



by
b
m
se
ad
co
ra
lo
ag
m
te
p
de
er
th
bl
to
ca
th
ha
va
th
se
im
tic
T
co
lig
of
PHOTO

Exposing Iowa's True Colors

EARLY COLOR PHOTOGRAPHY

by Philip G. Hockett

Anyone who has ever sifted through a few generations of a family's photograph collection does not expect to find any color images before, say, 1950. It is as if Iowa before midcentury was monochromatic, reflected only in images of sepia or black and white.

What a joy, then, to come across an early image of Iowa in color. These early color images are rare jewels, reminding us that Iowa was as colorful a century ago as it is on a sparkling spring morning in 1997.

In my own experience in teaching photography, I am surprised that even older adult students looking at a color transparency from as late as 1950 assume they are seeing a hand-colored black-and-white image.

Actually, "direct" color photography—in which the color is captured directly on film rather than applied or tinted by hand—has existed for nearly a century in various forms. Yet compared to the millions of black-and-white or sepia images in existence, color images compose a far smaller portion of historical collections. Why

To witness light revealing the life and color of an autochrome image is to delight in one of the earliest achievements of direct color photography.

so little color when it was such a remarkable achievement?

From the consumers' viewpoint, monochromatic images were far easier to view, display, and enjoy. As photography became ever more affordable, an enormous volume of black-and-white imagery was created for viewing in the American household. Format evolved from mounted cabinet cards and stereographs to inexpensive, accessible snapshots.

Snapshots were particularly portable. They could be carried in pockets or purses, passed around at social gatherings, thumbtacked to bulletin boards, written on and mailed, stored in shoeboxes or albums. Like the little pieces of paper they were, black-and-white snapshots turned up everywhere. They drifted in piles on desktops and in drawers, as common as leaves and leading a kind of active life in the material world.

Color images, on the other hand, seemed ungenerous and secretive because they were so inaccessible. The film was expensive to buy and to process, and the resulting transparencies, on glass or film, were cumbersome and fragile. They could be viewed only when light was shone through them, by holding them up to a window or lamp or placing them

in a tabletop viewer or bulky projector. After a time they tended to disappear, retreating in their boxes into garages and attics.

On an artistic level, some critics dismissed color photography as a vulgar and doomed attempt to render the visual truth about the world. Many art photographers and aestheticians defended black-and-white imagery, considering it artistically purer and the camera's only chance to compete on equal terms with drawing, painting, and printmaking.

Like pioneering photographers around the world, Iowan Fred W. Kent tried to capture his surroundings in color, experimenting with and mastering one direct color technology after another (as we shall see, each technology had its own advantages and its own obstacles). He made autochrome images as early as 1920, moved on to Dufaycolor in the 1930s, and through the 1940s and 1950s, assisted by members of his family, took thousands of slides on Kodachrome film.

Most of the images in this article were taken by Kent or his protégés and are now preserved at the State Historical Society of Iowa. Most are published here for the first time, exposing Iowa's true colors from earlier in this century.



BOTH PHOTOS: FRED W. KENT COLLECTION (SHS-IOWA CITY)

Charles Kent (left) poses amiably for his father, Iowa photographer Fred Kent, in this 1930 autochrome. Exposed onto an emulsion-coated glass plate, an autochrome generally had a clear plate of glass on top to protect the image. Because this one did not, the emulsion is deteriorating. Humidity and breakage also have taken their toll on autochromes, making those that have survived all the more rare.

Right: Kent posed his wife, Clara, with a huge bouquet of lilies of the valley in this characteristically idyllic autochrome taken in May 1920.

AUTOCHROME

The luminescent quality of autochromes, which are very rarely found in Iowa, sets them apart from other color images. Their softer, pictorial nature is strikingly different from the supreme clarity and wider palette of colors present in today's color films.

Since the beginning of photography in the 1840s, photographers experimented continually for a process that would create an image with a full spectrum of color. Early experiments relied on reflec-

tors and filters to merge red, blue, and green. The three-color process went through various refinements until the Lumière brothers in France announced a new process using dyed potato starch grains. Introduced in 1907, the Lumières' autochrome was the first practical color process to reach the public.

Most original autochrome images exist on glass plates that can only be viewed if held up to light or inserted into a special apparatus called a diascope (shown on

page 2), in which light strikes the glass plate and reflects the image off a mirror. Viewing the fragile plates is not undertaken casually, but the experience repays the trouble.

The autochrome process was expensive, and the exposure times long. A normal exposure for a summer landscape took one to two seconds at f/8; a portrait in a well-lit studio, ten to thirty seconds at f/5. Developing a single plate was a delicate operation of



up to 16 steps and 30 minutes.

Although the potato starch grains in the emulsion were microscopic in size, they would sometimes clump together and become visible to the naked eye. Yet the reflective grains and subtle shading render an incomparable image. The shimmering, granular iridescence of autochromes imparts a character different from that of any other photographic medium and completely unlike the sharpness of pictures from

early monochrome negatives. Given their granular quality, some autochromes resemble Impressionist paintings, and the often idyllic settings were typical of the period.

Seeing light dazzle through an autochrome and bring up the soft colors is an arresting experience. "The presence of color makes autochromes seem a product of our time," writes scholar John Wood, "but the content of all but a few makes them seem at great distance from it."

Only a few photographers mastered the autochrome. *National Geographic* published autochrome images as early as 1914 and used them extensively until about 1932 and intermittently after that. In 1926, under conditions of nightmarish difficulty, *Geographic* photographers Charles Martin and W. H. Longley succeeded in producing the first underwater color photographs, published in the January 1927 issue. One operated the camera while the other ignited magnesium charges over the surface of the shallow water to enhance illumination for the slow autochrome plate.

The autochrome achieved both commercial and artistic success and was the major color photographic medium for three decades. Nevertheless, the search for proper solutions, gums, and flexible film, as well as for a less cumbersome glass-plate process continued. This was achieved by the early 1930s, when the Lumière company offered sheet and roll film versions of the autochrome plate under the name Filmcolor, and Agfa soon followed with Agfacolor sheet and roll film.

Autochrome was still available in the late 1930s but does not seem to have survived the outbreak of World War II. Both amateur and professional photographers were welcoming alternative color processes, and Dufaycolor soon attracted their attention.





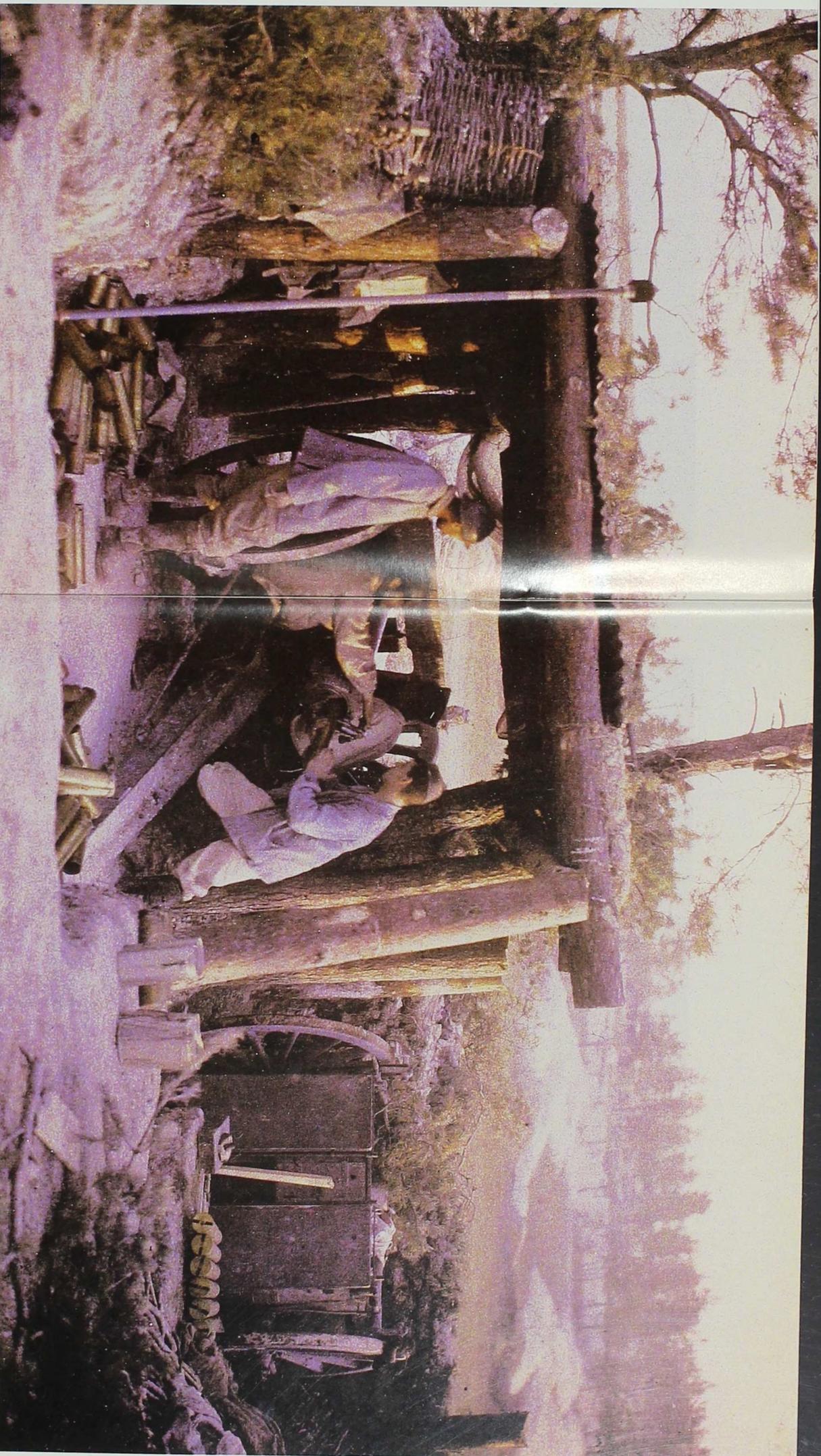
BOTH AUTOCHROMES COURTESY OF PAUL ZIMMER

The tranquility of a shade-dappled garden in this pre-World War I scene (left) belies the anguish that the war would soon bring. These contradictions of the early 20th century—innocence and world war—are represented here by two privately owned autochromes from Europe. The effect of any autochrome is astounding, but to see World War I in color gives one pause.

Only a few photographers mastered the autochrome. *National Geographic* published autochrome images as early as 1914 and used them extensively until about 1932 and intermittently after that. In 1926, under conditions of nightmarish difficulty, *Geographic* photographers Charles Martin and W. H. Longley succeeded in producing the first underwater color photographs, published in the January 1927 issue. One operated the camera while the other ignited magnesium charges over the surface of the shallow water to enhance illumination for the slow autochrome plate.

The autochrome achieved both commercial and artistic success and was the major color photographic medium for three decades. Nevertheless, the search for proper solutions, gums, and flexible film, as well as for a less cumbersome glass-plate process continued. This was achieved by the early 1930s, when the Lumière company offered sheet and roll film versions of the autochrome plate under the name Filmcolor, and Agfa soon followed with Agfacolor sheet and roll film.

Autochrome was still available in the late 1930s but does not seem to have survived the outbreak of World War II. Both amateur and professional photographers were welcoming alternative color processes, and DuRaycolor soon attracted their attention.



BOTH AUTOCHROMES COURTESY OF PAUL ZIMMERN



The tranquillity of a shade-dappled garden in this pre-World War I scene (left) belies the anguish that the war would soon bring. These contradictions of the early 20th century—innocence and world war—are represented here by two privately owned autochromes from Europe. The effect of any autochrome is astounding, but to see World War I in color gives one pause.



DUFAYCOLOR

Aside from a handful of autochromes, the first evidence of color photography in Iowa can be traced to the use of Dufaycolor and Kodachrome film. Dufaycolor had originally been introduced as movie film, but by 1935 it was also available as sheet film.

Dufaycolor was a dependable color process that clearly met a need, and, like autochrome, it had long-lasting quality and stability.

Dufaycolor was no quicker to process than autochrome had been, but it cut the number of steps from sixteen to nine. It took about the same effort to process as most contemporary black-and-white films, but the cost was at least three times that of black-and-white film. A photographer could send exposed film to Dufay's American lab in Rockefeller Center in New York and receive paper

prints as well as transparencies. It could also be processed at home by moderately skilled amateurs. Its very fine resolution, increased sensitivity, and relatively simple processing offered superior results compared to earlier techniques, making Dufaycolor popular with amateur and professional photographers. Long available on the market, it was finally discontinued in the 1950s.

BOTH PHOTOS: FRED W. KENT COLLECTION (SHS-IOWA CITY)



Fred Kent used Dufaycolor film to photograph his daughter, Barbara (left), and his son Tom (above) in April 1936, within a year of Dufaycolor's introduction to the public. The soft colors in these images are reminiscent of autochrome's soft colors.



Dufaycolor was capable of capturing vivid colors, as demonstrated in this image from the *National Geographic* archives. J. Baylor Roberts photographed eleven University of Iowa students posed by the 1938 Homecoming Corn Monument, at the intersection of Iowa Avenue and Clinton Street in Iowa City. In monochrome the same image might well have been unremarkable, but in Dufaycolor it is startling and shows the

strength of documentation the medium possesses. The August 1939 *National Geographic* article, "Iowa, Abiding Place of Plenty" by Leo A. Borah, is illustrated by twelve Dufaycolor images, eight in Kodachrome film, and several in black-and-white. This balance of color film types is typical of the late 1930s, when Dufaycolor was a proven quantity and Kodachrome film was still in its marketing infancy.



J. BAYLOR ROBERTS/NATIONAL GEOGRAPHIC IMAGE COLLECTION

A 1939 advertisement in *National Geographic* for Dufaycolor film alerts readers to the many Dufaycolor images in the magazine. "Natural color" was the preferred phrase in the late 1920s and 1930s to denote color that was integral to the film rather than applied by hand.



Dufaycolor Film Fits All Popular Cameras

**SNAP YOUR CHILDREN
IN NATURAL COLOR**

*Dufaycolor Guarantees
That You Can Get
Good Color Pictures*

YOU can easily take good color pictures with your own camera. Dufaycolor guarantees you satisfaction—or a new roll free.

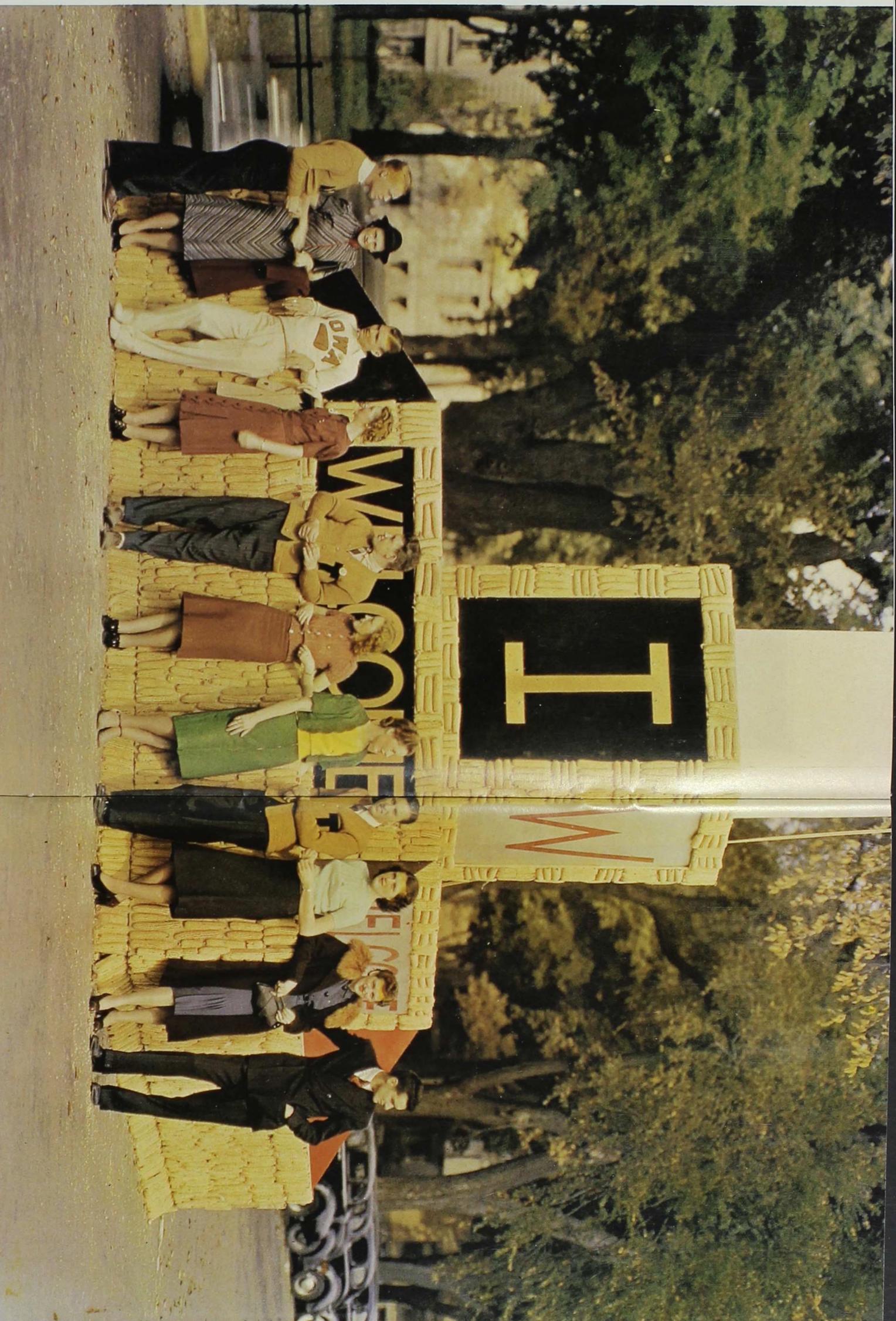
Notice how many of the color photographs in recent issues of the *National Geographic* are marked "Dufaycolor" in the lower right hand corner. Over 187 have appeared in the last 17 issues.

See your dealer today. Try a roll of Dufaycolor film in your camera.



FITS ALL POPULAR CAMERAS

REPRINTED WITH PERMISSION OF ILFORD PHOTO CORP.



J. BAYLOR ROBERTS/NATIONAL GEOGRAPHIC IMAGE COLLECTION

Dufaycolor was capable of capturing vivid colors, as demonstrated in this image from the National Geographic archives. J. Baylor Roberts photographed eleven University of Iowa students posed by the 1938 Homecoming Corn Monument, at the intersection of Iowa Avenue and Clinton Street in Iowa City. In monochrome the same image might well have been unremarkable, but in Dufaycolor it is startling and shows the

strength of documentation the medium possesses. The August 1939 National Geographic article, "Iowa, Abiding Place of Plenty" by Leo A. Borah, is illustrated by twelve Dufaycolor images, eight in Kodachrome film, and several in black-and-white. This balance of color film types is typical of the late 1930s, when Dufaycolor was a proven quantity and Kodachrome film was still in its marketing infancy.

A 1939 advertisement in National Geographic for Dufaycolor film alerts readers to the many Dufaycolor images in the magazine. "Natural color" was the preferred phrase in the late 1920s and 1930s to denote color that was integral to the film rather than applied by hand.

Dufaycolor Film Fits All Popular Cameras

**SNAP YOUR CHILDREN
IN NATURAL COLOR**

*Dufaycolor Guarantees
That You Can Get
Good Color Pictures*

You can easily take good color pictures with your own camera. Dufaycolor guarantees you satisfaction—or a new roll free. Notice how many of the color photographs in recent issues of the National Geographic are marked "Dufaycolor" in the lower right hand corner. Over 187 have appeared in the last 17 issues. See your dealer today. Try a roll of Dufaycolor film in your camera.



FITS ALL POPULAR CAMERAS

REPRINTED WITH PERMISSION OF KODAK PHOTO CORP.



KODACHROME FILM

By 1940, Dufaycolor was being crowded out of the American market by Eastman Kodak's revolutionary new color transparency medium, Kodachrome film. Just as autochrome was an example of a technology that by chance was an exact fit with the

aesthetic of the early 20th century, which favored soft-focus, romantic, pictorial renditions, Kodachrome film, capable of brilliant colors, clean edges, and more mechanical or realistic renditions, was a similar match to the streamlined aesthetics of the 1930s.

SHSI (IOWA CITY)



Track meets and tulips testify to spring in Iowa. Left: Kodachrome film captured runners sprinting to the finish line at a Mount Vernon track meet, May 12, 1950. (The image is not flipped; the athletes are running clockwise.) Above: Images like this one of the 1941 Orange City Tulip Festival on Kodachrome film were produced at the University of Iowa's Department of Visual Instruction to illustrate public lectures that defined Iowa as a land of scenic beauty that also honored its traditions of agriculture and education.

The Hawkeye State on View-Master

Tom Kent, who shared his father's fascination with color imagery, also contributed to Iowa's photographic legacy when he created stereo views for the View-Master Company. Tom was only 19 when he flew to Portland, Oregon, in 1953 to solicit interest in some of the Kent family's bird photos. Instead, he was hired to create "three-dimensional pictures in full-color Kodachrome" of the Hawkeye State's most scenic and historic spots. A small booklet with Iowa facts and figures accompanied the 21 views. Later, Tom Kent created View-Master images for South Dakota and the Black Hills, Minnesota, and Wisconsin. The Iowa images are now in the collections of the State Historical Society of Iowa.

—Mary Bennett
Photo Archivist
State Historical Society of Iowa



The best of the surviving color photographic record of life in Iowa beginning in the late 1930s is on high-contrast Kodachrome film slides in their readily identifiable red cardboard mounts.

First introduced in 1935 as movie film, Kodachrome film was released a year later in 35-mm format for still cameras. Its commercial production marked the successful end of a ten-year search by Kodak and two young professional musicians, Leopold Godowsky and Leopold Mannes, for an ever simpler, more reliable way to record color images. Kodak advertising stressed that the color was actually in the Kodachrome film, in contrast to hand-colored monochrome photographs.

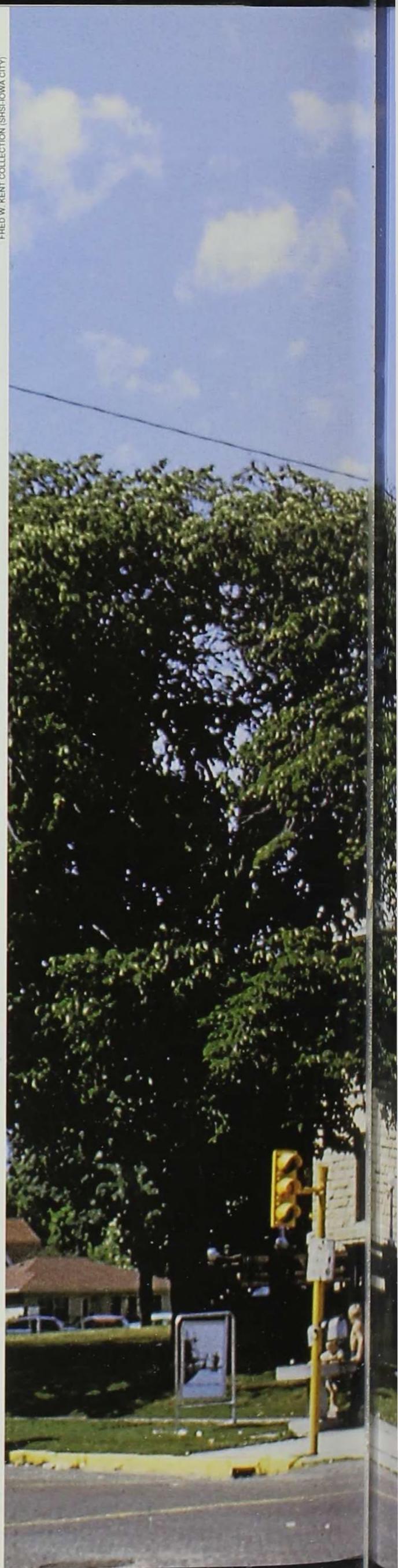
Early problems with rapid fading took two more years to correct, but by 1938 Kodachrome film had assumed what is essentially its present form. It delivered a sharply defined image in richly

saturated color with uniform results. Over time, it also proved highly stable. Slides from Kodachrome film from the 1940s have easily outlasted Kodacolor prints and Ektachrome transparencies from the same period, and the process had no serious competition in America inside or outside the company until Kodak's own introduction of Ektachrome in 1946 and of other competing films by 1965.

Kodachrome film's simple format belied a sophisticated chemistry that required, and still requires, machine processing. Whereas Dufaycolor could be developed and printed by moderately skilled amateurs, Kodachrome film had to be handled in Eastman's own labs. Initially it was expensive: in 1936, for example, an 18-exposure roll of 35-mm Kodachrome film cost \$3.50 with processing, equivalent to about \$30 in 1997.

Youngsters congregate at a stand near the traffic light by the Grundy County Courthouse in Grundy Center, July 27, 1956. Because Kodachrome film worked particularly well for outdoor shots, the color images preserved from midcentury are often rich in documenting the smaller details—like children playing and cars passing by—as well as panoramas and imposing buildings.

FRED W. KENT COLLECTION (SHS-IOWA CITY)





The best of the surviving color photographic record of life in Iowa beginning in the late 1930s is on high-contrast Kodachrome film slides in their readily identifiable red cardboard mounts.

First introduced in 1935 as movie film, Kodachrome film was released a year later in 35-mm format for still cameras. Its commercial production marked the successful end of a ten-year search by Kodak and two young professional musicians, Leopold Godowsky and Leopold Mannes, for an ever simpler, more reliable way to record color images. Kodak advertising stressed that the color was actually in the Kodachrome film, in contrast to hand-colored monochrome photographs.

Early problems with rapid fading took two more years to correct, but by 1938 Kodachrome film had assumed what is essentially its present form. It delivered a sharply defined image in richly

saturated color with uniform results. Over time, it also proved highly stable. Slides from Kodachrome film from the 1940s have easily outlasted Kodacolor prints and Ektachrome transparencies from the same period, and the process had no serious competition in America inside or outside the company until Kodak's own introduction of Ektachrome in 1946 and of other competing films by 1965.

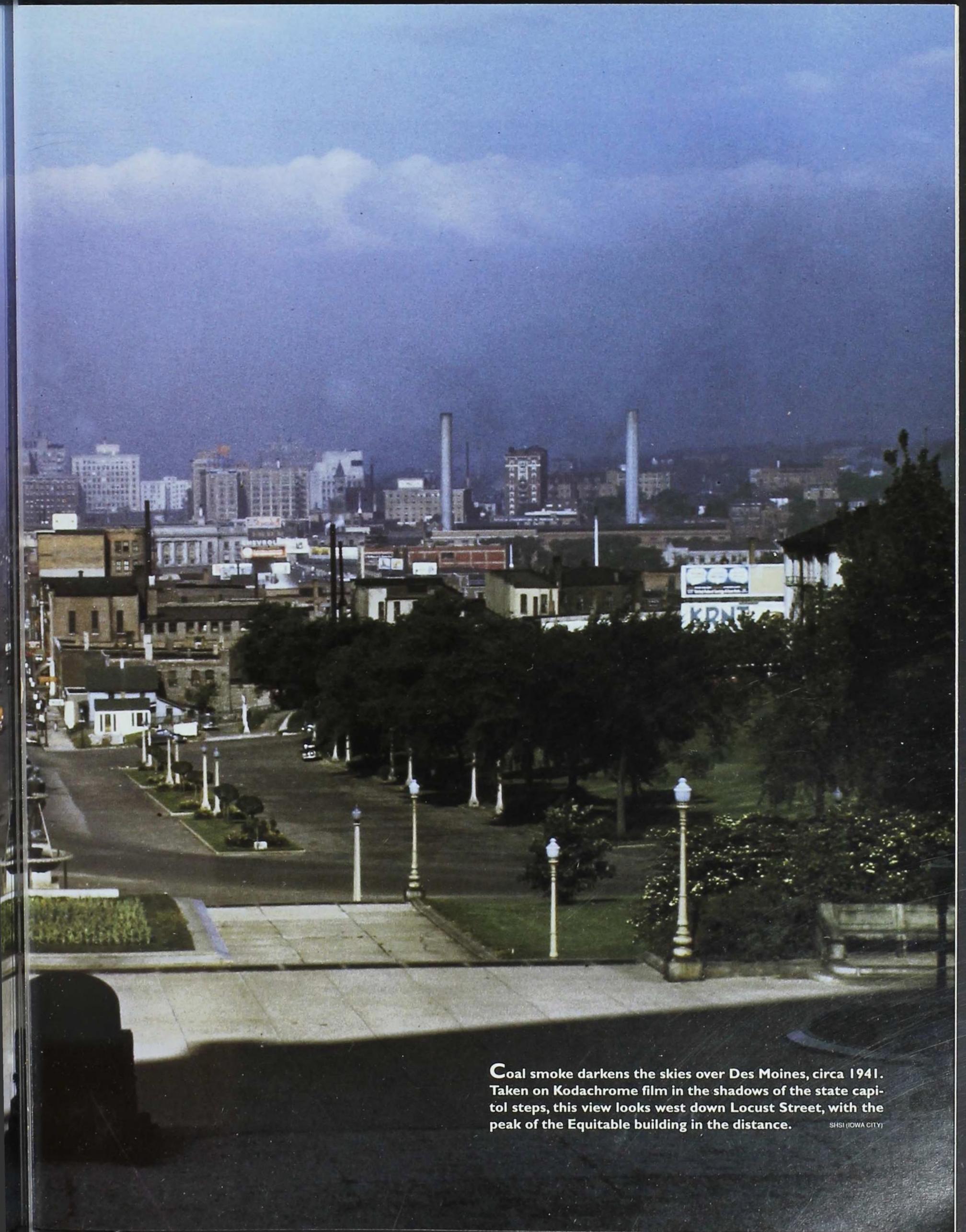
Kodachrome film's simple format belied a sophisticated chemistry that required, and still requires, machine processing. Whereas Dufaycolor could be developed and printed by moderately skilled amateurs, Kodachrome film had to be handled in Eastman's own labs. Initially it was expensive: in 1936, for example, an 18-exposure roll of 35-mm Kodachrome film cost \$3.50 with processing, equivalent to about \$30 in 1997.

Youngsters congregate at a stand near the traffic light by the Grundy County Courthouse in Grundy Center, July 27, 1956. Because Kodachrome film worked particularly well for outdoor shots, the color images preserved from midcentury are often rich in documenting the smaller details—like children playing and cars passing by—as well as panoramas and imposing buildings.

FRED W. KENT COLLECTION (SHS-IOWA CITY)







Coal smoke darkens the skies over Des Moines, circa 1941. Taken on Kodachrome film in the shadows of the state capitol steps, this view looks west down Locust Street, with the peak of the Equitable building in the distance.

SHSI (IOWA CITY)



Coal smoke darkens the skies over Des Moines, circa 1941. Taken on Kodachrome film in the shadows of the state capitol steps, this view looks west down Locust Street, with the peak of the Equitable building in the distance.

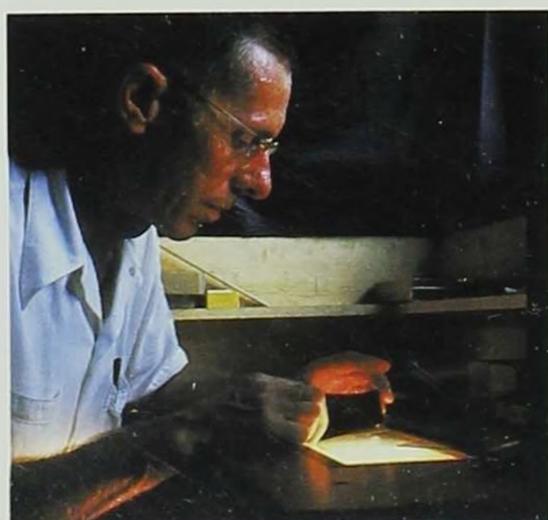
SHS/IDOWA.CITY

BOTH PHOTOS THIS PAGE: FRED W. KENT COLLECTION (SHSI-IOWA CITY)



Besides capturing colorful outdoor scenes, Kodachrome film was also used by Fred Kent for difficult interior shots, like this intimate close-up in an operating room. Kent labeled the image: "Drs. Burr and Lee. Eve OR Aug 48."

Right: An ad from the May 1950 *National Geographic* invites photographers to enter "the spectacular world of color opened by Kodachrome Film." Mounted in the characteristic red cardboard frames (far right), the film did indeed bring stability and vividness to color imagery.



Fred Kent checks slides, 1949

Fred Kent illuminates the darkness

The power of historic color photographs can be seen in the work of Fred W. Kent (1894-1984). Kent was the University of Iowa's official photographer for 50 years. In his long career he not only produced a superb visual record of Iowa City, the university, and eastern Iowa, but also experimented with many aspects of the medium, including direct color photography and how it could be used in the medical world. Working closely with University of Iowa faculty, Kent knew that the cutting edge of medical research and education relies on the latest developments in photography. He made thousands of color slides that could be used to assist faculty in research and teaching.



Double Reward

when you take pictures
with Kodachrome Film in your
miniature camera

1. brilliant screen projection

of your pictures . . . finished
and mounted as color slides without extra charge

2. gorgeous Kodachrome Prints

made to order . . . in the
reasonably priced 2X size shown, or in larger sizes

ENTERTAINMENT? Creative satisfaction? They're yours when you enter the new world of photography—the spectacular world of color opened by Kodachrome Film. Use any miniature camera with *f*/6.3 lens or better. It's easy to make superb color pictures.

Fine equipment for less money . . .

And now Kodak has produced an ultra-modern miniature camera with *f*/4.5 Lumenized lens selling at the remarkably low price of \$29.95, including Federal Tax. Ask your dealer to show you the sensational new Kodak Pony 828 Camera. With it—and Kodaslide Projector, Model 1A, at \$29.50—you're well-equipped to start your Kodachrome career . . . Inspect these, and other Kodak miniatures and projectors . . . all fine instruments at sensible prices.

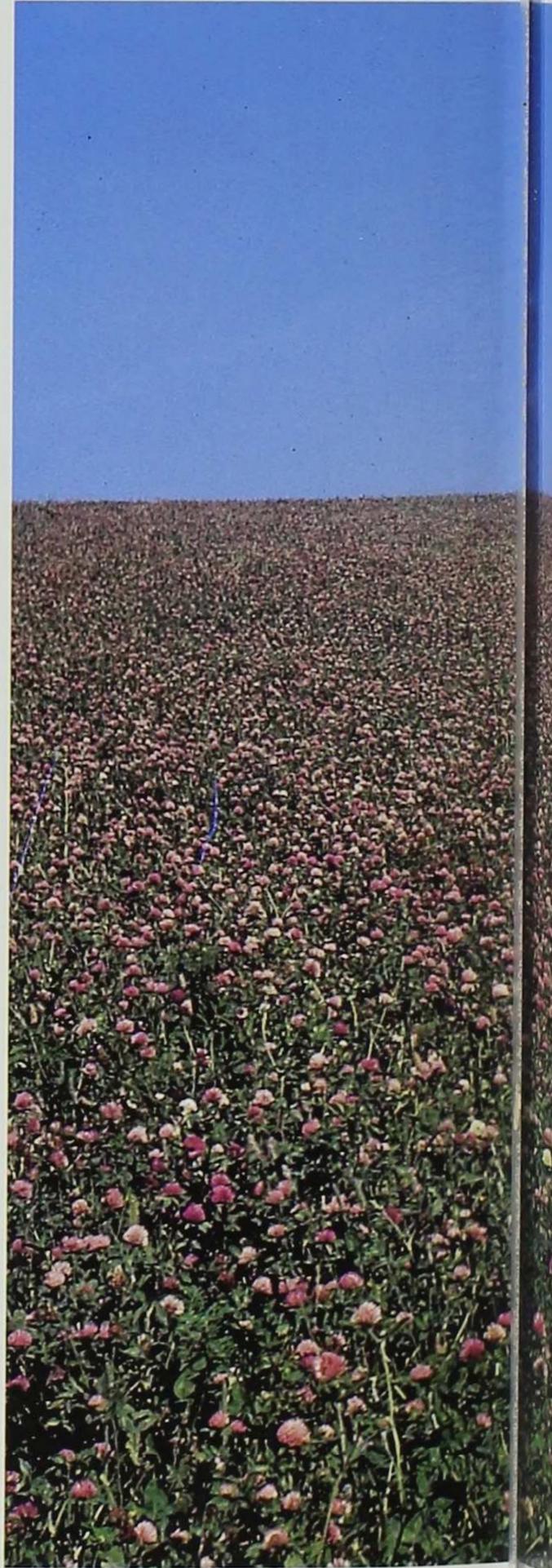
Eastman Kodak Company
Rochester 4, N. Y.

It's Kodak for Color



Kodak
TRADE-MARK

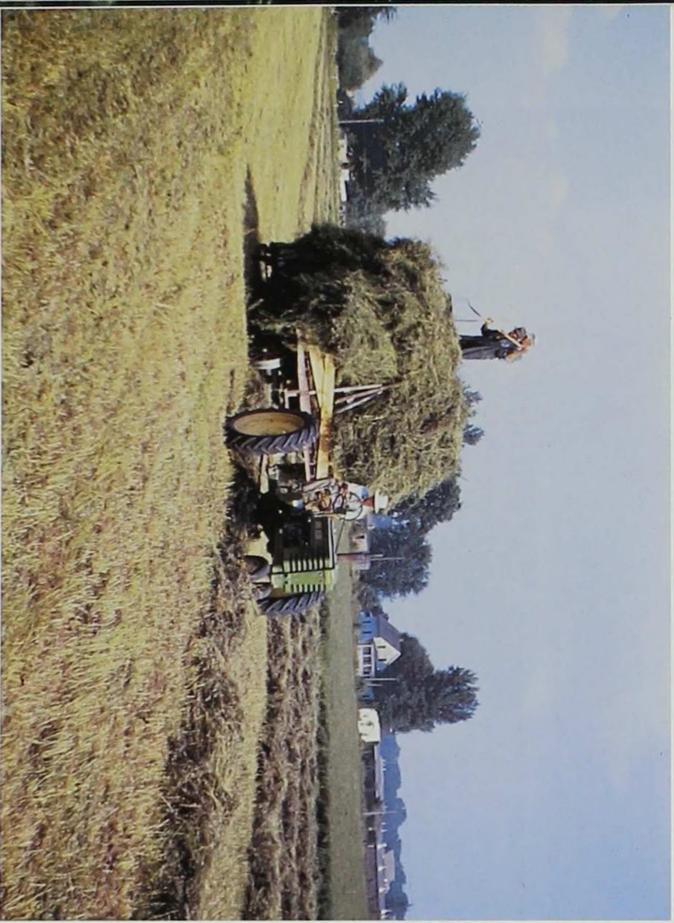
ALL THREE IMAGES FROM SHSI (IOWA CITY)





Making hay while the sun shines made good sense for Iowa farmers and for photographers using Kodachrome film. This trio of slides (circa 1941) was taken by the University of Iowa's Department of Visual Instruction as part of an Iowa boosterism project to extol Iowa's agricultural abundance. Today, they remind us of changes in farming. Above: Hans Henricksen stands knee deep in red clover. Top left: Farmers demonstrate cutting alfalfa. Bottom left: Bud Sutter with hay rack.

ALL THREE IMAGES FROM SUSHI (IOWA CITY)



Making hay while the sun shines made good sense for Iowa farmers and for photographers using Kodachrome film. This trio of slides (circa 1941) was taken by the University of Iowa's Department of Visual Instruction as part of an Iowa boosterism project to extol Iowa's agricultural abundance. Today, they remind us of changes in farming. Above: Hans Henriksen stands knee deep in red clover; Top left: Farmers demonstrate cutting alfalfa. Bottom left: Bud Sutter with hay rack.





To be confronted with the sheer authenticity of a color photographic image from early in this century can be a disquieting yet pleasurable experience. The sense of immediacy such an image confers deprives us of the conceptual safe-zone that a monochrome picture provides, and startles us with a sense that the past is truly past—and yet closer to us than we first believed.

The color imagery from this infant period—autochromes, Dufaycolor, and Kodachrome film—has been long overlooked in the historical record. Assuming wrongly that all color images were not stable, we have too often ignored these marvelous images in favor of black-and-white photos. In other cases, we have assumed that an early color image was hand-tinted.

As advocates for historical photography and what it can reveal about the past, we Iowans need to develop an “eye for color.” We need to be alert to the rare examples of early color photography

in Iowa, to the Iowa photographers like Fred Kent who experimented and excelled in the medium, and to three major color formats—autochromes, Dufaycolor, and Kodachrome film—that we might uncover in our public and private collections.

The Fred W. Kent Collection at the State Historical Society of Iowa is in no danger of being lost or overlooked. But many other quality color images are at risk because of their fragility or because of ignorance of their historic value. A coming task of all history-minded individuals, whether working in family collections or institutional archives, is to uncover, identify, safeguard—and enjoy—these treasures of early color photography. ❖

Philip G. Hockett is a graduate of the University of Iowa and has taught photography to adults through the Des Moines school system for 15 years. He first took color photographs of his own in 1962.

Combine the skill of a photographer like Fred Kent with the glory of an Iowa spring and the color capacity of Kodachrome film, and the result is an image like this one of Kent's daughter Barbara daydreaming under apple blossoms, May 12, 1940.



To be confronted with the sheer authenticity of a color photographic image from early in this century can be a disquieting yet pleasurable experience. The sense of immediacy such an image confers deprives us of the conceptual safe-zone that a monochrome picture provides, and startles us with a sense that the past is truly past—and yet closer to us than we first believed.

The color imagery from this infant period—autochromes, Dufaycolor, and Kodachrome film—has been long overlooked in the historical record. Assuming wrongly that all color images were not stable, we have too often ignored these marvelous images in favor of black-and-white photos. In other cases, we have assumed that an early color image was hand-tinted.

As advocates for historical photography and what it can reveal about the past, we Lowans need to develop an “eye for color.” We need to be alert to the rare examples of early color photography

in Iowa, to the Iowa photographers like Fred Kent who experimented and excelled in the medium, and to three major color formats—autochromes, Dufaycolor, and Kodachrome film—that we might uncover in our public and private collections.

The Fred W. Kent Collection at the State Historical Society of Iowa is in no danger of being lost or overlooked. But many other quality color images are at risk because of their fragility or because of ignorance of their historic value. A coming task of all history-minded individuals, whether working in family collections or institutional archives, is to uncover, identify, safeguard—and enjoy—these treasures of early color photography. ❖

Philip G. Hockett is a graduate of the University of Iowa and has taught photography to adults through the Des Moines school system for 15 years. He first took color photographs of his own in 1962.

Combine the skill of a photographer like Fred Kent with the glory of an Iowa spring and the color capacity of Kodachrome film, and the result is an image like this one of Kent's daughter Barbara daydreaming under apple blossoms, May 12, 1940.