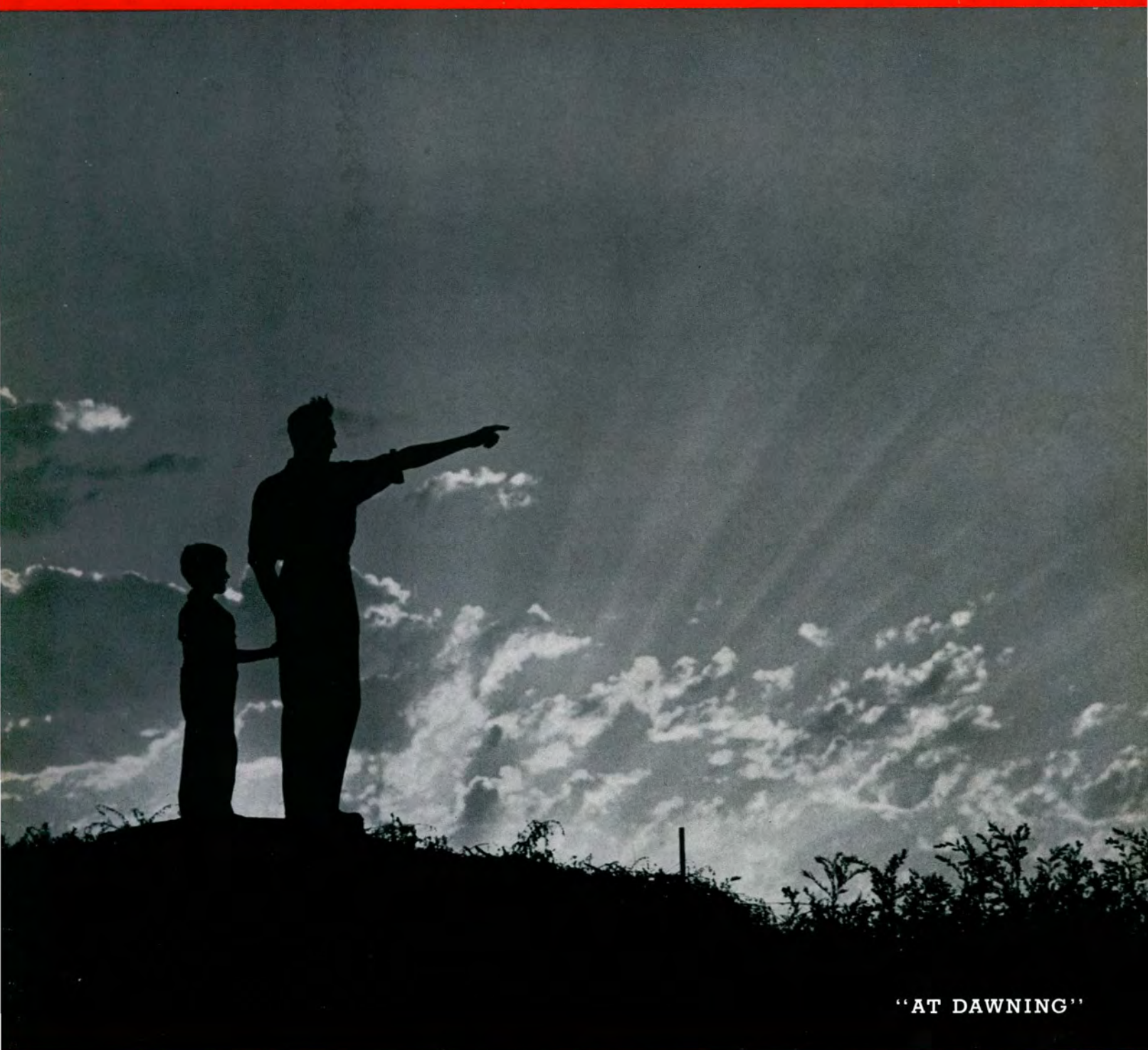
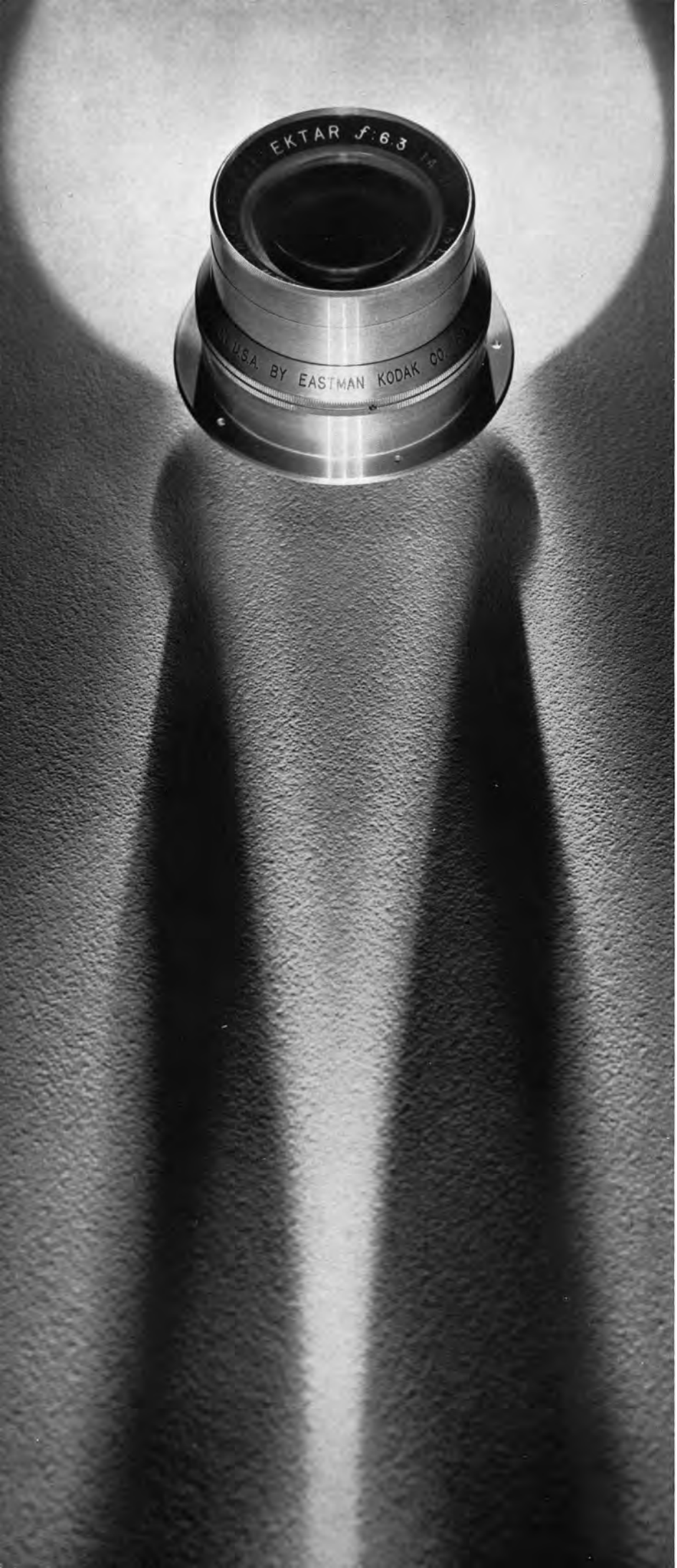
KODAK

A MAGAZINE FOR EASTMAN EMPLOYEES



"AT DAWNING"

APRIL 1941



IN THIS ISSUE

EKTAR LENS

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KODAK

Volume 20 APRIL 1941 Number 4

A Road for Rays of Light

The Lens Designer Must Plot A Veritable Highway Through Many Types of Optical Glass

IT DOESN'T TAKE a trained civil engineer to understand some of the problems which must inevitably arise in laying out a new road to run, let us say, between one city and another. We can foresee that such a road will not run in a straight line, though such would hypothetically be the best route, and we can surmise that the surveyors for that road will take advantage of natural topographic features wherever they can and they will overcome all topographic obstacles as best they can. Eventually, they will have mapped out the most feasible route for their road, though it may appear a rather poor compromise to carping sticklers for perfection.

The life story of a Kodak lens begins with a vast number of figures. Even with the aid of a modern computing machine and mathematical tables, it often requires many months to compute a new lens formula

Roads through Glass

Now, there is another kind of roadway which offers somewhat comparable problems in being laid out, and this is the route that lens designers plot through pieces of optical glass to carry rays of light into a camera. Here again, there is a hypothetically correct route which would lead those rays to produce a perfect image at their destination—the focal plane of the camera—but certain obstacles along the way make this goal very difficult to attain so that the lens designer, like the road surveyor, must be satisfied to reach the most feasible solution and leave perfection to the angels!

Now, one of the strange things about the lens designer's job is the fact that rays of light always travel in a straight line unless disturbed, and yet he lays out a road for them through optical glass which introduces just the sort of disturbance that bends them from their normal course. But this bending is essential in that it serves to focus points of light on one focal plane. In the process, unfortunately, it raises some tremendous problems which the lens designer must seek to overcome.

We ought to look at these problems for a moment and see just why it is so difficult to guide rays of light into a camera in a satisfactory way.

Sales Angles

When a new camera is designed at Camera Works, the ruling consideration is that it should appeal, in its final form, to Eastman customers and thus lead them to desire it and to buy it. So the Development Department must give a great deal of attention to such considerations as attractive appearance, a high degree of compactness, a popular film size, a reasonable retail price, and so on. But the incorporation of these very necessary features may add considerably to the lens designer's problems, for he is held within very strict limits. He must design his lens to fit the specific needs of a camera, since those sales considerations hardly permit the designing of a camera to fit a lens. So, when the time comes, after the final design of a camera with sales-appeal has been decided upon, the Camera Works engineers turn to the Scientific Department at Hawk-Eye and say in about so many words, "Here's a new camera we have just designed

They Scored High in Quiz

Facing the mike and the genial quizzer is the no-less-genial Kodak Office foursome that knew all the answers—well, enough of 'em to come out "tops"—in a recent intercity quiz contest. Reading from left: William A. Vaughn, Patricia Leek, Jeremiah G. Hickey, Jr., and Doris Weber

for Mr. Consumer. We're satisfied that it will appeal to the buying public, and now we need a lens for it. Below you'll find the specifications which this lens should meet in the way of focal length, coverage, speed, and cost limitations. Please see what you can do for us."

Problems Pop Up

Now, this is a much larger order than you might ever suspect. It involves the mathematical computation of an entirely new lens—and if you think that is a simple job you should see the volumes of figures representing months and even years of labor that have gone into other Kodak lenses. It isn't, we repeat, a simple job, because to survey and lay out a road for waves of light requires that the lens designer overcome a great many obstacles, some rather mountainous in their way of obstructing the progress of his work.

A hundred years ago, when photography was an infant and the science of optics still crept uncertainly about in its swaddling clothes, the lens designer had very incomplete knowledge and inadequate theories to guide him. He had to grind his lenses, fit them in a mount, and then find by practical application whether or not they were good. If his lens didn't serve properly as a pathway for rays of light, he had to try again and again until he attained a reasonably satisfactory result. Lens designing was just a matter of hit and miss in those days, and even the best hits weren't bull's-eyes by a long way.

Today, lens designing is done mathematically, largely with the help of automatic calculating machines. And because the lens designer is familiar with the optical properties of his glass and its effect upon rays of light, he knows that a satisfactory solution to his problem on paper will lead to proper performance of his lens in actual practice. The problem is, of course, to reach that satisfactory solution on paper—and that is generally an arduous and drawn-out business.

Action on Light

The chief trouble is, as you probably know already, that glass not only refracts or bends light—a very necessary property for bringing the rays to a focus—but it also disperses the light into all the colors of the rainbow. It might be thought that a lens could be made out of a single piece of glass. So it could, but it would not be a good lens, for it would suffer from defects which are known as aberrations. In order to reduce these, the lens designer uses different kinds of glass to balance the errors of one lens element against those of another having different optical properties.

Final Steps

In the meantime, the designer must keep in mind the final requirements for his lens, and it may be that these requirements will force him to introduce as many as seven or eight elements into his lens. If they do, he is soon swimming in a turbulent sea of figures—thousands and thousands of them. He no more than overcomes one mountainous obstacle when he runs smack into another which may even force him to retrace his steps and start all over again in a new direction. Eventually, all errors are satisfactorily balanced out, and such requirements as focal length and speed are satisfactorily fulfilled. Tools are then prepared for grinding the lens, a sample lens is made and tested, and production begins.

Kodak's Contributions

The Eastman Kodak Company has contributed greatly to progress in lens design. Most of us are familiar with how the Company has brought about a lowering of the price of fine lenses by its advanced methods of manufacture, but few of us know how much our own scientists have contributed to improved methods of computing lenses. A staff of more than twenty members in the Scientific Department at Hawk-Eye devotes its entire time to computing new lens formulas, and the records of that department contain a treasure of recorded experience gained in the past to guide its efforts in the future. New contributions are made each day to this storehouse of scientific findings.

But the lens designer, in his more communicative moments, will tell you that row upon row of mathematical figures is not by itself enough to assure the successful computation of a new lens formula. Years of experience are needed to give him a "feel"—a kind of directional sixth sense—which aids him in plotting pathways through optical glass over which light waves may pass on their way to forming a sharp photographic image.

Beaver Skins and Pieces of Eight

Barter Held Sway in Colonial Days, When Currency Was Too Fickle and Scarce for Exchange

Samples of early United States coin and currency. The Constitution gave Congress sole right to issue money, but these first paper notes, known as "continentals," had no bullion to back them and so declined in value

WHAT A NIGHTMARE of confusion we would be plunged into if all the coin and currency of the United States were suddenly to disappear. Just try to imagine the difficulties involved if we had to resort to barter in the exchange of goods and services. We can hardly realize how greatly money, as a medium of exchange, contributes to the smooth and orderly processes of everyday life. Yet, it is not a natural phenomenon to be found wherever men live together. Savage tribes have either a very primitive form of money or simply no money at all. And even our ancestors, the hardy settlers of America, struggled to form a nation without the convenience or aid of an established currency.

Trade and commerce were largely a matter of barter in colonial days. There was, it is true, some metal coin in circulation—English shillings and pence, Spanish pesos and dollars or "pieces of eight," French guineas, and Portuguese moidores. But these coins were neither stable enough in value nor plentiful enough to serve as a sound medium of exchange.

So the luckless settlers of America were forced to use beaver skins, tobacco leaves, Indian wampum, and other articles of relatively stable value. According to a printed list of 1703, one beaver skin had a value equal to two small axes, to ten pounds of pork, to five pecks of Indian corn, or to one foot of broadcloth. One skin, we are told, would buy one plain shirt, but a "shirt with ruffels" for the dandy required a payment of two skins.

Obviously, the Colonies were desperately handicapped by this lack of a sound and adequate currency to help in carrying the affairs of domestic business and foreign trade. Their petitions to the Crown for the establishment of a mint went unheeded. For a time, a small mint in Massachusetts turned out the "pine tree shilling," but even this production of coin was soon stopped by the English Government.

With the end of the Revolutionary War and the winning of national independence, it might have been expected that our distressing monetary system—or lack of it—would be rapidly improved. But the Articles of Confederation, jealously guarding the rights of the infant States, did not give the Continental Congress any real power in monetary matters. To pay off the debts incurred during the War, the Congress caused paper notes to be printed. Known as "continental notes," this currency was based chiefly on the credit of a bankrupt government, and its value swiftly declined to such a low level that the phrase, "not worth a continental," came into being as an expression of complete worthlessness.

With the adoption of the Constitution in 1789, the Federal Government was given power to levy taxes and coin money. It was now possible to take steps to improve the monetary situation and a Treasury Department was promptly formed, with Alexander Hamilton as its first secretary.

(Continued on page 16)

The first mint was established in Philadelphia by act of Congress for the coining of gold, silver, and copper coins. These two pictures, courtesy of the Rochester Museum

PANORAMA

Couldn't Split

HEREWITH, somewhat belatedly, we present a Halloween story that came to us recently from St. Paul.

Seems that Robert Hoffman, manager of the Eastman Kodak Stores in that city, submitted gaily and generously to numerous "tricks-or-treats" demands on that night of merrymaking. "When he ran out of candy," writes Paul Light, St. Paul columnist, "he handed out dimes.

"Three tiny youngsters accepted a ten-cent piece with exclamations of delight. Bob was surprised when his doorbell rang a few minutes later. On the porch stood the smallest of the three.

" 'Here, Mister,' he said, handing Bob a coin. 'We didn't know how to split it.'

"Bob pocketed a shiny penny."

London Notes

HUMOR AND TRAGEDY blend in much of the news that reaches us from England these days, and all of it is plentifully veined with that almost incredible English calm. Here are two extracts from recent mail, the first an excerpt from *News from the Outpost*, a London publication:

"Saturday afternoon is children's hour at the Hollywood cinema, and the Germans chose that moment to drop a bomb in it, with serious results—several children killed and many injured.

"Two children who had gone to this performance failed to return home at the usual time. Their mother, hearing of the tragedy, rushed to the scene, but could find no trace of them. Eventually returning home distracted, she found the children safe and sound.

" 'Goodness, what happened to you two—didn't you go to the Hollywood? '

" 'Oh, yes, Mother, we went there, but the Germans dropped a bomb on it, so we came out and went to another one.' "

And a letter from a Kodak Limited employee relates realities that tax one's credulity.

"Some astounding things happen, hardly believable unless you see them. For example, a six-story tenement will be completely demolished by a high-explosive bomb, floors and walls all down in one big heap of rubble, the blast knocking out windows and doors in near-by properties. Yet, standing on a mantelshelf on a remaining wall will be two or three china or glass ornaments and a clock, untouched!

"Again, high up on the wall of a ruined house will be a mirror, unbroken and still serenely hanging by its piece of cord on a nail!

"One of our girls had a rummy experience the other night. She went to call on some friends. There was no answer when she rang the doorbell. She tried the door and opened it only to find that only the front wall of the house was there: the rest had been bombed up or down, whichever way you prefer. Looking at the front, the curtains were in place, and the windowpanes were intact. But the inside was blown to hell!"

Rattrap

YOU MIGHT BE CONTENT to mark it down as just another of the endless wonders of science, but we prefer to believe that somewhere in this vast world another Rube Goldberg has come to life and given us the benefit of his ingenious mind.

We're alluding to a big wooden affair, rather ordinary and boxlike in appearance, but most extraordinary in operation—for it's the darndest rattrap you ever saw. We ran across the contraption down at Kodak Park and we'd like to tell you how it works.

The trap—about six feet long, two feet wide, and one foot high—is placed in a doorway or other spot where rats are wont to run. There it offers the unsuspecting rodent a tunnellike aperture through which he can easily pass. But as he gets halfway through, his furry body interrupts a beam of light playing on a photoelectric cell, a circuit is broken, and a gate drops at each end of the trap.

Seeking escape, the trapped rat now climbs a ramp, turns right, and walks over two flexible metal blades. The first of these springs back to block his return, while the second starts a motor which resets the trap. Proceeding, the rat soon finds himself faced with a choice of six stalls, any one of which he may enter. But whatever his choice, it proves a fatal one, for he is promptly electrocuted.

National Salon

RECEIVED just at press time is news that presages a notable photographic display at the Kodak Office. The item is as follows:

"The Kodak National Salon will be held in conjunction with the regular Kodak Camera Club Spring Exhibition. It is open to all Kodak employees in the United States. The Salon has classes for black and white, 2 by 2 color transparencies, and color prints. Pictures will be judged by a jury of experts and awards will be made for the best entries in each class. There will also be lesser awards in each class in the salon.

"The closing date for receiving entries is May 3rd. The Salon will be on exhibition at the Kodak Office early in June. Entry forms can be obtained from the Kodak Camera Club, and they are also available at the Eastman Kodak Stores and the branches."

What's New

AMONG recent gadgets to come to the attention of the *Wall Street Journal* is a decorative holder that is offered as an aid to leg-of-lamb carvers. The holder grips the bone and keeps it from skidding. . . . Other gadgets mentioned included manually operated push-and-pull levers instead of oars to propel lifeboats. . . . An electrically operated drawer to be fastened beneath a hospital bed. The bed's occupant can open the drawer by pressing a button. . . . A mechanical lead pencil that is as thin as a pocket comb and can be used as a bookmark. . . . And a filing case for index cards to be installed under an automobile instrument board.

They Have Retired from Kodak Service

Elmer Cain, E. K. Stores, Chicago

Knuthen Moldal, E. K. Stores, Chicago

Julius A. Wiseman, Kodak Park

A. Carl Fisher, Kodak Office

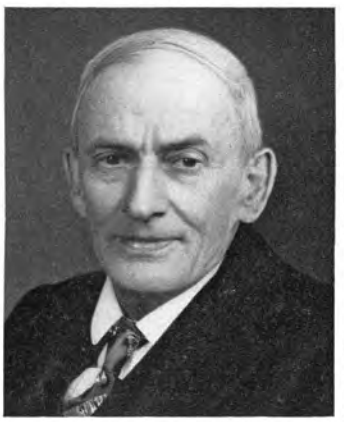
Fay W. Ager, Kodak Park

Hugh E. Dooley, Kodak Park

Miss Anna A. Ellor, New York Branch

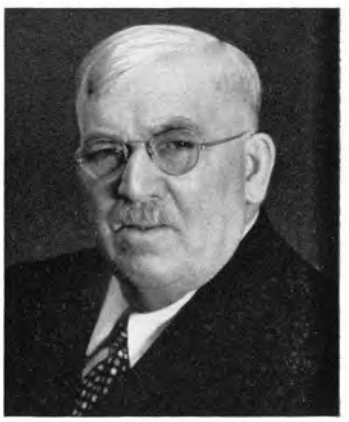
John A. Woods, Kodak Park

John B. Johnson, Kodak Park



Edward F. Green, Kodak Park

Otto Groth, Kodak Park



Timothy B. Toomey, Kodak Park

J. Lee Tormey, E. K. Stores, Baltimore

Anthony Faifer, E. K. Stores, Chicago

Charles O. Carroll, Kodak Park

Henry R. Merritt, Kodak Park

It's a Gigantic Housekeeping Job

The Division of Maintenance And Operation Has a Variety Of Vital Tasks to Carry Out

IT'S A BIG JOB however you look at it, this business of housekeeping for a city: miles of streets and sidewalks must be kept clean and in repair; a vast sewer system must be serviced; thousands of tons of waste must be collected and disposed of. . . .

Performing this job in Rochester is the division of maintenance and operation. This division is a unit of the Department of Public Works (see March KODAK, page 3). Its large-scale activities affect intimately the safety, health, comfort, and convenience of every resident of the city.

Crisscrossing the city are 526 miles of public streets—that's equal to the distance between Rochester and Louisville, Kentucky—and most of them are paved. Thirty bridges span the Genesee, the Barge Canal, and the city's other waterways. Subjected to enormous wear and tear by their daily traffic load, these essential arteries must be kept in good condition.

Because Old Man Winter—remember him?—lays a none-too-gentle hand on Rochester, street repair is carried out as far as possible during the other months. Then, in a single day, the city's asphalt plant may deliver as much as two hundred and fifty tons of material to the repair gangs of the division of maintenance and operation.

Those heavy snows of ours find the division on the alert. Indeed, just about the time we're sweltering under a blistering sun, routes for street and sidewalk plowing are being mapped by the guardians of our highways and byways. And when the weather bureau warns of an approaching snowstorm, the snow-fighting forces, with their plows and loaders and trucks, are ready for action at a moment's notice, day or night.

The menace of icy streets is met by spreading a mixture of rock salt and cinders. Motorized flushers and sweepers are used in regular street-cleaning jobs; and throughout the summer giant sprinklers do their part in abatement of the dust-and-grime nuisance.

Ashes, rubbish, and garbage are collected regularly and disposed of by the division of maintenance and operation. The contents of thousands of ash cans are dumped on city-owned land or used to fill in sunken areas. Rubbish is taken to the incinerating plant, where combustible material is burned. Garbage goes to the reduction plant, where it is "cooked," several tons at a time, and treated with naphtha solvent to reduce it to two salable by-products: grease and a brown, flaky powder called tankage. The grease is sold to soap manufacturers, the tankage to fertilizer manufacturers.

The bridges that span the city's waterways are kept safe by the division of maintenance and operation

There's good money in garbage, when it's gathered in mountainous quantities and treated properly. Last year, 1,780,000 pounds of grease and 10,000,000 pounds of tankage were sold by the city for $91,746. Incidentally, the waste gases produced in the rubbish-burning process at the incinerating plant pass through high-pressure steam boilers and generate steam that is used to "cook" the garbage in the reduction plant. This rather recent bit of magic on the part of the economy-minded maintenance and operation division cuts down the steam bill by more than $20,000 a year!

A city's services are not all overground. Beneath our streets and buildings lies a complex network of tile pipes, some of them large enough to drive a car through. This is the sewer system, which carries waste from every building in the city to the sewage-treatment plants. The largest of these plants can treat nearly fifty million gallons of sewage a day.

Careful supervision of sewer construction throughout the city has

(Continued on page 15)

Winter's snows and frosts and rains, coupled with a heavy traffic load, mean plenty of wear and tear for the city's highways and byways. Repair work is confined as far as possible to the more seasonable months

Another Kodak Year Is Reviewed

A Report to Employees on The Company's Operations in 1940

As we all know, it is the accepted practice among industrial corporations to issue each year a financial statement known as the "annual report." By listing therein its assets and liabilities together with a statement of the profit or loss resulting from operations, a company informs its stockholders, its employees, and the public in general of its progress over the previous fiscal year.

But we should remember, as we come to examine the 38th annual report of the Eastman Kodak Company, that a financial statement cannot, alone, tell the whole story of a company's operations. There are very important aspects of any company's business that cannot be represented in dollars and cents.

Thus, in the Company's annual report, we find no mention of the public good will and confidence in Eastman products which enters into every sale we make. Nor can this annual report evaluate the spirit of the Company's employees and the high order of workmanship that lies behind the reputation of Kodak products. Nor is it possible to estimate the value to employees, to the community, and to the national economy of the Company's continued efforts to stabilize the rate of production and so of employment throughout the year.

All of these factors, though they do not lend themselves to strict financial analysis, contribute in a very important way to successful operations.

Sales and Profits in 1940

Sales of the Company and its wholly owned subsidiaries amounted to $122,618,828, an increase of 9½ per cent over the sales of these same companies in 1939. These figures do not take in the operations of Kodak companies outside the Western Hemisphere since the troubled international situation makes it impossible to obtain complete figures from the foreign plants and branches. The cost of production and distribution within the Western Hemisphere came to $102,144,322, this figure including such items as raw materials, wages and salaries, advertising, shipping, and research. Provisions for United States income and excess-profits taxes and for foreign income taxes amounted to $9,173,218. This shows a marked increase over the provision for 1939 of $4,798,318.

Of the 1940 taxes, $8,661,485 was payable to the United States Government. This sum was equal to $3.50 per share of common stock, as compared with $1.79 per share last year.

Net profits for the year were $20,076,739 compared to $20,818,200 in 1939.

National Defense

Some attention must be given to the numerous defense orders which the Company is undertaking to fulfill for our government. At the time this is written, these defense orders have reached a total of approximately $35,000,000 and it is probable that this figure will be increased as time goes on. It will undoubtedly take several years to completely fill this extended list of contracts. A new seven-story building at Hawk-Eye, designed to handle the Government's increased demand for optical equipment, is nearing completion, while the existing production facilities of other Kodak plants are being widely used for expediting defense contracts. Normal production schedules have, naturally, been somewhat affected in many instances.

The Company is proud of the extensive contributions which it and its employees are privileged to make to the national defense program. It has entered wholeheartedly into this work and, in line with its policy during the last war, it has voluntarily limited itself in regard to the profits which may accrue from such contracts.

Service to Employees

Under the group-insurance plan, $279,777 was paid to the beneficiaries of 117 Kodak employees. In the twelve years that this plan has been in operation, $2,152,254 has been paid to beneficiaries. At the end of the year, 27,582 Kodak employees were insured for a total of $63,036,214.

The tax paid by the Company under the New York State Unemployment Insurance Law last year was $882,089. If we assume that *all* employees leaving the service of the Company last year were eligible for the maximum benefits under the law, and that none of them was re-employed within the thirteen weeks' benefit period, they would have received from the State a total of $238,121, or 25.9 per cent of the amount contributed by the Company.

During the year, sickness benefits amounting to $447,231 were paid to Kodak employees.

One hundred and forty-four employees retired during the year under the provisions of the retirement plan, bringing to 637 the number of former employees now receiving monthly retirement benefits.

During last year, 18,606 employees were granted a total of 26,054 weeks of vacation with full pay.

In recognition of their loyal service, the employees shared in the Company's 1940 success to the extent of $2,396,045, paid in the form of wage dividends on March 24th of this year. The rate of the wage dividend is dependent upon the amount of dividends declared each year on the common stock of the Company.

New Products

Highlighting Kodak progress in the photographic world was the new Kodak Ektra, a superb 35-millimeter camera introduced to the public early this year. Displaying features never before offered, this miniature-type Kodak has been aptly termed the "world's most distinguished camera."

The British Children

During 1940, employees and the Company joined in a spirit of unselfish co-operation to bring the children of Kodak Limited employees to the safety of America. When the Company sought last summer to find homes among its Rochester employees for these children, the response was generous and immediate. One hundred and fifty-six British children are now settled in their foster homes here.

Kodak's Balance

(As of Decem

ASSETS

Cash	Needed to pay for raw materials; manufacturing facilities; heat and light; building maintenance; to pay wages and salaries and employee benefits; and to meet many other expenses:	$ 30,548,050
Marketable Bonds and Stocks	Investments of funds not immediately needed by the Company, but which are readily available:	18,261,911
Accounts and Bills Receivable	Money owed to the Company for goods which have been sold but are not yet paid for:	13,053,049
Inventories	Raw materials and supplies on hand, goods in production, and finished goods not yet sold:	39,027,651
Investments in Subsidiary Companies and Branches	This includes money invested in companies in the British Isles, Continental Europe, Africa, Asia, and Australasia, together with advances to them:	23,460,989
Other Investments and Advances	This includes advances to customers which are not due until after 1941; funds advanced and invested in the Kodak Employees' Association and in employees' home projects; and marketable securities which the law obliges us to deposit with the workmen's compensation commissions:	2,158,182
Land, Buildings, Plant, and Machinery	The Company's investment in the buildings we work in. Buildings and equipment wear out and provision must be made during their useful life for their eventual replacement. After deducting the amount of this provision, the value of our land, buildings, and equipment is the figure shown:	86,535,757
Deferred Charges to Future Operations	Prepaid insurance, prepaid taxes, etc. Since this item represents things paid for but not yet used, it is an asset:	706,519
Total Assets		$213,752,108

What the Company Owns

Sheet for 1940

28th, 1940)

LIABILITIES

Accounts Payable	This item shows what the Company owes for materials, supplies, power, heat and light, and other expenses:	$ 6,586,214
Wage Dividend	This amount was set aside from 1940 earnings for payment to employees on March 24th, 1941:	2,396,045
Provision for Taxes	Set aside on the books to pay federal, state, and local taxes which were unpaid at the end of the year:	11,579,395
Dividends Payable	Money due to the 42,191 stockholders of the Company and paid on January 2nd, 1941, in return for the use of the money they have invested in the Company:	3,806,505
Reserves	Set aside on the books over a period of years as a protection against losses which cannot be foreseen. Workmen's compensation and various insurance reserves are included:	26,206,945
Capital Stock and Paid-in Surplus	Representing the original investments made by the stockholders to provide the buildings, equipment, and working capital which make our jobs possible:	124,479,722
Earned Surplus	This item is not a specific sum set aside in a bank but represents assets which keep the business going: buildings, machinery, operating funds, and so on. It has been derived from the investments made by stockholders and it represents a portion of past years' profits that has been retained in the Company to provide for manufacturing and operating facilities. This policy of building a surplus has made expansion possible:	38,697,282
Total Liabilities		$213,752,108

What the Company Owes

THE EDITOR'S PAGE

"The Good Earth"

As long as history has recorded the activities of Man, it has told of his digging below the ground in search of the buried treasures of the earth. Gold, silver, diamonds, copper, and tin were among the minerals known in ancient times. So important were the uses of certain minerals that periods of time in the life history of mankind have been named for them. Thus, we speak of the Stone Age, the Bronze Age, and the Iron Age.

It is very unlikely that future historians will name this epoch of ours for a single mineral, for today we find our industries and, in turn, our standards of living dependent to a large extent on all the minerals of the earth. Silver and gold serve as our monetary standards of exchange (see page 3). Iron ore, tin, copper, zinc, nickel, lead, and other metals supply the materials for our tools and the products of our industries. Nonmetallic minerals, such as sulphur and potassium, are indispensable to the operations and processes of manufacturing.

Nowhere is this dependency on minerals more striking than within our own industry. Merely to read over the formulas of Eastman developers or to run down the list of Eastman chemicals is enough to make one quickly realize the importance of minerals in photography. Sodium compounds, potassium, borax, tungsten, and phosphorus are among the more important on the list.

The emulsions of our photographic papers and films are rendered light-sensitive by the presence of silver compounds for which there appears to be no substitute.

Diamonds are employed for cutting and grinding; silica, for glass and lenses. Magnesium finds important use in insulation; and calcium, in refrigeration.

The rarer elements are on Eastman's shopping list, too—platinum, uranium, radium, and tantalum being more or less frequently used for special purposes.

Contrasted with these rare elements are those products of the mines which reach Kodak in huge quantities. Coal, of course, heads the list with several thousands of carloads a year. Iron and steel in various forms fill more than a hundred and fifty cars a year, while soda and sodium compounds arrive at the rate of almost five carloads a week.

It would require a great deal of space to list the sources of all these minerals used by the Eastman Kodak Company. Most of our tin comes from the Dutch East Indies. Industrial diamonds are mined in South Africa. Sulphur and the phosphates are widely distributed over the earth, our supply being largely domestic in origin. The potassium minerals are also supplied for the most part from within the country.

Behind all these minerals, these basic compounds of the elements from which the universe is fashioned, lies a long story of prospecting and digging deep into the tough hide of old Mother Earth. From shafts sunk into mountainsides, thrust beneath desert lands, and even bored through the ocean floor come the precious minerals which men have converted into thousands of products.

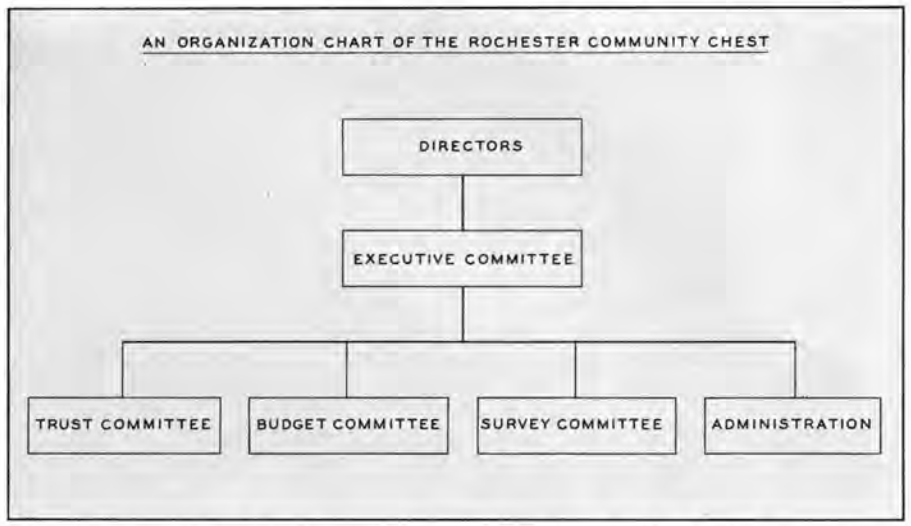
Local Philanthropies Participating in Rochester Community Chest

(*See story on next page*)

Association for the Blind of Rochester
Baden Street Settlement of Rochester
Baptist Home of Monroe County
Charles Settlement House
Church Home
Columbus Youth Association
Convalescent Hospital for Children
Council of Social Agencies
Family Society of Rochester
Genesee Hospital
Genesee Institute
Highland Hospital of Rochester
Hillside Home for Children
Humane Society of Rochester
Industrial Workshops
Jewish Children's Home
Jewish Home for the Aged
Jewish Welfare Council
Jewish Young Men's and Women's Association
Legal Aid Society of Rochester
Lewis Street Center
Milk in Schools Committee
Rochester Catholic Charities
Rochester Children's Nursery
Rochester Chapter—American National Red Cross
Rochester Community Home for Girls
Rochester Council—Boy Scouts of America
Rochester Council—Girl Scouts
Rochester Friendly Home
Rochester General Hospital
Rochester Guidance Center
St. Ann's Home for the Aged
St. Elizabeth Guild House
St. John's Home for the Aged
St. Mary's Boys' Home
St. Mary's Hospital
St. Patrick's Girls' Home
Salvation Army
Travelers Aid Society of Rochester
Tuberculosis and Health Association—Rochester Committee
Vacation Home—Council of Jewish Women
Visiting Nurse Association
Young Men's Christian Association
Young Women's Christian Association
Youth Service Bureau

A Common Fund for Community Needs

The Chest System Introduced Efficient Methods to Financing Of Social-Welfare Enterprises



This well-knit organization, the directors and committee members of which donate their services, insures efficiency and economy in the financing of the community's varied social-welfare enterprises

IN EVERY COMMUNITY there are social-welfare problems that cannot be adequately dealt with by federal, state, or municipal agencies alone. The larger the community, the more numerous and diverse are these problems.

Care of the aged, of children, of the sick, promotion of health and provision of character-building and recreational facilities—these are responsibilities that demand various services: hospitals, clinics, nursing societies, social settlements, arts-and-crafts centers—to name but a few of the more obvious.

Mr. Citizen Responds

The availability and success of such services in any community depend to a large extent upon the interest and active support of private citizens. Thus, of the six thousand hospitals in the United States some forty-five hundred are maintained in large part by donations. Again, many nursing associations have to rely upon private aid to supplement their income. And such meritorious youth-welfare activities as the Boy Scouts, the Girl Scouts, and the "Y's" are so financed.

Outmoded Methods

For many years, the financing of social-welfare services was a haphazard, and even annoying, procedure. Each agency in a community conducted its own money-raising campaign, and in the larger cities this meant as many as fifty different appeals in a single year. Obviously, some device for introducing efficient methods into the financing of social-welfare enterprises was needed—if only for the sake of Mr. Citizen's peace of mind, not to mention his much-worn pocketbook.

Early Organizations

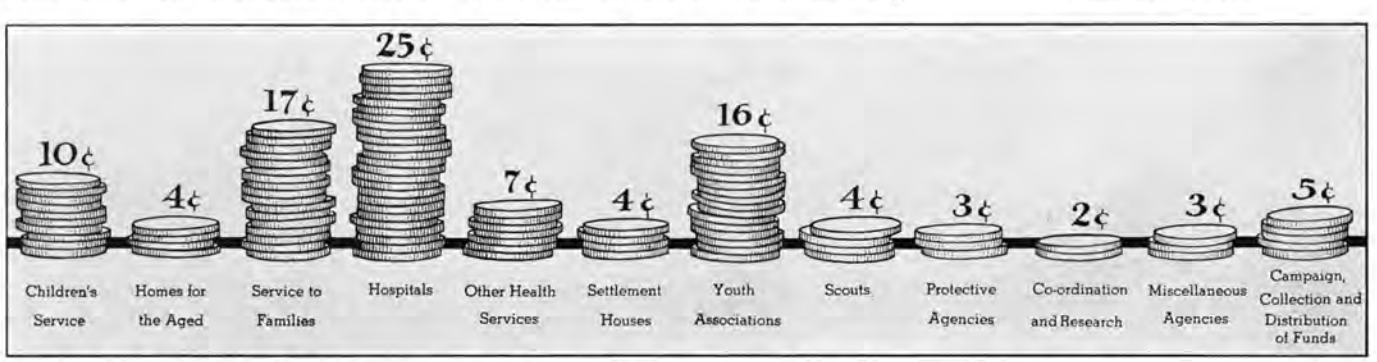
Formation of the Associated Charities in Denver in 1887 was the first step in that direction: a collective drive on behalf of the city's social-welfare agencies cut down the number of appeals by 23 in that year alone. But it was not until 1918, when "War Chests" were organized in some four hundred communities to meet emergency needs, that the merit of a single yearly campaign as opposed to many individual drives was demonstrated beyond all doubt.

So well did the War Chests prove their worth that they became the Community Chests of today, numbering upwards of five hundred in every part of the United States. Their job is raising money and distributing it in accordance with a definite budget procedure for the assistance of the social-welfare agencies that are affiliated with them.

How the Community Chest of a large city operates is well exemplified by the Rochester organization, which ranks among the leading Chests in the country. This chest is under the supervision of a full-time manager, who is responsible to a board of directors that is comprised of 40 representative citizens. There are, in addition, an executive committee of 15 members, a budget committee of 10 members, a trust committee of 9 members, and a survey committee of 7 members. The directors and committee members donate their services.

A single yearly campaign takes the place of numerous, and often competing, appeals. The actual cost of the campaign is fractional compared with what it would be if each social-welfare

(*Continued on page 16*)



How each cent of the contributor's dollar is allotted by the Rochester Community Chest is shown in above drawing. Administration expenses are notably low

1940 in the World of Photography

Noting Highlights of the Year In Scientific and Other Fields

Condensed from a review that appears in the "New International Year Book," by kind permission of the publisher, the Funk & Wagnalls Company. Author of the review is Glenn E. Matthews, of the Research Laboratories.

ANNOUNCEMENT of an improved, rapid method of Kodachrome processing marked the most significant advance in the color field during the year. Processing is accomplished by a continuous treatment on a single machine, instead of on three machines with drying operations between each treatment, as required heretofore.

Indicating the ever-increasing use of color by both amateurs and professionals, the *Photographic Dealer* reported that sale of color film in 16-millimeter and 8-millimeter sizes to movie-makers had, for the first time, exceeded that of black-and-white film.

One New York firm is said to have made more than 50,000 wash-off relief prints from color films during the year. Saluted as the "world's largest Kodachrome photography job," was a paint-and-color guide that contained 236 reproductions, many of them full-page size. (See June, 1940, KODAK, page 13.)

First large-scale use of Kodachrome sheet film for field investigation of glacial terrain was made by Bradford Washburn, in his Ninth Alaskan Expedition.

The microfilm method of recording and copying has become increasingly important. In the National Draft Lottery, two Recordak Juniors were employed to record the numbers. In addition, enlarged prints were made of each record, and from these prints photo-offset plates were made for distribution to the 6,175 local draft boards. (See December, 1940, KODAK, page 13.)

The Gary, Indiana, Public Library was using the micro-file system for charging all books (about 7,000 charges could be made on a 100-foot roll of film). At the New York Public Library, where 130,000 pages of newspapers have been recorded on microfilm, important music manuscripts were being microphotographed. This method was being used, too, in department stores, to record sales.

For the graphic-arts field, new panchromatic and orthochromatic films and plates were introduced. The Hartford (Connecticut) *Newsdaily* made its bow as the first metropolitan daily newspaper to be produced entirely by offset photography. About 50 per cent of the editorial space was devoted to illustrations. Readers of the Seattle *Times* for May 4th, 1940, saw the first natural-color news photograph to appear in the news section of any Pacific Northwest newspaper.

Specially coated lenses, fitted to projectors in all theaters showing "Gone With The Wind," gave the screen image greater detail, better contrast, and freedom from color degradation.

A special stereophonic sound demonstration was staged at Carnegie Hall on April 9th, 1940. It included orchestra selections, organ music, an opera scene, and choral singing—all reproduced from a photographic record on film. Four sound tracks were recorded on the film, three of them music, and the fourth for volume control. Ten-times amplification of the original sound volume was claimed.

This is a Royal Air Force reconnaissance photograph of an aerodrome on the Continent. The letters indicate vital targets that are identified in the original legend: refueling points at A, aircraft on ground at H, ammunition store at E, and so on. British Official Photograph No. C-543 (Crown Copyright Reserved)

"Fantasia"

Première of Walt Disney's "Fantasia" was held in New York in November. For this unique musical cartoon, 420,000 feet of film were used to record several orchestra selections; and from this footage, 28,000 feet were chosen for the picture. The sound was printed on a separate film from that used for the picture, and a complex sound-reproduction system was employed.

Another interesting development in the motion-picture field was the release of equipment and sound film for nickel-in-the-slot motion pictures.

A survey made by the motion-picture division of the U.S. Department of Commerce revealed that 65,000 of the 67,000 motion-picture theaters

Photography aids plane production: fitting airplane parts directly on aluminum photograph of layout drawing. The original layout was photographed and then projected onto large sheets of aluminum alloy which had received a photosensitive coating. Reproduced by the courtesy of the Glenn L. Martin Company

in the world were equipped for sound. Approximately 17,000 motion-picture theaters were in operation in the United States during the year.

The first educational film in Kodachrome, "How Birds Feed Their Young," was announced by the Eastman Kodak Company. (See December, 1940, KODAK, page 12.)

A color television demonstration was conducted in New York by the Columbia Broadcasting System. Beach and garden scenes on 16-millimeter color film were transmitted. "Vectographs," a method of stereoscopic photography, was described by Edwin H. Land, the inventor of *Polaroid*. In a Vectograph, two different images in black and white can be superposed on a single surface for viewing through Polarizing spectacles.

The Kodak Research Laboratories announced that photographs made with the Electron Microscope had revealed the structure of a silver grain in a photographic image to be of a filamentary nature, rather than coke-like in structure. (See January KODAK, page 13.)

High-speed stop-motion photography with the Edgerton stroboscopic camera revealed that some droplets from a sneeze were sprayed into the air at speeds as high as 150 feet a second and traveled as far as twelve feet. (See November, 1940, KODAK, page 4.)

A special camera was used to photograph steam jets traveling 1,500 miles per hour, as they hit a turbine blade making 3,600 revolutions per minute. The behavior of turbine blades, under 1,250 pounds of steam pressure at 900 degrees Fahrenheit, was studied by this means for the first time.

Furnishing of cameras to brand inspectors of the Wyoming Stock Growers' Association quickly resulted in recovery and restoration to their owners of many heads of cattle.

Enlarged photographs of the retina of the eye were suggested by Dr. J. R. Dean, of the American Optometric Association, as an accurate means of identification of individuals and, therefore, a valuable supplement to the fingerprint method.

Radiography was in increasing demand by leading jewelers as a means of identifying natural, cultured, and synthetic pearls. A new high-speed x-ray technique was developed by Westinghouse, permitting radiographs of objects moving at high speed. (See November, 1940, KODAK, page 1.)

The Latest in Films

New films introduced during the year included: high-speed, fine-grain, motion-picture film; high-contrast orthochromatic and panchromatic film for the graphic arts; and a film of very high speed for use with the new commercial gaseous-discharge lamp. A fast panchromatic film that could be developed directly to a positive transparency was offered for use in miniature cameras.

Color photography with Kodachrome was said to have been made more flexible by the production of blue-coated flash lamps, which could be used either to supplement daylight or for night pictures.

The Kodatron Lamp for ultra-speed photography was introduced. The lamp features a long-lived, gas-filled flash tube that gives extremely bright flashes of an effective duration of 1/30,000 of a second. It is intended primarily for commercial, portrait, illustrative, news, medical, and technical photography. (See October, 1940, KODAK, page 15.)

What a sneeze looks like is revealed in this picture, taken with stroboscopic light exposure, time about 1/30,000 of a second. Courtesy: M. W. Jennison and H. E. Edgerton, Massachusetts Institute of Technology

ACTIVITIES

HAWK-EYE HIGHLIGHTS: Jerry Holland and Frank Comstock, star doubles team of the Badminton Club, captured the Men's Doubles Championship in the Rochester District Badminton Tournament. They downed defending champions Cliff Schmidt and John Jung, by scores of 15-9, 12-15, and 17-14. . . . The Athletic Association has elected its new officers for the coming year—President, William Archibald; Representatives, Leo Green, Ann Iwaskow, William Ferron, Evelyn O'Brien, Ruth Heim, Omer Schaubroeck, Willi Seeger, and George Mura.

CAMERA WORKS HAPPENINGS: Three hundred and fifty members of the Recreation Club attended the second card party of the season held in the Kodak Office dining room. . . . The Basketball Team finished fifth in the Industrial League, having lost four decisions by a total of five points. . . . The Bowling Team was out front in the Flower City Industrial League by a margin of two games with only two weeks of play remaining. Marion Rein and Hildegarde Michaelson won the doubles event and Mildred Joslin the singles, in the interplant bowling. . . . The Brownie Specials finished two games ahead of the Splicers in the "A" Bowling League. William Maslanka held honors for both high-single and high-three games with scores of 269 and 697. Twelve teams were still fighting for first place in the Supervisors' League with three weeks to go. The Specials and Bantams were fighting for first spot in the Girls' League. Supermatics held a six-game lead in No. 2 League with Bill Lobb holding high game with a whopping 278. Seniors were leading by a narrow margin in No. 1 League. . . . The Supervisors' Annual Banquet was held on Friday, March 14th. Ralph Welch acted as toastmaster.

KODAK PARK ACTIVITIES: With eleven victories in twelve games, the Basketball Team won its fifth consecutive crown in the Rochester Industrial League. In the play-offs following the regular season, the team fell in the first round to the I.B.M. five, and later won the consolation round by defeating Delco. The team was entered in the Annual Y.M.C.A. Invitation Tournament where it was to defend its last year's championship in play starting March 25th. . . . The Building 48 Team won honors in the Department Basketball League by finishing its season without a single loss. It was favored to cop the play-offs to be held with Building 29, Testing, and Sensitometry. . . . The Bowling Team was to compete in the A.B.C. Tournament in St. Paul on the fifth and sixth of this month. They will compete in the State Tournament at Buffalo on May 10th-11th. Four K.P.A.A. League Bowlers had survived the first three rounds of the *Times-Union* Classic. They were: Daniel McStravick, P. & S.; John Schilling, Tool Room; Chester Herle, Field Division 1; and George Williams, Recovery. . . . A large noontime audience enjoyed the table-tennis exhibition on March 4th. Lazlo Bellak, the trick-shot artist, Bernie Grimes, intercollegiate singles champion, and Louis Pagliaro, world's singles champion gave an eye-popping display. . . . Since March 10th, the K.P.A.A. has handled distribution of expired film for the personal use of employees. Members can obtain film on the third floor, Building 28, between noon and five o'clock, Monday through Friday.

Activities Calendar

April 10—Camera Club monthly meeting and talk by Wescott Burlingame, "Indoors with Kodachrome"

April 16—Camera Works supervisors' bowling party, at the Elks Club

April 17—K.O.R.C. girls' annual party, at the Chamber of Commerce

—Camera Works girls' bowling league banquet, at the Chateau

April 21—K.P.A.A. girls' bowling leagues banquet, at the Breakers

April 22—Kodak Office girls' bowling league banquet, at the Chateau

—Kodak Office men's bowling leagues banquet, at the Elks Club

April 25—Kodak Office Bridge Club party, at Locust Hill Country Club

April 26—Hawk-Eye Athletic Association annual party

April 29—Kodak Office bowling leagues, mixed-doubles tournament, at Buonomo's

May 1—Camera Club monthly meeting

May 3—Camera Club, closing date for spring-exhibition entries

To Kodak Park went possession of the Sulzer Trophy, offered for the women's interplant bowling competition. Team members were, reading from right: Edith Kelley, Clara Crary, Ruth Heisner (standing), Ruth Tuschong, and Irma Hamlin (extreme left). Marion Matthews, K.P.A.A. assistant secretary, is standing at left and directly in front of her is Margaret Koetter

OUT OF THE HAT

Soprano

Miss Ruth Rohn: her hobby is music

SATISFYING INDEED is the hobby of Miss Ruth Rohn, of Hawk-Eye. "Ever since I was a little girl, I have loved good music," she relates. "I took part in many musical activities, including the Inter-High Choir, while attending East High; and I earned a scholarship for a year's study at the Eastman School of Music."

Possessor of a fine soprano voice, Miss Rohn still studies assiduously. Every Thursday night, she practices with the Kodak Choral Society. "But when rehearsals are over," she says, with a smile, "I dash off madly so I won't miss too much of the Eastman Theatre concerts, which are held the same night."

Miss Rohn informs us that the very lowest musical sound—she emphasized that word, "musical"—yet produced by the human voice is the note G below the bass stave (can you beat it?). The highest, by the same token, is B an octave above the treble.

And while no two voices are identical, there are only six voice classifications in music: the bass, baritone, and tenor of the menfolk; and the contralto, mezzo-soprano, and soprano of the women. Incidentally, voices are classified, not according to their range as one might suspect, but according to their timbre.

"Speaking of voice, I've had some strange experiences with my singing," Miss Rohn recalls. "I remember the time I was to sing at the wedding of a friend and came down with a heavy cold several days before. Doctoring it didn't seem to do much good and on the morning of the wedding my throat was in anything but good shape. However, I did well enough—at least there were no complaints—and then three hours later I lost my voice completely!"

Miss Rohn is an ardent pianist, too, and she shares with her sister an additional hobby: collecting records of classical music.

Restorer

'WAY BACK IN 1879, when Rochester was still but an overgrown village, a thrifty farmer built a great three-story wooden building just off the dirt road that curved through the hills from Bushnell's Basin down to Victor.

Levi Valentine had a dream when he erected Valentown Hall at a deserted country crossroads. It was expected that the Shawmut Railroad would soon run a line past the site of Valentown, and he proposed to give impetus to the development of a village there by building a community center. In his frame structure, this enterprising farmer laid out space for stores, offices, lodge rooms, schools, and a grand ballroom.

But the railroad never came, and while Valentown Hall did for a time house a doctor's office, a business school, a store, and a ballroom that was the scene of many social events, the building never enjoyed the prosperous activity that its visionary builder had foreseen for it. In time, it was abandoned, to stand alone and desolate for years while the rank brush grew higher and higher around it, as if to hide its dreary emptiness from the sight of passers-by.

But now the glories of Valentown are being revived. Mrs. Lillian Fisher, of the Roll Coating Department, Kodak Park, and her husband have bought the gaunt, weather-beaten building and are rapidly restoring it.

"We plan to use it for an antique shop and museum of local history," Mrs. Fisher informs us. "Perhaps in time we may even hold dances in the old ballroom on the third floor. You would be surprised at the amount of interest that is being shown in our work at Valentown. Ever since an article about it was published in a local paper last September, we've had our hands full with week-end visitors."

Mrs. Lillian Fisher: at a country crossroads

Housekeeping Job

(Continued from page 6)

resulted in a highly efficient and economical system. Maintenance and operation of Rochester's 624 miles of sewers last year cost $78,131, or 24¢ for each citizen—a fractional sum indeed for an essential health guard.

It takes an imposing army of men and machines to do the city's heavy housekeeping job. At peak strength, the division of maintenance and operation numbers more than 2,500 employees. Upwards of two hundred motor-driven units, ranging from small pumps to giant power shovels, are used in the division's daily duties.

Interplant Bowling Winners

The Camera Works team that won the Lovejoy Trophy in the annual interplant bowling competition. From left: Angelo Zello, William Irwin, Herbert Scheuch, Gus Swanson, and Angelo Petrillo (kneeling)

Beaver Skins

(Continued from page 3)

Following extensive investigations into the problem, Congress passed the Coinage Act on April 2nd, 1792, providing for the erection of a mint in Philadelphia—then the national capital—and the coinage of the gold eagle ($10), half eagle, and quarter eagle; the silver dollar, half dollar, quarter dollar, dime, and half dime; and the copper cent and half cent.

Following the provisions of this Act, the first copper cent was coined in 1793, the first silver dollar in 1794, and the first gold eagle in 1795.

Today, the Philadelphia Mint remains our chief source of metal currency, though two others, the Denver and San Francisco Mints, are engaged in making coins. Last year, these three Government mints turned out 768,093,000 copper, nickel, and silver coins with a face value of $39,994,000.

In addition to executing the coinage of the United States, the Bureau of the Mint has certain other duties. It operates assay offices in various cities where assays of coin and bullion are made. It refines and casts bullion into bars. It strikes off special medals for the Federal Government. And, surprisingly enough, it manufactures coin for many foreign governments, this service having been employed by Costa Rica, Ecuador, San Salvador, Cuba, the Philippine Islands, Peru, Venezuela, Argentina, Nicaragua, Siam, and Indo-China.

While all of our metal currency or coins is produced by the Bureau of the Mint, this division of the Treasury Department has nothing to do with the production of our paper currency or notes. These "bills," as we generally refer to them, are turned out by the Bureau of Engraving and Printing.

Improvement Idea Pays

Her idea scored: Miss Eva J. Cutler, of the Yard Department, Kodak Park, saw a way to improve the parcel-pass system and submitted her idea through the Suggestion System. Miss Cutler's suggestion was adopted, and she is shown here receiving an award from Clayton A. Benson, Suggestion System secretary

A Common Fund

(Continued from page 11)

agency in the community had to stage its own campaign. Further, the chest allots the funds it collects in accordance with actual needs, so that every cent of the contributor's dollar sees well-planned service.

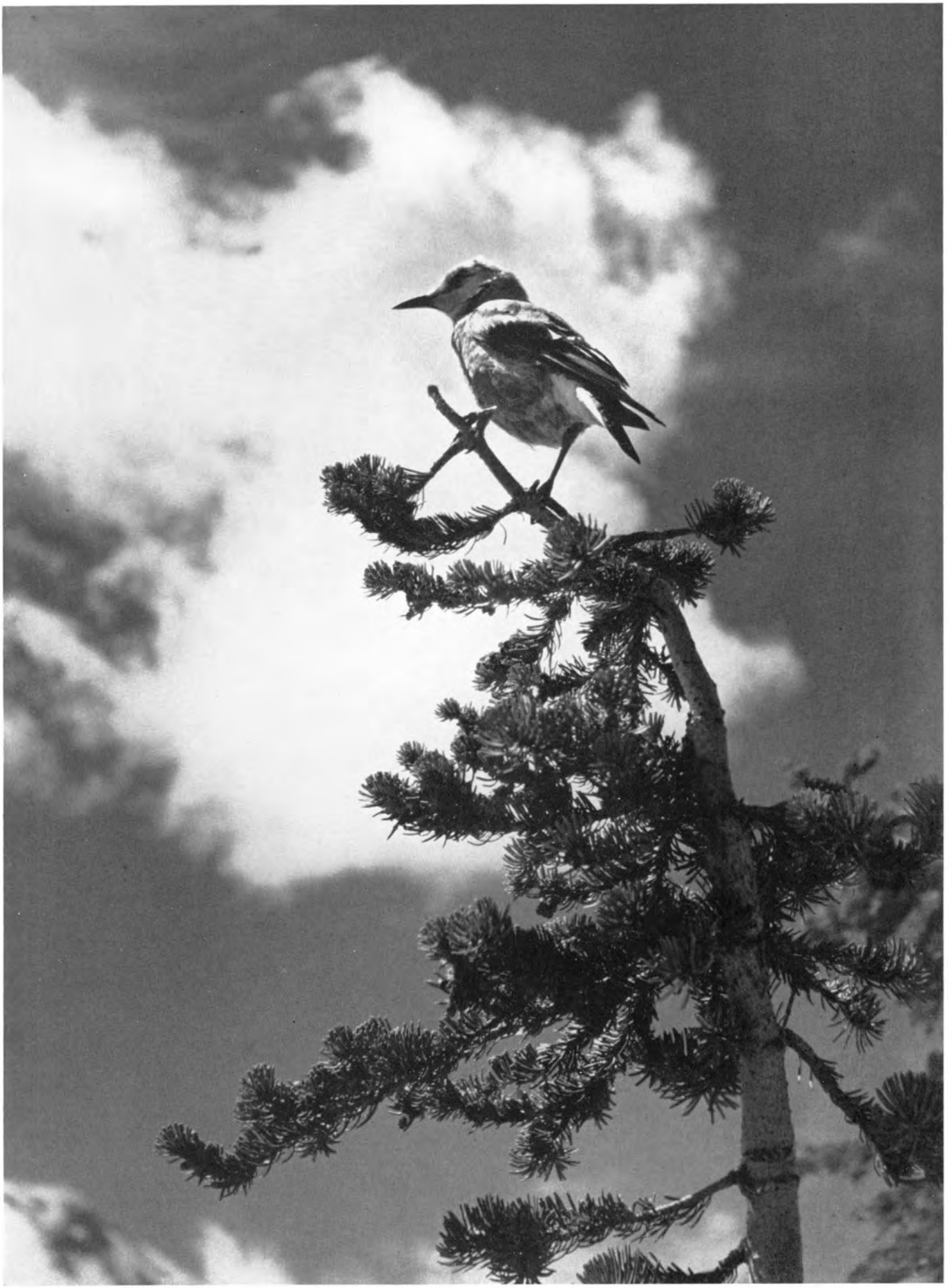
In the 23 years of its existence, the Rochester Chest has collected a total of $31,697,481 on behalf of its participating agencies, in 23 annual drives. If Rochester had no Chest and if each agency had conducted its own annual money-raising appeal during the same period, the total number of drives would be 1,437!

Weighing the Benefits

But the value of the Chest is not to be measured solely by its efficiency as a money-raising unit. Thanks to it, social-welfare agencies are enabled to concentrate on improving and extending their services, and to eliminate waste and duplication by cooperating with agencies that have similar programs.

During the past four years, the Community Chest's survey committee has sponsored a series of studies, made by nationally known experts, to cover all of the participating agencies. Seven of these surveys have been completed. Undertaken to assist the agencies to operate at continued and improved levels of economy and effectiveness, these studies have already proved their worth in enabling the agencies, and the contributor's dollar, to do a better job.

The Community Chest plan demands careful budgeting and regular auditing of expenditures by its member agencies. Indeed, participation of a social-welfare agency in the Chest is a direct assurance to the community that it operates in a businesslike way.



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from Monday until Friday the **Kodak** is yours

There's a Kodak "made to order" for every woman

During the week, when father's away, some of the finest snapshot opportunities are sure to come along. It's up to you to get them, or they're lost . . .

Try using the Kodak yourself and see what delightful snapshots you get. You needn't be "mechanical"—there are a dozen late-model Kodaks and Brownies you can use with utmost assurance. You'll get the pictures.

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$7.50

JIFFY KODAK SIX-20, Series II

Box-camera simplicity, folding camera style and convenience—that's Jiffy Kodak Six-20, Series II. Touch a button—"POP"—it opens. Touch another—"CLICK"—it gets the picture. "Near-and-far" Twindar lens. Pictures, 2¼ x 3¼ inches...Other models are Jiffy Kodak Six-16 at $8.25, and the Jiffy Kodak V. P. at $4.25.

ONLY EASTMAN MAKES THE KODAK

Accept nothing but the film in the familiar yellow box—Kodak Film—which only Eastman makes.

KODAK VERICHROME FILM

Load with Kodak Verichrome Film and you're all set to "get the picture." It makes the average camera a better camera. Verichrome doesn't depend on perfect exposure or perfect weather.

This Eastman advertisement will be seen in the May issue of "Good Housekeeping"