The two views shown here are the final selections from the "close-up" entries that arrived shortly ahead of the deadline. Many readers have probably seen some of Susan Pinsky's by now famous Realist Macro cat stereos in addition to the one featured in The Society column and on the back cover of Vol.19 No.1. For most subjects and most stereographers, the subject would be presumed "covered" by now. But Susan has continued to come up with a delightful series of new and imaginative "in your face" cat stereos that even those with only an academic interest in feline anatomy find fascinating. Cat fanciers, of course, can never see enough of them.

We found this particular action close-up simply too good not to share, and Susan's notes explain its significance to her series of cat stereos: "Cat Got Your Tongue. Taken with a custom made 120 rollfilm camera made by David Burder, England, for the Stanford School of Anatomy in Palo Alto, California. He delivered it to California via our place, so I got to run some test film through it first. Since cats are my passion I started with my cats drinking water from the kitchen faucet, and this is where the whole sequence of this type of shot started."

The 3-D potential of smoke, steam and fog has long intrigued stereographers, and Otto Willau combined that interest with the Close-up assignment to produce the view selected here. His entry demonstrates that exotic and expensive equipment isn't necessary for all close action stereos. Smoking Candle was made with a TECO-Nimslo with +1 auxiliary lens over middle lens pair for an 18mm separation on Konica chrome 100. Daylight was combined with remote flash for backlighting.

**Next Assignment: Children**

This may sound like an easy one, but we hope to see some imaginative stereos of kids from age 30 seconds to 12 years that have both good stereo impact and that very subjective quality of "human interest." Any number of kids can be included, but one or two generally get more attention than many. (Continued on page 2)
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ON THE COVER

Peter Fangel and his family in their garden display the stereoscopes made in the busy home workshop ca. 1884. Fangel later became the leading Danish stereographer of his time, documenting his country in over 7,000 views, many of which were marketed in the U.S. Thanks to the efforts of Erik Fersling and T.K. Treadwell, the section of Fangel’s unpublished autobiography covering his stereo work has been translated for publication as our feature in this issue.
In His Own Words

Peter Fangel’s autobiographical notes about his self-taught career in stereography (this issue’s feature article) are enough to make me tired just reading about all that work – toiling all day in his workshop and then spending most of his evenings working on stereo (somehow this all starts to sound familiar). The sheer number of work hours put in by people like Fangel to maintain a successful business must have been considerable.

As illustrated in our cover view, Fangel’s was a family operation in Denmark which benefited greatly from having a distributor in the United States. This expanded market both increased his view production and spread his images internationally, assuring that a good percentage of his work would survive to be sought after by today’s students and collectors of stereographic images. Few other small European stereographers or publishers had such an advantage, and much of their work is forever lost. Our coverage of European photographers and publishers in general has been limited, and we thank T.K. Treadwell for helping bring Fangel’s story to SW readers.

Twenty!

Last issue’s editorial mentioned that changes were coming in Stereo World’s cover design, and you now have before you the “New Look” that will soon take us into our 20th year of publication. Gone is the arched top format that has framed cover images since our third year. In 1980, Editor John Waldsmith made an exception on the cover of Vol. 7 No. 3 for my Tru-Vue article, but everything since then has gone under an arch regardless of the shape of the original image.

Although it may resemble a Realist slide window, the new design isn’t intended to imitate any particular stereo format, but to allow more enlargement of images from a variety of formats and to make full use of the cover space. Contrary to what some traditionalists may fear, it’s not a signal of any coup by VR-crazed, 3-D techno-militants intent on eradicating symbols of 19th century stereography. Many of the oldest views lack any arched tops or have arches of varying curvatures and styles, and these will no longer have a generic arch imposed on them. Art Director Mark Willke has introduced some additional improvements on the inside pages, which you may notice as you read this issue.

Stereo World’s covers and content will continue the effort to reflect the wide interests of NSA members, as generally represented by researchers and writers who contribute articles, information, or ideas. If you sense a lack of attention to any particular area of stereo history or imaging technology, start writing – or at least talk to people of similar interests who may give it a try.

Assignment 3-D

Relatively close shots taken from the level of a child’s world are often the most effective. Send anything from action views to portraits, but do get parents’ permission for publication if the subjects are other than your own children.

Deadline for the “Children” assignment is October 25, 1993.

The Rules:

As space allows (and depending on the response) judges will select for publication in each issue at least two of the best views submitted by press time. Rather than tag images as first, second or third place winners, the idea will be to present as many good stereographs as possible from among those submitted.

Prizes are limited to the worldwide fame and glory resulting from the publication of your work. Anyone and any image in any print or slide format is eligible. (Keep in mind that images will be reproduced in black and white.) Include all relevant caption material and technical data as well as your name and address. Each entrant may submit up to 6 images per assignment.

Any stereographer, amateur or professional, is eligible. Stereos which have won Stereoscopic Society or PSA competitions are equally eligible, but please try to send views made within the past eight years. All views will be returned within 6 to 12 weeks, but Stereo World and the NSA assume no responsibility for the safety of photographs. Please include return postage with entries. Submission of an image constitutes permission for its one-use reproduction in Stereo World. All other rights are retained by the photographer.

Send all entries directly to: ASSIGNMENT 3-D, 5610 SE 71st, Portland, OR 97206.

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Auctions Awkward

This letter is in response to Tim McIntyre's article [Vol.19 No.5] regarding auctions.

I am one of those people who do not participate (bid) in auctions. The reason is simple. I feel that it is a waste of time and effort to bid on something when I know that I have only a very slight chance of being the successful bidder. Even if I were to succeed in being the highest bidder for an item, you can be sure that I would be paying a price many times higher than had I purchased that item at a regular fixed price sale.

I must say that auctions do not seem to me to be very equitable, especially telephone auctions. How can a long distance caller expect to compete on an even footing with a local caller? For that matter, how can a mail bidder expect to compete with a phone bidder when the phone bidder has the advantage of constant bid-checking?

If someday in the future auctions were to become more advantageous to the buyer then I would consider participating in one. Until then I will continue to pass them by.

Harry Komar
St. Louis, MO

There are instances in which a single mail bid will get you a particular view for a price less than you would find in any catalog or on any dealer's table, but this is often a matter of luck. For those special views vital to complete or enhance a collection, it sounds like you (and I) would be better off financially and emotionally to keep looking - with the cash for a reasonable, set price in hand.

- Ed.

U-Views? Ewe Views? Yew Views?

I've noticed that most of the stereo photo pairs in Stereo World illustrate formal written articles. There doesn't seem to be any way that a stereo photographer may get their images into print if they don't have an accompanying written article.

So, may I suggest a page in Stereo World in which an NSA member may submit a stereo photo pair that they took, or have in their collection, and have the images published? These images could range from Keystone to Realist, to Nim-lo, et al. The photos could be the favorite in their collection. The page title could be "You Views" or something indicating a page directed to the individual, to get their stereo images displayed to NSA subscribers (one set per person permitted).

Ron Paul Smith
Sharon, MA

A few years back, there was a feature much like the one you describe, called "Member's Choice" in SW. We've wanted to reinstate that feature (with a mix of vintage and modern images) for some time now, but a lack of both space and time have delayed setting up a system for choosing Images. We'll try to get it sorted out by shortly after the San Diego convention.

- Ed.

Insert Correction:
The closing date for the John Saddy (Jefferson Stereoptics) Auction #93-7 is Tues. July 6, 1993. (The date was omitted from his 4-page gray insert mailed with Vol. 19 No. 6.)
Peter Lorents Fangel was born at Harrendrup, Denmark in 1837, and died in 1922 at age 85. In his last year he wrote down his memories in 93 closely-written pages, covering his family, his youth, his work in Europe, and most important to us, his relation to stereoscopy.

He served an apprenticeship as a joiner in his father's workshop, in spite of the fact that he didn't like it. At 20, he finished his education and, as many young workmen at that time did, left Denmark to work and earn more elsewhere in Europe. He went first to Berlin where he got a job, but after a year he left and walked, in winter, to Vienna. He worked in Austria a couple of years, then in Switzerland and various towns in Germany. The last was Frankfurt, and there he got a message from his father asking him to come home. At this time he had been away for 10 years, working as a joiner.

The part of his memories relative to stereoscopy begins shortly after his return to Denmark in about 1867. It describes the difficulties a self-taught stereographer had to go through, before success was achieved. Because about 47,000 of his stereos were sold in the U.S., there are many in collections now, and the story behind them may be interesting. A translation of that part of his memories follows.

Before continuing I’ll reflect on how unforeseen circumstances can influence a man’s destiny in later life. I read in the Swiss magazine “Bund” about a special train that was going to Paris. During the trip I bought a stereoscope and 12 views, as well as single pictures from places I visited. After coming home, my father and I visited our family in Skamby, and I took the stereoscope with me. They were very interested, and the photographer Höeg asked if he might make copies of the pictures, which I let him do.

In a photographic magazine he’d seen a picture of an American stereoscope, oval of course. Chr. Bröns made one of mahogany with round corners. He had Stegman make some, and without asking, sent me a sample stereoscope and 11 pairs of lenses and asked me to make 11 of them, offering 2 kroner each.

Though my power saw helped a lot, and I worked 12 hours a day, I couldn’t earn more than 1 kroner 33 øre a day. I sent the stereoscopes to them and said that if they wanted more, they would cost 2 kroner.
65 øre without lenses. They accepted, saying that mine were much nicer than those from Stegman. They'd also seen a magazine article on how to make stereograms. They'd had a closed carriage built with a hole behind, just big enough to admit the upper part of a man's body, and otherwise light-tight, for use as a field darkroom. Dry plates hadn't yet been invented; each wet plate had to be prepared just before use and developed immediately, and this was what the carriage was for. They drove to the manors, first at Funen and later in Jutland where they made stereos and larger photographs too, if ordered.

Later I received more lenses from them and also bought some myself, but I didn't make any more stereoscopes like the first one. Its slide could not be dismantled; the whole instrument was screwed together and too complicated to be sent in one piece. My new type was in more pieces, much as they are now. By this time the two men had begun to make stereograms, and I provided the stereoscopes, which was my financial salvation. If I had not by accident read the article in "Bund", all this wouldn't have happened, and who could have predicted what my destiny would have been.

My making stereoscopes wouldn't have been practical if I'd not built a circular power saw from memory, similar to one we had at the telegraph factory (where I had my forefinger cut to the bone the first week; for many years this fingertip was numb whenever it was cold). Making stereoscopes was an evening job in the beginning, because I had other work in the daytime. At seven o'clock in the evening I said "Knocking-off time"; I had a joiner and one or two apprentices. I took the stereoscope...
pieces into the dining room and worked there all evening.

In Middlefart I took part in starting an industrial association. An exhibition was held in Copenhagen in 1872, and the association agreed to contribute to traveling expenses for those members who applied. I got a grant, but instead of going to Copenhagen directly, went to Hamburg with samples of my new stereoscope. I got a few orders and went to Berlin, where I found two customers. One of them bought 13 dozen that autumn; the other ordered continuously until three years ago when he closed his shop.

At the exhibition in Copenhagen, I left a sample stereoscope with the secretary, Jensen, and he sold some. In Berlin I sold them for 4 kroner each but as the lenses were cheaper here, I reduced the price, hoping to sell more. Maybe I could have avoided this price reduction; I had no competitors. I made 10,000; I had been too modest, and even now, when wages are three times higher, the price is still the same.

Gradually the stereoscopes came into the shops; soon I had about 80 customers, but it required constant selling. Between 1870 and 1880 stereoscopes were probably not imported to Denmark. For many years I sold 300 to 400 each year, seldom more, but as the greater part of the manufacturing was done in my spare time, it helped us through the hard times. The children learned to help with
filing, grinding and polishing at a moderate work rate, and contributed much to speeding up the production. They weren’t allowed to spend their earnings from this or from running errands; they had to deposit the money in the saving bank. At confirmation, one of them had 120 kroner.

In my shop, I also made coffins. At that time plaster seraphs were used for black coffins. The children made the seraphs and blackened and lacquered them; some of our output was sold to other cabinet-makers. The entire profit from this seraph-making operation went to the children, and they could use this money as they pleased. They were almost able to buy their own clothes, and they learned to save and take care of themselves starting at 8 to 9 years of age.

When I delivered stereoscopes to the shopkeepers, they wanted stereoviews too, but each shop was too small to have his own import business. The only Danish pictures I was selling were the few from Höeg and brøns. I got Swiss stereos from Gabler in Interlaken, and German ones from a firm in Berlin, and sold them to the shopkeepers at a small profit.

In 1877 I read in “Frankfurter Zeitung” that lots of glass stereos were for sale in Hamburg. I went there and chose 250 at 1 mark 50 pfennigs each; later on I purchased 100 more and also a revolving stereoscope. I made 24 of this mod-
el viewer; I used them to show stereos around the country, but that involved too much traveling, and I had other work to do at home. In Bogensee and on Lange–
land I did very well. However, the profit wasn’t big enough to pay well; as usual, I wasn’t sufficiently brash. I think I could’ve earned much more by advertising, because everybody praised the views.

From time to time I took a two–week train trip to sell stereoscopes, and now more and more people were asking where they could get Danish views. H. Hansen in Odense had started to take them; he promised to make a few in every town in Denmark, but for three years I waited in vain. In 1887 while on a trip to Jutland, I made notes of the beautiful places I saw. When I came home, I was annoyed by Hansen’s delay, and started thinking that maybe I could start making some plates myself and have a photographer do the developing and printing.

In 1879, 8 years earlier, I found that we could get by and have more peace and quiet if I just worked with stereoscopes and skipped the ordinary work as a joiner. Supervising the employees and providing them with materials took a lot of my time. But mother grumbled each time I would refuse a job, so it took several years before it became a reality.

However, by this time I had begun to make other instruments, pantoscopes and similar. I wanted to try to make my own photographic plates, but didn’t know the procedure. I put a pair of achromatic lenses in a camera which I got from photographer Sick, and let him take one plate in his studio and one in the garden. When they were developed and printed I said: “Well, I’ll make my own camera.” I got a book, “progress in Photography after 1879”, but it was no help.

Then I ordered volumes 7,8 and 9 of “Handbuch der Photographie” by Professor Eder in Vienna. These described the fabrication and handling of plates, the whole negative process.

It took a long time to complete the camera, with 12 double plate holders, working from the book. I also learned from the book how to handle the plates, and became in some ways better than many photographers, who were used to wet plates and didn’t have as thorough a knowledge of dry plates as Eder’s book gave me. I bought some dry plates; as soon as the camera was finished I went out and made some tests, and let Sick develop the plates. The first plate was taken in Grimnehus Garden, Louise was in it, but Sick accidentally destroyed it. I then turned to Kolding and afterwards to Slagelse, Soró and Ringsted. Then I went to Berlin, where I made other plates which I used for many years.

In Nakskov photographer Christensen developed about 40 plates, but just one was usable; all the others were no good. He told me they were overexposed, even though all were taken instantaneously. The real reason was that he tried to develop 6–8 plates at a time in a big bowl, and it was impossible for him to handle so many. Also, he used the same developer as for his studio plates. At that point I gave up taking plates until I had time to experiment with developing.

Of course I didn’t expect good results at the beginning, but they were better than I’d hoped. I took plate no. 159, “The institution seen from the moor” to develop myself at Sick’s. When pouring the ferrousulphate into the fluid, I only took half as much as he used. Sick said “You need more”, but I said “No, let me try this first”, and got a good plate. The next day I took some other plates of the guinea pigs at Teglgaard and they were excellent.

From then on I developed my own with good results. Only once, when snowbound in Ringe, did I let a photographer do my developing. He was a brother of Hansen in
Odense, and spoiled the first plate completely. Of course I spoiled some myself, but if the damage was done during development I knew how to correct it, so the number of lost plates was very small. In 1891 I was in Aalborg and developed some plates at photographer Høeg's studio, and he said "It must be rare when you ruin a plate."

Professional photographers were still making prints for me, but though my plates were clear, I always received gray prints. However, if I started making prints myself, I'd have to give up making pantoscopes. Then I ordered volume 12 of Eder's book, which described the positive process. I studied it, and immediately started making my own prints. My daughter Laura, who was working in Ryslinge, came home and was a great help to me.

I crossed the country several times, making negatives in Christiania, Slesvig, and other spots, finally reaching more than 7,100 negatives. Many of them I could've done without, but not all were taken for business. If I liked the scene, I'd take it for pleasure, as an amateur. In fact, many of these have sold better than those I took aimed at commercial sale. Also, if I took 10 plates of a manor house where 5 would've been sufficient, it often happened that the customer wanted all 10. I always thought "Better one plate too many than one too few", when I was at a remote place and something could go wrong, although that seldom happened.

The number of plates wouldn't have grown so much if I hadn't got a customer in the U.S. C.C. Lange was a son from the manor "Flintholm" near Stenstrup. He'd traveled in Denmark as an agent first for a wholesaler in Odense and later for two insurance companies. He should have been an excellent businessman; his noble appearance and charming behavior could be almost irresistible. But he had one fault: He was a gambler, and not for small change. His debts reached 80,000 kroner which his father paid in part; he then disinherited him, and forced him to go to America. His wife and children stayed home and were supported by the family.

From America, Lange wrote to hotels where he had stayed all over Denmark, asking about stereographers. Three hotels gave him my name, and we got in contact. He was lucky to be able to get everything he needed in one place, from me. If he had to collect orders over there, and then deal with many different photographers here, he would soon get stuck, because not everybody was too precise in delivering exactly what had been ordered.

In Kolding, a photographer who'd got a letter from Lange, asked me about export prices. I told him that if it was for Lange it would be of no use, because I had already made him an offer. So he offered Lange other types of photographs; he mailed some, but never got the money. I offered my stereos to Lange for 30 öre each including postage. Assuming one month credit he ordered 2 gross, and because of the large number I lowered the price to 40 kroner per gross, a reduction of 2 öre each. I risked sending him 2½ gross for 100 kroner. After half a year I got some money, but only in exchange for some more stereograms.

By this time I thought that the 100 kroner owed me was lost. Next spring I mailed him a few, but by April 1901 business speeded up, and I increased the price to the 30 öre as first offered. I didn't care whether he bought or not; I knew that nobody could compete with me. By this increase, I'd cover the loss I expected. I kept records, and when I thought the balance was running too high I gave him samples of new views without charge.

One year I promised him a bonus of 10 kroner when he reached 4,000 views, and 10 kroner for each 1,000 additional. He reached 9,600 and received 66 kroner as bonus. Later I lowered the price 5 öre for those views, and he ordered more than 20 times. The first price increase netted me 400 to 500 kroner beyond the free copies and bonus, and covered his outstanding debt. Overall he received about 46,000 to 47,000 views, and paid over 13 thousand kroner.

The first stereos Lange ordered were sold to Danish immigrants. Soon he began taking orders from other people, using my catalog. He marked the orders sequentially, such as 1a, 1b, etc., so each had its own identification for later delivery. What a huge job it would have been for him, if he'd had to order the views from many different photographers and sort them out himself.

In October, he suddenly disappeared; I think he probably died. 800 stereos were left packed and ready for delivery and payment, and he wouldn't have done that if he had been alive. Unfortunately for me, autumn was the best time for business, and I had about 1,800 of the best pictures ready in order not to have any shortage, but I got stuck with them. When Lange disappeared my business nearly stopped, because when I was dealing with him I didn't seek any other outlets. And now, when other things like amateurs and cinemas have come along, it hardly pays to do anything.

Somewhere I have a portrait of Lange. If I can find it, I'll make copies for each of my children, so that they can have a portrait in memory of him they have to thank for half of what they will get from their parents.

In December, 1922, Peter Lorents Fangel died. He was an excellent joiner, to which his stereoscopes in solid, polished mahogany bear witness. He was also a fine and productive stereographer; at that time the biggest in Denmark. With all his photographic equipment in an old baby carriage, he traveled around most of Denmark, and took over 7,100 views from 1887 to 1901. He was very methodical. Each Stereo had a number referring to his still-existing records. He even made notes of how many prints he made of each number. Also, a printed catalog exists, which was probably used to promote sales in the U.S. While there were other stereographers in Denmark, we owe most of our visual record of the country to his dedicated efforts.
Remembering Larry Wolfe

Frequent Stereo World contributor Laurance Wolfe died March 30, 1993 at the age of 77. He had been in declining health for the past year, suffering from a stroke and congestive heart failure.

To say that Larry Wolfe was enthusiastic or energetic in his devotion to the history and future of stereo photography is like saying Ben Kilburn dabbled in the Stereoview business. Words like driven, fanatic, and runaway train come to mind when I recall Larry's nearly constant stream of promotional ideas for the NSA, Stereo World, and the two NSA conventions he was so deeply involved with in Manchester, New Hampshire. But unlike those annoying types who spout grand schemes in the hope that someone else will implement them, Larry was always ready to jump into even the most complex project with both feet running and both hands busy at his typewriter, creating press releases and promotional material to pry any possible publicity out of the media.

One of his projects involved the stereographic media, as represented by Stereo World, and the need to encourage and facilitate stereojournalism. He singlehandedly organized SCAN (Stereophotographer Correspondent's Action Network) as a group of stereographers ready to cover events, places, or people of potential stereographic interest in or near their various local areas. Not only did over two dozen people sign on as standby volunteers for assignments from SW, but Larry went on to design and produce photo ID press cards for each one of them! (I still keep mine in my wallet, and even though it's long outdated and may never get me into anything more exclusive than Extra Fries Day at McDonald's, it's generally the one I show when asked for any photo ID beyond my driver's license.) While SCAN is no longer functioning, it did produce several good views for SW articles and helped inspire some of the continuing submissions of timely stereographs from readers around the globe.

Larry did extensive research and sought out stereos for his articles with the same energy and busy typewriter that he applied to NSA promotional projects. His "Stereo Gold" feature on Alaskan Gold Rush views, "Post Crypt" illustrating several famous cemeteries with views by SCAN members, and "Stereoclues" linking Kilburn views to General MacArthur's return to the Philippines were all the products of multiple re-writes, carefully annotated replacement pages mailed in envelopes stuffed with extra maps and graphics, and stamped self-addressed postcards inviting editorial comments. Larry's research efforts went into overtime for "Stereographer Ike" which tackled the question of just how many views President Eisenhower actually made with his famous Realist, while reproducing several of the stereo slides from the Eisenhower Library.

Larry never claimed to be a skilled photographer, but in order to document New Hampshire's presidential primaries in stereo (since no one else was attempting it in any sort of comprehensive way) he learned on the job, chasing candidates around in the snow and getting better with every campaign. At his funeral, copies of his articles were displayed and his Realist hung at the front.

A former NSA vice president for membership, Larry was an NSA Fellow, chairman of the 1984 convention, committee member for the 1990 convention, a member of the Photographic Historical Society of New England and the New Hampshire Historical Society.

Born in Brooklyn, he graduated from the University of Wisconsin with a degree in Journalism and worked as an editor for Dell Publishing in New York. He served in the infantry in WWII, earning the Silver star, the Bronze Star, and the Purple Heart. Following the war he worked in public relations in Pittsburgh, PA.

He was a member of the American Legion and Amnesty International. He was in the Disabled American Veterans as well as being an active liberal Democrat, a pacifist, and a strong advocate of human rights. In other words, he was exactly the sort of dynamic, helpful, and multi-dimensional individual you seem to come across a bit more often in the NSA than in the flat world. But even in the NSA, you won't find many people with Laurance Wolfe's energy, rapid-fire literacy, and promotional skills.

- John Dennis
Come enjoy the southern California sunshine, beaches, pine-covered mountains, deserts, and 400 year old buildings of the California Missions. Capture it all for yourself in stereo images from the 19th century of from your own camera. When you attend the 1993 NSA Convention in San Diego this August.

The convention, located in Mission Valley's Town & Country Hotel, will offer a "photo opportunity" tour featuring some of the old locales of stereoview cards from Keystone, Underwood & Underwood and others. Included will be the San Diego Mission de Alcala, Balboa Park, the Hotel Del Coronado, and a trip aboard the ferry to Broadway Pier. For details, contact tour coordinator Lillian Harris at 619-296-2255.

The exhibits will accent the past, present and future of 3-D, as new technology opens new doors with a potpourri of stereographica sure to please any interest. Also on tap will be workshops to help you hone your craft and help generate new ideas. An unusual feature this year will be the aspect of motion, as three dimensional movies in several formats will be presented by members of the 3-D Movie Division of the Stereo Club of Southern California.

With this year's convention marking the 100th anniversary of the Stereoscopic Society, competitive exhibits have been planned to involve more modern stereo print photographers than previously. John Waldsmith and Quentin Burke, both SSA circuit members and co-chairs of the competitive exhibits, have announced three "salons" within the 1993 exhibit. Salon "A" will provide a showcase for the collector of vintage views as well as categories appealing to the modern print stereographer. Today's stereographers will also find five categories available in Salon "B" for multiple entries, and Salon "C" for individual entries. There will also be a non-competitive exhibition at no charge on a "space-available" basis.

Of course, the convention isn't complete without the trade fair, which will be set up with ample space in one of the Town & Country's larger rooms. This will be your opportunity to "take home" the convention in a tangible way with some collectible images or equipment, new or old.

**A Preview**

Some of the Shows Scheduled for the 1993 NSA Stereo Theater:

**CHINA AT THE TURN OF THE CENTURY**
by Paul Wing. 170 stereographs by an unknown photographer showing scenes, villages, country and farm life, families, occupations, boats, etc. all expertly copied to stereo slides.

**HIGH SPEED STEREO**
by Franklin Flocks. A selection of images similar to those in the July/Aug. '92 Stereo World article by Mr. Flocks. Water balloons bursting, glass breaking, bees in flight, etc. all frozen in full color stereo to reveal a world invisible to unaided human senses.

**WINDOWS IN TIME**
by Susan Pinsky and David Starkman is a lighthearted visual step into the past through 80 vintage stereoviews projected in six sequences, each individually choreographed with its own music.

**STEREOGRAPHIC METAMORPHOSES**
by Jonathan Golden. Hang onto your vertigo - and witness this three dimensional dissolving evolution of images. Each image is chosen to interact with its adjacent counterparts, disarming the viewer's perception. Stereos of animals you can pet, buildings you can hang out of, pseudostereo experiments, time lapse animations, and light drawings are all combined with digitally recorded stereo sound and music to make this a high impact visual treat.

**A SOUTHERN CALIFORNIA EXPERIENCE**
by Standish Lawder and UCSD. 1950s and 60s music sets the tempo to a summer on the beach and on the road in Southern California.

**THE EYES HAVE IT**
by Ron Labbe. A short and fast moving 4-projector show.

**SUSAN'S 3-D POTPOURRI**
by Susan Pinsky. Everything from computer generated images vintage historical views in 14 short sequences including hyper stereos by Paul Wing, flowers by Stergis M. Stergis, scanning electron microscope stereos by David Burder, 1950s nostalgia by Tommy Thomas, volcanic eruptions, Hollywood celebrities, and more.

**3-D X-RAYS OF FLOWERS**
by Albert Richards. The astounding translucent images produced by invisible radiation have been re-edited for a faster tempo, so even those who saw the show in Fort Wayne will enjoy it again. Presented by Paul Wing.

**THE BIG BANG**
as illustrated in 3-D via computer animation is the subject of a dual 70mm film created for a Korean corporation. These images illustrating the first few days of everything will be presented as a series of still slides from frames of the film.

For more on the 1993 NSA Stereo Theater, contact Bob Mannle, 653 Hutchison St., Vista, CA 92084, (619) 941-5500.
"You want to go where?" These were the words I heard most often when I gave my intended vacation destination early in 1992. Unless one has studied the history of the north Atlantic region, it might come as a surprise that a small country near the Arctic Circle has had a parliamentary form of government since the 900s or over four times as long as the age of the United States. It might also come as a surprise to find that one of the inhabitants of this same country possibly discovered the North American continent before Columbus. The name of this tiny country, about the size of Ohio, is also a surprise because it doesn't really depict what one finds there. These three surprises were but the first three of many that I would experience during a 12-day tour of the island. The name of the country, of course, is Iceland, created from the mid-Atlantic rift: land of friendly, confident people, of cliffs and sea birds, volcanoes, geothermal springs, clear air, sunshine, rain, snow, fjords, rivers, deserts, waterfalls, sheep, lakes, fish, and yes, some ice.

My desire to go back to Iceland came as a result of a trip my wife and I made there in 1987. We spent about a week in and around the capital of Reykjavik, which means "Smoky Bay," a modern city of over 150,000 inhabitants. We took some day trips around the Reykjanes area, as the peninsula containing Reykjavik is known. At our bed and breakfast hotel, we spoke with a couple from England who had just finished a 12-day bus tour around the island. They told us that it was the most wonderful trip they had ever taken. I vowed then to check out their story.

Such a trip promised to be special and for this reason, I decided that I needed a new stereoscopic camera, one that would take full-frame 35mm pictures. Because of my location (Saudi Arabia) and the difficulty of "shopping around," I decided that I would attempt to build my own stereoscopic setup out of two auto-focus, self-winding cameras. I first bought one camera and after experimentally modifying it to allow external focus activation and shutter release, a second camera was purchased and likewise modified. The cameras were a pair of Minolta AF-Zs with 35mm wide angle lenses, and were mounted in a custom frame made of white pine and 5-minute epoxy. The lenses turned out to be separated by about 6½ inches. This separation, however, tended to produce stereo pairs of landscapes that were phenomenally vivid. Even close up pictures of flowers were acceptable. An external set of switches was wired up and, armed with my new camera and about 48 rolls of 36-exposure, 35mm Kodacolor Gold II, I was ready for my trip. My daughter said it looked as if I was taking pictures with a spice rack!

Through the Iceland Tourist Bureau, several sets of faxes went back and forth until I was confirmed on a 12-day Grand Tour of Iceland, scheduled to begin on July 9, 1992. Not wanting to be rushed upon my arrival and also wishing to cancel the effects of any residual jet lag, I booked a hotel in Reykjavik for July 8th. The flight from JFK arrived at Keflavik airport around 6:00 A.M. on a somewhat cold, drizzly morning. After clearing customs, I arrived at my hotel around 8:00 and after a short snooze to help me settle in, I went for a walk to check out the capital city of Iceland.

The dominant landmark in Reykjavik has to be Halgrimskirkja, a large cathedral that reminds me...
of a hooded Viking helmet. In the front stands a magnificent statue of Liefur Eriksson, the man credited with the discovery of North America sometime around the year 1001. Even with the little bit of mist, the weather certainly wasn't all that unpleasant. The plastic sleeve that I had made to keep mist and rain off my cameras worked perfectly. I continued down the main street leading from the front of Hallgrímskirkja and headed for the downtown section.

Walking around Lake Tjörn, I came across the striking picture of Hallgrímskirkja between the birch branches seen in Figure 1.

July 9th began as a carbon copy of the previous day: drizzle and a coolness in the air. I checked out of the hotel just as the bus came to pick me up. Our contingent numbered 37: thirty French-speaking, half of them from the island of Guadeloupe, and seven English-speaking. By about 9:00 A.M., we were off!

First stop was Thingvellir, a national park about 22 miles (35 km) northeast of Reykjavik that is a most sacred place for all Icelanders. Over 1,000 years ago, the Viking settlers of Iceland began to hold their annual Althing or parliament meetings here. Thousands of people would come from all over Iceland to take part in debates and to pass laws. The site has been preserved over the centuries and except for some earthquake activity that changed the landscape somewhat, it is nearly as it was at that time. A small, crystal clear river runs through the site which lies at the foot of a long basalt cliff that forms a natural amphitheater. In fact, the acoustics are such that speakers actually faced the cliff when they spoke, the echo of their voices reaching many more people than would have been possible otherwise. Figure 2 shows a view of the cliff with the river running under a small bridge.

That afternoon, we traveled up through the Kaldidalur, between two glaciers, difficult to see because of the low overcast, and on to
Our second day, we headed west, out the Snæfells peninsula, stopping once to look at a large columnar basalt cliff. Then it was on to our lunchtime stop at Budir. After lunch, we drove a short distance, then walked along the cliffs by the sea where we saw numerous seagulls and their nests.

Figure 4 shows one of several holes flow covered a former river. The river eventually found its way through the cliff with the sea in the background and the birds along the edge.

Hraunfossar, a most beautiful waterfall that actually runs out of the middle of a cliff. Hraunfossar was formed when an ancient lava flow covered a former river. The river eventually found its way under the lava and produced these lacy falls, which flow into the pre-

Synchronizing Auto-focus

by R. F. Housholder

In order to take stereo pairs with two cameras, it was necessary to modify them slightly to allow synchronization of the shutters. Not knowing how the cameras operated, but feeling confident that I could figure it out, I first bought one camera and, after taking off the covers, got down to the business of making the mods.

The Minolta AF-Z that I purchased is an auto-focus camera with a 35mm lens and built-in flash. (I did not want a zoom camera because that would introduce another dimension that would have to be synchronized.) There are two buttons on the top of the camera: one changes the mode (Normal, Self-Timer, Fill-flash, and Sequential), while the other is the operating button. The operating button has two functions: partially down, the automatic focus is activated; fully down, the shutter is released.

As anyone who has recently opened up one of these cameras knows, they contain a small, sophisticated computer system, with most of the electrical components located on printed circuit (pc) boards. Gone are the days of all-mechanical release systems. After studying the operating button and its two switches and determining that there were no mechanical considerations, I decided to duplicate the focus and the shutter release with separate external switches.

The switch mechanism operates as follows: There is a common connection in the form of a small, pillow-shaped metal pyramid that is tightly fixed to the pc board. When the operating button is partially
The third day, July 11, found us visiting a turf church in Skagafjörður called Vidimyrakirkja. It was built in 1834 and presents a beautiful site, especially with all the yellow flowers and grass growing on the roof.

We moved on, July 12th, to one of the highlights of the trip, a visit to the Capital of the North, Akureyri. This city of about 14,000 is located near the closed end of the Eyjafjörður and proved to be another of the surprises I alluded to at the beginning. Just about 60 miles (100 km) south of the Arctic Circle, Akureyri has something for everyone. The city and harbor are clean and modern with a large building crane on the skyline. Our visit to the botanical gardens allowed us to see a complete collection of arctic plants, along with some of the most gorgeous flowers anywhere. Figure 5 shows members of our group taking pictures or making videos of the spectacle.

Minoltas

depressed, a small strip of metal spring is pressed down from its normally-open position until it connects with the top of the metal pyramid, thereby, activating the automatic focus. More pressure on the operating button deforms the metal pyramid slightly and it pops inward, making contact with the shutter-activation connection. So far, pretty straightforward, you say? Well, I thought I had figured out the switch functions and it was now just a simple matter of finding appropriate places where I could solder on leads.
The following morning, July 13, broke completely clear, without a cloud in the sky. Our first stop was Godafoss or the Falls of the Gods. In a bowl-like setting, the falls are a striking contrast to the otherwise bleak Icelandic landscape. Probably the most scenic area in all of Iceland is Myvatn or “Midge Lake.” Here, one finds extremes ranging from placid lake vistas with abundant birds, through geothermal steam vents, hot water pools inside of caves, ancient volcano craters, some with lakes in them, and an area of grotesque lava shapes culminating with a lava cathedral! All this within an area the size of a typical mid-sized city and its suburbs. Our first point of interest was the geothermal area at Hverarönd, where vile-smelling mud pools combine with steam and run them outside of the camera to a set of external switches.

This is where the hard part came in. I couldn’t locate access to the connection that was underneath the small metal pyramid. Finally, with the aid of a small magnifying glass and a strong light, I was able to look under the pyramid on the other side of the pc board. There, a small plated hole indicated that a connection passed through the board from directly underneath the pyramid. I followed the trace on the underside of the board, to the left side of the LCD panel, to another plated hole and back up to the top of the pc board. There, the hole was labeled “S2,” which had to stand for “Switch 2.” A small free solder pad was conveniently connected to the plated hole.

So, I now had three contacts: one common, one for the focus, and another for the shutter. It was time to test my theory about the operation of the switches. I carefully soldered leads made from computer wire-wrap wire to the pads nearest the three contacts and, with the batteries inserted and the enabling switch closed on the front of the camera, I touched the common wire to the focus; the green LED near the viewfinder came on. So far, so good. I next touched the shutter wire to the common and focus wires; the flash and shutter fired and auto winder cycled. Voilà! I had done it.

The rest of the modification procedure consisted of drilling a small hole in the plastic cover, leading the three wires out through the hole after devising some strain relief for the connections, and buttoning up the camera case. I then bought a duplicate camera and, in about an hour, made similar modifications to it. Next, I mounted one of these telephone connector sockets to the right side of each camera, using the two camera strap fasteners as anchor points. Finally, I mounted a set of external microswitches in two locations on the external frame, the left set was connected to the focus wires from each camera and the right set was similarly wired to the shutter wires. Telephone connector plugs on the ends of the wires from the switches completed the wiring connections.

The frame for the two cameras was made of white pine glued together with 5-minute epoxy. The cameras were mounted side-by-side...
vents in an area that straddles the mid-Atlantic rift. Figure 6 shows one of the smaller steam vents.

The afternoon began with a short stop at geothermal pools at Grjótagjá, again located on the mid-Atlantic rift. What makes these pools unusual is the fact that they are located inside of caves. When one descends through any of several openings in the rocks, the warm, moist air of the cave tells you that the water is hot. Several years ago, bathers used to be able to use these pools, but in recent years, due to changes in the heating from below, the water has reached a temperature of 136°F, which is a bit warm! Figure 7 shows the steam rising off of the surface of the hot water in one of the caves.

Traveling south along the eastern edge of Myvatn, we came to one of the most unusual places in all of Iceland. As any Icelander will tell you, trolls (mischievous elves) come out at night. If a troll has the

with small pieces of wood glued such that the cameras could not move side to side or back to front. Two rubber-faced wooden shims held each camera tightly in place and prevented up and down movement. The back of the frame is designed to allow the film door to be opened without removing the cameras. Battery replacement requires the cameras to be removed, however. A rubber pad glued to the bottom of the frame completed the project.

I found that, since the cameras had relatively wide-angle lenses, I didn't need to compensate in any way for parallax. The camera lenses are separated by about 6.5 inches. This exaggerates the stereoscopic effect, which actually improves landscape scenes quite dramatically. I made a plastic sleeve for the cameras and, on occasion, it proved to be well worth the effort, as it kept the mist and rain off of the cameras, yet allowed me to take pictures through two holes cut in the front of the sleeve. Since the sleeve was made of clear plastic material, the viewfinders could still be used and the switches could still be activated through the plastic.

I ended up with a rugged, yet light, fully-functional, stereoscopic camera system, one whose worth was proved quite decisively by taking over 600 stereo pairs during my recent "circumnavigational" bus tour of Iceland. The advantage of full-frame stereo photography is best demonstrated by mounting the pictures so they can be viewed using the View Magic viewer from Dimension Press, Harvard, MA, that was recently reviewed in Stereo World. Traditional, side-by-side stereo photographs can be obtained by cutting the full frame prints at appropriate locations. All in all, I have been pleased with the camera system and, as you can see by the Iceland photographs, it works. Some of the more adventurous Society members might wish to duplicate my efforts and make their own full-frame stereoscopic camera system. I would be glad to provide more details and answer any questions regarding my camera modification experiences.

Ross F. Housholder, c/o Saudi Aramco - Box 10077, Dhahran 31311, Saudi Arabia.
misfortune to be outside when the sun comes up, it is turned to stone. Legend has it that the grotesque lava formations at Dimmuborgir are just that: trolls turned to stone. See for yourself in Figure 8. Perhaps that small shape to the left of the larger one is, indeed a troll frozen in stone amid dwarf birch trees and an occasional conifer. Well-marked trails lead to all parts of Dimmuborgir, but our group headed for the lava cave church. After seeing several magnificent cathedrals and churches in Iceland cities and towns, the lava cave known as Kirkjan certainly ranks right up there with its man-made cousins. Figure 9 shows a view from the south in mid-afternoon light. Inside is a huge vaulted ceiling, another of the Iceland surprises.

Day six, we traveled to a point only 25 miles (40 km) from the Arctic Circle at the tip of the Tjörnes Peninsula where we stopped by some cliffs and looked again at some more nesting sea birds. Then on to another national park, this one called Jökulsárgljúfur, where we drove into a huge sunken horseshoe-shaped canyon called Asbyrgi. The bus let us off at a trail head where, after a short walk of about 15 minutes, we came to a small lake at the end of the horseshoe. The entire canyon is filled with small birch trees. There followed the two types of waterfall experiences: "impressive" and "incredible," or falls seen from a distance as opposed to up close. A distant view of Hafragilsfoss is shown in Figure 10 and is the eastern

Figure 12

taken back about a quarter of a mile (500m) from the falls. Some small figures of people can just be made out on the rock outcrop at the left side of the falls, which are 143 feet (44 m) high.

Our next major day of traveling began the morning of July 16th and was along the eastern fjords. As we started down the Alafjördur, we came upon some sod-covered buildings that had been constructed for a movie set some years before. We stopped and, since they were typical of early Icelandic farm construction, took several pictures of them. Figure 12 shows the front view of the buildings and part of the magnificent
setting where they depict an early Icelandic farm. The evening was spent near the town of Höfn.

As we approached the vicinity of Vatnajökull, the largest glacier in Europe, the next day, the weather turned extremely cloudy with intermittent rain. Upon consulting a small chart on my Icelandic map, I was surprised to note that the area had the heaviest rainfall of any area in Iceland, over 4000 mm per year. That's over 13 feet of precipitation annually! With that kind of water falling out of the sky, most of it in the form of snow on the upper slopes of Vatnajökull, one could see why it might be raining on any given day.

We rounded the southeastern "corner" of Iceland and experienced another of Iceland's surprises: clear weather within just a few kilometers of such intense drizzle. We were treated next to a close-up examination of a glacier. It is a humbling experience to see one of these monsters at close range. From a distance, they look like soft snow, but in reality, they are made of crystal clear ice that is covered with dirt and dust in some places. I was surprised to see huge boulders up on the top of the ice but I understand that it is quite common for such stones to be picked up by the movement of the glacier and deposited many miles away. Figure 13 shows a view of our close approach. From the dark cave to the left of the two individuals in the picture, a torrent of glacier melt water roared out, took a turn and immediately dove back under the glacier.

The morning of July 18th was a leisure morning. In the afternoon, the rain returned and prevented us from a planned trip to the cliffs at Dryhólaey; however, after a night spent nearby at Skógar near another fabulous waterfall, we returned the following morning, July 19th, to the tops of the cliffs of Dryhólaey that the rain of the previous day prevented us from seeing, and enjoyed wonderful views of black sandy beaches with glaciers on the horizon and sea birds nesting on the cliffs. Figure 14 is an over-the-edge view at some nesting puffins with the north Atlantic washing up on the black beach 130 meters (400 feet) below.

After lunch, we drove for several minutes to a dirt track turn-off, where we continued to an interesting archaeological site known as Stöng. There, an authentic Viking long house, part of a farm, has been uncovered from the aftermath of an eruption of the volcano Hekla in 1104. A modern covering has been erected over the site to preserve it from the elements, but inside, one can see parts of the rock foundation, locations of fire pits and walls. Figure 15 shows a view of the remains of this Viking long house underneath the covering.

July 20th, our tour ended with a visit to another water-filled caldera at the crater Kerid. After a short stop at the town of Selfoss, where we saw another surprise consisting of geothermally heated greenhouses where bananas are grown, we headed across the final lava field back to Reykjavik.

The following morning, on my flight to Amsterdam, we flew southeast from Keflavik, out over the Westman Islands and I was able to look back over the landscape that I had lived in and been a part of during the past 12 days. We had traveled over 1650 miles (2700 km) and it was true that I had, indeed, seen some ice, but I went away with much more of an appreciation for the other aspects of this unique place, a land called Iceland. Would I ever want to return? Quite simply, yes.

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Looking for 3-D Virtual Reality

by Ken Clark

The Virtual Reality Systems '93 show in New York City March 15 to 17 demonstrated that virtual reality remains virtually all hype. Performance has not matched the promise of the technology. For enthusiasts transfixed by the visual power of an image in three dimensions, the wait for good 3-D in virtual reality may be a long one.

Designers of lavish interactive immersive systems with head mounted displays, gloves and complete environmental simulations have sacrificed 3-D for faster computer processing time. Since the display resolution of full immersion systems is as good as being blind (20/200 or greater) a stereoscopic view offers little benefit in exchange for the computer processing required. While new high-resolution displays are promised this summer (promises, promises) and rumors of hot new items abound, the virtual reality industry has a distance to travel before it can match the visual quality of the stereoscopes that exerted such a powerful pull on the imagination 100 years ago.

But Virtual Reality Systems '93 did show that despite slow progress, the promise of interactive 3-D is alive, and that the eventual melding of computer and imaging technology will realize the creation of exciting reconstructions of three-dimensional reality. Exhibitors unveiled a number of systems available this year that offer here-and-now virtual reality and 3-D stereo image generation and manipulation capabilities.

Big players in the entertainment industry, such as Hughs, with its Mirage system, (an arcade version of a military aircraft simulator) and Virtual World Entertainment's Battletech arcade game were not represented at the show. The big consumer electronics firms interested in 3-D, such as 3DO, Sony, Sega and Nintendo were absent. Rumors and product announcements abound, but the 3-D intentions of the biggest firms are not public information.

Interactivity vs. Immersion Leaves 3-D in Background

The VR industry's fascination with interactivity requires a high price in computing power. When a VR player turns his head, or zooms off in a certain direction, the computer has to scramble to create a rapidly changing view. This "tracking lag" is a good way to simulate drunkenness, but not so good at creating other virtual effects. To interact in virtual worlds (looking, pointing and moving around) requires that the world must remain very simple to prevent overloading the computer with complex graphic information. Immersion is sacrificed to interaction. That's the necessary tradeoff that has left 3-D vision out of virtual reality.

During a three-hour presentation on stereoscopic displays, learned young pony-tailed men talked for hours on the various merits of different display arrays and screen refresh rates. At the end of all this talk, Eric M. Howlett of Leap Technologies, designer of the remarkable and ill-fated Leap stereo camera, stood up and asked, "Why isn't anyone talking about stereoscopic depth vision." This launched a technological discussion that basically concluded that with current display technologies, it just wasn't...
worth the trouble. Howlett, like others, has retreated from stereo virtual reality, because of the high cost of true stereo for most applications. Motion depth cues and other techniques "are almost as effective as stereo disparity. Few users even notice that stereo is missing, and none, it appears, would trade the extra resolution to get it back."

That's too bad because some of the software for these virtual worlds would look great in 3-D. At the show, Straylight introduced a beautiful virtual world, Cybertron, which features rich 3-D graphics of Spanish galleons and splashing dolphins. But the head-mounted display provided only a two-dimensional view.

**3-D for Home Computers**

Virtual reality is not limited to complex, immersive systems. Software designers are bringing simpler versions to home computer screens. The smaller field of view allows PCs to run virtual worlds at video game speeds, because less processing time is required. In this kind of virtual environment, designers have recognized how 3-D helps create the virtual experience. Because the computer is a window on the virtual world rather than the world itself, stereoscopic vision adds an extra dimension.

Sequential field glasses, that shutter in synch with rapidly alternating right and left screen images, were the tool of choice for 3-D computer system designers at VRS '93. Two kinds of glasses are used, CrystalEyes, which flicker at a rate of 120 frames per second, and glasses such as 3DTV's, which flicker at 60 frames per second and support the NTSC broadcasting standard.

At VRS '93, Michael Stark introduced a new line of 3DTV glasses and hardware for use with Amiga, Macintosh and PC computers. These low-cost systems, which start at $195, include cables, glasses and a rendering device for converting 3-D images. Some systems will also drive a power glove for that hands-on virtual reality feel. Four different models of interfaces operate via parallel or serial ports, or via magnetic pickups to synchronize any of five different models of electronic LCD glasses with stereoscopic 3-D images on the computer screen. Two of the interfaces and all of the glasses will also work with consumer VCRs and TVs for viewing of videotapes, discs or CD Rom. Sometime this year, 3DTV plans to introduce a VR computer mouse that will work in three dimensions for around $1500.

Software designers are creating new products for the computer 3-D niche, and several were introduced at the show. Certainly VistaPro is one of the most beautiful, and the new version released in April supports 3-D viewing. (See "Fuser-Friendly Computer Stereo" in this issue.)

**2-D to 3-D Stereozation Looms**

Playing in someone else's reality is fine, but what about creating your own? Latent Image Technology's Stereozation technology will allow any budding 3-D videographer to take a page from Ted Turner and "stereoize" old movies or 2-D images. Images can also be created from scratch. A computer-assisted system simulates depth, permitting regular films, videos and other images to be displayed stereoscopically on video, computer and motion picture screens.

Plans are in the works for the construction of a large-scale facility which will provide low-cost digital film production services. In the meantime, small-scale projects can be produced at the lab facility or on a PC equipped with a Truevision ATVista Card and the 223 Stereo Paint System. This product, still in beta testing, will allow painters, illustrators and other 2-D artists to create true 3-D images from scratch in a 3-D environment. Existing 2-D paintings, illustrations, photographs and image files can be brought into the system, and all can be mixed and matched.

The figures and images generated on the system are then just cardboard cutouts, and can be modeled in the round. A practiced eye is required to get the right push and pull on a particular point, say the tip of a nose, but once identified, the computer can adjust the distance automatically as the image grows larger and smaller in the frame. The finished product can be output to film, video or high resolution computer display, and may...
be viewed on any kind of stereo-
scopic display.

Now stereo photographers who
have always wished that they had a
particular snapshot in 3-D can
dump it into a computer file and
redo it. But that will be one expen-
sive dupe. The ATPvista Card costs
around $5000 and the 223 software
package will be priced at over
$5000.

Checkerboard Polarization
Jumps Ahead

For those more interested in real
reality than the virtual version,
Sadeg Faris of VRex has continued
improvements on his micropolariz-
ation system. For years, various
3-D technologies have swarm in
and out of popular fashion like the
images on a pair of bad mounts.
Enthusiasts have held out hope for
3-D viewing as comfortable and
convenient as 2-D. Faris’ checker-
board polarization technique,
Micropol, is a lot closer to that ide-
al than anyone else working on vir-
tual reality display systems today.

The technology, first described by Ray Zone in the Jan./Feb. '92 Stereo World, builds on the strong
foundation of binocular polariza-
tion techniques, familiar to anyone
who’s ever worn a pair of 3-D glass-
es at the movies. The Micropol dif-
ference is that stereo image pairs
are combined into a single image
through a microscopic checker-
board of polarized squares that
alternate by 90 degrees. The single
image source reduces or eliminates
problems of cost and alignment
associated with most polarization
systems.

The potential for the system
seems vast. It can be used with
almost any display device or sys-
tem, including video and film.
Commercialization will bring the
technology to overhead, rear and
front projection systems and to the
screens of personal computers.
Right now, products are limited to
to video and computer imaging. On
display at the show was a 3-D over-
head projection panel. Called the
VR1000, it’s a full-color active
matrix panel, with a Micropol
screen positioned on top to pro-
vide a 3-D effect. The whole device
is then placed on top of an over-
head projector and focused on a
silver screen to preserve polariza-
tion. Viewed through glasses, the
3-D effect is very impressive. Reso-
lution matches the 480 lines of the
VGA video display standard, mak-
ing it very suitable for computer-
generated images. The system is
compatible with Apple Macintosh
and PC-compatible computers, and
lists for around $6200. A converter
is available to input NTSC video
from VCRs and camcorders.

Other displays include a 3-D
video wall, not displayed at the
show, that creates a 10-foot diag-
ognal image with a back projector. A
smaller unit, the RV1000, provides a
67 inch screen, also back projected.
VRex has also assembled a new
3-D stereo camera out of a pair of
miniature industrial CCD cameras. The
CAM3000 3-D Stereo Camera
provides electronically adjustable
convergence and interocular dis-
ance for absolute control over the
creation of a three dimensional
image. Lenses are interchangeable,
and optional adapters allow the
CAM3000 to be used with a wide
range of optical instruments. The
camera is now discounted at
$5941. For camcorder capability,
the same system is available with a
recorder and LCD monitor for
around $6,800.

By the end of this year VRex has
promised 3-D flat screen displays
and a hard copy printer. Current
systems work at a resolution of 300
microns per square, which is all
that’s required for use in current
video systems. In the lab, the
checkerboard squares have been
shrunk down to as little as 15
microns, offering the potential for
photographic-like resolution some-
time in the future.

Another visionary, Ron Logsdon
of Shebuté, demonstrated an alter-
ate future for stereo viewing with
his Vortex device. With a little tri-
gle-shaped box held between the
hands, he has taken the properties
developed by David Swift and Dr. Sadeg Faris of VRex arrange the 3-D video camera for a close-up.
At the left, the VR1000 Micropol projection panel is positioned on an overhead projec-
tor to display the images.
Among some amateur stereographs of the Southwest taken around 1910-1915, James King of Albuquerque, NM found this view of the famous hairpin turns where Highway 85 climbed the steep La Bajada hill south of Santa Fe. Widened from a stage road to accommodate automobiles around 1911, this was for many years the only road between Santa Fe and Albuquerque. Its tortuous reputation and stunning view were spread far beyond the local region on post cards, turning an obstacle into a tourist attraction by the 1920s.

(Continued on page 25)
We note with deep regret the passing of Frederick S. Lightfoot. He had a long association with the Stereoscopic Society and was our General Secretary from 1974 to 1977. He was instrumental in initiating our affiliation with the National Stereoscopic Association and was awarded life membership in the society.

Super Couples
Beginning with the creation of the American Branch of the Society in 1919 when Walter and Rose Cotton led the way, we have on occasion been blessed with "stereo couples" who have made outstanding contributions to our organization. Currently we have a bumper crop of such dynamic duos ["stereo pairs"] whose shared interest in stereo viewmaking has been a benefit to us all.

I would especially like to single out Robert and Audrey Kruse, whose service to the Society is second to none in a group which could not function without the dedicated contributions of time and effort of a number of volunteers. Bob Kruse has been treasurer of the Society since 1986 and Audrey Kruse took over the essential task of Supplies Secretary in 1990.

Bob and Audrey Kruse live in Minneapolis, MN, where the summers are beautiful and the winter nights are cold and long – conducive to catching up on one’s stereo projects (although they have been known to skip off on a Caribbean cruise when the February winds cut particularly cold). They have three children and three grandchildren.

Bob Kruse was born in 1919 and married Audrey in September of 1943 in San Jose, CA while he was stationed in Sunnyvale during WWII. He served as a photographer for four years in an Army Engineer Mapping unit. After the war, he served four years as a weekend warrior, aviation photographer’s mate in the Naval Reserve. He worked for 47 years in the photographic area of the lithographic printing industry, mostly researching and supervising color separation techniques. Bob has worked with every photographic process, from wet plate to color scanners. He retired in 1985.

Bob started in Stereo in 1954 through 1971 and picked it up again in 1983. He is a member of both print and transparency circuits where he often illustrates his hobbies in full color stereo. The other hobbies include visiting and studying pre-Columbian ruins in

Bob and Audrey Kruse were prepared for the beginning of the 1989 holiday season when they made this view to send to their stereo colleagues. Bob is the Treasurer and Audrey is the Supplies Secretary for the Stereoscopic Society of America.
Audrey Kruse was born in Fresno, CA in 1924 but moved to Minneapolis in 1925 where she went through school and graduated in 1943. After her marriage to Bob and his WWII departure for the South Pacific, she returned to Minneapolis, attended business college, and waited out the war until Bob’s return late in 1945.

They built their house in 1948, and it’s been enlarged and periodically remodeled since then. She has been a busy homemaker with more hobbies than she could keep up with in addition to raising two daughters and a son. Over the years she has regularly taken art classes as well as other craft classes over a wide spectrum. She joined the Stereoscopic Society officially in 1989 as a member of the C Print Circuit. She and Bob love to travel and take every opportunity to do so, with stereo camera always in easy reach. Audrey has a special knack of showing that different angle in travel views and in capturing the mood in different interior views.

1993 is a special year for the Kruses as they mark Audrey’s 50th high school reunion as well as their Golden Wedding anniversary in September. They hope to re-trace their 1943 steps in California to mark the occasion. The Stereoscopic Society joins in offering our best wishes and our special thanks for all that they have done to make the Society thrive.

Voting Reports
1992 voting leaders for the Alpha and Beta transparency circuits are reported as follows.

**Alpha Folio Voting Leaders**

<table>
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<tr>
<th>Member</th>
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<th>Total Points</th>
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<td>Paul Wing</td>
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<td>R.E. Markley</td>
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**Beta Folio Voting Leaders**

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**Favorite Views**

- "Marsh Marigolds" by Steve Trynoski (34 pts)
- "Two Leaves" by Steve Trynoski (20 pts)
- "Mending the Nets" by Paul Milligan (20 pts)
- "Country Church, France" by Paul Wing (20 pts)

**Kaiser-Panorama Group Formed**

A n organization dedicated to the study, preservation and publicizing of the room-size Kaiser-Panorama stereo viewers and images has been established in Celle, Germany. From 1883 to the 1930s, these circular viewers presented a sequence of tinted glass views to 25 people at a time in several German and other European cities. The views were changed weekly and included educational, scenic and current event topics, making the "Panoramas" a stereo forerunner of newsreels and weekly TV news magazine shows. One of the last remaining Kaiser Panoramas in now in the Munich Photo Museum.

Erhard Senf, president of the new organization, owns one of the largest remaining collections of Kaiser-Panorama transparencies and will present a reproduction Panorama to the Bomann Museum in Celle. The association is open to anyone interested in the viewers or their images. The annual twenty Deutschmarks dues include the publication Panorama-Post, available through Karsten Hälibig, Fridagsweg 9, D-W-3100 Celle, Germany.

**Then & Now**

Cut into the side of the almost sheer lava escarpment, the road and its 23 hairpin turns challenged equally the motors of vehicles and the nerves of their drivers. A gas station, tourist cabins and tow truck service thrived at the bottom of the hill until 1932 when a more readily traversed highway was constructed about three miles east of the original road. The hairpin turns of the old roadway remain today largely undisturbed and unimproved, and can be reached using a four-wheel drive vehicle from nearby I-25.

In 1989, Mr. King and fellow NSA member Bob O’Nan located the position from which the Then view was made and took the Now view seen here. Mr. King explains: "Keep in mind that this location is extremely isolated - miles from any human habitation. Thus it's not surprising that both Bob O'Nan and I experienced a strange yet exhilarating feeling as we looked through our camera's viewfinder and saw almost exactly the panorama that presented itself to our near turn-of-the-century antecedent. With the cooperation of Bob's daughter Molly, in appropriate costume, we positioned her in approximately the same place next to the roadway as the dark figure in the original photograph."
by John E. Williamson

The people of the Victorian age used the stereoscope to escape to lands they could only imagine prior to the invention of photography. They placed the bulky viewer in front of their eyes and saw stereoscopic images that transplanted them to another world. In some respects they may have been among the first to use the group of technologies that are now being loosely called “virtual reality.”

Someday, very soon, you will be able to wear a pair of virtual reality glasses and explore the wonder of Cyberspace (a computer generated, fully interactive 3-D world). If you chose, the world you explore could be a re-creation of Mount St. Helens before, during or after the volcanic eruption. Or you could visit Victorian England, complete with computer generated, animated people who would interact with you.

This scenario will be affordable for home use sometime within the next decade. It is currently feasible, though the $200,000 price tag restricts its use to research institutions and universities. Less powerful home systems (under $500) are under development for a 1994 release. For the impatient, it is possible to explore the first tentative steps taken in virtual reality today.

One can either visit the upscale arcades and play one of several low resolution virtual reality games such as Dractyl Nightmare or Battletech (reviewed in Stereo World), or one can stay at home and visit Mt. St. Helens, Yosemite, or even Mars using VistaPro from Virtual Reality Software Laboratories.

The advantages of using VistaPro are:

• The resolution of the images is a great deal better.
• The images can be saved as souvenirs of the worlds you have visited.
• Odds are you can use your current computer.
• Unlike Dractyl Nightmare, it doesn’t cost $1.00 a minute.

This $129.95 software package runs on the Amiga, IBM PC, and Macintosh platforms. VistaPro uses Digital Elevation Models (DEM) obtained from U.S. Geological Survey data. These DEMs are 3-D databases of geographic structures (hills, valleys, ravines, etc.) and are accurate to within 50 feet. While that may not seem very accurate, keep in mind the scale of the database can be hundreds of square miles. VistaPro uses these coordinates, a degree of artificial intelli-

The crater of Mt. St. Helens as generated on a computer using VistaPro. A shift of “camera” positions produces a stereo pair, each image then being photographed separately as it appears on the screen. Here the lava dome has been replaced with fanciful trees and a waterfall playfully flows from the crater rim. Stereo by the author.

A lake, fractal/randomly generated with VistaPro Trees, water and waves were added. Note the subtle light and shadows on the trees on the near right and left sides. Stereo by the author.
Computer Stereo
Computer Generated Stereos

gence (AI) programming, and fractals to generate realistic views of the data set.

The AI is used to place trees, water and snow in realistic locations on the slopes and crevices of the landscape. Trees will not grow on a vertical cliff nor will they appear above the user definable tree line, nor will they grow under water. Fractals are used to impart some "randomness" in these computer generated worlds, making them appear more realistic and less systematic. As a result, trees will not grow in even rows like an orchard, but rather in random clumps. Furthermore, just as in real life, the tree line is not a rigid border with no exceptions. A few trees will be drawn above the tree line.

Through a flexible set of target and camera parameters, users can quickly change their locations in 3 dimensions as well as the target they want to photograph. The user's position and camera target can be readily selected from a topographical map. Using this 3-D coordinate system, it is very easy to manipulate the camera to create stereo pairs. The distance between each image will require some trial and error, and is influenced by lens length and subject distance.

With this software, the sun is completely under your control. VistaPro will also allow you to alter the intensity, diffusion and direction of the sunlight. This combination allows you to add, remove or exaggerate shadows. You can manipulate lens size, from fish-eye to telephoto with the click of a button. You can add haze to make more distant objects appear hazy or slightly blurred.

Using VistaPro, you can visit Mt. St. Helens during any season of the year (by adding snow or changing the colors of the leaves), and from any location (by using the coordinate system). Currently you can only choose between pine or oak trees (though this may change with the next release). You can even visit Yosemite in the future to see what effect erosion (that you add) will have on the landmarks, as well as add bodies of water. The water can take the form of oceans, lakes, rivers or waterfalls. Waves can also be added if desired.

(Continued on page 40)

For printouts of VistaPro generated pairs, NSA member Richard Ross uses CorelDraw on a fast 386 IBM. After importing both right and left PCX file VistaPro images to the screen, he crops and aligns the pair, then prints it as a black & white halftone on a 600 dpi laser printer. Seen here is one wall of the crater of Olympus Mons from the DEM data set for Mars.

A VistaPro landscape randomly generated with fractals by Richard Ross, who shifts both camera and target positions between images to minimize distortion in the resulting 3-D view. He warns that it takes his system about an hour to print out each stereo pair.
Following his retirement from 30 years of active duty in the U.S. Army, Bill C. Walton worked for nine years in the Fort Benning, GA Public Affairs Office. The job involved photographing and publicizing activities at the fort, including the 13-week infantry training course for new recruits. This gave NSA and Stereoscopic Society member Walton the nearly perfect opportunity to record every step of modern "Basic Training" (now known as One Station Unit Training) with his Stereo Realist.

Members of the Stereoscopic Society Print Folios have seen several examples of Bill's excellent black & white views from Fort Benning over the years, and have frequently voted them among the top stereos circulated. Now many of the best of these views have been assembled into a book that documents the training process from the recruits' arrival, shots and haircuts to the final graduation exercises. BACK TO BASICS Infantry One Station Unit Training in 3-D presents 75 full size 3.5 x 7 inch views, one to a page, with informative captions under each one. The brief 7 page introductory text covers the history of Fort Benning and the changes in the methods, equipment and terminology involved with the infantry training program over the years.

This is not one of those military picture books that simply illustrate the latest high-tech hardware of war like some glossy mail-order catalog. Nearly every view in BACK TO BASICS concentrates on the young recruits themselves as they climb ropes, clean equipment, fire rifles, and polish boots during the course of their training. Several of the views, like "Slide for Life," showing a trainee suspended from a cable over a river, are remarkable 3-D compositions. Others capture the environment and training routine powerfully enough to nearly make you feel the humid Georgia heat or the point of a thrusting bayonet.

Those who have seen original stereo prints by Bill Walton will find the same photographic quality in much of the book, but some images, especially the indoor flash views, suffer from an obvious contrast gain in reproduction. The visual message, perhaps made even more starkly dramatic by the high contrast, is completely positive toward its subject matter, as is understandable from an army publicist. The book, with a viewer included, is being sold at the troop PX in the Fort Benning training area and has been sent to veterans groups of four infantry divisions that trained there during WWII. (In the introductory notes, the author maintains military tradition by including not only the model number of the Realist he shot the stereographs with, but the serial number as well!)

Whatever your thoughts may be concerning military matters, this is a fine collection of skillfully done stereos documenting a complete army training course through the eyes of a soldier following every exercise at close range. That alone makes it unique, and the skillful stereography of Bill Walton makes it a significant addition to any collection of stereo publications.

BACK TO BASICS Infantry One Station Unit Training in 3-D, soft cover, 75 full size views with viewer included, $13.00 plus $1.50 postage (GA Res. include 5% tax) from: MUSCOGEE 3-D, 3739 Meadowlark Drive, Columbus, GA 31906.

BACK TO BASICS: A Review by John Dennis

Explore the World of 3-D Photography Then & Now, in Stereo World
Still only $22 a year from:
NATIONAL STEREOSCOPIC ASSOCIATION
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OH 43214
UFO Captured in Stereo?

One of the views that Bill C. Walton included in his new book Back to Basics (reviewed on previous page) is a time exposure made during an August, 1991 night exercise on a firing range at Fort Benning, GA. He doesn't claim to have a stereograph of a UFO, but he hasn't been able to identify the row of lights at the upper left, and provides the following account.

I printed this one because I like the waving light in the foreground which was made by a Drill Sergeant moving among the soldiers who were firing their M16s on Fort Benning's Malone 4 Range. He was carrying a flashlight and making corrections. As I recall, it was a time exposure of slightly over a minute and I was hoping to stereograph lines of tracer ammunition going down range. When I mounted it and looked at through a viewer I noticed the "formation of lights" in the sky near the left edge of the view.

I figured I had dirty negatives so I checked them and they were clean, and the dots are in both negatives. My Realist is showing its age and it overlaps once in a while, and the line of dots extends into the overlapped area of the left negative.

There is no range south of Malone 4 that would be firing over this range, so that negates other weapons. If it were aircraft flying it should have caused streaks rather than individual points of light, since I made a time exposure. I am not ruling out reflections, but it seems odd to me that both lenses would catch the same reflections. I checked my night firing negatives to see if this "formation of lights" showed up anywhere else. I made 9 different exposures that evening, all of them looking generally to the west, and the formation does not appear in any of the other stereo pairs.

I took this view to the Public Affairs Office at Fort Benning, where I used to work, and they couldn't come up with any identification. I am open to suggestions because I can't identify what the "formation of lights" is.
An ultrasound image from the data set in a computer, rotated for a stereo pair and displayed through surface rendering. Shown is a large atrial septal aneurysm protruding into the left atrium. The aneurysm appears to bulge out toward the observer.

A number of people have wondered if 3-D pairs could as easily be made using ultrasound images as they have been from X-rays in the past. Some have even requested “pairs” of sonograms made from slightly different angles during prenatal exams.

The problem is that ultrasound images represent generally cone-shaped slices usually showing a cross section of the area being imaged. (The technical term for these, as well as CAT-scan and MRI images, is tomographic imaging.) Stored in a computer, several of these slices can be electronically assembled in sequence and made transparent enough to look through – as if you were looking through a reassembled bread loaf end-on. In fact, the medical term for the process is “breadloafing.” By having the computer shift the slices slightly in relation to each

A Flat-screen Volumetric Display

Over the past 20 or so years, there have been nearly as many systems devised for “volumetric” 3-D displays as for 3-D video systems. All volumetric viewing systems, whether mechanical or otherwise, produce an image whose depth is limited within a confined area for direct viewing without the need of lenses or filters.

The latest of these systems uses a rotating flat screen which is claimed to provide more flexible image control and better definition than earlier methods. Recently patented by LAMDA Systems Corporation of Highland Park, IL, the screen rotates on a vertical shaft (as if standing upright, centered on a very fast turntable). Attached to the same shaft and extending out below and in front of the screen, are mirrors which direct a HeNe laser beam containing the image information to the screen. The laser scans cross sections of the volumetric image, always remaining fixed in relationship to the screen unlike other systems which project images from a fixed point toward a moving surface. This is said to also allow text or other 2-D graphics to be included with less distortion, and the screen itself can be strobed with UV light to illuminate phosphors in a background reference grid that can be made to appear at various planes within the space.

Another New VR Magazine

Virtuoso, a new magazine aimed at individuals working or interested in virtual reality systems and applications, has begun publication with the March/April 1993 issue. With an annual subscription rate of $25.00, the new bimonthly will be more affordable to a wider range of readers than its parent publication, VR News. Both magazines share the same editorial staff and are published by Spectrum Dynamics, Inc., the mail-order supplier of both hardware and software for virtual reality systems. (See NewViews, May/June '92.)

For subscription information on either magazine or the firm's catalog, contact Spectrum Dynamics, 3336 Richmond Ave. Suite 226, Houston, TX 77098. Phone: 713-520-5020. Fax: 713-520-7395.
other, a stereo pair of the bread-loafed images can be generated, each slice becoming a plane of depth in the view.

Until recently, synthetic stereograms like this were more commonly made from CAT-scan or MRI systems due to their more detailed images. Advances in computer imaging have made it possible to use the data from multiple ultrasound scans to produce what to the computer are volumetric three-dimensional images. These can then be displayed from any angle, rotated, split open, solidified, textured, turned into wire-frame outlines, or divided into different colors to identify separate features. Organs can be electronically "removed" from the body and studied from every direction, inside and out. Most of these functions can be displayed as stereo pairs as well.

Ultrasound probes can be inserted into the stomach, for instance, and aimed at the heart for several remotely controlled scans to build up image data covering the entire organ. Two articles on echocardiography in the journal Mayo Clinic Proceedings for March '93 cover several techniques involved with ultrasound imaging of the heart. Along with examples of other computer-manipulated heart images are two displayed as stereo pairs, positioned in the journal for convergence free viewing. The technique illustrated here is called surface rendering, in which an object is electronically extracted (segmented) from the volume of image data. The computer then creates surfaces at the boundaries of the object, which face the observer. Shadowing techniques are used to provide perspective, and the object is rotated for a second image to provide a stereo pair. Without involving the time or expense of other tomographic imaging systems, this ultrasound technique allows even small areas of the heart to be studied in depth, as if a plaster cast of the living heart were on the table for study.

A Tricky 3-D Spin

Doodletop 3-D is a 3-D drawing toy geared to the 6-12 year old market. As you spin the top, a geometric spiral design is formed on the paper spinning surface by a marker which serves as the point of the top. The kit consists of two tops (one with a blue marker and one with a red marker) and a pair of anaglyph glasses.

The only problem is that you need to spin the second top so it forms the same design as the first - a feat not easily accomplished - and both designs have to be spaced properly!

Theoretically, some interesting 3-D designs can be made - but you will need a lot of practice and a lot of luck. In the prototype examined at a Toy Expo in New York, the blue of the glasses did not properly extinguish the blue of the marker, but the company says this will will be corrected.

3D Scope Probes Gently

While 3-D video systems have become a widely available option for both the teaching and practice of surgery, system refinements and new imaging devices continue to appear almost monthly. One of the latest is the 3D Scope, developed at Boston University Medical Center for real-time use during "Minimally Invasive Surgery."

This involves a variety of techniques allowing smaller incisions, minimal pain and trauma, and shorter hospital stays. The number of such procedures done in the U.S. grew from 50 in 1989 to 400,000 in 1992, its most common use being for gall bladder operations. The two tiny cameras at the end of a probe feed color 3-D images to a surgical field than currently used 2-D scopes and monitors.

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For information on cost and availability, contact Doodletop, PO Box 5995, Carmel, CA 93921, (408) 393-9000.
A Stereoscopic Chronology of New York City

NSA member Jeff Richman has assembled a chronology of New York City concentrating on buildings appearing in stereographs during the period from the mid-1850s to about 1910. Intended as both a source of information and a means for dating stereoviews, he believes it will prove helpful in increasing the knowledge and enjoyment of any collector of 19th century New York views.

The Chronology is based on research done using guides of the period as well as many histories of New York, backlists, and the author's own knowledge of subjects which have appeared in New York City stereoviews. Most of the entries are of buildings in Manhattan, and include the location (specifying corner), architect, years of construction and opening, and year of demolition or a note that the building still stands. Further, topics such as Brooklyn, ships, photographers and distributors of stereoviews, and Central Park are also featured.

A sample from page one of the chronology is shown here. Over three hundred entries are included on the 21 pages of text, plus about 20 illustrations. A Stereoscopic Chronology of New York City is available for $12, including postage from Jeff Richman, 52 Harriet Lane, Huntington, NY 11743.

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Academy of Music, n.e. corner Irving Pl. and 14th St., architect Alexander Saeltzer or Thomas R. Jackson, completed 1854; destroyed by fire May 21, 1866, rebuilt and reopened 1868, demolished 1910.

Academy of Music (Brooklyn) erected on Montague St., 1860.

Aitkin, Son & Co. (New Building), n.w. corner Broadway and 18th St., built 1860.

Albemarle Hotel, 24th St. and Broadway, architects Renwick and Backus, opened 1860.

All Souls Unitarian Church (also referred to as Dr. Bellow's Church or the "Church of the Holy Zebra" because of its striped architecture, 4th Ave. & 20th St., by Jacob Wrey Mould, construction begins 1854, opened 1855, demolished 1929.

Altman's (B.), designed by D.J. Jardine, 6th Ave. & 19th St., opened 1876.

American Hotel, Broadway and Barclay St., destroyed by fire 1866.

American Museum of Natural History, Central Park West at 77th St., designed by Calvert Vaux and Jacob Wrey Mould, begun 1872, completed 1877.

Anthony, Edward, moves to 501 Broadway 1860, becomes E. & H. Anthony 1862, moves to 591 Broadway 1869; issues "Gelatine-Bromide" series 1880.

Appleton (D. and Company) begins marketing foreign stereoviews in NYC in 1853 from their new building on Broadway between Catherine and Leonard Sts.

Arsenal (Central Park at 5th Ave. and 44th St., architect Martin E. Thompson, completed 1849, extant.


Assay Office (U.S.) occupies former U.S. Bank Building at 30-12 Wall St. 1855, demolished 1915; facade now in American Wing of the Metropolitan Museum.

Astor Library, south wing designed by Alexander Saeltzer, opens 1853; center section by Griffith Thomas 1866-69; north wing by Thomas Stant 1879-81.

Astor House, n.w. corner Broadway and Vesey St., designed by Isaiah Rogers, opened 1836, closed 1913, demolished 1926.

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E. & H.T. Anthony & Co. No. 4110, "REV. DR. BELLOW'S CHURCH, FOURTH AVENUE."
Located at 4th Ave. & 20th Street, the All Souls Unitarian Church was also known as Dr. Bellow's Church and the "Church of the Holy Zebra" due to its striped architecture. Designed by Jacob Wrey, it opened in 1855 and was demolished in 1929.
Dotty and I like to explore different areas in California when the opportunity arises, and so our latest visit took us north of San Francisco to Eureka/Arcata territory (with earthquake aftershocks).

A highlight was a morning with Peter Palmquist - NSA member, photographer, collector, editor, publisher, researcher, and whatever duties go with those varied undertakings.

Peter, a native of nearby Ferndale, is a writer, a photographer for more than 40 years, and historian of photography. His first book was published in 1975. It was obvious he spends countless hours researching (he began in 1971) and publishing his prolific output in the photographic field.

Our library at Eastern College has benefited from his generous contribution of many of the 30-plus books and catalogs he has written, edited, compiled, reprinted, or published. A few of the titles which received Peter's caring and professional touch are: Carleton E. Watkins, Photographer of the American West; Photographers of the Humboldt Bay Region (a series of five volumes covering 1850-1885); Camera Fiends and Kodak Girls; Return to El Dorado, A Century of California Stereographs; J.J. Reilly, A Stereoscopic Odyssey 1838-1894; and Lawrence & Houseworth/Thomas Houseworth & Company, A Unique View of the West 1860-1886.

For three years Peter has edited (and distributed) The Daguerrean Annual, a 264-page publication of accumulated data for the Daguerrean Society. This organization is dedicated to the history, art, and science of the world's first form of photography.

A recent publication is Catharine Weed Barnes Ward: Pioneer Advocate for Women in Photography. Peter provides a sampling of her writings and photographs, a chronology of her life, and a bibliography of her extensive essays and books. Catharine (1851-1913) was an avid writer and lecturer even before she took up photography at age 35.

She carried her writing skills into the photographic field, including stints as editor of The American Amateur Photographer and co-editor and co-publisher of The Photogram and Photographs of the Year which was published here and abroad. She was a strong advocate that women should take up photography and, she used presentations of her own works to encourage other women to become involved in the profession.

Peter's library of books, directories, pamphlets, papers, stereographs, photographs, etc. is extensive and provides a fertile source for whatever subject matter he may decide to delve into. Not all of the material is photographic - I found references to my Gold Rush ancestors!

It was a fascinating morning. We had a chance to talk photography, NSA related matters, research and resources, and his publishing endeavors which will come off the press in the near future.

Thank you, Peter!

Latest Gifts to the Library
Alan Young - John Wayne Hondo anaglyphic movie poster
Mel Lawson - book, Atlantis Park (color anaglyphic photos)
Richard Pitman - contemporary stereo slides
Ron Lowden - stereoscope
Jim Hollis - U&U Switzerland Guide Book
Mel Lawson - stereo-related material
Freeman Hepburn - 2 photography books

Del Phillips - James Hurst listing with document and information on the Hurst Museum at Albany, NY
R. Joki - newspaper 3-D article
Bill Walton - 5 contemporary stereographs
Jack Cavender - Around the World Through the Telebinocular - guide book to 600 set, copyright 1930
Tom Haynes - contemporary stereograph

Latest Acquisitions through the Purchase Fund
The Stereoscopic Photograph - 5 issues, 1901 & 1902, published by Underwood & Underwood
3-D Hollywood, Photographs by Harold Lloyd, Simon & Schuster 1992
Photograph of a developing machine for stereo prints at the H.C. White Co. - 1894

Remember the Holmes Library with your stereo-related donations. We can only be a good research source if we have good research material!
Bending Colors
Two New Viewers Take Advantage of an Optical Trick Unposed

Chromostereopsis

Light passing through a prism, the edge of a lens, a pinhole, or an embossed "holographic" filter is bent. The longer the wavelength, the more it bends. Longer wavelength colors like red are bent more than shorter wavelength colors like blue. When a flat image composed of several colors is seen through any light-bending device, some of the colors are shifted more than others. (Technically, this is described as chromatic dispersion.) If such devices are placed in front of each eye, but arranged to shift colors laterally in opposite directions, a 3-D effect will be seen. Even without help, some 3-D effect can sometimes be produced when strong red and blue lettering is seen off-axis through the lenses of the unaided eyes. While it would be nearly impossible to arrange all the colors in a photograph to form a logical 3-D placement for this kind of viewing, created images like computer graphics, posters or laser shows can be designed to take full advantage of chromostereoscopic viewing systems.

ChromaDepth

ChromaDepth is the trade name for a most interesting and very recent development utilizing that old stereoscopic chestnut "chromostereopsis."

This is the peculiar effect that we may sometimes experience when looking, with both eyes, into a large, curved magnifying lens at a multicolored planar image. Red areas seem to float right off the image plane while complementary colors recede into the distance. Indeed, I have a favorite (2-D) slide of colored pebbles that I sometimes show to students, using a large-lens slide viewer, in order to illustrate how colors can falsify true depth information.

Until now, the inconvenience of providing such large prismatic lenses has limited any application of this phenomena. However, the ChromaDepth system redresses the situation by using binary optics in place of actual prisms. The result is a paper thin, optically transparent plastic material, embossed with a holographic pattern, for use in any type of 3-D glasses frames.

The material may be used for viewing colored images on the printed page, and the effect can be impressive, especially if the page is held at a distance. I certainly was impressed by the fact that it actually did work, albeit with a strange feeling and some loss of sharpness when viewing non-primary colors.

However, the perfect application for ChromaDepth is at laser shows, where the multiple color, single wave-length laser beams may be programmed to give dramatic, sharp and maximum 3-D effects. The system clearly gives each color its own position in space, and its 1992 debut at the Hayden Planetarium in New York was most favor-
Different Approaches to Produce Similar 3-D Illusions

ChromaDepth glasses made for use at laser light shows. The first look through them reminds you of the diffraction grating “rainbow” glasses sold at science museum gift shops, but the patterns embossed on these filters shift colors selectively according to their wavelength. The left and right are “aimed” in opposite directions to produce a 3-D effect from the shift.

**The 3-DVG**

by John Dennis

A far simpler method of displaying chromostereopsis avoids the expense of both prisms and holographic filters. Kenneth J. Dunkley of Holospace Laboratories has achieved similar results with a pair of pinholes on movable frames. His “Three-Dimensional Viewing Glasses” (3-DVG), patented in 1989, allow one eye to view a flat color image through one edge of a pinhole while the other eye sees the same image through the opposite edge of the corresponding pinhole when the device is properly positioned.

The edges of the pinholes have the same effect on different wavelengths of light as do prisms or the embossed holographic patterns on the ChromaDepth filters. Colors

Before ChromaDepth, these “superchromatic” prisms could be used for chromostereopsis. Two prisms are placed in front of each eye. One is of a high coefficient of chromatic dispersion while the one facing it is of a low dispersion glass, and acts to preserve a normal line of sight so the observer’s eyes aren’t strained to maintain fusion of a single image, as would be the case with single prisms. Diagram from “The Chromostereoscopic Process” by Richard Steenblik.

<table>
<thead>
<tr>
<th>LEFT EYE</th>
<th>SUPERCHROMATIC PRISM</th>
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<tr>
<td>RIGHT EYE</td>
<td>SUPERCHROMATIC PRISM</td>
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<tr>
<th>ACTUAL OBJECT DISTANCE</th>
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<th>IMAGE DEPTH</th>
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<th>AVERAGE IMAGE DISTANCE</th>
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are selectively shifted in opposite directions so that a 3-D effect is generated when the brain fuses the now slightly different images. While the 3-DVG pinholes produce none of the distortion of the other devices (in fact they can improve sharpness), they do reduce the visual field to a tiny spot, requiring one to stand back to see an entire magazine cover, for instance. The depth effect is less pronounced than that provided by ChromaDepth, but planes can be instantly reversed by moving the halves of the viewer to use the inner or outer edges of the 1.5mm holes. Besides, holes are far easier to obtain for experimentation than superchromatic prisms or embossed holographic filters.

Mr. Dunkley's efforts in 3-D imaging, however, go beyond basic chromostereopsis. An advanced viewer patent combines three different techniques for generating an impression of 3-D from a 2-D image or pattern:

1) by altering the viewing axes of the eyes (producing the selective color shifts)
2) through the pinhole effect which is said to give a 3-D impression of its own when a flat image is viewed through a tiny aperture
3) by "illocal framing" which focuses a frame between the image and the observer, adding what some call a depth sensation and enhancing the size impression of objects in a picture.

The hooded "3-DVG Professional Model 1" prototype combines all of these effects through the use of adjustable diameter pinholes with an adjustable interocular, and adjustable illocal frame spacing. Neither version is on the market yet, but the 3-DVG was exhibited at the 1990 Invention Convention at the Franklin Institute in Philadelphia. Inventor Kenneth Dunkley is a pioneer holographer who's 1973 transmission hologram Thoughts is widely regarded as an early and "pivotal" example of holography as an art form.

A sample of the 3-DVG was included in a circuit of the Speedy Bravo Print Folio for Stereoscopic Society members to evaluate. Most of them reported a noticeable 3-D effect and several tried a variety of color images and patterns, while a few were very critical of one claim made in the viewer's instruction sheet that color magazine pictures would be made "stereoscopic." (The effect on a photo is of course completely random, depending on the colors of objects in the scene. Typical blue skies in scenic photos will recede behind the foreground objects in most scenes, however.) Some of the best effects were found with strong colors in comic and advertising sections of newspapers.

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**ARCHIVAL SLEEVES:** clear 2.5-mil Polypropylene

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<th>Size</th>
<th>Price</th>
<th>Minimum Order</th>
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Russell Norton, PO Box 1070, New Haven, CT 06504-1070
**Calendar**

**June 19** (FL)
19th Tampa Camera Show & Sale, Holiday Inn-Ashley Plaza Downtown, Tampa, FL. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2243.

**June 20** (TX)
Dallas Camera Show, Convention Center, Dallas, TX. Contact Donald Puckett, 1106 Graham Ave. #206, Dallas, TX 75223. Call 214-824-1581.

**June 20** (FL)
8th Orlando Camera Show & Sale, Ramada Inn (Central) 3200 West Colonial Dr., Orlando, FL. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

**June 26-27** (OH)
Ohio Camera Swap, Shadybrook Armory, 1-75 Exit 10B West, Cincinnati, OH. Contact Bill Bond, 6910 Cherry St., Blue Ash, OH 45242. Call 513-891-5266.

**June 27** (CT)

**June 27** (GA)
Atlanta Camera Show & Sale, Atlanta Marriott-Northwest, 200 Interstate Parkway, Atlanta, GA. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2243.

**June 27** (IL)

**July 11** (NJ)

**July 11-August 7** (NY)
"PERSPECTIVES, PROXIMITIES, PERCEPTIONS: Expressions in 3-Dimensional Electronic & Graphic Media" is the 3-D imaging component of the huge MONTAGE '93 International Festival of the Image in Rochester, NY this summer. See the SW article (Vol. 19 No. 6, page 24) or contact Lance Speer, 60 Shepard St., Rochester, NY 14620.

**July 17** (AR)
Little Rock Camera Show & Sale, Best Western-Inn Town, 600 Interstate 30, Little Rock, AR. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2243.

**July 17** (IN)

**July 17** (VA)
Virginia Beach Camera Show & Sale, Sheraton Inn-Military Circle, 870 Military Circle, Norfolk, VA. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2243.

**July 18** (CA)
Buena Park Camera Expo, Sequoia Club, 7530 Orangehorpe Ave., Buena Park, CA. Call 714-786-6444 or 786-8183.

**July 18** (IL)
Chicagoland's Camera & Photo Show, Holiday Inn, 860 Irving Park Rd., Itasca, IL. Contact Chicagoland, PO Box 761, Grayslake, IL 60030. Call 708-639-7078.

**July 18** (NJ)

**July 18** (TN)
Memphis Camera Show & Sale, Memphis Airport Hilton, Memphis, TN. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2243.

**July 18** (TX)
Central Texas Camera Show & Sale, Austin North Hilton, Austin, TX. Contact James Oakley, 11706B Argonne Forest, Austin, TX 78759. Call 512-335-6731.

**July 24** (OH)
The photographic Historical Society of the Western Reserve 21st Annual Photographic Flea Market, Holiday Inn, Strongsville, OH. Call 216-382-6727 or 216-232-1827.

**July 25** (CA)
Culver City Camera Show & Sale, Veterans Memorial Auditorium, 4117 Overland Ave., Culver City, CA. Contact Anton at Bargain Camera Shows, PO Box 5352, Santa Monica, CA 90409. Call 310-396-9463.

**July 25** (MD)

**July 25** (NY)
Buffalo Super Camera Show & Sale, Dадisson Hotel-Airport, 2040 Walden Ave., Cheektowaga, NY. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2243.

**July 31** (CA)
San Diego Camera Show & Sale, Al Bahr Shrine Temple, 5440 Kearny Mesa Rd., San Diego, CA. Contact Anton at Bargain Camera Shows, PO Box 5352, Santa Monica, CA 90409. Call 310-396-9463.

**July 31-Aug. 1** (MA)
Boston Photorama USA, Ramada Inn Woburn, Woburn, MA. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2243.

**August 1** (CA)

**August 1** (NY)

**August 6-8** (CA)

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**Upcoming National NSA Conventions**

1993
- San Diego, CA August 6-8

1994
- Milwaukee, WI June 17-19

1995
- Atlanta, GA June 27 - July 3

1996
- Rochester, NY August 1-5
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For Sale

300W EG PROJECTOR BULB $10, 100 Realist slide glasses: $25. 50 Realist stereo masks $9. 50 slide protectors: $3.50. 50 EMDE silver paper masks $3. Art Faner, 1961 Center #101, Salem, OR 97301.

ANTIQUE PHOTOGRAPHY MAIL AUCTION. Hundreds of early vintage images, Daguerreotypes, ambrotypes, tintypes, stereo views, ephemera, and paper photographs of many formats. $3 for next illustrated catalog, or next 4 catalogs for $10. Subscription includes Prices Realized mailed out after sale. Don Ulrich, 1625 South 23rd, Lincoln, NE 68502.

ANTIQUE STEREOSCOPES completely renewed to useable condition. Handmade parts used where necessary, very limited supply. $75. + S&H. Al Meyers, (815) 725-3813.

ARTHUR GIRLING’s “Stereo Drawing - A Theory of 3-D Vision and Its Application to Stereo Drawing”, 100 pages hardbound 8½ x 12. Stereo photographers are finding that the book applies equally to stereo photography and is a mine of information on methods of making 3-D pictures and viewing them. Written in non-technical language and profusely illustrated with B&W drawings as well as 11 pages of superb anaglyphs, this book is a must for the serious stereocoptist. Now available from NSA Book Service, 4201 Nagle Rd., Bryan, TX 77801. Price (including postage) $19.00 USA, Canada. Overseas add $2.00 surface, $4.00 air.

BACK TO BASICS. Infanty Basic Training at Fort Benning, Georgia. 75 BW stereographs with viewer. Single copy $13, plus $1.50 shipping and Georgia sales tax if applicable. MUSCOGEE 3-D, 3739 Meadowlark Drive, Columbus, GA 31906.

I BROKE MY REVERE 33 and will strip for parts as you request. Also have VM S1 Projector, VG. Call Al Meyers, (815) 725-3813.

JOHN WALDSMITH’S “Stereo Views, An Illustrated History and Price Guide” available signed for Tru-Vue filmstrip needs or collection, mint- in original box, $45; TOC holder) on your antique viewer? Walnut $8.50, Poplar $5.50, Postpd. You stain to match your decor. Handmade parts used to provide sale. Don Ulrich, 1625 South 23rd, Lincoln, NE 68502.


LIFE LIKE VIEWER, exc. $25. ST-63A Viewer, exc. in box, $30; 3-Tu-Brown leatherette storage boxes (2 with eagle embossed on lid) containing 73 rolls in red/silver boxes and a black viewer; views very good, viewer works, storage box corners need repairs, $125. View-Master Model E viewer w/fitment attachment, both new in boxes winstruction sheets, $55; sixteen years (1977 thru June 1992) of Stereo World, all exc. $200. Ken Bates, 26 Cherokee Pl., Eureka Springs, AR 72632. (501) 253-8763.

NEW KEYSTONE STEREOMASTER Model 3101: the best viewers for people who must wear glasses! This is the real thing: superb optics, beats antique and reproductions for viewing stereos. $75 plus $5 shipping (in US). Russell Norton, PO Box 1070, New Haven, CT 06504, (203) 562-7900.

SAWYER’S VIEW-MASTER library storage box, Mint, still sealed in original carton, $45; Personal stereo camera w/flash and original instruction book, Exc. in poor case, $125; Model "C" viewer, dark brown, Mint- in original box, $45; TDC Colorlist II stereo camera, Mint/Mint-, $195. Mark Willike, 203 SW 89th Ave., Portland, OR 97225. (503) 297-7653. Please add postage.

SEQUENTIAL FIELD VIDEO recording and viewing system. Shoot 3-D video with two gen-locked cameras, record and view with ordinary VCR and TV. Uses liquid crystal glasses, $500. Call for more information. Optical Delusions, Inc. (407) 659-3856.


STEREOVIEW LENSES - Any subject or condition. Write for approval or catalogue. Specialties: Locomotives, street scenes, towns, occupational and expeditions. Edward Couture, 1233 South Curson Ave., Los Angeles, CA 90019-6612, (213) 690-3455.


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MUSIC RELATED, and 1500 other selected stereo views in stock. Will trade only for Maine flat mount views - any subject or condition. Write or call for details: Blaine D. Bryant, 684 Bridgton Road, Westbrook, ME 04092, (207) 854-4470.

WILL TRADE View-Master 3-D Movie Preview Reels - "House of Wax", "Inferno", "Hondo", "Nebraska", "Miss Sadie Thompson", plus 15 additional titles - for Tru-Vue filmstrip needs or rare items. Robert Lang, 7028 Westerville, Dal- las, TX 75248.
Wanted

CORTE-SCOPE SETS, incomplete sets, single views, literature, no viewers unless with views but will purchase views without viewer. Would like to correspond with other collectors with Corte-Scope sets so I may know what was made. Still researching this company. John Waldsmith, PO Box 191, Sycamore, OH 44682.

DELAWARE photos, all formats, esp. stereo. FLORIDA STEREOS of historical value, especially DUE TO NOT RECEIVING a questionnaire will I this in your era, Center, FL 32815. describe or send on approval highest prices with era, WWll, views, pockets. The Only National Organization Devoted Exclusively To Stereo Photography, Stereoviews, and 3-D Imaging Techniques.

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GERMAN 3-D BOOKS (Raumbild) from Delaware photos, all formats, esp. stereo. FLORIDA STEREOS of historical value, especially DUE TO NOT RECEIVING a questionnaire will I this in your era, Center, FL 32815. describe or send on approval highest prices with era, WWll, views, pockets. The Only National Organization Devoted Exclusively To Stereo Photography, Stereoviews, and 3-D Imaging Techniques.

HARDHAT DIVER PHOTOGRAPHS wanted! Stereo views, CDVs, Cabinet Cards, Albumen Prints, Daguerreotypes, Ambrotypes, Tintypes, Post cards, posters, books, catalogs, documents, etc. Gary Pilecki, 617 Gaymas Court, San Ramon, CA 94583, (510) 886-9848.

HURST STEREOSCOPIC STUDIES of Natural History #54, Belted King-fisher. Also want view or photo of Jumbo, the elephant. John David Laird, 6808 Lakecrest Ct., Fort Wayne, IN 46815-7978.

I BUY ARIZONA PHOTOGRAPHS! Stereo views, cabinet cards, mounted photographs, RP post cards, albums and photographs taken before 1920. Also interested in xeroxes of Arizona Master items and look-alikes and would be pleased to receive correspondence. View-Master trade list available. Please make a note of this in your directory.

I COLLECT VIEWS OF SAN DIEGO, California in Realist or View-Master format! Contact: Dave Wiener, PO Box 12193, La Jolla, CA 92039.

IRELAND. Interested in purchasing flat mount views of Ireland - individual views or collections. Joe Henggeler, PO Box 1298, Stockton, TX 79735.

MICHIGAN stereographs and interesting early photographs of Michigan in other formats wanted. Dave Tinder, 6404 Coleman, Dearborn, MI 48126-2024, (313) 581-0005.

FLORIDA STEREOS 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, Hendriksen, PO Box 21153, Kennedy Space Center, FL 32815.

GERMAN 3-D BOOKS (Raumbild) from WWll era. Especially need the "Hitler-Mussolini" book with double-image cards and expandable viewer in pockets within book's covers. Call Ron Martin, (206) 432-3282 or write 24404 249th Ave. SE, Maple Valley, WA 98038.

MR. POSTER sold out at Fort Worth - now restocking! Buying: F/3.5 St. Realist, Kodak, Revere, etc., clean w/ case - $75. F/2.8 Realist ex w/ case - $240. F/2.7 Wollensack, mint w/ case - $300. Contura, mint w/ case - $350. Buying: Macro Realist, Realist, mint w/ case - $375. Stereomatic 500 w/ case - $240. Buying VM cutters - $150. VM 36"24" closeups - $150/$175. Movie Pre-View reels - $50 each! Buying Realist red-button viewers, Revere, TOC, Iloca, etc. - $50. Kodaslide II and Realist AC-DC viewers - $75. Buying TOC 116 w/ case - $175. TOC 716 w/ case - $275. Realist 81/2 projectors - $450/$650. No collection too large! I also buy vintage TVs (1920-1950) and transistor radios (1954-1960) and will trade 3-D items for these non-stereo collectibles! Call days: (201) 794-9606, FAX days: (201) 794-9555, call 24 hours: (201) 410-7525, or write: Harry Poster, PO Box 1883, So. Hack., NJ 07606 (or ship UPS: c/o TACK Mtrs., 375 Route 46).

MUYBRIDGE VIEWS: Top prices paid. Also Michigan and Mining - the 3 Ms. Many views available for trade. Leonard Walle, 60 Pinto Lane, Novato, CA 94947.


OCEAN GROVE, NJ stereo views, photos by Pach, Stauffer or Hill. Also, Ocean Grove souvenirs and memorabilia; glass, china, spoons, paperweights, novelties, advertising pieces. James Lindemuth, 94 Mt. Carmel Way, Ocean Grove, NJ 07756, (908) 775-0035.


OPERATING MANUAL or copy thereof of View-Master Personal Stereo Camera, made for Ralph Gosse, Box 5351, Albany, NY 12205-5351.

PERSONAL STEREOS of World Fairs/Expos to buy or copy. L. Smart, 1609 Brickhouse LN., Fallston, MD 21047, (410) 877-3592.

PETOSKEY, MICHIGAN stereo views. Also Harbor Springs, Bay Views or any northern Michigan views. Howard Ball, 441 N. Division Rd., Petoskey, MI 49770, (616) 347-2700.

(Continued on next page)
FUSER FRIENDLY

VistaPro is a good compromise between speed of image construction and image realism and cost. The technology exists to produce images with 16.7 million colors with far greater pixel resolution on today's desktop computers, but the length of time required can be 24 hours or longer. This rendering time will continue to shrink every year. VistaPro is an interesting tool and an admirable first step into virtual reality. With faster computers, it will soon be possible to maneuver through these worlds in real time.

The IBM PC version of VistaPro was reviewed in this article. Computer screen images were rendered at 640 X 480 pixels in 256 colors and were recorded on Ektachrome 100 at f/8, 1/4 second. While the majority of the variables are the same, there will be some differences in the output for the Macintosh and Amiga versions of VistaPro.

The IBM PC version will output VGA and AVGA (8 bit, 256 color) images, which can be saved as PCX files. Image resolutions from 320 X 200 pixels to 1024 X 768 pixels can be generated. Just as with film, the more pixels used the less grainy an image will appear. The time it takes to generate an image depends upon the resolution of the image and the number and type of “realism” options selected. In the lowest resolution mode with all the “ism” options selected. In the lowest resolution mode with all the options turned off, a frame can be generated in a few seconds. At the highest resolution, with trees, water, waves, shading, haze, and all the additional options, an image can take over an hour to generate.

The IBM version of VistaPro requires 640K RAM, 3 MB of hard disk space, VGA card and monitor and a mouse. A math co-processor, additional RAM and a 386-based machine or greater are recommended.

The VistaPro package does come with a selection of DEM data sets for portions of Mt. St. Helens, Yosemite, Crater Lake, Mars and others. Users may also randomly generate their own worlds, allowing an infinite number of photographic opportunities. Additional DEM data sets of actual locations on both Earth and Mars may be ordered for $35 each. Current titles include the Grand Canyon, Aspen, Vail, and Northern California among others. A large number of refinements are being made to this program. Expected in the next version are road building options, star fields, clouds, and a wider selection of trees. While the current version of VistaPro includes no instructions for generating or viewing stereo pairs, the next one [now available] is expected to include specific references to stereo, as well as a possible driver for the SEGA/Toshiba machine or greater.

VistaPro may be ordered directly from Virtual Reality Laboratories, 2341 Ganado Ct., San Louis Obispo, CA 93401, (805) 545-8515.
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STEREOSCOPIC VIEWS OF

TEXAS & INDIAN TERRITORY

Photographed and Published By

MARTIN & TROUTMAN, PARIS, ILLS.

Negative nos. 1–105. Will buy single cards or collections.
Also wanted: Photographic views showing Buffalo Hunting, Cowboys, Outlaws, Lawmen, Plains Indians, 19th c. Texas.

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A distant view of Hafragilsfoss Falls on Iceland's longest river, the Jökulsá á Fjöllum. The treeless canyon with its rugged rock formations allows the sound of the falls to be heard quite clearly from far away. More of Iceland's surprises, captured in full frame stereo with a pair of point-and-shoot Minoltas, are seen in Ross F. Housholder's article on page 12.