A World of Color

Although some of today's stereo photographers and collectors may assume that the world was exclusively recorded in black and white prior to the Second World War, the fact is that color has been a frequent element in both flat and stereo photography since at least the 1850's. Of course if your only exposure to stereographs has been through the pages of Stereo World, you could be forgiven for concluding that 3-D images are still produced only in black and white!

The need to illustrate the colors tingeing and photographic techniques of the past and the desire to do justice to the color work of contemporary stereographers have led the writers, staff and readers of Stereo World to wish often, over the past few years, that the costs of color preparation and printing weren't so prohibitive for a non-profit, all volunteer publication like ours. When NSA member Dwight Cummings of Wy'east Color in Portland, Oregon generously offered the use of his company's expertise in color separation and related color preparation work, the rush was on to choose the most interesting and informative stereo material to illustrate in a color issue.

What evolved was this attempt to follow the progress of color's applications to stereo images over the years, and to reveal the range of color possibilities found by stereographers working with current materials and technology. What evolved even more quickly was the realization that no single magazine issue could come close to providing a comprehensive text on so wide and involved a subject. A few examples and paragraphs must serve to illustrate entire decades and concepts of color stereography. The many fascinating historical and technological side roads not covered (not to mention the image gems omitted for lack of space) would easily fill a few more issues like this—or a good sized book.

One purpose was, in fact, to show just how old, complex and incomplete the whole story of color in relation to stereography actually is. If a wider appreciation of what exists to be seen (or better yet some new research into any of the subjects covered) is inspired by this special issue, the time and efforts of all who helped with it will be well rewarded.

The somewhat more random selection of the articles relating to contemporary stereo reflects some of the very wide range of material being produced and used today in a growing variety of special applications—only a fraction of which are ever seen by more than a few people. These images can range from computer generated corporate logos to breathtaking aerial hyperstereos, and from stereo microscope images of surgical procedures to 3-D snapshots of birthday parties, whether taken with an aging Realist or a Nimslo with automatic flash. Virtually all of this modern output is in color—and some of the more abstract efforts use color (and its 3-D movement in space) as a primary subject of the images, as in Jan Gjessing's work illustrated in "Reality Beyond Fantasy."

The stereo posterizations created by Howard Frazee also depend on color for their impact, as do the paintings and constructions seen in the "Handmade Stereo" articles. Some of the other contemporary material in this issue, including the images in our "Gallery" section, would translate into recognizable images in black & white, but without the skillful use of color being visible, their value as stereographs would evaporate.

This one color issue can't come close to exhibiting what needs to be published in color, or what should have been, during the past 14 years. (With this issue, Stereo World starts its 15th year.) In fact, this may only serve to dramatize to our readers what they've been missing! But at least the history and the potential of color in stereo have been outlined, and any possible future color sections now have a base on which to build more detailed treatment of various subjects.
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Front Cover: One of the Kromgrams from “The Ives Kromskop”, Paul Wing’s feature in this issue covering this now rarely seen first color photography system on the market. Even more seldom (if ever) are the images reproduced in their complete stereoscopic form.
One of the most remarkable stereoscopes ever produced commercially was the Ives Kromskop (Patent #531,040, Dec. 18, 1894). In it, three stereoscopic glass positives made from negatives exposed through red, green, and blue filters are optically superimposed to give a full color image of remarkable quality. It was more than ten years prior to the introduction of relatively crude full color plates such as the Autochrome.

This viewer and a complementary one shot color camera were inspired by Frederic Eugene Ives (1856-1937), a pioneer in the field of halftone printing where he held many important patents. The reproduction of nature in full color was his other absorbing interest. It occupied so much of his time that he founded a company at 1324 Chestnut Street in Philadelphia that remained in business over forty years even though mass acceptance of any of his ideas never came to pass. A New York showroom was also established at 18 W. 33rd St.

In 1861, James Maxwell, the British Physicist, showed that by projecting superimposed red, green, and blue images, a full color image could be produced. Lack of color sensitive (panchromatic) film in those days was a serious drawback, and some thirty years passed before the emulsions existed which Ives used in making his color separations.

Ives’ first color patent #672,573 (July 22, 1890) described the basic three color (additive) process and the use of three positive images in a special triple lantern to produce a full color image on the screen (Fig. 1). He also covered the use of negatives in the production of printed color images using the halftone process. The printing colors then become cyan, magenta and yellow, the complementary (subtractive) colors for red, green, and blue. Announcement of his achievement led to an invitation to England in 1892 which lasted for two full years as he captured crowded audiences at a series of lectures.

He returned to America in April 1894 and set about putting his ideas into commercial form. This led to the invention of a viewing device first known as the Photochromscope. He was back in England little more than a year later both to promote his halftone process and to introduce the perfected viewer now named the Kromskop. In 1896, the British Kromskop Syndicate was formed to exploit this invention but it was never successful and the project was terminated in 1898 when Ives returned to Philadelphia. His long sojourn and great promotional activity in England and on the Continent help to explain the relative abundance of these rare viewers on the overseas market.

The real challenge was to find a practical way for optically combining six images to produce a color stereo image. The first images were made on a single glass plate, side by side to fit conveniently in the triple lantern projector. The same three images in the original Ives Photochromoscope viewer, although only monocular, required seven reflectors, six lenses, plus the three color screens. The stereo Kromskop finally reached the market with only two tinted transparent mirrors, an external reflector for distribution of illumination, two additional color filters, and the viewing lenses.

The problem had been tackled by other inventors without success. In Fig. 2 a simple arrangement dating
back at least twenty years is shown, using a mirror C and two plain glass reflectors A and B. The three separations are placed ahead of the appropriate color filters and the distance from the viewing lens is constant. There are two basic problems. The optical path is too long, making the picture very small. Also, the glass mirrors, which both transmit and reflect, create annoying double images.

Ives' ingenious solution is diagramed in Fig. 3. The original mirror C is eliminated to shorten the optical path. A green transmitting reflector is used for the blue image, and blue for the red image. The green reflector also serves as the color filter for that image. When the red or blue images are reflected from these tinted mirrors, the annoying secondary image that normally bounces off the back side of the glass is absorbed by the complementary color in the glass.

Initial alignment of the viewer is accomplished by the angle and squareness of the two transmitting reflectors shown in Fig. 4. The glasses are spring loaded against rotatable triangular stops to allow a small change in inclination. Through this adjustment, the red or blue images can be raised or lowered independently with respect to the green. The base support for the mirrors can be rotated for initial horizontal alignment. These are normally factory adjustments but they sometimes have been tampered with and it is not easy to bring back proper alignment. In the early versions, these adjustments were crude. Later versions have threaded verniers that are a great help if things are truly out of line.

The block on which the reflectors are mounted fits slidably into the instrument, coming to rest against a small eccentric wheel. Turning a knob on the outside of the viewer moves the assembly back and forth a small amount. This simultaneously
The commercial product, (Patent #531,040, Dec. 18, 1894) is illustrated in Fig. 5. It is a precision device of polished mahogany and brass most likely made in England with final assembly and calibration in Philadelphia. When properly aligned and illuminated, the results are quite spectacular. Superimposing six 2" by 2" quality images virtually eliminates grain. The three pairs are precision mounted in masks and held loosely together by silk tapes, and are fanfolded for storage (Fig. 6). The positive green image slips into a slot at the rear and is non-adjustable. The blue image lies horizontally on the first step in two-point contact with a factory aligned brass plate. Only a very small horizontal adjustment is possible. The red image mounts similarly at the top, with the addition of a vernier screw at the left for precise horizontal adjustment only. The spacer card between the red and blue images bears the title.

In use, the viewer is always tipped up to improve illumination, to ensure that the red and blue images lie against the stops, and to make the vernier on the reflectors operate properly. Proper illumination is most important. A daylight diffuser (Fig. 7) was standard equipment but it is generally missing. It was of opal glass, mahogany edged, and rested on the two pins at the back of the reflector. A chain permits it to be swung to the rear for changing slides. Ground glass is not a suitable substitute. Normal illumination was by skylight. At night the "Kromskop Night Illuminator" was available for $12 (Fig. 8). Two Welsbach gas burners were used and the exterior housing was of polished mahogany and brass.

The reflector at the rear of the viewer sends light through the 'green' image. In some instruments, the mirror is tinted green, but it can be a more neutral color such as yellow since the true spectral filter is a transparent mirror inside the viewer. By sliding out the block containing the mirrors, the viewer becomes an ordinary stereoscope for viewing specially mounted glass stereograms or for looking at the 'green' image as a black and white positive.

![Fig. 5.](image1)

"Turkish Rug and Tabaret," Kromgram No. 8, Series A. All Kromgrams from author's collection.

![Fig. 6.](image2)
Kromskop, the camera was used in the horizontal position. The later stereo version paired the cameras vertically, allowing a "normal" lens separation.

The Kromskop came with eight Kromgrams for $50. A large selection of Kromgrams was available, the "A" Series priced at $1 ($10 per dozen) and the "B" Series at $1.50 ($15 per dozen). One 12-page price list covers almost 400 subjects.

While perhaps not a major factor in the failure to achieve commercial success, the pictures as a whole are disappointing. Exposure, general print quality, and color rendition are excellent but the photography was by people with little or no understanding of good stereo composition.

Outdoor scenes were particularly poor. A group of people including Ives visited Paris in 1897-98 proceeding on to Switzerland, and about three dozen views were published as a result. Scarcely one has a foreground object within 100 feet of the camera, and the need for near perfect registration makes them generally disappointing in the viewer. Even more remarkable was the promotion of upwards of 100 stereo pictures of paintings from the National Gallery in London! Still lifes were casually set up with little regard for esthetics. Some thought was given to choosing subjects that demonstrated nuances in color. Some of the flower arrangements are very good, primarily because of the excellent color reproduction.

A special set of medical views was produced in the hope that the medical profession would recognize the great benefits of full color 3-D. Views were offered from Paris, London, Philadelphia, Niagara Falls and Washington DC. A series of still life subjects and a small number of portraits were an important part of the listings. A portrait of Mrs. McKinley in the White House Conservatory was taken at the same time as
A complete Kromogram unfolded on a light box with the left images filtered to show the colors which would be provided and combined by a Kromskop viewer. Except for the green, the images are inverted and reversed for viewing in the transmitting reflectors shown in figure 4. Kromogram windows are exactly 2" wide with a three-sixteenth inch septum and only 55mm center to center. The mounts are 5¼" wide.

In summary—if you own a Kromskop and have some fine examples to show, treat them with care and be chary about acquiring additional ones which may be mediocre examples from the published lists or even poorer amateur efforts.

No information is available on the number of viewers produced. Design variations suggest that several small production runs were made, with sales of the last units spread out over a number of years.

Proper illumination and register of the views was a serious drawback. The expense and relatively poor quality of the commercial views must have been a factor. Making Kromgrams demanded more skill than the average amateur could give to it. It all added up to failure in spite of the enthusiasm of the professional critics.

At least one competitive system appeared briefly around 1900. It was known as the "Kromaz." A single lens camera using mirrors made two exposures, and the resulting four images, one red, two green and one blue were optically combined in a viewer.

In the meantime, other inventors, notably the Lumière brothers, were working towards direct color transparencies based on the additive color process. In 1907 they began marketing Autochrome plates (including stereo sizes), the first commercially successful color process. It wasn't until 1935 that the superior subtractive color process to be known as Kodachrome virtually put an end to efforts using the familiar red, green, and blue filters.

(Continued on page 47)
Abstract color 3-D images have been produced by a wide variety of methods in recent years: from time exposures of moving lights, to multiple exposures, to computer generated graphics. But the images produced for (and by) multimedia, sound/color modulated, multiple-projector 3-D shows in Norway recently by Jan Gjessing have taken the concept of abstract stereo far beyond what most people have ever seen or imagined.

The images seen here were created by a variety of methods and through several steps, starting with simple line drawings to establish basic shapes and positions. These and other images are combined on three horizontal screens to create colors, shapes, movements and 3-D effects which exist only during Jan Gjessing's multimedia shows, the latest of which was "Dreamscape," presented in March, 1987 as the opening concert of the Northern Sound Festival near Oslo. It is sound, in fact, which controls much of what appears on the screens. Sound-to-light liquid cells are connected to the music tracks of an 8-track tape deck (other tracks control dissolve-units for 12 of the 20 projectors). These cells, placed in the 12 programmed projectors, modulate the form and movements of their projected images in response to the music—providing a constantly changing background at the plane.
of the screens for the stereo images, projected through 4 Leitz projectors equipped with beam-splitting devices. The mirrors on these are adjustable, and a crew of 4 operates these projectors, controlling the depth positions of the stereo images in relation to each other and to the programmed images from the other projectors. The 4 remaining projectors have their own dissolve units programmed for special purpose action in combination with sound-to-light liquid cells.

The abstract images and artificial landscapes in these stereo pairs are the products of optical manipulation of the original drawings—no computers are used in any step of imaging or projection. To record the effects of these “expanded light” images in stereo, a single SLR camera is placed in front of a rear-projection screen on which the images appear. From behind the camera, a second projector throws a fine grid onto the camera side of the screen, providing a precise reference for establishing the infinity point when left and right images are compared. Sequential exposures can then be made with enough precision to be mounted in GEPE pin-register full frame mounts with no cropping or adjustments.

The “Dreamscape” show itself involves sequences and combinations of images like these, along with ordinary landscape stereos. The 3-D, moving, and sound-modulated patterns are projected into the landscapes, and as the music becomes more dramatic the images come further through the stereo window. All of this must be left to the imagination when viewing these samples on the printed page. More of the elements of the “Dreamscape” show were experienced by those who saw some of the slide pairs at the ISU Congress in Switzerland in October, ’87, where some fade and dissolve effects were possible in combination with the music. The presentation at the ISU was titled “Reality Beyond Fantasy,” and was easily one of the most well received shows of the 4-day congress, where, ironically, Mr. Gjessing was to see the first 3-D projections other than those he had made himself back in Norway!
The application of color tints to stereo images came soon after the introduction of Brewster's 1850 stereoscope and the initial studio sales of daguerreotype portraits and popular scenes in stereo. The 19th century's growing middle class had come to expect color in the painted "miniature" portraits done for them, regardless of whatever other qualities the works may or may not have had. As daguerreotypes began to compete with painted portraits, their lack of color was more quickly noticed by many people than were their bright images and high resolution.

Tinting was the obvious solution to this potential limitation on the portrait studios' business, and according to Darrah in *The World of Stereographs*, "...the mid-nineteenth century demand for colored photographs had to be met by painters. In fact, hundreds of miniaturists who found themselves unemployed as a result of photography, banded into associations and advertised their skills in photographic periodicals and by handbills distributed among urban photographers."

A considerable number of the stereo daguerreotypes to be found are tinted portraits, group shots or still lifes—frequently done with enough care and skill that the colors fuse in 3-D as precisely as the images themselves. The colors are generally subtle and "realistic" enough to easily outshine the faded, unbalanced appearance of some color photos made in the 1950s or '60s! Did the early daguerreotype studios attract the best of the miniaturist painters, or,

*Stereo daguerreotype nudes were generally well tinted AND more unequivocally bawdy than later mass produced card 'risque' or nude views. This pose, far less awkward than many, was probably held through several exposures by the young woman, providing many 'originals' for limited but lucrative distribution by the studio. Note exposed points of silver creating a diamond effect in the necklace. (Wim van Keulen collection.)*
unlike the later mass produced card views, did the one-of-a-kind daguerreotypes require more care and patience from whoever was applying the colors? Whatever the reason, stereo daguerreotypes were often regarded, like the small flat portraits, as images in need of tinting.

Among the leading photographers of the day, the practice of tinting daguerreotypes brought a response similar to that heard regarding today's video colorization of black and white movies. In his 1852 Treatise on Photography, Robert Hunt covered the matter of "Colouring" in a single paragraph: "I shall not present any plans for applying colours to the Daguerreotype, as it is, in my opinion, impossible to add by the brush to the exquisite workings of nature's pencillings. Those who may wish can obtain of every dealer a complete assortment of colours very neatly arranged in a small box for that purpose."

In The Daguerreotype in America, Newhall includes a quote from the Photographic Art-Journal of April, 1854. "Although some of our finest artists use this style of coloring, they must in their own minds condemn it, as they know that they are working to please the bad tastes of the community and not their own. What is finer in the Daguerreian art than a fine, sharp, bold picture without color (or a slight flesh tint), or a drab background, not killed with too much mercury?"

The purists of photography's first two decades probably had a valid point. Such a totally new and wonderful art form hardly needed to be painted over with "improvements" while its own techniques were still being learned and refined. But from the perspective of today any stereo daguerreotype to be found is a treasure, and the dedicated collector could care less if it had been tinted with essence of raw sewage! We should consider ourselves lucky that most tinted "dags" were done with as much care and restraint as they were—and that at least some have survived for nearly a century and a half as such unique and fascinating artifacts.

Generally, daguerreotypes were tinted using dry, powdered pigments applied with a very fine-point brush. In his 1861 manual on coloring, Alfred H. Wall instructed that the surface be prepared using "a varnish prepared expressly for the reception of dry colours", since ordinary varnishes would dry too hard and smooth. But in The Daguerreotype in America, Newhall claims, "A very slight amount of isinglass dissolved in water was first applied to the surface. It was allowed to dry and then was made tacky by breathing on it."

Colors were applied using the brush tip to rub in small amounts of the powder with a gentle circular motion. (Wall specifies a dark sable brush.) Loose bits of powder were blown off, and a clean brush was used to remove stray powder which may have obscured shadows or outlines. After the first coloring, a coat of varnish was applied and allowed to dry. A second coloring was then applied to certain areas to emphasize highlights and to strengthen colors where needed in clothing and draperies.

The best powdered colors were fine enough to adhere to the prepared surfaces and allow the addition of more color to an area with-
While it seems logical to assume that the colors have faded somewhat, the soft tinting of this portrait by Claudet seems well suited to the subject. (Courtesy of International Museum of Photography/George Eastman House.)

out the brush removing what had already been applied. They were sold in small bottles with tints and shades revealed by names indicative of their use (like “horizon” or “flesh”) as well as numbers. Wall makes much of the need for clean, dry brushes with fine points: “They must be carefully preserved from dust, well rinsed after use, and pointed with the lips before being put aside to dry.” One can only wonder what sorts of things were absorbed by artists who spent several years pointing their brushes “with the lips.”

Sometimes, objects like diamonds in a picture were made to shine by digging a sharp knife point into the plate, leaving a spot of silver showing. As with tissue views, the skill of the artist can be measured by how well these “pierced” highlights fuse in the stereoscope.

Dry colors were also used for tinting glass positives, but since these could be produced in the thousands from a single negative, there may have been less incentive to give them the detailed attention given some daguerreotypes. Compared to the great numbers of tinted paper views, the number of glass views which were tinted is quite small, Langenheim glass tinteds being the most often seen.

By the mid 1850's, when these Claudet views were made, chemical and optical improvements had made daguerreotype exposures short enough for usually successful portraits—provided there was something to lean on! The question here is, was the dog alive, or one of the studio props? (Courtesy of International Museum of Photography/George Eastman House.)
Seven years ago, with a bit of assistance from both the N.S.A. and Stereo World Magazine, we (my wife, Kimberly, and myself) began a rather formidable project. We began to photograph the concert performances of every relevant popular music group and celebrity, finding or custom-modifying the equipment needed for stereo photography. The plans were for the resulting images to be printed in a future edition of Stereo World, and selected examples were to be donated to the Holmes Stereoscopic Research Library, which was then located in Canton, Ohio. More recently, in 1987, we felt fortunate to also have many of our images accepted into the Smithsonian Institution for inclusion in their historical collections.

The performers were all to be photographed in their actual live concert performances—as they would be seen by the audience. But they were not to be captured from the balcony or even from the 30th row. Rather, we always photographed as close as permitted, with the added dimension (pun somewhat intended) of depth. This often meant photographing within ten to fifteen feet of the performers and stage—and very often as close as five or six feet! Often the sweating performers were not nearly as warm...
Randall Owens is a 37 year-old professional fashion photographer and musician living in Dallas. He received a B.A. from the University of Houston, where he studied photography, classical music literature and music composition. His interest in stereo photography began when he was four years old, when he received his first View-Master viewer. His wife, Kimberly Block, is a professional make-up artist, photo-stylist, and writer, and was indispensable in her assistance during the concerts, as well as in the editing of all of the selected images.

The equipment used for this project included custom-modified twin-synchronized Nikon F3 cameras with 50 mm, 85 mm, and 135 mm lenses; twin Rollei 2002 F cameras with 15 mm, 16 mm fisheye, 35 mm, and 85 mm lenses; two Busch Versascope F40 cameras (one with adapted Steinheil Redufocus attachment); Wollensak F2.8 stereo camera; Revere F3.5 stereo camera; and (recently added) French-made Hectron stereo camera.

30 very familiar names, including most of the groups and entertainers one might recall from recent times. We plan to continue this collection indefinitely, and there is certainly a seemingly endless supply of new artists and talent who deserve to be represented.

We are grateful for the acceptance we have received from the artists and their representatives, and we felt that they appreciated the possible significance of the project for the future. Many of the artists themselves seemed to understand the benefits of stereo versus "flat" photography. Especially when viewing the original slides, the images can put you at Mick's, David's, or Grace's arm length. With the assistance of a powerful hi-fi system, we feel like we're there again. We would like to believe that years from now, these three-dimensional images could help to convey just what rock concerts were all about.

risome to us as the throngs of pushing fans who seemed to view anyone in front of them as an adversary to crush. Somehow we survived, and fortunately the photographs did not seem to suffer as we did.

In order for us to capture these images, we attended one typical concert in a tour. We were always careful to insure that the concert not be interrupted or hampered in any way by our presence there. In fact, it is the "typical" concert which we set out to capture—anything else would have prevented the accurate representation of the event as it occurred.

We only photographed when the record company or publicist granted us photographic passes—one for the operator of the camera equipment, the other, for my associate/assistant (a true necessity, since the equipment used was large and cumbersome, and therefore much slower to load and operate in a dark, loud, and crowded environment). Also, because we were capturing the concert as one uniform entity, we needed to continue photographing the entirety of the concert. In today's very "limited access" concert environment, it is difficult to even enter a concert with any camera—and photo access is often limited to only the first few songs of a concert, but for our purposes, this would not have provided a very fair documentation of the concert, nor would it provide us sufficient time to take the number of images necessary to assure superior results.

Since its beginning seven years ago, this project has become what is, to our knowledge, the largest collection of photographs of this kind in the world. Currently the list of participating artists contains more than
THE HIDDEN MAGIC OF TINTED TISSUES

by Paul Wing

Long before the invention of photography, an important scientific toy was the peep show. It was an art form not to be confused with today's version! First evidence of the appearance of these shows dates back to the 1400's. They were large boxes which allowed viewing of a series of pictures through small openings. Flaps in these boxes allowed lighting from either front or rear. In this way, a scene could be transformed from day to night. Color was applied to the back of the translucent drawing, and special effects were created by pinpricking, adding silhouettes, simulating fires and other ingenious tricks.

Itinerant showmen traveled throughout Europe with these boxes. Daguerre himself made such shows and in 1822 created a large scale "diorama" version, where a seated audience viewed an elaborate scene which was transformed in spectacular fashion, as the illumination was changed from reflected to transmitted light. In the 1850's, small dioramas were sold as toys. The Polyrama Panoptique appeared in the 1850's using drawings, and the large ornate Megalethoscope of

A scene from "Le Pre aux Clercs," one of several plays in Paris theaters reproduced in diorama form and marketed as tissue views by B.K. The tintering and piercing in many of these theatrical tissues are as fine as can be found. (See the cover story in the Nov./Dec. '82 Stereo World.)
Only the extreme piercing at the center of the right image gives any hint of what will happen when this "surprise" tissue is held up to a light source.

A fine example of the type of tissues which came to be known as "incendies." Others used views of burning buildings, volcanoes, etc. The effect here is heightened by the inclusion of flying sparks and the glow of the fire on the water and dock.

Carlo Ponti, using photographs, appeared in 1862.

Stereo views were a natural extension of this art form. Early box type stereo viewers, made for either opaque or transparent views, were ideal for the purpose. Views were albumen prints made on thin paper and colored on the back. Piercing and other special effects were added. A plain translucent backing was provided for protection and to hide the coloring. Diecut mounts (sometimes embossed with elaborate decoration) completed the outside of the four part sandwich.

The small size of the views was a special complication. Elaborate diorama style tricks were virtually impossible in 3-D. These attempts often show up on only one half of the stereo pair, but pinpricking of necklaces or chandeliers was sometimes done quite neatly in stereo. The views with hidden trick effects were known as "surprises." Fires were popular, as typified by the burning ship illustrated here, and were known as "incendies." Colors were applied by hand, and much of the early work was exquisite. In some of the popular views (published over a span of more than 30 years) the eventual deterioration of
quality becomes obvious, but the best, as seen in this small selection, were quite remarkable.

Tissues were largely a French monopoly, centered in Paris starting in the late 1850's, and extending beyond the turn of the century. English views were made, but many of them may have been produced in France. (Some relatively inferior tissues were produced in the U.S., mostly in the 1890's.)

A frustrating fact is that the great majority of these intriguing views give little or no clue as to maker, often bearing only imprinted initials such as BK, JA, LL, EL, or JQ. Many lacked even that much identification on their ornate embossed frames, but one early line of French tissues in plain tan frames (View-Master collectors take note) was stamped G.A.F. at the top!

“Returning From the Races in Hell” is one of the 72 “Diableries,” or tissue views covering the life of the Devil in Hell (Enfer) published by the elusive “B.K.” Company of Paris. A feature article on these expertly constructed and tinted scenes appeared in the March/April 1984 Stereo World.

Here two different ratios of front to back lighting are shown. The left image shows the effect of roughly 50/50 lighting, as if the view had been made at dusk. The right image is almost completely back-lit, for a dramatic night effect. The heavy tintering nearly obscures the original photographic image when some of these tissues (especially outdoor scenes which do a day-to-night progression) are held up to a strong light. The unidentified view is probably French, and not later than 1860.

A feature article on these expertly constructed and tinted scenes appeared in the March/April 1984 Stereo World.
I'm mostly known for building large outdoor sculptures made of steel tubing and cable. My atom portrait, too, is art even though it exists close to science's more abstract atom. As you may know, science, by the end of the 1920s, decided to set aside the problem of describing the atom as a physical object, instead, settling for mathematical data alone. But since people continue to want pictures of everything, atoms no less than trees and creatures, and since the atom's details are inaccessible, it is necessary for any such image to be an invention. Who but an artist would likely come up with such a picture?

Since I began this search for a satisfactory picture in 1960, I've tried different means—sculptures, models, drawings and writing—in order to portray the whole atom with its surrounding electrons. Most tempting are rigid models, objects in 3 dimensions. Yet, steel, wood and plastic are cumbersome and finally look like hardware, whereas a proper atom enlarged to human scale should be jointless, glueless, stringless and little encumbered by gravity.

Recently I have begun to work with what seems to be the best medium for this purpose: a 3-dimensional graphics computer. I bought a

In this picture the outer electrons' orbits are veiled in lace. ©1987 Kenneth Snelson

An array of atoms hovering in the night sky. ©1987 Kenneth Snelson
Five neon atoms accosted by a stranger (lower right) unaware that neon is inert. ©1987 Kenneth Snelson

Here, according to my atomic visualization, is the entire inventory of orbital options for the electron of hydrogen, for shells one, two, three, four and five. The colors of the ring-orbits identify those with identical numbers of de Broglie matter waves. At any shell the “S” orbital is centered on the shell’s equator. All others (p,d,f...) are off-center, halo orbits. ©1987 Kenneth Snelson

A single heavy atom with 60 electrons—perhaps a snapshot of a neodymium atom. ©1987 Kenneth Snelson
An atom of chromium encroached upon by helium atoms. ©1987 Kenneth Snelson

Still life with stereoscope and photo of sculpture "Mozart I" in Purchase, NY. ©1987 Kenneth Snelson

rather high end system, a Silicon Graphics model 3130 with Wavefront Technologies software to make simulations of the atoms of my imagination. After creating the computer picture, I make the stereos by shifting the internal, software, "camera" on polar coordinates, around the y-axis, a few degrees, then photographing the views one after another directly from the color monitor (1024 lines) with a normal 35mm camera.

In these stereo pairs, you see spherical forms in space. Each sphere represents an individual atom with each electron described not as a point-particle, but as its entire orbit or pathway around the atom. As you may notice, the electrons don't necessarily follow great circle, equatorial paths. Mostly they distribute themselves on small-circle domains in the atom's space. The reason is that electrons are essentially wave-like rather than particle-like when they are part of an atom.

According to my model, it is the nature of each electron's "orbit" to disallow others into its space. The orbits themselves are, in effect, separate, tiny, matter-like objects, yet each one consists only of the electron particle racing rapidly around a circle in the manner, say, of a vibrating string. They are structural parts of the atom, having their own electrical charge, gyroscopic momentum and magnetic field. Groups of these electron orbits in an atom are capable of filling up its spherical onion-layer shells by arranging in symmetrical patterns around the nucleus. All of this makes my atoms have a different look from the logo-atom seen everywhere, since the electron-streaks in my model have the capacity to fend-off one another. Of course the colors in these images are fanciful, but again, they are art and not science.

Earlier images and models from Kenneth Snelson's work with atom portraits have been shown at the Hirshhorn Museum and Sculpture Garden in Washington, D.C. and at the Berlin National Gallery. In 1980, an exhibit of the atom images traveled to science museums around the U.S. with the help of a grant from the National Endowment for the Arts. An illustrated booklet produced for the exhibit covered in some detail the thinking behind the images of various types of atoms—from both historic and current points of view. Copies are still available, for $5 including postage, from Kenneth Snelson, 140 Sullivan St., New York, NY 10012.

Snelson's other works are represented in public and private collections all over the world, and have been seen in dozens of exhibitions since 1964. His large cable and steel tubing outdoor sculptures are in place in cities like Columbus, OH, Purchase, NY, and Baltimore, MD. Some of the computer images used here will be displayed at the New York Academy of Sciences this fall.
Most of the tinting ever done on stereographs was of course done on paper-based albumen prints mounted on cards of various weights and colors. Of these tinted prints, the majority were done between the early 1850's and the late 1870's, with the greatest volume being produced in England and France. The same generalizations tend to hold true for quality of tinting in attention to detail, color, and stereo fusibility. The best work seems to have been done in the earlier years, perhaps when the miniaturist painters who had turned their talents to photo tinting could still handle the work load.

Despite some fine quality tinting examples set by the Langenheims and others in the 1850's, most U.S. publishers tinted few of their views and most of those few seem to have suffered from the pressures of mass production schedules and a probable lack of miniaturist coloring talent willing to work for the wages paid in view factories. By the 1880's and beyond, tinted views produced even by publishers with good reputations for photographic quality were often simply covered with blotches of color over entire areas of "Russian Peasant Woman Crushing Corn by Hand." No. 825 (probably by T.W. Ingersoll) is one of the better color lithograph views to be found. Only in some fairly small details are there serious color registration problems or stereo anomalies to be found. (T.K. Treadwell Collection.)
a subject with no regard for shading, density, stereo effect or even the edges of objects! Many views are limited to three or four colors, with all lawns, trees and bushes in the same shade of green and all flowers the same pink as most of the dresses.

The poor quality of so many of the tinted views to be found in shops and photographica sales has resulted in a general rejection of any tinted view by some collectors who haven't seen what real skill and care in the application of color could do—and who may be passing over some gems deserving closer examination in a stereoscope.

In "The World of Stereographs" Darrah states, "Categorically, all tinted stereographs produced before 1863 were colored with transparent water colors. Beginning about 1863-64, the newly discovered synthetic liquid aniline colors became available." As many as 90 different colors were available from various suppliers, along with detailed instructions on which to use for skin tones, drapery, hair, clothing and jewelry.

In actual commercial production, some publishers had a sequence of artists apply one color per person, passing views on down the line until tinting was complete. Other publishers had single workers doing entire views, as hinted at by the different colors sometimes seen on the same objects in otherwise identical copies of the same view. This could have been the result of several people doing the tinting, or of one worker, assigned a tall stack of views, changing the colors out of sheer boredom.

High quality tinted views enjoyed brief periods of rebirth in the early 20th century when companies like H.C. White and Keystone issued occasional special tinted views or sets. One of the more noted is a 1906 hundred-card Keystone set illustrating native costumes from around the world in color.

But by far the color stereographs seen the most often by the most people were the color "litho" prints, priced as low as 85¢ per hundred and available from the turn of the century into the 1930's. In the 1880's, the halftone screen method of photomechanical reproduction had been brought closer to practical dependability by Frederic Ives, of Kromskop fame. By the late 1890's, three-color halftone printing had become a reality in time to be a part of the great surge in stereo view popularity of the next several years. The new process meant that once the desired colors had been chosen for a view, thousands of identical "tinted" views with precise color in every detail could be produced and marketed at a fraction of the cost of even the most crude hand tinted views.

In practice, the color lithographed views often suffered from sloppy printing and out-of-register colors which, together with the halftone dots themselves, made the magnified, fused images in a stereoscope look rather pitiful when compared with larger, flat color lithographs of the time. Also gone was any of the subtlety of the better tinted views. Litho colors were universally garish, with a common trend toward orange shirts and identical, blank blue skies. But consumers then must have been less offended by the shortcomings of lithographed views than are present day collectors, because they sold in astounding quantities and went on to serve as promotional and advertising devices. The better examples and sets are now getting more attention from researchers and collectors because, as Darrah pointed out some time ago, there are images of historical interest which survive only on litho views.

Except for being better than most, this tinted paper view could be mistaken for some early color photographic process at first glance. "The Brig o' Balgounie, on the Don, near Aberdeen." No. 4 by G.W. Wilson, shows tinted landscape stereography at very near its best. Besides views like this of the Scottish countryside, Wilson was known for his fine stereo architectural studies of English cathedrals and was eventually named "Photographer to Her Majesty in Scotland" by Royal Warrant from Queen Victoria. (T.K. Treadwell Collection.)
With this issue, we introduce “Foreign Affairs,” a new column by Russell Norton which will cover in detail some of the earliest and least well known stereographers and publishers from outside the U.S. (concentrating mainly on England and France). With their fine examples of early English tinted card views, his first two columns are presented sequentially in this special issue.

These “Scenes in Our Village” were photographed by T.R. Williams in 1856. They were inspired by the then late Mary Russell Mitford’s (1787-1855) widely admired sketches of country life that ultimately became the five volumes titled “Our Village” (1824-1833).

“Dear Miss Mitford’s” sentimental sketches were extremely popular with Victorian readers. Even the Art Journal noted of her passing (1855, p. 266) “THE LATE MISS MITFORD.—The name of this lady is honoured and beloved wherever the English language is spoken or read…” The industrial revolution had nearly ended traditional English country village life based on an agrarian economy. Threemile Cross, Miss Mitford’s Village, seems to be one of those places that time forgot. The roofs are thatched, agricultural workers will sleep in the fields, and gleaning is a living Biblical tradition. There is the romantic charm of traditional village values, innocence, and the longing for a supposedly simpler life and time gone by. The Christmas 1856 London Stereoscopic Co. catalog says of “Our Village”: ‘So sweet a spot of earth, you might have guessed some congregation of the elves to sport by summer moons had shaped it for themselves.’

Thomas Richard Williams (1825-1871) was a professional Daguerreotypist in London. Williams began as an assistant in Claudet’s studio, then worked in Beard’s studio. Beginning about 1849 he opened his own studio at 236 Regent Street which lasted until about 1870.

Williams’s primary business was certainly portraiture, but by about 1855 he was offering a commercially successful series of stereo Daguerreotype portraits, still lives, and views inside the newly reconstructed Crystal Palace. By the time of publication of the London Stereoscopic Company’s first catalog in October 1856 (possibly as early as May 1856), Williams’s Daguerrian stereos were available in card form from the London Stereoscopic Co. and others.

The 1856 London Stereoscopic Co.’s catalog has been reprinted both in “The Photographic Collector” (UK) Vol. 3 No. 2 and in the 1971 Morgan & Morgan reprint of Sir David Brewster (1856) The Stereoscope. This catalog begins with a list of 45 Crystal Palace views which are clearly by Williams because the numbers, titles, and subjects match the captions from marked T.R. Williams views. Following this, the catalog lists “Miscellaneous Subjects” “Groups, Figures, &c. &c.” The “First Series” lists titles such as “Robt. Drummond, Valet to late

"The Village Schoolmistress." From the 1856 SCENES IN OUR VILLAGE series by T.R. Williams.
Lord Nelson” and Launch of the Marlborough at Portsmouth” which are again known T.R. Williams’s subjects.

Beneath the listing of the “First Series” the catalog announces “Several exquisite Rustic Scenes from Berkshire.” At this same position in the Christmas 1856 catalog is the announcement “On the 1st of December, 1856. Scenes from ‘Our Village’” with the list of titles reproduced here. All of this corroborates the supposition that “Our Village” is Threemile Cross, located just south of Reading in Berkshire. In addition, ‘The Cottage” seems to match illustrations of Miss Mitford’s “The Cottage.”

The implication from the listings in these sequential London Stereoscopic Co. catalogs is that Williams made multiple visits to Threemile Cross. This is borne out by the change in vegetation that can be seen in the views. The Christmas catalog says “each has descriptive matter, or an appropriate quotation at back.” Since there are some mounts which are more nearly slate-colored than the usual brownish gray and which may lack anything other than the title of the series and subject, I believe these may be examples that were sold between visits to Threemile Cross.

I have been unable to determine the author of the “descriptive matter” on the backs of the views. The sympathetic and fairly sentimental verses may approach doggerel in places, but overall they do not seem bad, especially in the context. They do not seem to be by Miss Mitford, although she did publish volumes of poems in 1810, 1811, 1812, and 1813. They are seemingly contemporaneous with the photographs themselves since “Lane leading to the Farm” reads in part:

“Thus, what is cultivation to the eye
Of the taught artist—stereoscopes supply.”
Possibly T.R. Williams was not only a “photographic artist,” but also a “poet.” Ambitious art historians take note!

The order of the titles listed corresponds to Williams’s in the very few blindstamp numbered examples that have been found. Williams made several contemporaneous exposures of at least some scenes such as “The Dame and Spinning Wheel.” There is also the possibility that he may have either rephotographed “The Blacksmith’s Shop” or that two entirely different views were taken. It is difficult to decide this point since the wrong view was sometimes mounted on a card with a different printed title. No “Scenes in Our Village” which do not appear in the list are known to me, although other Williams views that may be related but outside the series do exist. Unlike the Crystal Palace and “First Series” the tonality of “Scenes in Our Village” does not suggest to me that they were made from Daguerreotypes.

Certainly T.R. Williams and the London Stereoscopic Co. had a close working commercial relationship. Indeed, the London Stereoscopic Co.’s office at 313 Oxford St. “corner of Hanover Square” and “20 doors west of Regent Street” was just around the corner from Williams’s studio at 236 Regent St. “opposite Hanover Street.” It appears, however, that the London Stereoscopic Co.’s distribution of Williams’s work was non-exclusive because examples of “Scenes in Our Village” exist blindstamped with both “T.R.W. PHOTO” and “GR” (Gebhardt, Rottmann & Co., London) as well as embossed “D. Bolongaro & Son, Manchester.” I interpret this to mean that Gebhardt, Rottmann & Co. acted as wholesalers in this case.

The London Stereoscopic Co. apparently offered “Scenes in Our Village” in 1856 “most exquisitely executed” for 3 shillings each; “exquisitely coloured” may have been extra. It also advised “These pictures are perfect Stereoscopic Gems,” and no collection can be complete.
"Taking Corn Into the Granary." From SCENES IN OUR VILLAGE.

without them." I believe the same holds true today. Unfortunately, choice examples are quite scarce. I estimate an interesting subject in near mint condition to be worth $50, with a premium for the very top subjects such as the close interior view of "Little Polly gone fast asleep." For views only in near excellent condition, views with average slightly sloppy tinting, or views of dull subjects, $25 would be more nearly fair. Views in lesser condition will usually bring commensurately less.

I would like to thank Mr. B.E.C. Howarth-Loomes for providing me with a photocopy of the Christmas 1856 catalog; I shall remain forever in his debt. Numerous other collectors provided valuable access to their collections, and I particularly thank Brian May for providing me numerous photocopies from his collection.

"Scenes in Our Village" Checklist

T.R. Williams's "Scenes in Our Village" list of 59 titles from the Christmas 1856 London Stereoscopic Company catalog (B.E.C. Howarth-Loomes collection). The order and capitalization have been retained. The catalog refers to the series as "Scenes from 'Our Village.'" I have shown the actual title
from the card itself in brackets when it differs from the catalog by other than a hyphen or parenthesis. Titles on the cards are always in full capitals.

The Old Church.
[The Church.]
The Squire’s House.
The Fishpond.
[The Fish Pond.]
The Park Bridge.
The Church through the Trees.
[The Church seen through the Trees.]
The Road through our Village.
The Dame and her Spinning Wheel.
[The Dame and Spinning Wheel.]
John Sims at his Pigstye.
Maria Parson’s Washing Day.
[María Carson’s Washing-Day.]
A Gossip by the Way.
Blacksmith’s Shop.
[The Blacksmith’s Shop.]
Old Giles’s Grindstone.
“The Cottage.”
[The Cottage.]  
Sowing Barley.
[Turning Barley.]
Reaping.
Reapers at Dinner in the Field.
Loading the Wheat Cart.
Rick Making.
Going to School.
The last Load—Gleaners waiting at the Gate.
Gleaners Returning.
[The Gleaners Retiring.]
Dick Carter’s Potatoes Harvest.
Lazy Joe Bennett’s Hut.
Taking Corn into the Granary.
The Straw Yard.
Loading the Dung Cart.
Stacking the last Rick.
A Rest by the Way.
Dame Edmund’s Talkative Daughter.
Old Dancy enjoying his Pipe.
A Chat at the Gate.
The Ruined Cow Shed.
Lane leading to the Farm.
First warm day in Spring.
[The First warm day in Spring.]
The Old Story (at the Pump).
Martha and Daniel at the Churn.
Little Mary and her Maggie.

Our Rectory.
[The Rectory.]
The Village Schoolmistress.
A View of our Street.
Turnpike to the Hamlet.
Bread and Cheese in the Barn.
Cottage on the Banks of the River.
[A Cottage on the Banks of the River.]
A View of the Bridge.
The Weir.
The Weir—Another View.
The Ferry.
Under the Willows.
Angling in the Stream.
“Where I catch the most fish.”
Anglers done for the day.
The Cart Shed.
[The Cart Shed.—Quite Tired.]
The Remains of the Old Hall.
“Tummus” standing for his Picture.
The Doctor’s One Cow Dairy.
Little Polly gone fast to sleep.
[Little Polly gone fast asleep.]
Drawing Water from the Well.
[Early Morning—Drawing Water from the Well.]
The back view of Neal’s Cottage.
Mrs. Giles at her Pump.

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Part II: Mark Anthony’s Stereoscopic Groups Listed

This is a list of Anthony’s printed titles recorded verbatim from actual stereoviews. The great majority of individual cards are untitled. When present, the title is always in gothic script on the verso, either on the mount or on a highly characteristic small paper label. An asterisk (*) indicates I have seen an example identified as “Anthony.” The vast majority of these titles are from my own attributions; I have included only those views of which I am certain. The identification of the “Anthony” who did these fine early

“(Interior of a Stereographic Manufactory.)” attributed to Anthony, circa 1858. Title inferred from the 1860 London Stereoscopic Co. catalog issued by Paul & Curtis, NY.
English groups as the landscape painter Mark Anthony is extremely complicated, and will be discussed in "Foreign Affairs III."

60. Meditation.
68. The Miniature.
72. The Cobbler.
76. The Necklace.
81. The Restaurant.
A Bevy of Girls.
A Comfortable Lent.
A Day's Spree.
*A Delicate Appetite.
*A Doting Father.
*After the Ball.
Artificial Florists.
At the Ball.
Bagatelle.
Bal Masque.
Blind Man's Bluff.
Boxing Night.
British Gallantry.

"Punch and Judy," attributed to Anthony, circa 1858. Title from another example.

Burglars.
Caps and Courtship.
Christmas Tree.
Couple of Politicians.
*Doting Father.
Double Soled.
Effects of Dining Out.
Evening Music.
*Fine Fruit, Sir?
Flowers of Loveliness.
Fortune Telling.
Game at Forfeits.
God-papa.
Going to be Married.
Grandmother's Pupils.
Greek Maidens at the Stream.
Guess, who!

Happy Man.
Haymarket Amenities.
His First!
Irish Peasantry.
Italian Image Maker.
Juvenile Ball.
Legal Measure.
Love laughs at Danger.
Mamma's First.
Military Tactics.
Nursery Occupation.
Olympian Group.
Perplexing Predicament.
Pleasant Dream.
Preparing for an Excursion.
Punch and Judy.
Reading a New Piece.

"Fine Fruit, Sir?" by Anthony, circa 1858. Title printed on verso. An exact duplicate was embossed 'Anthony.'
"(Poor Girl)" attributed to Anthony, circa 1858. The inferred title was inked in manuscript on another example of this view. The girl in this view is the evidence linking this series with Mark Anthony.

<table>
<thead>
<tr>
<th>Reflection.</th>
<th>The Course of True Love never runs smooth.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scottish Scenes.</td>
<td>The Dame School.</td>
</tr>
<tr>
<td>Sea Side Reverie.</td>
<td>The Donkey Ride.</td>
</tr>
<tr>
<td>Sea-side Comicalities</td>
<td>The End of Crinoline.</td>
</tr>
<tr>
<td>Self-Admiration.</td>
<td>The Gallant Surprised.</td>
</tr>
<tr>
<td>Spare a Copper your Honor!</td>
<td>The Gleaners.</td>
</tr>
<tr>
<td>Supper after the Ball.</td>
<td>*The Happy Cottagers.</td>
</tr>
<tr>
<td>The Abbess and her Flock.</td>
<td>The Listener.</td>
</tr>
<tr>
<td>The Auction.—Going, Going, Gone!</td>
<td>The Loo Party.</td>
</tr>
<tr>
<td>The Baptism.</td>
<td>The Love Secret.</td>
</tr>
<tr>
<td>The Chess Players.</td>
<td>The Marriage.</td>
</tr>
</tbody>
</table>

*The Miser.*
- The Mock Dentist.
- The Mysteries of the Dressing Room.
- The Pawnbroker.
- The Procession at Church.
- The Quack Doctor.
- The Reading Room.
- The Rustic Kitchen.
- The Sleeping Beauty.
- The Three Hundred-a-Year Couple.
- The Toilet.
- The Unwelcome Guest.
- *The Village Fete.*
- The Village Politician.
- The Whist Party.
- These are my jewels.
- Toilet Scene.
- Too Polite by Half.
- Washing Day.
- "Your Likeness, Sir? No White Eyes." *1*

"The Laundry." by Anthony, circa 1858. Title taken from another example with a printed paper label also reading "ANTHONY PHOTO." The young woman in the foreground appears in "Poor Girl."
The high contrast manipulation of images called posterization has enjoyed various episodes of popularity over the years, each time being illustrated and explained in one photography magazine or another. The application of the process to stereo images involves no special technique or innovation, but the surprising possibilities to be found when depth is added to these sharply outlined, glowing, solid color images have very seldom been explored.

Always ready to experiment with unusual 3-D projects, NSA and Stereoscopic Society member Howard Frazee has created posterized versions of many of his stereo slides, including some of his fine hyperstereo images of buildings and skylines. Equipment required is minimal. A red safelight, three small trays, Kodalith film and chemicals, a hole punch and a closet are needed. Most important of all are the two simple pin-register frames shown here, which Mr. Frazee assembled from heavy lucite with his usual precision.

An unmounted stereo pair (slides of any format, OR black & white negatives) is first contact printed onto a strip cut from a 4 X 5" sheet of Kodalith film. Several exposures are made, each one twice as long as the last, on up to ten strips of film from the same original pair. (Actual exposure times depend on the light source.) After processing, the negatives (when working from slides) are numbered N1, N2, etc. Each will have a different density, and since this is high contrast litho film, some highlights will turn completely black and some shadow areas will turn completely clear. The effect will be different in each different exposure, resulting in a range of actually different images.

These negatives are then contact printed on more strips of film, using a standard exposure, with a range of positives (P2, P3, etc.) the result. Negative 1 and positive 2 are then "stacked" on a new strip of film on the pins in the frame and exposed together, creating an image marked C2. The same is done for the other negative/positive pieces of film (N2 and P3 = C3, etc.).

This third set of film strips is then contact printed onto a final series of strips (marked F1, F2, etc.) reversing the tones yet again. (At this step, N1 and the highest "P" number are also printed again for a final reversal, as they get left out of some other steps.)

All of the F1, F2, F3, etc. strips are then soaked in an etching solution, which dissolves the black areas of image. Liquid retouching colors are then brushed on the emulsion side of the now completely clear film.

Only the areas which were originally clear in this final film will retain the color. The choice of which colors to use on which pieces of film

Hyper-stereo of a neighborhood in San Francisco, done as a five zone posterization. This image is built up from four dyed film strips and a positive for black outlines.

Several etched and dyed pieces of film, a negative and a positive wait their turn on the register pins, which already hold an assembled posterization. For contacting the originals on litho film, they are taped to a smaller scrap of film which is punched and placed over the litho film on the frame at the rear.
The original image is this hyper-stereo view of buildings in Edinburgh by Howard Frasche. These frames are contact printed onto the litho film strips at several different exposures. For more precise (and expensive) registration control, these could be enlarged onto full 4×5 sheets of litho film and copied onto 35mm again at the end of the process.

A three zone posterization of the original, using one of the negative images as a mask to emphasize the dyed color elements of the assembled yellow and magenta "stack."

Using the same zones as the first posterization, magenta here is chosen in place of yellow, and blue in place of the magenta.

is a matter of personal taste and/or experimentation. Using register pins, the final punched and dyed strips of film may be stacked in any combination which produces an interesting effect. With the pins keeping the selected pieces together, the image areas are sandwiched between two pieces of glass and copied like any slide to be duplicated.

Those with computer graphics systems capable of digitizing images from slides may wish to try this sort of effect electronically. It could be a good way of determining which slides have the most potential for later posterization on film—both in terms of color and stereo effects.

For a complete set of basic instructions on posterization (exposure processing, and assembly) send a stamped, self addressed envelope to STEREO WORLD POSTERIZATION, 5610 SE 71st, Portland, OR 97206.
We begin our first full color issue in a blaze of brilliant blue. Robert Wilson has sent along a cyanotype, a print created from a process developed by Sir John Herschel in the early 1840’s but rarely used until the late 19th Century. At that time its ease of processing and low cost apparently excited at least a few photographers, mostly (if not exclusively) of the amateur variety. The extent to which stereographers of old linked up with the cyanotype process has not been well documented. Judging by the overall number of views my own two eyes have chanced upon (I think three) in over ten years of perusing every card within arm’s length, the number should not have been that great. Or is someone out there hoarding a large collection of your basic blue stereoviews?

Now on to the print itself. Our image is almost certainly the work of an amateur. Mounted on plain cardboard stock, the image shown is both unevenly trimmed and backed up on the reverse side with amateurish quality half-size print of a weedy tomato garden. To capture the image shown here, the photographer climbed to the roof of a downtown building that stood at least 10 stories tall. The image was taken with a single lens camera which was then moved between exposures. Changes
in the position of the few pedestrians on the street far below indicate this to have been the creative process. At least four electric streetcars can be seen operating on one of the two tracks visible at the center of the wide prominent main street. Undoubtedly, the overview shows a large city. But which one?

Our second view is published on a cabinet size mount by Webster and Albee of Rochester, N.Y. Shown is a two story open-air pavilion. A large crowd can be seen on the inside of the structure’s railings. They appear to be seated at tables. There is a large grassy area that abuts the back of the building. The foreground seems to be dirt and is level. The section where the cameraman stands is also level but is boxed up about one step higher than the area in front of the pavilion. Overall, the appearance is one of a reception/outdoor dining/party area at perhaps an extensive park or a racetrack.

Our final two views relate separate segments of the Little Red Riding Hood story as portrayed by different publishers. Submitted by Rusty Norton, both views have thwarted his determined efforts to uncover their photographers’ identities. The first view lacks any type of (Continued on page 38)
Several 19th century experimenters had worked on methods of recording color images on a single photographic plate by passing the image through a "Screen" of microscopic, additive color filters just ahead of the emulsion. But a commercially successful plate based on this concept was to reach the market only after years of effort by the brothers Auguste and Louis Lumière of Lyons, France. Their 1904 patent became a practical product in 1907, after a panchromatic emulsion of adequate sensitivity became available.

French stereographer E.P. Frank, in a letter recently found in a collection of his work (by NSA researcher Howard Frazee) provides a first-hand report on shooting and processing Autochrome plates. Written in 1951, his letter refers to his experiences with stereo Autochromes from 1911 to 1931.

Glad the Autochromes reached you in good condition. Their principle is a comparatively simple one: glass plates are first coated with a very tough emulsion loaded with a SINGLE LAYER of potato-starch particles, dyed in the three fundamental [red, green and blue] colors as evenly distributed as possible, AND a black filler (fine charcoal dust) for the intervals between starch particles. You can see this easily under a low-power (40x or so) microscope. Then came a second, panchromatic emulsion. Exposure took place THROUGH THE GLASS SUPPORT, in other words, with the plate's BACK TOWARDS THE LENS, so that the colored light was "selected" in spots by the dyed starch particles. Since Lumière's "panchromatic" emulsions were not quite satisfactorily panchromatic, special very dark, reddish-yellow filters had to be used.

Between the dark filters and the enormous loss of light through the starch ("reseau") net, Autochromes were about 50 times slower than modern Kodachrome or similar emulsions used without filters: basic exposure was around 1 second at 1:8 for light, sunlit subjects. Of course a tripod was an absolute necessity.

Processing was rather simpler than that of Ektachrome: development (in special solution) took place either in darkness (by the watch), or in subdued light, after Pinakryptol desensitizing, and produced a sort of exceedingly muddy color negative. After a short rinse, this went into a silver dissolver, from which it emerged looking like nothing on earth; another rinse, then full exposure to day—other strong light, and re-development, which gave a more or less correct (according to exposure and development) color positive.

All silver bromide having been either dissolved or reduced in those baths, no fixing was required, so the plate was washed shortly, and dried. A very special varnish might also be applied. (I never used it, more accidents happened with that than with anything else. The slightest scratch in the outer (panchromatic) emulsion resulted in one of those confounded green stains you've noticed on a few of the transparencies.) Finally, the result was a color picture in "pointillism."

Autochrome plates were available in several flat sizes and stereo formats, and amateur stereographers...
were some of the first and most enthusiastic users. The limitations of tinting and the complexities of separation systems like the Kromskop could be forgotten. Autochromes could be made in standard stereo cameras and viewed in any stereoscope designed for glass slides. The dark and dense look of Autochromes seen today isn't necessarily a result of aging—they tended to be dark even when new. A special "diastere" transparency viewer was marketed for flat Autochromes, but stereo users needed to use only their regular stereoscope and perhaps a somewhat brighter than usual light source.

As a direct positive process, Autochromes could not be easily duplicated. This left them out of any serious consideration for use by commercial publishers of stereo views, who had long since abandoned glass slides as a significant product, in any case. Virtually all the stereo Autochromes that exist were made by amateurs—or by professionals as part of some special or personal project. Even these uses were limited by the expense of the process. In the U.S., Autochrome plates are said to have been priced at $5.00 for a box of four plates in the 1920's, when black & white film was about 20¢ a roll.

The Autochrome's first serious competition came with the introduction of Agfa Color Plates in the early 1920's. These used dyed resin grains in place of potato starch, but the concept was similar to that of the Autochrome. The fact that these systems had their emulsions on the back of the glass meant adjustments in focus were necessary. In cameras with ground glass backs, the ground glass could simply be turned the other way when focusing for color photos. But many smaller cameras and most stereo cameras by then were focused by a scale on the front, and some were even fixed focus.

One solution mentioned by Mr. Frank was the use of Zeiss "Ducar" filters, which included a slight (−.01 diopter) optical correction along with the color correction.

Some of the focus problem may have been alleviated in the late 1920's, when both companies introduced cut film versions of their color transparencies. This gave color some of the convenience of black & white materials and, according to some sources, kept Autochromes on the market despite problems with the supply of the special grade of glass the company had been using. The new Lumière product was called Filmcolor, and a roll film version was even introduced, under the name Lumicolor. According to stereographer Frank, "The cut films didn't keep flat, and necessitated frightfully small stops and long exposures." While the noted "pointilism" effect remained, the film-based versions of the product seemed to have replaced the Autochrome's soft, almost romantic rendition of colors with a harsh, high contrast look. By 1932 a wide array of color cameras, films, and processes were available, although most were designed for professional use in connection with the rapidly improving field of color reproduction in magazines. In that year, production of Autochrome materials ceased—although some remained available for a time from existing stocks.

Dufaycolor, with its fine-ruled color screen was introduced in 1935 as the ultimate achievement in additive color transparency films. (A negative/positive process called Finlay Color had employed a much more coarse, geometrical mosaic screen in the 1920's.) Consumers of Dufaycolor included a growing number of stereographers in August of 1936, when the new Kodachrome became available in 35mm and roll film formats. (Sheet film sizes followed in 1938.) It took little time for the superiority of the dye-coupler, subtractive color film from Kodak to be recognized. The fine grain quality of its images and of its duplicate transparencies would soon make possible the first mass marketed stereographs on color film, with the 1939 introduction of the View-Master reel. (See Stereo World, March / April 1984.)
The purpose of this special section is to illustrate at least some of the wide range of recent and current work from around the world involving the skillful and creative use of color in stereo imaging. Some of these stereographs have been seen and honored in international competitions or circulating folios, while others are being shared here for the first time.

Some are samples of views to be included in future articles in black & white issues, but which deserved at least token recognition of their fine use of color. Others were selected from the hundreds of slides and prints sent in for this issue on the basis of their individual contributions to a 3-D gallery which, we hope, extends the range of color in depth beyond the usual expectations.

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Monarch butterfly and zinnias in the Cheeseman Memorial Park, Denver, 1952. Voted one of the top views duped and distributed to members of the short-lived Academy of Stereoscopic Arts and Sciences of the early '50s. Made using a Leica and a 28mm lens by Howard W. Butts, who became more than adept at dramatic scenic views during his years as stereographer for the Stori-View Company of St. Louis.

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"Rainbow Lorket" by Allan Griffin, FP5A. Made with a twin SLR rig with cameras mounted base-to-base for a three inch separation using 105mm lenses.
Color infra-red stereo by David Bauman. Taken with a Realist at f/22 using gelatin filters and a long exposure. Mr. Bauman's audio visual production company in Cincinnati uses paired Nikon images in multiple projection at sales meetings or other promotions where a client's product can be best displayed in 3-D.

Macro Realist close-up with flash by Howard Frazee.

"Mrs. Cluck" by Susan Pinsky is one of many animal close-ups she has made with a Macro Realist and circulated in the Stereoscopic Society slide folios to the delight of other participants.
"Fireworks Over the River" by Stereo World Art Director Mark Willke was made with two Realists on tripods 12 feet apart. The ten second f/8 exposure was synchronized with air-bulb releases after the cameras had been pre-aimed above the launching barge just before dark. Fourth of July, 1986, Portland, OR.

"Wing Tennis" from one of the View-Master reels included in the book "Beyond the Third Dimension" by Stan White. (See Stereo World, Nov./Dec. '87, page 36.)

"What's for Lunch?" by Quentin Burke demonstrates the advantages of shade over direct sunlight for many subjects in color. This starving deer was looking for a handout along the Kaibab Trail, Grand Canyon, AZ, 1982. The color print pair is mounted in a Q-VU-X Mount as covered in Stereo World, July/August '87, page 23.
“Sydney Bridge at Dusk” by Allan Griffin, FPSA. A ground based, synchronized hyperstereo by one of the world’s most widely recognized masters of wide-based stereo techniques.

Look again at the details in this view by Ted Lambert, the late master of multiple exposure, special effects 3-D. From a presentation on Mr. Lambert’s work by Ron Labbe.

“Waterskier” by Allan Griffin, FPSA. Shot with a paired Konica FS-1 action rig (6 inch separation, 105mm lenses, 1/500th sec.) and an award winner at three international exhibitions in 1981 and 1982.
THE UNKNOWNS
(Continued from page 31)

label but is distinguished by what appears to be a backward "K" at the center of the left margin of both stereo halves. A paper strip label on the reverse side of the second view is the only identifying mark there. The label clearly shows the photograph to be the third view in a series. We have reproduced the label here so our readers can compare it with any other Red Riding Hood Series views that they might have.

To date three of the four views from our July-August '88 issue have been identified. That's a .750 percentage that would make any baseball batter or "Unknowns" Editor beam with pride. Thanks for your help, everyone!

Jim Crain was the first to respond. He recognized the first view as being one of the rooms in artist Albert Bierstadt's residence "Malkensten" in Irving on Hudson, New York. Albert was in residence there from about 1865-1876. Brother Charles Bierstadt used his own artistic medium to preserve the room's image for posterity. The place was actually quite an impressive mansion and could have held its own against many of the resort hotels of the period. The term "Malkensten" was German and referred to a gathering place where artists would congregate to drink beer, play billiards, and discuss their permanently displayed works. Bierstadt decided to appropriate the name for his home. The house met its fate one day in 1882, reduced to ashes by a scorching fire. Anyone interested in more information including other photographs and drawings of the house, might wish to consult Gordon Hendrick's book Albert Bierstadt.

Our second view in that issue drew the largest number of responses. In turn, Francis Rizzari, Edwin Bathke, Paula Fleming, and Bruce Hooper arrived at the conclusion that the "Chestnut St." image was taken in the fast growing Colorado mining town of Leadville. The photographer, George D. Wakely, was standing at the busiest intersection in town, the corner of Chestnut and Harrison Sts. As for a date, it appears the most likely year may have been 1880 or 1881. John Lieninger, who owned the stationary and bookstore so prominent in the image, came to Leadville in December of 1877 and opened his store in 1878. The photographer, G.D. Wakely, shows up in the 1879 Business Directory of Leadville and again the following year under the name "Wakely and Clements." However, none of the other name recognizable businesses appear to have opened prior to 1880. By deduction, then, the early 1880's provide the most reasonable time period for the dating of the image. Two books that were an invaluable aid to those researching this view were Terry Mangan's Colorado on Glass and Leadville: Colorado's Magic City by Edward Blair. Matching or near matching photos can be found in each of these resources.

The final July-August view was recognized by Richard Elliot. He had visited Shelburne Falls, Mass just prior to receiving that issue. Thinking he recognized the topography, a double check of some Polaroid images taken while there proved a positive match. Some of the buildings still stand and the bridge across the Deerfield River is still in use. The site where the photographer set up his apparatus is now an arts and crafts/gift shop. During those days, however, it was the site of a railroad station and our unknown photographer may have stood on its roof or perhaps on the hillside just behind and to the side of the station itself. Shelburne Falls today is most noted for its "Bridge of Flowers," a concrete arched structure built across the river there that first served to support a trolleyline to Buckland. It's 400 ft. length, located just beyond the bridge in our view, is presently lined with two flower beds and is open daily to visitors.

Please hold on to any views you have been considering sending to me for the time being. It will take approximately a year to clean out the current backlog.
The Color Attraction

The question of color always was surrounded by difficulties as it affected the Stereoscopic Society. Like photography in general, stereoscopy was of two minds in being fatally attracted to color while often resisting and even denying the attraction.

In the earliest days, in 1839, when L.J.M. Daguerre in Paris presented the first practical method of 'fixing' the image of a lens (a gift, officially, to the world from the French government)...the absence of color in the recorded image was noted with regret. Almost immediately, skilled and not-so-skilled artisans began attempting to colorize the daguerreotypes with tinting techniques. Some were rather successful, others botched the job.

"Not for Voting"

The Stereoscopic Society, since its creation in 1893 in England, has been primarily made up of amateurs. Some were very skilled amateurs, it is true, and others may have become professionals in some aspect of photography or photographic equipment. Certainly some part of the membership was always found to be tinkering with the latest techniques and/or equipment...even when success would have threatened the status quo.

Since voting always played some role in the evaluation of member's entries in the folios...there was the desire by some to 'standardize' the entries to eliminate 'unfair' advantage. This had a negative effect on innovation. Although it was well-intentioned and prevailed at times in the short term, in the long run it was stifling and did not succeed.

All early entries in The Stereoscopic Society were based on paper prints mounted on 3½ x 7" cards, a method compatible with the commercial viewers which were abundant in the 1890's and for some decades thereafter.

Some members tinted their viewcards. This gave rise to concern in others that a colored picture would have an absolute advantage over a monochrome picture (toning was apparently always acceptable) and some did not want to permit such colorizing. One should remember that these were hands-on darkroom photographers whose only contact with commercial elements was in the purchase of chemicals and sensitized paper and films (or plates). Since colorizing is a difficult extra step it can be done well or poorly. A good picture could be ruined but a poor picture really wasn't helped much by tinting. If argument arose, it was not uncommon to mark the viewcard "not for voting" and show it anyhow. Although there were never many skilled colorists in the Society, usually there were some.

"The Doctor" by R.W. Caldwell. One of the more impressive tinted views circulated in the folios in the 1930's—with possible tinting help from Annette Karge of Keystone. The image originated with the famous painting by Sir Luke Fildes, which was later done as a life-size painted sculpture exhibit by the Petrolagar Laxative Company at the 1933 Century of Progress World's Fair in Chicago. Mr. Caldwell photographed the exhibit in stereo, then tinted the black & white prints to match the original colors. The result is almost certainly the most realistic "3-D painting" ever created.
membered by some as president of TDC and later Sawyers of Viewmaster fame). Current active colorists are myself and Dr. Brandt Rowles. There were others (such as Nat Oldham of Hobart, Tasmania) who we know did tinting but finding examples of their work has not been fruitful. I do not know that an "unfair advantage" resulted from making a good picture better. Tinted pictures did not dominate the voting so far as I can determine from surviving evidence.

"Colour Transparencies Not Eligible"

Another early disturbing element (disturbing to the standardizing forces) was the appearance of monochrome transparencies. There was so much interest in transparency stereo, however, that in 1921 in England a special section for transparencies was created. It was very popular, divided into groups of 30, and flourished at least until World War II disrupted everything.

During the 1930's Dufaycolour film became very popular in the United Kingdom and of course some of the transparency makers' interest was peaked. General Secretary Harold Mobbs however, took a hard position and insisted that colour slides were not eligible for transparency folios. Folio Secretary John Singleton (still a very active Society leader to this day) interpreted this as "Lovers of the Steam Trains" by R.G. Wilson. In his more than 50 years of activity in the Stereoscopic Society (starting in 1929) the late Mr. Wilson served in various leadership positions while circulating some of the finest large-format BoW views ever seen. His 35mm color work helped lead the Society into the second half of the 20th century, as seen in this stereo record of a steam engine restored in the mid 1960's by the Tennessee Valley Railroad Historical Society. (See Mar./Apr. '86, page 40.)

I do not know for sure how the American Branch circuits were affected by this but quite a few transparencies from that time survive in our archives. They are monochromes mounted in the same size as the 3½ x 7" cards but nearly all have warped considerably in storage and would require remounting for comfortable viewing. I suspect they were not barred from entry in the American domestic print folios. I also feel that voting results were given more importance in the United Kingdom which affected the rules accordingly. Now, fortunately I feel, the voting results in the American circuits are always of interest but not the reason for the Society's existence.

Kodachrome and the New Stereo

When Kodachrome and Realist format came upon the scene, the battle started anew as to what was allowed in the folios. Whatever the decision the color transparencies appeared anyway as "not for voting". Some resentment was incurred in those who had no appropriate viewer for Realist format. But the "new stereo" was marvelous and it attracted a hitherto neglected group. color photographers who did no darkroom work but depended on commercial processing. This really shook the foundations of the traditional idea of what constituted a photographer. On top of this, projection stereo was now not only feasible but quite manageable even to the all-thumbs crowd. Before, projection stereo when accomplished at all was done with great difficulty. Thereafter it was available in full color.

The Society responded by creating new circuits for color transparencies in Realist format. In time this became the dominant form. The black and white print circuits suffered a slow and, to some of the old guard, painful period of decline and attrition, becoming all but inactive in the 1970's.
Return of the Print

Good ideas die hard, however. Advances in color print technology had taken place on a grand scale. But, throughout photography the traditional backbone of amateur involvement, the darkroom photographer, was rapidly disappearing. Nearly all of the multitude of B&W print clubs, one by one folded up. They were not replaced by color print clubs... apparently the amateur darkroom photographer was not viable in color. Transparencies had aided and abetted the demise but can not really be blamed for it since the color slide clubs have also been passing through the slow death process. Should we blame the instant color print and/or electronic flash? Modern color snapshots are very good. And prints require no viewing apparatus... the same powerful inhibitor which has kept stereo confined to those of us who are truly entranced by 3-D.

The stereo print circuit was re-instituted about ten years ago with about a dozen die-hards and is now thriving. Nothing is ruled out in large format (the Realist format folios are doing quite well on their own). The main difference is that the color prints are now in the majority in standard viewcard format. The darkroom photographers still do B&W and the color photographers mostly use commercial processing (we now have some quality print services who cater to stereo needs). Both get their share of votes. Some do their own color processing but this is the exception. I feel that, overall, print format stereo is now producing its best work ever and can get even better. We mix color, B&W, and tinted prints. A good picture gets the votes in any mode. Seeing what everyone is doing is still the best part of participating in the folios.

The More Things Change

The transparency (Realist) circuits have continued quite well. Their main problems seem to be in ageing equipment and discontinuance of mounting supplies which is also due to wearing out of 30 year old manufacturing equipment (not likely to be replaced). The Nimslo cameras are being converted... as far as that helps. It’s amusing to note that Nimslo lenticular color prints have

(Continued on page 47)
Creating stereo images without a camera (or a computer) is an esoteric art form dating back to Wheatstone's first stereoscope. Fascination with the techniques of stereo drawing has grown considerably in recent years, as evidenced by consistently sold-out press runs of current 3-D comic books and by the impressive assortment of various types of 3-D art at last year's ISU Congress in Switzerland. (Stereo World Nov./Dec '87 page 25.)

By far the most challenging and rare form of stereo art is the painting of complete and accurate stereoscopic pairs of solid forms and detailed color images. The number of artists who have succeeded in many serious attempts at this feat can probably be counted on the fingers of two hands, although among them can be found a name known around the world—that of Salvador Dali. (The 2nd ISU Congress in St. Mande, France in 1976 featured a presentation by Dali titled 'Art, Cyclopean Vision and the Problem of Stereoscopic Expression' which was illustrated with some of his own stereo images. (See Stereo World Nov./Dec '76 page 12.)

For this special issue, we asked two stereo artist NSA members to tell us why and how they create their unique stereo images. By presenting here their condensed comments and some examples of their very different styles, we can show at least a little of the wide range of work being done by the relatively few people in this field.

Alexander Liccione uses a style similar to photo-realism in his stereo paintings, leading to some shimmering 3-D effects of light and color in what at first look like quite representational pictures when viewed flat. Mr. Liccione is a professional New York artist, widely recognized for his numerous stage paintings, murals and cover illustrations.

Stephen Best uses paint on masonite boards, boxes, lights, and various other materials to create abstract, geometric, but internally textured stereo images. His stereo photography is seen in the folios of the Stereoscopic Society, and he has long been an active contributor to Stereo World and the NSA—managing the 1985 NSA Convention in St. Louis.

I have been interested in stereo photography since I was a child. It wasn't until I came to New York City that I began to get involved in stereo on a larger basis. As I am always experimenting with art, likewise I try the same with photography. It is an important tool used by many artists and illustrators.

I do feel that I am adding a new dimension to the stereo world in painting form. I am currently doing a large series of stereo paintings which I hope to exhibit shortly. I must add, the sizes of these paintings are getting larger, the stereo images look so much more powerful.

My work has always been intended for free viewing, namely because of the sizes of the paintings and the textures of oil paints, etc.

Even though I work in different mediums I prefer painting with oil
on canvas. I generally prepare my paintings by doing an underpainting with acrylic paints, which dry very quickly. This enables me to rapidly map out what the painting will eventually be. Changes and corrections can be accomplished much faster at this stage. Blending oil colors over a lighter underpainting can be quite effective indeed. I use this technique when I am in the process of achieving a very detailed painting (an almost photo-realistic look, but somewhat different).

When I'm doing a painting that calls for a more expressive, loose, and painterly brush stroke effect, I eliminate the underpainting altogether by simply painting directly on the canvas with oils. In some cases I have combined the realistic detailed paintings with more direct, painterly ones. To me the effects of the two being together are quite striking. At times, I feel that a certain stereo painting I am working on is sufficient, while there are moments when I feel that a combination of a single-view painting with a stereo painting presents a very strong visual impact.

While I sometimes have ideas of what paintings I would like to do next, I always prefer to pick my subject matter at random. I enjoy taking long walks in New York and I'm always being inspired by what I encounter: be it people, the landscape, or even the architecture—the sources are many. Whatever the subject, I try to establish a rapport between the spectator and the painting. When I combine, say, a nude and a landscape, I am trying to make a comparison between the two, the beauty that exists in both subjects.

I would say that my paintings are representational, by all means. However, there is one that has surrealistic overtones even though it wasn't intended to be surrealistic. It's the one of the little girl who is dozing off to sleep, daydreaming of a medieval cloister interior and of what life would have been during that time. Alone, the painting of the girl does not conjure the thought of surrealism, but combined with the stereo of the medieval cloister, it suggest a dreamlike feeling. To me it works as a painting. Of course I don't combine all of my stereo paintings with other single image paintings, only the ones that I feel can relate a certain theme.
In 1944 I took a course in map reading while in the Army Specialized Training Reserve Program. In this course I recall some free-viewing exercises to help one to free-view aerial stereo photographs. This was my first contact with stereo and I soon converted this to stereo doodling and stereo photography, the latter with a Brownie box camera.

The doodling was accomplished by tracing coins and keys and other small items, twice each, to make small drawings no more than 2½ inches wide for each half, keeping the vertical dimensions of the respective elements of the drawings the same while varying the horizontal dimensions. This was fine for parallel free-viewing but the small format was not all that interesting. I didn’t do too much with this on a regular basis until the late 1960's when I “invented” cross-viewed free-viewing. I put invented in quotes because, of course, other people knew about this before. The important fact about this discovery, for me, was that I could now exceed 2½ inches and paint in three-dimensions. My first painting, titled “EU,” was an oil painting done about 1967.

For my first several paintings, I painted each half of the stereo image on a separate 8” by 12” canvas board. Not much later, and to the present, I began painting on single canvas boards and later on masonite.

From the beginning I ruled out realistic painting such as landscapes, still lifes and portraits. I had two reasons for this—the stereo camera can do a much better stereo portrayal in all three of these areas, and I prefer abstract and geometric forms in my paintings. The forms in this modern style of painting are precise and sharp and easily manipulated in the stereo window.

I usually work out a preliminary sketch for one half of the stereo pair and then make full-scale cut-outs of the assorted forms that I then trace on to the masonite board. (I use the rough side of the masonite for my paintings.) I trace out the forms for one half of the painting, then for the other half, maintaining identical vertical dimensions for the pairs of separate parts, but varying the horizontal distances in one direction or the other depending upon whether the parts are to be nearer or further from the viewer in relation to the other parts. These forms are then filled in with paint. For horizontal spacing, experience has enabled me.
to judge the amount of space needed and the direction, left or right, involved. This usually works well although there have been some occasions when an unsatisfactory work became quite satisfactory in a second, slightly modified, version. For my first several paintings I used oil paints but soon switched to acrylics. I prefer to use unmixed primary colors.

There are two basic systems for 3-D painting. In one system the elements of the painting are flat surfaces at different distances from the observer. The other system employs transitional surfaces connecting flat surfaces, thus yielding solid elements. I have used both systems.

During the early seventies I produced a series of indirectly illuminated stereo paintings. Essentially, these were thin boxes with two large sheets of masonite for the front and back. The elements of the painting were cut out of the front surface and acrylic paint was applied to the inside surface so that it would show through the cutout elements. These colored cutout elements of the painting were illuminated by small bulbs around the inside 1½ inch walls. These paintings are best seen in darkened areas or at night.

What I find to be most impressive and satisfying about stereo painting is the "creation of space," or at least the very positive illusion of having created space. Cross-viewing a stereo painting is to see a volume of space defined by the elements of the painting and the stereo-window involved. It seems "real," abstract as it may be.
Duplication Service

Thanks to a tip from a reader, I have discovered (and confirmed by phone) that American Photo Group (formerly 3M Dynacolor) will make mounted stereo duplicates from mounted stereo original slides. Current price is $1.00 per dupe, plus a flat rate of 60¢ per order for shipping and handling, regardless of quantity of slides to be duped.

American Photo Group also offers Kodachrome and Ektachrome (E6) processing and stereo mounting services. (Cardboard mounts are used.) Prices are currently $7.05 for a 20-x roll, $7.45 for 24-x and $10.55 for 36-x, including stereo mounting. (Plus 60¢ per order postage & handling.) Contact American Photo Group, 616 Dwight St., Springfield, MA 01101. Phone 413-739-2521.

Star D Viewer Fades

The "Star D" stereo slide viewer (formerly the Brumberger Stereo Viewer) recently ceased production. The manufacturer claimed that sales volume did not justify the investment in production. This leaves the "Life Like" viewer as the only currently manufactured slide viewer for the Realist format which features focusing and internal illumination.

Toshiba's 3-D Strategy

NSA Japan correspondent Rob Oechsle phoned in a special report to clarify the current situation with the Toshiba 3-D camcorder. This new development was reported in the past two issues of Stereo World and has been making news in numerous magazines and newspapers.

Rob spoke directly (in Japanese) with Mr. Onda at Toshiba, the manager of International Marketing of Video Products. Mr. Onda reported that at this time there are actually only five working models of the camcorder, which look like finished products but are really handmade modifications of existing camcorders. One of these is the camera seen in promotional photos and in use at the Consumer Electronics Show in January in Las Vegas (where it was connected to a special frame repeating memory device and a monitor with twice the normal scan speed for "flickerless" 3-D through the shuttering glasses).

Apparently it is a common practice in Japan to do test marketing by announcing it in a way that it seems like full production is imminent. Depending on the reaction from dealers and the public, the marketing department will then make a decision to go into production, or to cancel the project. This is the case with the 3-D camcorder. Based on marketing results, Mr. Onda reported to Rob that the 3-D camcorder was definitely a dead item in Japan, but that interest in the U.S. was leaning in the direction of a go-ahead for production and marketing of a U.S. model, perhaps by fall of 1988. However, Rob thinks it unlikely that the advertised "flickerless" aspects of the system will be included with the camcorder, adapter, and glasses—or that such expensive technology will be available on the consumer market at all. Stay tuned to Newviews for more details. (And congratulations to Rob and Etsuko Oechsle on the birth of their new daughter Amy Iko!)

No Nimslo / Nissei News

After it took over all marketing and processing of Nimslo 3-D prints last year, The Nissei Corporation of Henderson, Nevada announced that the current model Nimslo camera would be made available with an improved metering system and that a new model, under the Nissei name, would follow. Newviews has been unable to get further information on either project from the company, including product photos or projected dates of availability. (Which is why no mention has appeared sooner here.) The Nissei Corporation has reduced the long delays in processing Nimslo 3-D prints from a matter of months to a matter of days. (The company policy statement reads, "Film sent to Nissei will normally be processed and shipped within 72 hours of receipt." (Real-world time seems to be closer to a couple of weeks.)

Current prices average about $2.00 a print, with processing and printing of a 24 exposure roll (12 Nimslo exposures) set at $23.88. (Reprints are $2.32, and 8x10 enlargements are $14.95.) Order forms with more price information and mailer envelopes are available from The Nissei Corporation, 3 Sunset Way, Bldg. E, Henderson, NV 89014 (702-451-7005). (See also, Modern Photography, Jan. '88, page 8 and 4.)
More people will be watching televised 3-D images at one time than ever before in history, sometime in late May when ads for Coca-Cola and 10 minutes of ‘Moonlighting’ appear in 3-D on ABC. The assumption made in last issue’s Newviews was soon confirmed in early reviews of the video process to be used. It is an application of the Pulfrich effect to computerized video technology, as developed by Terry Beard of Nuoptix Associates of Bakersfield, California.

The same area of the brain related to depth perception is thought to be affected by the perceived motion of elements in an image relative to each other. (This is part of the basis for the ‘Visidep’ 3-D system, viewable with one eye, covered in the March/April ‘83 Stereo World, page 25.) When an element of microsecond delay between the brain’s perception of the moving object from each eye is introduced, that area of the brain (in theory) provides a definite if sometimes subtle, 3-D effect. This is the “Pulfrich” effect which many science museums demonstrate with a slowly moving pendulum and a neutral grey filter to use over one eye in order to trigger the brain’s perception of a time delay between the images from the two eyes.

TV writer Joel Fisetzner of the New Jersey Record was able to get some details of the Nuoptix system from its inventor before people from Coca-Cola (which had quickly purchased rights to it) “whisked the dazed Beard out of the room.” A single video camera provides alternating, 60 to a second, images of a scene—probably one with a moving object and/or background in it. One scan of the alternating images is toned to match the darker filter of the glasses, while the following scan matches the lighter (or perhaps clear) side for the other eye.

The system apparently uses a one-lensed, single camera so that those watching without glasses see a perfectly normal image. Only the Pulfrich effect introduced by the moving elements of the image and triggered in the brain by the alternating toned frames for the glasses creates a 3-D impression. This totally compatible image, with no need for anything to be “fused” and no flicker to tolerate, probably explains the positive reviews from early demonstrations and the reason for Coca-Cola’s investment in 40 million of the glasses along with 3-D ad production and other promotions.

Most of the 100 or so TV critics who saw a January demonstration in Los Angeles were impressed by the easy and comfortable way the very real 3-D effects could be seen. That in itself has to be a “first” for any 3-D film or video system, regardless of the technology involved. Whether or not Nuoptix can go beyond motion-related special effects and expensive ads is yet to be seen. But for those at all interested in the process, it should provide an ideal demonstration of the difference between a 3-D effect and a true stereoscopic picture. For several million other viewers, it should provide an effective and enjoyable new dimension for a segment of “Moonlighting.”

Current plans are to distribute the glasses at 25c a pair—or maybe less—in combination with Coca-Cola products. If all goes as planned, they should be hard not to find by May. (Thanks to NSA members John Fish-er and David Kemmer for their help with this story.) ☑

N.S. WHO?

The non-profit National Stereoscopic Association was incorporated in 1974 to promote the study and preservation of the stereoscopic images and equipment of the past and to encourage and facilitate the growth of all aspects of stereoscopy in the present. Besides publishing Stereo World, the NSA has established the Oliver Wendell Holmes Stereoscopic Research Library where much of the written material relating to stereoscopy (since the mid-1800s) is available to researchers.

If this issue of Stereo World is your first exposure to the NSA, we invite you to write for more information. Send a stamped, self-addressed envelope to NATIONAL STEREOSCOPIC ASSOCIATION, PO Box 14801, Columbus, OH 43214.

IVES KROMSKOP

(Continued from page 6)

The Kromskop is seldom mentioned today. Relatively few people have had the opportunity to see properly illuminated views in a Kromskop. These reproductions are the first ever done in 3-D. They are a reminder of the tremendous achievement of this great inventor. ☑

The author wishes to thank George Eastman House and the International Museum of Photography in Rochester, NY for their help with images and information in this article.

THE SOCIETY

(Continued from page 41)

been included in the transparency folios on an “extra” or “non-voting” basis. The more things change the more they stay the same. Even though I can see no real future for lenticular prints, it is still interesting to see what results people are getting with the Nimslo process. When the new is better it will replace the old.

Some transparency photographers have been entering print format with cibachrome prints made from transparencies. Others have made nice prints with color-negative films shot in a Nimslo camera, usually using the two outer negatives of the quartet.

Join the Society

Stereo photographers can get more information on joining the Society from Jack E. Cavender, 1677 Dorsey Avenue, Suite C. East Point, GA, 30344. ☑

STEREO WORLD March/April 1988 47
For Sale


NIMSVOLS WITH CASES (5) Never used, brand new in original boxes. S.85. pp each. Check or M.O. to Bob Rebholz, 190 Meucci Ave., Copiague, NY. 11726.


For Sale

STEREO WORLD READERS: The new "Excel" viewer is made specifically for quality viewing of 3-D books and magazines. Hooded, with quality lens and pedestal stand. $19.95 plus $3.00 UPS. G.H. Sergio, 760 Clawson St., Staten Island, NY. 10306.

TRADE

BREAKING UP 30 YEAR COLLECTION of choice Daguerreotypes, Ambrotypes, Tin-types, CDVs, literature and stereo views. Stereoscopes include New York, Boston, Chicago, Washington, Civil War, Steamboats, Exposition and others. Still collecting. Will trade for my specialty—almost any New Jersey stereo by any photographer or publisher. Send for helpful wish list. George Moss, Box 336, Sea Bright, N.J. 07750.

WANTED

MUYBRIDGE VIEWS. Top prices paid. Also Michigans and Mining—the 3 Ms. Many views available for trade. Leonard Walle, 49525 W. Seven Mile, Northville, MI. 48167, (313) 348-9145.


GOLD & SILVER MINING & Numismatic stereo views: All orig. photographic images (stereo views, etc.) up to 1910 (no foreign), prospectors, mine interiors, exterior, mining equipment, mining towns, etc. Also wanted anything Numismatic, views of U.S. Mints & Assay Offices, mint & coinage operations. Send photocopies with price & desc or send for my approval. I will respond quickly. David Sundman, Littleton Coin Company, 253 Union St., Littleton, N.H. 03561.

FLORIDA STEROEO'S of historical value, especially Tallahassee, Tampa and Gainesville. Price and describe or send on approval, highest prices paid for pre-1890 views. No St. Augustine. Hendricksen, PO. Box 21153, Kennedy Space Center, FL. 32815.

PORTARTS OF AMERICAN PAINTERS, Sculptors and Photographers in all formats (Cased, stereo, CDV, Cabinet, other paper prints) Paul M. Hertzmann, Inc., Box 40447, San Francisco, CA. 94140, (415) 626-2677.

BRITISH VILLAGE and scenic views (stereo, CDV, etc) by Bedford, Ogle & Edge, et al. Paulia Fleming, 7800 Heritage Drive, Annadale, VA. 22003.


IMAGES SHOWING PERSONS posed with cameras, etc. Any format Send Xerox or call (813) 577-9527, D. Jordan, Box 20194, St. Petersburg, FL. 33716.

WANTED

STEREOPICION??? Wanted for research; photocopies and references from any source for any use of this term to mean "stereoscope," including printed comments about this usage. Jeffry D. Mueller, 2701 Chippewa Court, Finksburg, MD. 21048-1536.

VIEWS OF GLASS MAKING Industry, Glass Exhibitions, glass blowing, etc. Send info and price to Jay Doros, 780 Chancellor Avenue, Irvington, N.J. 07111.

STEREO VIEWS, photos and post cards of Dakota Territory and No. and So. Dakota. Wanted to aid in a photo research project. Robert Kolbe, 1301 So. Duluth, Sioux Falls, S.D. 57105.

STEREO VIEW DEALERS: Please add my name to your mailing list. If a subscription is required, send information on terms. David Boone, PO. Box 1314, Albay, OR. 97321.

VIEW-MASTER BOOK SET. Mushrooms and Their Natural Habitats. Please send price and condition to: Donald Weber, 21 Sherman St., Auburn, N.Y. 13021.


JOHN ROGERS stereo cards wanted of School Days/Photographer. Contact A.J. Merlo, 3025 Spring Street, Racine, WI. 53405.

GALVESTON, TEXAS stereo views. Also unusual viewers. Gertrude Canning, 620 51 Street, Galveston TX. 77551.


ACCESSORY LENS KIT for Marco Realist; Seton Rockhide flip-up polarizer for Realist (with or without camera); G5 Realists wisselal numbers before A5000 (must be Exc. + or better); pair of Realist ST-54 lens shades in used/worn condition. Mark Willke, 1956 NE Barberry Dr. #K, Hillsboro, OR. 97124.

1894 CALIFORNIA MID-WINTER FAIR anything and other better California, Nevada and Hawaii stereo views and other paper items. Ken Prag, Box 531SW, Burlingame, CA. 94011, phone (415) 566-6400.

DAKOTA: Will buy, trade, beg or borrow Dakota views. Have yet to steal one—please feed my interest and help keep me honest. Brian C. Bade, RR#6, Box 432, Sioux Falls, SD 57103.

As part of their membership, NSA members are offered free use of classified advertising. Members may use 100 words per year, divided into three ads with a maximum of 35 words per ad. Additional words and additional ads may be inserted at the rate of 20¢ per word. Please include payments with ads. Deadline is the 1st of the month preceding the next issue's cover date. Send ads to the National Stereoscopic Association, PO. Box 14801, Columbus, OH 43214, or call (614) 895-1779. A rate sheet for display ads is available upon request.
May 1 (MI)

May 7, 8 (TX)
Camera Show & Photographic Swap Meet, Oak Hills Motor Inn, San Antonio, TX. Contact Rowland Reinthaler, 150 11th Ave. SW, Largo, FL 34640. Call 813-584-7853.

May 8 (England)

May 14, 15 (OH)
Camera Show & Photographic Swap Meet, Red Carpet IM, 9694 Mahoning Ave. North, Jackson, OH. Contact Rowland Reinthaler, 150 11th Ave. SW, Largo, FL 34640. Call 813-584-7853.

May 22 (IN)
South Bend Camera/Computer Swap Meet, Century Center, South Bend, IN. Contact Roger Smith, PO Box 1551, Mishawaka, IN 46544. Call 219-259-2968 before 9:30 p.m. EST.

May 28, 29 (OH)
Ohio Camera Collectors Society Annual Camera Photofair, Parke Hotel, 900 Morse Road, Columbus, OH. Contact John Durand, Box 282, Columbus, OH 43216. Call 614-885-3224.

Wanted

KEYSTONE stereoscopic tours of Canada, England & Wales, Railroad Transportation. Underwood tour of Canada. Also views by Maynard (BC) and Sproule (Ontario). Andrew Hebden, 37 Parkview Drive, Peterborough, Ont., Canada K9H 5M5, phone (705) 745-2189.

CUSTOM REALIST 2.8: Steinheil wide angle attachment; 2 deck Brumberger stereo view boxes; Jules Richard glass views, others; Realist plastic lens cover. Jim Benton, 327 Tower View, Green Bay, WI. 54301, (414) 437-4955, eves.

A PAIR of 4" or 5" lenses for a T.D.C. 116 or 716 projector. Must be in excellent condition. Will pay well. Russ Carter, 30 Cape Cod Ave., Reading, MA. 01867, (617) 944-9640.

CURRENT BODYBUILDERS in 3-D & non-Porno CENTERFOLD type poses of handsome, well built gym regulars. I work out in gym with title holders and regional/national contest entrants. They want their enlarged classic poses all over the walls of the gym. I've introduced them to Realist slides, Nimslo prints, other current photo processes. They're interested in seeing how they would look, and if we could market them, but don't want to be the first champions filmed this way. They just want to see some current 3-D samples for which others of their caliber have posed, then try to contact the big physique magazine market with the untapped idea of some of their photos in 3-D. Can anyone suggest sources of current bodybuilders in any form of 3-D, or send samples of their own work (guaranteed returned or bought?) Paul Farrell, 32 Woodman Road, Durham, New Hampshire 03824.

A botanical stereo intruder, this Epiphyllum ("orchid") Cactus was posed amid the greenery in the moist shade of Fern Dell in Griffith Park, Los Angeles by Howard W. Butts in the late 1950s.
"Rainbow Lorikeet" by Allan Griffin, FPSA. A glowing example of the sort of stereograph hard to imagine being done in black and white. See "A Stereo World Color Gallery" on page 34.