspaper began to have vogue, one paper specifying its illustrated section as "The Half-Tone Part." The New-York Tribune started a special supplement Jan. 30, 1897, and in May, 1897, added halftone illustrations to this. From this section, as printing methods developed and the outbreak of the World War sky-rocketed the demand for pictures, came the gravure section of today's New York Herald Tribune, started in 1915.

A complete photographic record of the 100-year files of The New-York Tribune and the New York Herald Tribune has been made on microfilm for the library of the paper, and a duplicate of this convenient Recordak process is available at the New York Public Library.

New Classroom Film Aids in Shop

It Is Primarily Intended For Schools Engaged in Training For Our National-Defense Needs

WITH THE DEFENSE PROGRAM forging steadily ahead and thousands of young men receiving training for service in key industries, comes announcement of a significant new sound-film program, designed to give vital aid in the teaching of machine-shop practice.

Reel 1 of "Elementary Operations on the Engine Lathe" was released recently by the Company, after a preview before a number of industrial and school representatives. And, to employ for a moment the picturesque vernacular of the motion-picture world, it speedily demonstrated that it was sure-fire box office in its highly important field.

The reel covers correct methods for exact alignment of the lathe, . . . detailed procedures involved in facing, straight turning, and squaring a shoulder, . . . working accurately to dimensions from a mechanical drawing, . . . characteristics and selection of the principal cutting tools, . . . a comprehensive exposition of the use of micrometers in relation to graduated dials. All of this in eleven minutes' screen time!

With machine-shop practice divided into three stages, textbook, demonstration, and actual practice on the machine, the new sound film is proving an invaluable aid to the instructor. Utilizing carefully planned and superbly photographed full-screen close-ups, it isolates and greatly enlarges the critical action involved in every operation. It not only permits demonstration to the whole class at once, but enables each student to follow the action even more clearly than would be possible from a position directly at the side of the instructor. Full explanation in sound accompanies each step.

Reel 2, covering operations not included in the first film, is scheduled for release this month. These two reels, with skillful co-ordination of sound and image registering an impact not achievable by any other means, are a significant contribution to schools undertaking pre-employment training for national defense.

ACTIVITIES

KODAK PARK NOTES: With the K.P.A.A. bowling season at an end, we note the following winners in the various leagues: Finished Film, in the Women's 16-Team League; Film Emulsion Coating, in the Women's 8-Team League; Tool Room, in the Men's "A" League; Compositors, in the Thursday "B" League; Recovery, in the Tuesday "B" 16 League; Millwright and Building 105 tied in the Tuesday "B" 8 League; and Film Emulsion Coating in the Trickworkers' League. The K.P.A.A. Team made a splendid showing in the A.B.C. Tournament at St. Paul when they rolled a prize-winning total of 2812 in the team event. The team was pointing to the State Tournament at Buffalo where members were to compete on the tenth of this month. The women's bowling leagues held their annual banquet on April 21st. . . . Despite Walt Foertsch's tournament high-scoring record of 30 points in the first game, Kodak Park were dethroned as champions in the Monroe County Y.M.C.A. Invitation Basketball Tournament when they were eliminated in the second round by Newark. Building 48 made a clean sweep of both regular season and play-off competition in winning the Departmental Basketball League honors. . . . John Robinson, of the Mail Department, and Curtis Baker, of Building 13, won the Noon-Hour Table-Tennis Doubles Tournament. . . . About twenty-five girls have been taking the golf lessons arranged by the K.P.A.A. at the George Collins Golf School. . . . New trustees elected in recent K.P.A.A. balloting are: Helen Slowe, Spooling Department; James Culhane, Film Planning and Record Department; and Harold Lindhorst, N.C. Slitting Department. Trustees retiring after three years of service were: Ruth Heisner, Film Planning and Record Department; Dr. John Hecker, D.P.I.; and Alvin Tinsmon, Film Emulsion Coating Department.

KODAK OFFICE ITEMS: The bowling season was brought to a close with a round of gay parties. Both the men and the women held their annual bowling banquets on Tuesday, April 22nd. The Patent Department and the 13th Floor held individual parties on the twenty-fifth. . . . The first men's golf tournament of the season will be held on the seventeenth of this month. . . . Mrs. Harris Tuttle corraled high honors in the Individual Bridge Tournament, last event of the season. . . . Nearly 500 K.O.R.C. members turned out for the Men's Smoker on April 3rd. . . . The girls turned out in even greater numbers for their party on April 17th, about 600 enjoying an evening of fun featured by a style show.

Jerry Holland and Frank Comstock, badminton duo from Hawk-Eye, added to their many laurels recently by capturing the Men's Doubles Championship in the Rochester District Badminton Tournament

HAWK-EYE HAPPENINGS: A tennis club, managed by Phil Michlin, was organized this spring and will play in the Industrial Tennis League. Top-ranking prospects for active service are Jerry Holland, Walter Isslehard, Frank Comstock, and Herb Lettau. . . . With its season about to open, the Hawk-Eye Industrial League Softball Team named Chester Pero to serve as its chairman for the coming year. . . . The annual spring party and dance of the Athletic Association was held at the Kodak Office auditorium, April 26th. . . . The Camera Club held its annual election of officers. Elected were: John Phelan, president; Howard Rogers, vice-president; Evelyn O'Brien, secretary; and Hilda Pistor, treasurer of the group.

Smokers always pack 'em in: this shot was taken at the highly successful K.O.R.C. event on April 3rd

Kodak Discovery Finds Defense Use

New Rare-Element Glass Hailed As Giant Forward Stride, Will Aid in the Preparedness Program

Upper glass is a block of "crown," the type heretofore combining high refractive index with low dispersion most satisfactorily. The lower block is the Company's new rare-element glass that has been incorporated in aerial lenses designed for the Government. Its dispersion is exactly the same as that of the upper block, but position of pencil's image shows the greater ability of the new glass to bend light

A NEW TYPE OF OPTICAL GLASS, produced without the silicates heretofore composing glass and possessing increased capacity for bending light rays, has been developed by the Company and incorporated in aerial lenses designed for the Government during the past year.

"Almost as revolutionary as if someone had discovered how to make steel without iron," the new optical substance is the first basic optical-glass discovery since 1886, when the famous Jena glasses were introduced in Germany by Ernst Abbe and Otto Schott. (See December, 1938, KODAK, page 5.)

Tantalum, tungsten, and lanthanum, all considered normally as rare metals, are used to produce the new glass, which puts an important medium at the disposal of optical designers. For the present, however, the glass will be used almost exclusively for the making of lenses for the Army Air Corps.

In making public this significant discovery, a Company statement said:

"The glass has become available in the 'golden age' of optical science, when lenses considered the best ever made have been designed in spite of the fact that no intrinsically new optical glass has been produced for more than half a century. It is fortunate that the research on the rare-element glass, with its unique characteristics, came to fruition at a time when the resulting material could be put to use in the national-defense program."

The new glass is described as possessing a much higher refractive index (light-bending ability) than previously available optical glasses of the same dispersion. This means that a lens of given focal length will have much less curvature and that the path of rays through the margin of the lens will be more nearly like that of the rays passing through the central part.

The consequence, as shown by service tests of aerial lenses in which the new glass has been incorporated, is better "definition" in aerial pictures and a larger area covered, yet with no loss of lens speed.

Glass heretofore used for optical systems has been made from sand, which is composed of silica, with small quantities of alkaline earths and of elements such as boron and lead added.

Use of tantalum compounds and compounds of other rare elements was suggested eight years ago by Dr. G. W. Morey, of the United States Geophysical Laboratory, and the Research Laboratories soon commenced an investigation into the feasibility of the proposal. The new glass now being manufactured in the Laboratories is the result of this collaboration with Dr. Morey.

Some time may elapse before the new glass is found in wide and general use for photographic lenses.

"To incorporate this glass in a new photographic lens means that the optical designer must start from the very beginning," the Company statement emphasized. "Because of its higher refractive power, the new glass cannot simply be ground to a formula applying to silicate glass. Designing a new lens is a long and laborious procedure. . . .

"Application of the new glass to optical equipment needed for defense is the most important consideration at present."

His Suggestion Scores High

AMONG THE HUNDREDS of suggestions submitted each year by employees and approved for use, there are many which offer valuable ideas for improving the quality of products and for increasing the efficiency of production methods.

Recently, Melvin C. Hix of the Roll Coating Department at Kodak Park scored high with a suggestion of this type. Mr. Hix recommended an alteration in the coating machines which, he believed, would improve the quality of the film base which is coated upon them.

His idea was given a trial and proved so satisfactory that it was immediately approved. A careful estimate of its value has led to an award of $500 to Mr. Hix. KODAK extends heartiest congratulations herewith.

Melvin C. Hix, of the Roll Coating Department

OUT OF THE HAT

Speed Fans

THERE'S A YEARNING for speed in the blood of some men which can be as strong as the call of the sea or the lure of strange lands. Like an insatiable thirst, it is never satisfied. Speed for its own sake, speed as a thrill and a spectacle, has led its devotees to raise the limits up—up—up, until autos can now travel at 350 miles an hour and airplanes hurtle through space at an even greater rate.

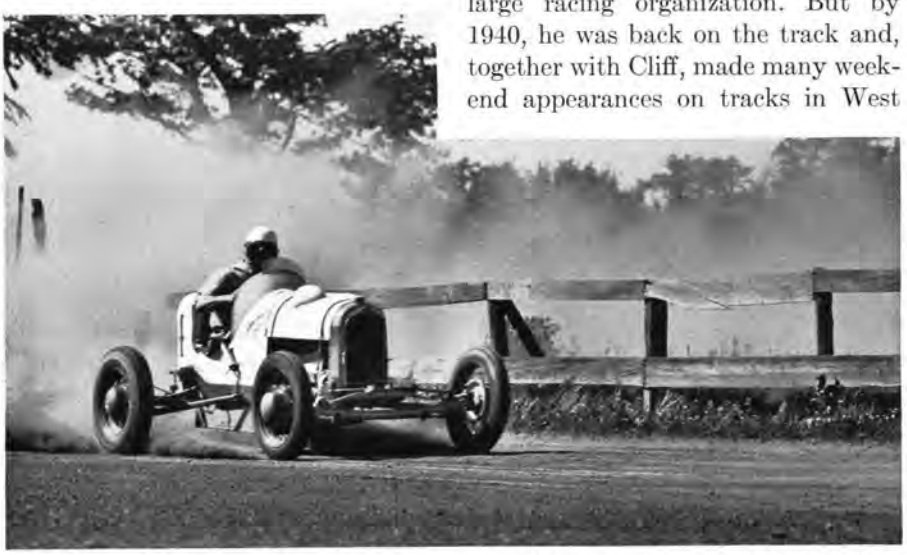
Speed has been in the blood of Donald Davison, of the Emulsion Coating Department, Kodak Park, since he was a boy. As a youngster he hung around the race drivers who tested the speedy 4-cylinder Dusenberg, which was once made in Rochester. By 1934, he was serving as a mechanic for Eddie Cox, famous local race-car driver, and in the fall of 1936 he was the proud owner of his own first racer—a "Fronty" Ford.

At about this same time, another Kodak employee—Clifford Wiley, of the Service Department, Kodak Office—was infected by the racing bug, too. But Cliff's interest in the sport was satisfied in a different way. An ardent photographer, he visited the race tracks to capture the thrills of the sport on motion-picture film. In time, the paths of driver and photographer crossed and these two young men have pursued their hobbies together ever since.

Clifford Wiley and Donald Davison: their paths crossed

Late in 1936, Don drove his "Fronty" Ford to a second place in the main event at Caledonia. He rebuilt the car that winter, fitting the motor with a special rocker-arm head which made the car so "hot" (racing parlance for fast) that it placed in many races on eastern tracks during the seasons of 1937 and 1938.

In 1939, Don's success wasn't so good, a new block causing the motor to overheat. So he sold the car, and giving up the wheel for a time, he served actively as an officer for a large racing organization. But by 1940, he was back on the track and, together with Cliff, made many week-end appearances on tracks in West Virginia, Pennsylvania, and New York State.



Donald Davison, at the wheel of his midget racer, roars out of a turn during races on the Caledonia track

During the past winter, Don and Cliff, assisted by Floyd (Pop) Perry—an old-time racing mechanic—have been building a midget racer on which they pin their hopes for a great season in 1941. But Don won't be at the wheel this year.

"Racing is a hobby," he explains, "in which you go out for the ride. I've had my fun at it, and from now on I'm going to let a younger man handle the wheel." He expects to have a midwestern driver take over the chores with both the new midget and the larger Alexander Special which he also owns.

Cliff has produced a veritable library of splendid racing films. Many in color and some exposed at night under the arc lights, they comprise a thrilling record of dirt-track racing in the East. He has shown them before many breathless audiences.

"It's really a magnificent sport," Cliff tells us. "Nowhere can you find a higher spirit or finer sportsmanship than is to be seen among those fellows. The relative safety of the sport indicates the consideration and regard each one feels for the rights and welfare of all the others."

Cliff likes to recall the amusing occasion in 1937 when Don made the mistake of forcing gas at abnormal

Formula for Fun: Net, Ball, and Racket

Tennis, One of Today's Most Popular Sports, Was Played Many Hundreds of Years Ago

Ye tennis fan of olden times played a game far different from the one that we enjoy nowadays. The court was enclosed by four walls, as shown here, allowing the player to swat the ball with abandon in all directions

In describing the activities of old Fleet Street Prison, abode of defaulting English debtors, an eighteenth-century writer mentions the game of rackets and pays tribute to its value as a form of exercise:

Within whose ample Oval is a Court
Where the more active and Robust resort,
And glowing, exercise a Manly sport.
(Strong exercise with mod'rate food is Good,
It drives in Sprightful Streams the circling blood;
While these with Rackets strike the manly Ball).

You see, in those days, the game was played against the walls as well as over the net of an indoor court. So the dandy of the day, jailed perhaps for failure to pay his tailor, was free to exercise his ingenuity and convert prison walls into the sides of a tennis court. A racket, somewhat similar in shape to that we use today, was employed to bat the ball, though it's interesting to note that way back in the thirteenth century the game was played with bare hands or, at best, a protective glove.

Well, like a good many other things, tennis passed through many stages of refinement until, in 1873, a Major Wingfield of England brought it out-of-doors and started a new version which he called lawn tennis. The indoor game of court tennis still survives, but its costliness has greatly limited its popularity.

We Adopt Tennis

America was introduced to Wingfield's new game in 1874 when an American girl, Miss Mary Outerbridge, brought the game back from Bermuda where she had been visiting. So enthusiastically was the game received in this country that Miss Outerbridge's older brother persuaded the mushrooming tennis clubs of the country to form the United States Lawn Tennis Association. That was in 1881, and for more than sixty years this association has been the ruling body of the sport in America.

There is surely no mystery connected with the great popularity enjoyed by tennis today. It's a grand competitive sport, and it offers excellent exercise—as the Fleet Street chronicler so quaintly pointed out. It can be played by two contestants, or by four, and while it's considered a bit too strenuous for the man past middle age, it's a great limber-upper for devotees from fifteen to forty.

Our Record

Almost from the time of its introduction here, America has been developing some of the world's finest tennis players. In the annual international competition for the Davis Cup, first played in 1902, the United States has been victorious eleven times—more often than any other country. Great Britian, France, and Australia have been other top-ranking centers of the sport.

No popular game has been graced by a more colorful line of champions. The Doherty brothers of England, Brooks and Wilder of Australia, Borotra and Lacoste of France, and the incomparable Tilden of America are names to conjure with. The legendary feats of these players have added glamour to a game which was once played by French nobles and English debtors to pass away the time.

In many of Rochester's public parks, fine tennis courts are available throughout the summer. If you want a thrill and a lift from listlessness, go crack the felted ball across the net. It's a grand old game, as you'll find.

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pressure into his motor. As he came up to the starting line in front of the grandstand, sheets of flame shot up from the hood.

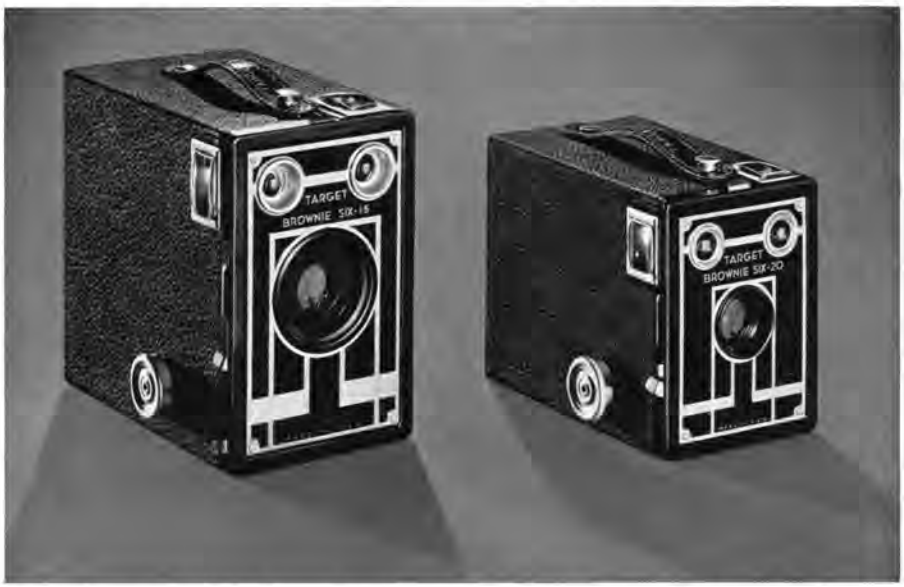
"There wasn't any danger," we were assured, "but five women promptly fainted."

And then there was the breath-taking moment during the night races at Caledonia in 1938. While leading the pack, Don entered one of the turns at high speed and swerved into a broadside skid. To avoid a pileup and injury to the other contestants, he gave his car the gun and headed through the fence.

"As I crashed through," he recalls, "one of the light poles loomed up dead ahead and a fear flashed through my mind that the pole might be broken and all the cars left speeding crazily in darkness. It was a bad moment, but luckily the pole stood the shock and I was able to jump to safety."

Accidents are rare on the dirt tracks—the chief danger being from the stones that fly from under the tires of the speeding cars. Still, it's a sport we'd prefer to enjoy from a grandstand seat while others burn up the miles with their roaring steeds.

They Join Brownie Line



Recent additions to Kodak's famous Brownie line are the Target Brownies Six-16 and Six-20. These smart, modern cameras mark a new high in value in their price field: $3 and $2.65, respectively

He Refused to Fail

(Continued from page 3)

across northern Greenland. His feat was hailed throughout the world.

It would be useless to try condensing the story of Peary's expeditions between this time and his last northward thrust in 1909. Enough to say that they were years of hardship, financial worries, and public misunderstanding—that they were also the years that gave him the experience and knowledge to make final success possible. Throughout those twenty years, the courageous explorer remained steadfast to his dream of winning the North Pole—a dream which led him, in the summer of 1908, to set out on his eighth and last expedition.

Sailing from New York on July 6th aboard the sturdy ship *Roosevelt*, which he had designed himself, Peary must have been plainly aware that this was to be his last attempt to achieve his great goal. Now more than fifty years old, almost half of his life had been devoted to the unrelenting struggle.

His campaign was organized with military-like thoroughness. With him were a seasoned staff of helpers, adequate supplies for arctic life, and, above all, a knowledge and experience that made him incomparably the best-fitted man in the world to accomplish the work ahead.

A base camp was established at Cape Columbia, and from this point Peary and his supporting parties began to thrust northward on the morning of February 28th, 1909. Slowly, in accordance with a precisely laid plan, men and dogs moved supplies to more and more advanced bases. One by one, the supporting parties turned back as their part of the work was done. Goodsell and MacMillan bade their leader farewell at latitude 84° 29′. Borup, with a large party of Eskimos and dogs, turned back on March 20th after crossing latitude 85°. Marvin faced southward on March 26th, and met a tragic death on the return journey. Bartlett, in charge of the last supporting party, accompanied his commander to the final base camp at latitude 87° 47′.

From here, Peary prepared for the final effort—a difficult dash of more than 100 miles to the Pole. Selecting the best of the remaining dogs and with Matthew Henson, and four Eskimos, he set out on April 2nd. Five marches later, on April 6th, he unfurled the Stars and Stripes at the Pole.

The exhausted party immediately laid down to rest. After a short sleep, Peary arose and made this entry in his diary. "The Pole at last. The prize of three centuries. My dream and goal of twenty years. Mine at last! I cannot bring myself to realize it. It seems all so simple and commonplace."

What an ordeal those twenty years had been, and what stoutness of heart must have been required to sustain this indomitable man on the long road to final success. He had, indeed, lived true to his motto, *Inveniam viam aut faciam*—"I shall find a way or make one."

Activities Calendar

May 12—Rochester Major Softball League opening game, Kodak Park vs. the Camera Works, on the Kodak Park athletic field

—Kodak Park noon-hour baseball league opening game

May 13—Kodak Park Athletic Association girls' tennis lessons, under the direction of William Tucker, on the Kodak Park courts

May 15—Camera Club pictorial section final competition for black-and-white prints

May 17—Kodak Office men's golf tournament, at Lake Shore

May 22—Camera Club pictorial section final competition for color transparencies

June 12 and 13—Combined Spring Exhibition and Evanoff-Trophy Competition, and the Kodak National Salon, in the Kodak Office auditorium

Did You Know?

THAT APPROXIMATELY 18,000 passenger trains and about 15,200 freight trains operate daily over the tracks of the American railroads? On this basis, says the Association of American Railroads, a passenger train starts on its run somewhere in the United States every 4.8 seconds, and a freight train starts on its run every 5.7 seconds, day and night, on the average.

• • •

That more than 52,000,000 men and women employed in industry and commerce now have social-security accounts? Approximately 1,000 benefit claims for retirement benefits of all types are now being approved daily. In the first eleven months of 1940, 237,000 such claims were approved. Benefit payments now total $4,250,000 a month, it is said.

"THE OPEN ROAD"

PRINTED IN U.S.A.
AT KODAK PARK

Great Movies—on your first film—with **Ciné-Kodak**

IT'S EASY, even for a beginner. Just three simple steps (see right), and even though you've never made a movie before in your life, you can get great movies—with Ciné-Kodak.

Every Ciné-Kodak is more than a wonderful home movie camera. It's part of a complete plan for trouble-free movie making. Eastman, and Eastman only, gives you the entire equipment and service you need: Ciné-Kodak—there's a model exactly suited to your needs; superior Ciné-Kodak Film in black-and-white or FULL-COLOR Kodachrome; processing service that's convenient and included in the price of your film; and Kodascope, the projector that shows your movies clearly and brilliantly—Eastman all, and all designed to work together.

Your dealer will show you Eastman home movie equipment . . . Eastman Kodak Co., Rochester, N. Y.

TO MAKE 16-MM. MOVIES . . . Magazine Ciné-Kodak—effortless 3-second magazine loading, 3 speeds, ultra-fast *f*/1.9 lens, interchangeable with eight accessory lenses, $112.50. Ciné-Kodak "K" *f*/1.9—most widely used 16-mm. home movie camera, $76.50. Ciné-Kodak "E" *f*/3.5—the low-priced "Sixteen" that has many high-priced camera features, $39.50.

TO SHOW 16-MM. MOVIES . . . Kodascope "EE"—low-priced, from $61.50. Kodascope "G"—Eastman's finest 16-mm. projector, from $107.50. Both complete with lens and lamp.

Ciné-Kodak

EASTMAN'S FINER HOME MOVIE CAMERAS

1. Easy to load . . . If it's a magazine model, as below, just slip in the magazine. If a roll film model, thread along marked film path.

2. Easy to set . . . The camera's all-purpose, all-film exposure guide shows you how to set the lens.

3. Easy to sight and shoot . . . Aim camera, press exposure button—and you're making movies.

This advertisement will be seen in "Newsweek" for May 12th, and "The New Yorker" for May 31st