We have some unknowns from Carl Wiederanders to run past you this issue. First is a view by Haines & Elliot of Albany, N.Y. of an imposing-looking group of men apparently listening to a speaker. The card is yellow.

Next we have a harbor scene with many barrels ready for loading at a dock. The ship at the dock seems to have both masts and a smokestack.

Located at No. 53 on an unknown street is Jacob Skillman's jewelry store with clocks and watches on display in the windows. "? & Davis—Merchant Tailors" are upstairs, as is "Walter—Dentist," while "Walters and Davis" advertise their "Fine Woolens."

Finally, a gray card shows the bunting-draped Utah Building, perhaps at one of the large expositions?

(continued on inside back cover)
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FRONT COVER:

"Hooter" is one of the characters in the multi-million dollar 17 minute 3-D musical space adventure now playing exclusively at Disneyland and Disney World. STEROE WORLD was on hand for the film's lavish premiere on Sept. 13th at Disneyland. Our article on the film, its production, and its theater is by Susan Pinsky, Bill Shepard and David Starkman.
AN END TO DEPTH PLOITATION?

More money has been spent making 3-D films in the past few years than any other time in history. But the films responsible for this expenditure aren't full length features in general release—their expense (and significance) is due to large film formats, custom camera rigs, and plush, high tech theater installations. The latest, Disney's Captain EO, is covered in this issue and besides being the most expensive, is probably destined to become the most well known 3-D movie of all time. The intriguing question, of course, is: "Will all this money and attention finally give 3-D films the acceptance as a valid form of cinematic expression that they never earned on their own? Will both economic and artistic confidence "trickle down" from the huge screens of the Expos and Epcot and Disneyland?"

The safest answer is "not necessarily"—but a heck of a lot of people have been very favorably impressed this time around...

Although it will be shown only at Disneyland and Disney World, Captain EO will probably have a very long run ("Eons" according to a Disney spokesman). The high-tech, high-budget 3-D production became a key element in the Disney organization's current effort to attract more people to the parks—especially Disneyland. According to a Disneyland press release, the fact that the film was done in 3-D was due at least in part to Michael Jackson's fascination with Magic Journeys at Epcot Center and his already growing interest in stereo imaging.

So now we see a 3-D movie featured as the centerpiece of a national promotional campaign for Disneyland and Disney World—kicked off by a glittering, "star studded" NBCTV special nearly four times longer than the film itself! Regardless of any shortcomings the film may have, its lavish promotion may well nudge the public's image of 3-D movies a step or two above the horror/novelty level. Captain EO is featured in prime time Disneyland TV commercials, airline promotional tie-ins, contests, etc. In fact, the association of 3-D with the Disney image has been given the ultimate official recognition: a special Disney 3-D logo sprouting mouse ears!

Could this apparent Disney commitment to 3-D inspire some film industry interest in this sort of state-of-the-art 70mm 3-D for feature films? The various big-screen 3-D shorts shown at recent fairs in the U.S., Japan and Canada share something besides a minimal story line with Disney's Captain EO and Magic Journeys. Their excellent production values and precisely controlled projection have demonstrated to millions of people the vast difference between the 3-D films of the 1950s to early '80s, and the fantastic productions possible now with systems like dual 70mm.

At EXPO 86, it was nearly impossible to go more than half an hour without overhearing bits of conversation about one or more of the 3-D films running there (July/August '86, page 20). Almost without exception, the conversations involved mention of how much they had enjoyed the film and how long the lines were; OR, how much they wanted to see the film people had told them about and how long the lines were! The 3-D movie talk even inspired one of the "On Site Entertainers" (jugglers, comics, etc. put on acts near many of the slower lines) to present a spoof called the "4-D Film." Fred Garbo did a one-man show from the "smallest pavilion at the fair"—Garbo's Garbage Pavilion. From his actual EXPO 86 garbage can he showed off the 4-D glasses (two pairs of 3-D glasses stacked and glued) and after much grand introductory chatter, pulled out the fair's only 4-D movie—the strip of film shown here.

The combination of the various fair films and the Disney films amounts to what is in effect a massive market test for truly high quality 3-D cinematography and projection. (The Disney people claim that Magic Journeys was seen by 19 million people.) The overwhelmingly positive public reaction to the technical superiority and bright, clear viewability of these films should have some effect on even the most cautious corporate decision makers in Hollywood. In fact, several of the films were made with dual camera, twin projector systems similar to the StereoSpace system once under serious consideration (1982-83) by United Artists Communications (as distinct from MGM/UA) for a
full length 70mm 3-D feature to be shown in the 40 to 50 large theaters around the country in the UA chain.

Clearly, the automated technology, the collective production experience, and the potential audience all exist—ready for some collaboration of corporate entities to create a 3-D feature film that takes up where Magic Journeys or Captain EO leaves off. The greatest threat to the future of 3-D films is not from a few more years of hesitation, however. It is from the very real possibility that such a production, regardless of technical quality, could take the form of a bigger, more expensive Jaws 3-D or Comin' At Ya! The general history of 3-D films leaves much to be desired and much to make up for. It would certainly help if the first 70mm feature gained recognition for its cinematic imagery and its story—not for its sensational novelty or its gore. That wish, by now, is an old one, but the money involved in today's state-of-the-art 3-D means there's more at stake than ever before. The first 'post EO' 3-D feature will need to be the sort of film at least worthy of consideration for an Academy Award—ideally for something besides its special effects. Anything less could allow 3-D films to slip back into exploitation as sources of quick profits from short, forgettable runs. Without a 70mm feature of trend-setting quality, there could easily be a reversion to single strip, 35mm 3-D to avoid the higher production and projection costs—a loss to the development of 3-D film's full potential and new interest in stereography in general.

—John Dennis

A NEW SERIES OF COMICS FROM THE 3-D ZONE

Stereo illustrator Ray Zone has announced publication of a new monthly 3-D comic book series titled The 3-D Zone to begin in February of 1987. The 3-D Zone will feature 3-D conversions of classic material by such artists as Wallace Wood, Basil Wolverton and George Herriman as well as original new material created specifically for the dimensional medium. (See STEREO WORLD Mar./Apr. '86, page 30.)

Each book will make use of the "Zonevision" 3-D process, a state-of-the-art dimensional conversion technique developed by Ray Zone with his work on numerous 3-D comic books. Zone is well known to comic book fans as the "King of 3-D" and the man who revived 3-D comics in the 1980's. The 3-D Zone will be a 32-page comic book with 4-color covers, printed on deluxe format English finish bright white paper and sell for $2.50.

Distribution of The 3-D Zone will be handled by Renegade Press for whom Zone has produced several 3-D comic books. Zone looks forward to continued association with Eclipse Comics, Kitchen Sink Press, Blackthorne Publishing and others for whom he has produced dimensional conversions.

The first issue of The 3-D Zone will showcase a rare graphic novel of Wallace Wood in the "Zonevision" process and go on sale February 10.

Comment

Clarke E. Leverette

It is with regret that I inform the NSA membership of the death of Clarke E. Leverette, one of the most active Canadian members. Clarke died suddenly of a brain hemorrhage Oct. 4, 1986 at the age of 51 years. He was in the midst of publishing the fourth volume of his distinctively colored Cherry Pink Index to Stereographs.

A librarian by profession, Clarke had undertaken to index the stereographs of all the major American publishers at the turn of the century. He estimated this would include 80,000 cards and not be completed until 1990. Using his expertise he devised an adaptable, expandable cataloging system that for the first time brought order to this area. He exhaustively corresponded with many members of the NSA to gather new titles. In the preface to the 1983 issue of the Index, Clarke revealed his philosophy. "It is being published now rather than later so that it can be used and improved over the years." His widow would be interested in hearing from anyone who would like to help continue his important work.

Martin Bass
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Canada

FUNDING SOUGHT FOR 3-D EDIBLE PLANT GUIDE

I have been hoping that my exhibit at the NSA Convention in Riverside would raise enough interest to generate the funding needed for the development and publication of the very first 3-D field guide(s) to edible plants. The last careful study of plants in stereo was done by Keystone (hand tinted) almost 75 years ago.

I have had an ongoing research project on guides to edible and useful plants, including world-wide correspondence thereupon. There is a crying need for good field guides to plants that have human use values, especially as foods. I do not know how to locate funding, nor generate interest. What I do know is that such a work, done properly, would sell at a good profit, even considering the research and development costs of such a pioneering publication effort. A 3-D guide would be superior to existing guides in terms of identification and interest. Such a work could outsell a large group of semi-cultist health food books by paying attention to accurate previous data in earlier works.

Anyone interested in such a project or with ideas concerning funding sources is invited to contact me.

Michael Aron Weinberg
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Years ago, before the world became young and naive again, Noel Coward used to sing a song which said that some things were 'past forgetting.' Kay Summersby, broken in health and spirit and coerced by medical bills, took this expression as the title of the book she agreed to spend her last days writing—about her World War II experiences on Dwight Eisenhower's staff. Actually, the publishers wanted a scoop on the Eisenhower-Summersby 'love affair.' Although the book really fails to substantiate the innuendo put forth by those who promoted its sales, it does illustrate that circumstances can encourage forgettability. The honor and privilege of taking part at the very center of one of the great adventures of all time WERE forgettable, or at least for sale, after time had taken its toll. Kay was dying and she was broke and no one cared anymore so she sold out and took the money. She wrote the book they wanted...well, almost what they wanted. She never saw the book in print. The grim reaper came too soon for that. I'd like to think she didn't want to see it. Would any of us have done differently? Somehow I really doubt it and that is sad. One wonders if anything, in the end, is past forgetting.

The Magellans of the Air

If you have a Keystone View Company boxed set entitled "Tour of the World" take out card #1. Be careful! Handle it.
with the care it deserves. It is about a grand adventure and a group of durable aviators. What they did was said to be 'past forgetting.' Surely, then, we are all familiar with it.

Admiral Robinson in 1924 said, "Other men will fly around the Earth but never again will anyone fly around it first." Perhaps that is a truism which really doesn't say anything illuminating. But, then, surely we all remember the exciting details we learned about in school? Oh! Not in your school? Well, not in mine either. I went through elementary school in the 1930's and I doubt if it was ever mentioned. We probably would have said that Lindbergh invented the airplane, had anyone asked.

Arthur Brisbane, the popular columnist who was carried by newspapers all over the United States, certainly must have known whereof he spoke when he wrote:

"Many centuries from now when the names of all the Presidents of the United States, with possibly the exception of Washington and Lincoln, have vanished from the pages of history, the names of these airmen will still be there, for the simple reason that their achievement marks one of the major milestones in the History of Man."

Well, he was smart . . . that 'many centuries from now' stuff makes it uncheckable. Let's not let him get away with that. Test it yourself. See how many presidents you can name and then identify the six men in the picture. Give the names that will still be there centuries from now.

In the event you feel the need of a hint (not on the presidents) you can turn the card over and read the reverse. Two names are mentioned, one of which is not pictured. The other is Lieutenant Lowell Smith. Surely, you can now identify which of the six airmen is 'Smitty.' After all, the face of the man who was Flight Commander throughout most of the saga is past forgetting if Arthur Brisbane was correct.

I have looked at this picture off and on and from time to time and wondered who these gentlemen really were. I have an unprovable theory which at least makes me feel less ignorant, whether true or not. The theory is that the writer of the Keystone blurb on the viewcard did not know who was who in the picture either. He or she may not even have known the names of the other five. That is why it was so neatly glossed over. Could Brisbane have been so poor a prophet? Finally I decided to make a minor effort to answer the questions raised by the viewcard. No big deal, I would settle for putting names on each of the six pilots in the picture. However, my first efforts turned up more information on the adventure than on the argonauts. But modern sources were also very sketchy on the odyssey itself and less than satisfying. The only really adequate source, I eventually discovered, was the original account of this remarkable voyage written by Lowell Thomas, who had succeeded in having himself designated the Official Flight
Keystone #26301. "The Boston—One of the Great Naval Planes in Pioneer Round the World Flight—Seattle, Wash." Upon arrival at Seattle, the Douglas World Cruisers were rigged with pontoons. Keystone's writers sometimes had problems with basic facts. They were ARMY planes, not Navy. And while the plane on the left could be the Boston, the one shown in profile is the Chicago (indicated by the "2" at the rear of the fuselage). Gordon D. Hoffman Collection.


Historian. After I finally found a copy of his The First World Flight (1925 Houghton Mifflin) my efforts became much more productive. I also spent more time reading 1924 issues of the New York Times on microfilm than my eyestrained vision appreciated. But it was worthwhile, even though I was often sidetracked by the Leopold-Loeb murder trial, Coolidge's nomination, and the doings of the Prince of Wales, among other featured items. . . . not to mention the entrancing portraits in the Sunday Rotogravure, several strange murders, and some juicy society scandals. There was no longer any question as to who the airmen were in the Keystone viewcard. The question now became how we could have forgotten them so easily.

'Past forgetting' indeed! It should have been but it wasn't. I would surmise that relatively few of the people living to-
day ever heard of the World Flight and that very few could name any of the principals. This epic journey was truly memorable. Time and time again it called for heroic behavior from the determined voyagers. I would encourage anyone who owns a copy of the stereo view to not treat it lightly but to put it in a position of honor in his or her collection. Had the Mercury astronauts been selected in 1923 rather than in 1959 these men would very likely have been in the group picture. They were among the best available in the United States Army Air Service and all were experienced cross-country and endurance pilots. They were chosen from the recommendations of commanding officers of all the United States aviation centers. Three pilots and two alternates were selected in addition to a flight commander. Lieutenants Lowell Smith, Erik Nelson, and Leigh


Keystone #26299. "Major Martin's Flagship Seattle Ready to Start World Girdling Flight of 25,000 miles, Seattle, Washington." A person on the fuselage, probably mechanic Sgt. Harvey, is barely visible doing last minute fussing. The Seattle's days as flagship were short, ending against a fog covered mountain in the Alaska wilderness. Author's Collection.
Wade were the chosen pilots and the alternates were Lieutenants Leslie Arnold and LeClaire Schultze. This was a blue ribbon group. In 1921, Nelson, Wade, and Arnold were with General Billy Mitchell when, with several other pilots and five airplanes, they proved that aircraft alone could sink naval vessels of all classes. The end of an era came when Arnold and his colleagues dropped five two-ton blockbusters in the water alongside the heavily armored German battleship OSTERFRIESLAND and sent it to the bottom in twenty-seven minutes.

Nelson was engineering officer and/or pilot on several celebrated flights of the endurance and cross-country variety, including the New York-Nome-New York venture commanded by St. Clair Streett (Lieutenant Streett was responsible for the planning and detail work for the World Flight and instrumental to its success). Lowell Smith had conceived and demonstrated a practical technique for refueling an airplane in flight. The officer of higher rank chosen to command and pilot the Flagship was Major Frederick L. Martin.

Late in 1923 an intensive training program for the pilots was initiated at Langley Field, Virginia. The prototype plane had been completed and flown to Langley for exhaustive testing which resulted only in minor changes in fabrication of the World Cruisers under construction in California. Ten of the best mechanics had also been detailed to Langley Field to work with the first Douglas Cruiser. Each of the designated pilots was privileged to select a companion to serve as mechanic and relief pilot on the flight. By the end of the six weeks of special training they had made their choices. Major Martin chose Sergeant Alva Harvey; Lowell Smith wanted Technical Sergeant Arthur Turner; Inigh Wade opted for Staff Sergeant Henry Ogden; and Erik Nelson went for Jack Harding, with whom he had worked at Dayton, Ohio. By the end of February, 1924, all pilots and mechanics went to California where they could observe the completion of the World Cruisers at the Douglas plant in Santa Monica and become as familiar as possible with all the details of their construction.

Before the start of the expedition it became apparent to Lowell Smith that Sergeant Turner was suffering from a lung condition that threatened to compromise his ability to undergo the rigors of so difficult a task. With great reluctance Turner was scratched from the flight. Smith decided to act as his own mechanic and asked alternate pilot Les Arnold if he would agree to fly with him in the second seat. The surprised Arnold was more than willing, though distressed that it was at the unfortunate Turner’s expense.

As it turned out, either Smith was looking ahead or was just plain lucky. Lowell was destined to become Flight Commander, but he was known to be a man of few words and to have a dislike for public speaking. Arnold was as eloquent in speaking as he was skilled in flying aircraft. As the need arose Les Arnold became the group spokesman and resident diplomat in dealing with public officials around the world.

The stage was set and the players had been selected. But success depended on an outstanding performance. The trials that lay ahead were severe, both physically and mentally. Based on results and putting it into contemporary terms, they had the right stuff.

The Race Around The World

By 1920 aviators in many countries had been dreaming of flying around the world. The quest was soon underway, but the earliest attempts came to a bad end. After that, preparations became more and more elaborate and it was apparent that someone was going to reap the honors. Whether man, machine, or man and machine had to complete the circumnavigation was never really clear. Time was apparently not a factor but presumably one had to continue
making progress. When the United States chose to get involved at least five countries were well along in what was developing into an interesting chase. It was General Billy Mitchell who won out in insisting that Washington should back the venture. This was no small commitment as a worldwide support system had to be established if there were to be any real hope of success.

Donald Douglas was contracted to design and build the four World Cruisers. He also was building his reputation. Shop was set up in a former movie studio in Santa Monica, California. Engineering Officer Lieutenant Erik Nelson, the "Flying Viking," supervised the construction for the Army Air Service. Nelson's practical experience and Douglas's theoretical knowledge blended well in the end. It wasn't all roses as they had their disagreements, but it worked. The machines were driven by 450 horsepower, 12-cylinder Liberty engines. They had interchangeable landing gear so they could be rigged for either pontoons or wheels. The sturdy biplanes carried two pilots, each in open cockpits. The airplanes were christened the "Seattle," the "Chicago," the "Boston," and the "New Orleans." Water from each namesake's city was used in the christening ceremonies.

Flagship Seattle Lost

On April 6, 1924, the squadron left Seattle, Washington, and began its flight into aviation history, traveling west around the world. The flagship was the "Seattle" piloted by 40-year-old Major Frederick L. Martin, head of the U.S. Army Signal Corps Aerial Technical School. In the second seat was Sergeant Alva Harvey, an experienced flying mechanic. The "Seattle" was plagued with bad fortune from the start, and its journey ended in a fog-shrouded crash in Alaska. The airmen were not seriously injured, but their ten-day walk out of the frozen wilderness is a story in itself.

Sergeant Harvey went on to a long military career and was a general officer during World War II. Neither of these men is included in the group of six shown on card #1 of the Keystone Tour of the World sets. The remaining men survived their open cockpit flights through some of the worst weather that part of Alaska had seen in a decade. The "Chicago" was designated the new flagship, and the expedition was ordered on to Japan without knowing the fate of their companions.

Several weeks later after Major Martin reached a settlement and was taken back to Washington, he was offered a new plane and the chance to catch up with the others; but, after due consideration, he declined, leaving himself and Sergeant Harvey to follow the rest of the flight in the newspapers. Frederick L. Martin, popular and highly regarded, had a distinguished military career...but for two great opportunities which ended in disaster. One was the world flight. The other occurred on December 7, 1941, when Major General Martin was in charge of the Hawaiian Air Force Command at Hickam Field, which was virtually destroyed by the Japanese during the Pearl Harbor attack. Whether deserved or not, he was one of three to bear the brunt of the blame. These two disappointments were the curse of his military tour of duty, which began in 1908 in the Coast Artillery. He was the first person ever to receive the Distinguished Service Cross in peacetime. He died in 1954 at the age of 71.

The Airmen

Lieutenant Lowell Smith, Flight Commander and first pilot of the "Chicago," was a 32-year-old Californian. He appears standing in the middle of the second row in the Keystone viewcard. This direct descendant of Daniel Boone had been a soldier of fortune, of sorts. As a civilian, he had


flown in Mexico under the hire of Pancho Villa, whom he admired. He held the Distinguished Service Medal from World War I and the Mackay Medal as the outstanding military flyer in 1919. Rising from private to captain during the war, he became a 1st lieutenant in the regular army in the early 1920's. In 1923 he conceived a procedure for refueling airplanes in flight. Although there was much doubt expressed, permission to test the procedure was obtained. He and Lt. John Paul Richter made the attempt in a De Haviland. On the first try Richter bumped the valve and got a gasoline shower, none of which got to the hot engine. Then for thirty-seven sleepless hours they kept the plane aloft with sixteen successful transfers of fuel and supplies from the other aircraft. For this Lowell Smith was awarded the Distinguished Flying Cross. He held sixteen records for distance, speed, and endurance. He has been characterized as a man of few words.

Props still turning, the Boston II, New Orleans, and Chicago (left to right) have returned to Seattle where it all began. Keystone did make mounting errors on occasion, and this view may actually be #26752. The caption on this mount (#17397) reads, "Los Angeles, The Great Airship Made by Germany for the United States." Gordon D. Hoffman Collection.

Kneeling on the right in Keystone viewcard #26408 is
seen the second man in the “Chicago,” 31-year-old 2nd Lieutenant Leslie Arnold. As mentioned earlier he was actually selected as one of two alternate pilots and trained as such. When Smith’s chosen mechanic, Sgt. Turner, fell ill, Lowell asked a more than willing Arnold to take his place. In younger days Les Arnold had sold pianos to farmers’ wives and even toured as an actor in summer stock in New England. During World War I, like the other World Flight pilots, he arrived in Europe too late to be involved in combat. Post-war duties such as ferrying did allow new pilots like himself to gain experience with a wide range of machines, but the war was over and it was time to go back. Peace-time duty in the states often involved exhibition flying promoting public relations for the Air Service. Les Arnold did his share of that, including one incident which he never quite lived down. In a take-off accident he was embarrassed but unhurt when he crashed into a chicken coop when his engine stalled. His luck, if that is what it was, was better when the big challenges came. First with Billy Mitchell’s ship sinking demonstrations and later, on the World Flight, he more than proved himself. He had a lot of confidence. When asked what he thought the chances of success were for the World Flight, he said it would be fifty-fifty. Because there were four planes, that meant two could make it... he and Smitty, of course, and it was a toss up on which of the other three. As it turned out he was essentially correct.

Standing on the left in the Keystone viewcard we see Lieutenant Erik H. Nelson, pilot of the “New Orleans” and the designated Flight Engineer. At 36 years he was the eldest of the six flyers in the group. Swedish born, he was the only naturalized citizen on the expedition and in earlier endurance flights had been dubbed “The Flying Viking.” His only other “only” on the flight had to do with male pattern baldness, a subject we will pass over. Because he had been heavily involved in the creation of the aircraft and had been on his share of glamor flights, notification of his selection for the World Flight came as a surprise to him. The Air Service, wealthy in ‘hot’ pilots, had been inclined to spread the goodies around.

Erik Nelson left Stockholm at age 16 on a German vessel to see the world; and he did just that for five years, traveling everywhere. He had a wide variety of experiences before joining the Army Air Service and had become an American citizen in 1914. He earned his pilot wings and a 2nd lieutenancy after enlisting in the Army Aviation Section during the war. His reputation was built on long distance and endurance flying which he had helped pioneer, sometimes as pilot, sometimes as engineer. The most ambitious had been the round-trip flight between New York and Nome, Alaska, on which he had flown as Flight Engineer with premier pilot Lt. St. Clair Streett. It was said of him that he was a man who dreamed dreams that came true. He had been one of the first to advocate a world flight by Americans.

Kneeling in front of Nelson on the left is the man who flew in the second seat of the “New Orleans.” John “Smiling Jack” Harding of Nashville, Tennessee, was Nelson’s choice as his mechanic. Harding was a veteran of the Air Service, a reserve officer, and a civilian with the Air Service in Dayton, Ohio, where Lt. Nelson had worked with him and been impressed with his abilities. Prior to the world flight Harding had chalked up 500 hours in the air as a mechanic. He had accompanied Colonel R. H. Hartz and pilot Lt. Tiny Harmon in the so-called “round the rim” flight circumnavigating the borders of the United States. Jack Harding was considered especially good at diagnosing and curing ailments in airplane engines.

Standing on the right is seen the pilot of the “Boston,” Lieutenant Leigh Wade. He was one of the top test pilots at McCook Field, Dayton. At one point he set an altitude
The flight ended in Seattle on September 28, 1924. Here, Erik Nelson lines up the New Orleans with the Boston II and (in the distance) the Chicago. By agreement, the planes touched down simultaneously, side by side, to complete the odyssey. Gordon D. Hoffman Collection.

record for multi-motored planes and suffered a frostbitten face for his efforts. He was also with Billy Mitchell at the naval tests. Leigh Wade was a handsome officer and something of a Beau Brummell at times in his dress, for which he picked up the contemporary nickname of "Leigh the Sheik." Lowell Thomas describes him as "a clean-living, hard-working young daredevil."

Kneeling in the middle of the view is Sergeant Henry "Hank" Ogden, the mechanic who was Leigh Wade’s choice to fly in the second seat of the "Boston." His choice for the flight was something like a field horse winning the Kentucky Derby. Originally he was brought in as one of the "extra" mechanics to help with the flight preparations and testing, the assumption being that they were not in the running. However, Major Martin insisted that all mechanics be tested, and after oral exams were carried out by Nelson and Smith, Ogden made the flight. He said he never worked or studied so hard in his life as when he found he had a chance. At 24, he was the youngest of the airmen and had acquired the second nickname of "trouble shooting Henry" around the hangers. When the flyers were in Tokyo after making the first crossing of the Pacific Ocean, The Japanese were not too thrilled at first with the implications of the success of such a flight, but the flyers were treated like visiting royalty. The "Chicago" blew an engine in Vietnam between Haiphong and Saigon. It was towed to Hue by three sampans, each manned by ten naked paddlers. A royal barge led the array, the local chieftain cuddling his favorite concubine while being paddled by some of his lesser wives. Smith and Arnold were stretched on the lower wing, the only shady place available. At Hue they were met by Ogden, who had brought a new engine in a rough but speedy overland side trip.

In Burma, a river boat collided with the pontooned "New Orleans" and Smitty came down with dysentery. In India when the pontoons were replaced by wheels, Associated Press reporter Linton Wells stowed away in the baggage compartment of the "Boston." He had noted that the pontoons were much heavier than the wheels, and he figured his weight wouldn't overload the plane. He flew across much of India until discovered, and even afterwards, as the flyers put him to work rather than strand him. After 2000 miles, at Karachi word arrived ordering him off the flight. Lowell Smith stepped in a hole in Calcutta, fell, and cracked a rib. He was taped up by a British doctor and was into the air on schedule the next morning.

The group reached Paris on Bastille Day, where they were regally received. Taken to the Folies Bergere that night, they found the comfortable seats a new type of hazard after the exhausting ten-hour hop in their journey. They fell asleep and missed the girls, a fact duly noted in the newspapers.

Around The World

I would encourage anyone interested in the details to read the full account of this exciting and difficult adventure (such as in the Lowell Thomas book). It was an odyssey much more demanding over an extended period of time and through varying hazards than more celebrated journeys that have been undertaken since. It was filled with interesting highlights and sidelights.

Through blizzards in Alaska they had to fly at near water level, standing up in the cockpits so that they could follow the barely visible shorelines. After the frozen northland it was only necessary to make the first-ever aerial crossing of the Pacific Ocean. The Japanese were not too thrilled at first with the implications of the success of such a flight, but the flyers were treated like visiting royalty. The "Chicago" blew an engine in Vietnam between Haiphong and Saigon. It was towed to Hue by three sampans, each manned by ten naked paddlers. A royal barge led the array, the local chieftain cuddling his favorite concubine while being paddled by some of his lesser wives. Smith and Arnold were stretched on the lower wing, the only shady place available. At Hue they were met by Ogden, who had brought a new engine in a rough but speedy overland side trip.

In Burma, a river boat collided with the pontooned "New Orleans" and Smitty came down with dysentery. In India when the pontoons were replaced by wheels, Associated Press reporter Linton Wells stowed away in the baggage compartment of the "Boston." He had noted that the pontoons were much heavier than the wheels, and he figured his weight wouldn't overload the plane. He flew across much of India until discovered, and even afterwards, as the flyers put him to work rather than strand him. After 2000 miles, at Karachi word arrived ordering him off the flight. Lowell Smith stepped in a hole in Calcutta, fell, and cracked a rib. He was taped up by a British doctor and was into the air on schedule the next morning.

The group reached Paris on Bastille Day, where they were regally received. Taken to the Folies Bergere that night, they found the comfortable seats a new type of hazard after the exhausting ten-hour hop in their journey. They fell asleep and missed the girls, a fact duly noted in the newspapers.
Icebergs in the North Atlantic were a problem, compounded by rolling seas, and the World Cruisers often had to fly at dangerously low altitudes because of fog. Coming down at sea was very hazardous. The "Boston" was lost when forced down on the way to Iceland by a bad oil pump, damaged, and sunk while being hoisted onto the cruiser "Richmond," one of the ships supporting the mission. On the way to Labrador the "Chicago's" fuel pump went out and Les Arnold had to hand pump for over three hours as they fought a 40 mph headwind. Washington decided to send a new plane, "Boston II," to Pictou, Nova Scotia, so that Wade and Ogden could rejoin the flight for the 'victory' festivities, although, in fact, they were out of the race.

The total trip was over 26,000 miles. Although they were gone about 5½ months, the actual flying time was a little over 15 full days, all told. The flight across the United States to Seattle was much in the nature of a triumphal march. The roaring twenties was a time for heroes, and the world-girdling lieutenants fit the bill perfectly.

Nearly everyone who saw them cheered and agreed. These men and what they did were past forgetting.

Epilog

The flyers were lionized for a while. They received Distinguished Service Medals and the French Legion of Honor and a variety of other honors and decorations.

Lowell Smith was advanced 1000 files and made a captain. Harding and Ogden were offered lieutenantcies in the regular army (I pass on clarifying rank in the peacetime army). The other pilots (Arnold, Wade, and Nelson) were advanced 500 files in the wait for promotion. But the army of the 1920's was not a place for rapid advancement in rank. The frugal, Yankee heart of Calvin Coolidge was not attuned to spending money on the military in the absence of a clear and present danger. In 1929, Smith became the Air Corps representative at Curtis Consolidated Corporation and Keystone Aircraft Corporation. He was advanced to colonel in 1942. Then, like the old soldier in the barracks ballad, he just faded away... at least from the public record. No other reference seems extant. *Who Was Who* lists him as deceased, but could not verify his biography which was listed as dated. No obituary was ever run in the *New York Times*. Past forgetting became forgotten.

Lieutenant Erik Henning Nelson was invited back to the land of his birth and presented Sweden's Royal Order of the Sword. But, the Flying Viking's home and heart were now in America. By 1928, however, it was reported that Lieutenant Nelson was resigning from the army. Despite ten years as a commissioned officer and all that he had accomplished, he found himself still a 1st lieutenant as he turned forty years old. It was reported he despaired of obtaining rank above captancy before being forced to retire. He joined the Boeing Airplane Company as a sales manager.

Still, there is a time for everything, and a season. The day after Pearl Harbor, Erik Nelson returned to the Air Corps.


Keystone #26750. "Airplane 'New Orleans' Landing at Sand Point, Seattle, Wash." Keystone mistakenly identifies this as the New Orleans. The numeral on the fuselage is 3, which identifies it as the Boston II piloted by Leigh Wade. Gordon D. Hoffman Collection.
He was given organizational and engineering duties, including maintenance arrangements for the first B-29 squadrons in India and China. Brigadier General Erik Nelson retired in 1946 and became Technical Advisor to Swedish Intercontinental Airlines. The Flying Viking died in Honolulu in 1970 at the age of 81.

Lieutenant Leslie P. Arnold, beyond the world flight, had an exciting career in the Air Service. He was among the first to experiment with aerial attack weapons, aerial photography, crop dusting, and dropping smokescreen bombs. Still, in 1928 he also felt it was time to get on with his life’s work since promotion in the army had become almost nonexistent. He became assistant to the president of T.A.T. Maddux Airlines (later Transworld). In 1936 he moved to Penn Central Airlines (later Capitol) as vice president. Captain Eddie Rickenbacker, the WWI ace, in 1940 enticed him to come to Eastern Airlines as Eddie’s assistant. World War II then interrupted his civilian career.

Re-entering the Air Corps, Les Arnold was called upon to organize the 39th Air Freight Wing. He was commander of the Ferry & Transport Services Command in Europe and in this capacity supplied Normandy during the Allied invasion of Europe. He retired in 1946 with the rank of colonel and rejoined Eastern Airlines, where he became vice president. He died in 1961 at the age of 66 years.

John H. ‘Smiling Jack’ Harding went on a lecture tour with Lowell Thomas for some months following the conclusion of the world flight. Afterwards he accepted the offer of Eddie Rickenbacker to take part in forming Florida Airways, basically an air mail carrier. His mechanical wizardry, however, did not leave him, as he invented and produced special airplane equipment. He was particularly proud of his fuel pumps designed for and used in the B-29 bombers of World War II. Smiling Jack Harding died in 1968. He was 71 years old.

The crew of the “Boston,” Leigh Wade and Hank Ogden, traveled more than 20,000 miles before the failure of an oil pump began the chain of misfortunes that ended with the loss of their ship in the North Atlantic. It was decided by General Patrick that they should rejoin the others in the “Boston II” and finish the remainder of the World Flight. They took part in all the celebrations and honors associated with the triumphal conclusion.

Unfortunately the public record of Wade and Ogden falls silent at this point. When they were stranded in their crippled ship on the never finished hop to Iceland, bobbing helplessly on an angry sea as they awaited rescue, the weather turned bad and their spirits reached a low point. Ogden said, “I’ve had a pretty good time on this old earth, Leigh.” “Was thinking the same way myself, Hank.” “Don’t believe I want to leave it, Leigh, right now.” “Don’t believe I care to either, Hank,” Wade agreed, as reported in his journal. Well, a ship did come eventually, and they got to hear all the nice things everyone said about them. But they weren’t past forgetting.

I recall James Cagney, playing Bull Halsey in the motion picture The Gallant Hours, saying, “There are no great men. There are only great challenges which ordinary men like you and I, on occasion, are privileged to meet.” But few are ever so privileged. The World Flyers were, as were the Mercury astronauts, to name only a few. Others will face great challenges, but they will have to do it in the context of their times and be valued according to the standards of those times.

During World War II Kay Summersby’s favorite song was “I’ll See You Again” from Noel Coward’s Bittersweet. But Kay is gone, as are the men who flew the Douglas World Cruisers. We will never again see the likes of Nelson, Smith, Wade, Arnold, Harding, and Ogden. Their time is past, but not past forgetting. And one can imagine years from now someone looking at the last surviving faded copy of viewcard #1 of Keystone’s Tour of the World and wondering who they were, these men with the strange machine.
Captain EO

A Spectacular 3-D Film

by Susan Pinsky, Bill Shepard, & David Starkman
"Hooter" is a musical green elephant sort of creature, and the closest to a traditional Disney character to appear in the film. Stereo by David Starkman.

The newest, most expensive and spectacular 3-D film ever produced opened on September 19th, 1986 exclusively at Disneyland in California, and Walt Disney World Epcot Center in Florida. A week earlier the Los Angeles Times referred to "Captain Eo" as "either the film event of the year, or the rock video event of the decade, or the 3-D event of the century. Take your pick."

Before getting into the technical side of the film, here are some background and credits. Star: Michael Jackson. Director: Francis Coppola. Executive Producer: George Lucas. Presented by: Eastman Kodak Company. Cost: no official word from Disney, but estimates have been around $20 million, with rumors even higher!

That's only the beginning! Additional credits include producer Rusty Lemorande ("Yentl"); set designer John Napier ("Cats," "Nicholas Nickelby"); art director Geoffrey Kirkland ("The Right Stuff"); choreographer Jeffrey Hornaday ("Flashdance," "A Chorus Line"); and photographic consultant Vittorio Storaro ("Reds"). Finally, add all of the imagination and technical resources of WDI (Walt Disney Imagineering, formerly WED Enterprises), and technical consulting by Eastman Kodak Company.

The result? A 17-minute, 3-D musical motion picture space adventure that sets a new standard for the art and potential of 3-D films. More on that later.

The story is short and simple. A "Star Wars" type space captain (Jackson) and his crew of robots and cute and fuzzy creatures dodge a space attack, crash land on a colorless planet of organic grotesqueness, and are confronted by the Supreme Leader (Anjelica Huston) and her forces of darkness. Tempting the Supreme Leader with a "gift" before being sent off for a hundred years of torture and having his crew converted to trash cans, the Captain uses his own magical powers of music, dance, and light to transform the planet into a rainbow-colored garden world, and the inhabitants and the Leader into beautiful people.

The film combines a few of the successful elements of "Star Wars," like the lone human starship captain with his ragtag crew of odd creatures (one, of course, cute, cuddly and perfect for marketing) plus the dangerous chase scene through a treacherous trench (haven't we seen that somewhere before...a few times?), with the popular MTV music video emphasis on one solo performer. One story line, one character, one hit song, one yawn. Why can a 30 second TV commercial tell more of a story (beginning, middle and end) than a multi-million dollar, 17 minute film? This effort combines some of the greatest talent and creativity of the day, yet the effort falls short of a memorable rock video.

"Major Domo" offers a hand. A rumor later spread claiming that Michael Jackson was inside the suit. Stereo by David Starkman.
Whoopi Goldberg was one of over 100 stars of TV, movies and sports on hand to publicize the opening. The entire parade of celebrities appeared in the NBC “Captain EO” TV special Sept. 20, ’86. Stereo by Susan Pinsky.

We loved the energy, the intent, the 3-D, and the special effects, but we demand depth in script and content as well.

The main song/dance number is so loud that it hurt. We only wish we could have understood the words to the song even a little. The dancers are excellent, the choreography exciting, but the violence of the movement exhibits hostility rather than persuasion. Have they changed these evil creatures into beautiful people or simply changed their clothing?

Technically, however, this is the most complex 3-D film ever made, with about half of the shots in the film (150) involving some sort of special effects. Because of the numerous additional factors that have to be considered in doing 3-D special effects, post production supervisor Tom Smith estimated that this was “three times more complex” than normal. This is easy to understand when you consider a scene such as a space “dogfight” in which the spaceships are made during one shot, the star background in another, a planet in a third, and laser effects animated in yet another shot. This is complicated enough in a flat film, where all of these elements are printed, one pass at a time, in an optical printer to get the final composite where they all appear to be in the same picture at the same time, all properly located.

In 3-D these elements are shot with the film equivalent of “slide bar” shooting. All of the above is done frame by frame for the right eye film. Then it all has to be duplicated for the left eye, separately and for each element that requires a separate pass through the optical printer. If a mistake is made in any one element it could ruin the shot. (The planet, for example, could appear to be closer than the spaceships, or one element could be pseudostereoscopic.)

So, “Captain EO” is a major tour de force of 3-D and special effects, both of which are extremely well done. This is not to say the film is technically perfect. The technical critic will, indeed, find a few minor flaws, but nothing which detracts from the overall quality of the film.

The greatest flaw is in a few live action scenes (mainly the dance numbers) where there are some shutter phase out-of-synch problems. This is a twin 70mm film, shot with twin 65mm cameras and projected by twin interlocked projectors. The Disney twin camera system consists of the two 65mm cameras in an “L” configuration, with one camera pointing straight ahead through a 45° half-silvered mirror, and the other pointing straight down, shooting off the surface of the mirror. This allows the effective interaxial (distance between lenses) to be varied from zero to several inches. At the same time convergence (which determines object placement in relation to the screen or “stereo window”) may also be adjusted.

Unlike still cameras, motion picture cameras have rotat-
Francis Ford Coppola, Angelica Huston, and George Lucas prepare to cut the ribbon—opening the theater and providing a videotape highlight for the later TV special promoting the film. Stereo by David Starkman.

ing shutters, which, in a twin system like this, may possibly get out of synch. This is not quite the same as actually having a frame out of synch, but is more like being a half frame off. In static shots this is not noticeable, but with rapid motion, such as the dance sequences, there is a slightly "swimming" effect, like a vibration or shimmer in the subjects that are moving.

The other technical flaw is more subject to debate, in that it relates to the choice of convergence point for many of the close-ups. It seems that every 3-D advisor for every 3-D film has different ideas about what is the best method to set convergence for 3-D movies, and there is no consensus of opinion among them. In "Captain Eo" most of the full-screen close-ups were converged behind the main subject, resulting in considerable off-the-screen parallax for those subjects.

In our opinion this is not the ideal choice of convergence for several reasons. First, with the exception of small objects intentionally brought off the screen (and most effectively!), these subjects are cut off at the bottom of the screen, thus creating a visual conflict that destroys or reduces any off-the-screen effect. Second, it is much less of an eye strain to converge on the plane of the screen (avoid the front rows for this one!). Third, since the polarizers are not 100% efficient, this creates some noticeable ghosting. Converging on the main subject minimizes this ghosting to virtually zero.

Still, considering the large number of highly complex visual special effects, this is probably the most elaborate and technically excellent 3-D film ever made. (Not to minimize the 3-D films at Expo '86—they were just a lot simpler and straightforward, even in 3-D Imax.)

The final, and most unique, technical aspect of the film is the role of the specially constructed 700-seat "Magic Eye Theater," in which set designer John Napier had a key design position. Working closely with Disney show designer Rich Rothschild and the Walt Disney Imagineering special effects team, they have created a series of in-theater physical effects which parallel and enhance the 3-D film effects to create a visual, aural and environmental experience. The Disneyland and Epcot theaters are the only ones in the world equipped to show the film with all of the intended effects.

Using a specially perforated 1,000 square foot (about 47 X 21 feet) silver screen, imbedded with thousands of optical fibers, and dozens of lasers which are synchronized with the optical digitally encoded soundtrack creates unexpected realistic effects at the appropriate moments.

One of the most spectacular effects (both visually and technically) is at the very opening of the film, when optical fiber "stars" start twinkling on one by one, then cluster by cluster, radiating out from the center of the screen until they spread far out beyond the edges of the screen onto the side walls and ceiling, filling up the whole front half of the

A View of the left projector, showing the 7000 watt lamphouse. Mechanical linkage shafts to continuous loop film chambers can be followed from upper left. Lens and film gate are behind the panel marked "2." Stereo by David Starkman.
Working side view of the continuous loop dust-free film chambers. The film never touches itself on a reel, so may be shown thousands of times without signs of wear. This is the same equipment used to project "Magic Journeys" which was running at the theater while EO's special effects (and publicity) were in preparation. Stereo by David Starkman.

Theater. That is impressive enough, but the whole star field is in 3-D with stars appearing at many different levels!

This is done by having each star consist of two optical fibers, polarized for the right and left views. By varying the physical separation of the pair, the depth level is changed. The 3-D star field becomes part of the opening 3-D movie scene in which an asteroid slowly swirls toward you from a nebula until it is rotating slowly within arms length. (The technical complexity is even more staggering when you realize that sections of stars have to selectively go out to allow the asteroid to be projected on the screen without stars in the middle of it!)

Other physical effects include flashing lights and strobes located above and behind the audience, and even puffs of liquid nitrogen "smoke" that emanate from behind the screen. Smell was even considered (we saw the machine nicknamed the 'smeltzer' and smelled the rose scent), but apparently abandoned due to the difficulty of clearing away the smell between shows and the possibility of the scent permanently working its way into the seat and curtain fabrics.

The images are sharp and bright, seeming to be nearly equal to the levels of a normal, flat 70mm movie. This must in part be due to the twin 7,000 watt lamphouses used. The largest lamphouses commonly in use are about 4,000 watts.

Dave Melanson, project manager, showed us the mechanically interlocked projectors, along with the unique Disney-designed film cabinets. Since film duplicates are expensive, and a film such as this is shown continuously every 25 minutes all day long, the film is threaded into a dust-proof, climate-controlled cabinet where it is threaded in continuous loop fashion over a large number of rollers in such a way that there is never any film-to-film contact.

This not only means that threading does not have to be done between each showing, but also that a single print of a film may be shown 150,000 times (many years) without need for replacement!

(continued on page 39)
The use of a pair of full frame 35mm cameras to obtain stereo pictures has attracted many workers. The resulting system is often referred to as $2 \times 50 \times 50$. At least three significant problems have dampened enthusiasm for this approach:

1. Shutter synchronization
2. Positioning of the two lenses close enough together for normal picture taking
3. The bulk and weight of two cameras

A camera has recently been introduced which promises to mitigate these problems. This full-frame 35mm camera is only about 4 inches wide and weighs 7.7 ounces. It features a coupled range finder, an $f/2.8$, 35mm F.L. lens and exposure automation. The feature which makes this camera useful for 3-D photography is that the shutter is triggered electrically by a switch rather than a mechanism. This camera is the Olympus XA which retails for about $120.00.

The Olympus XA camera's shutter release button consists of a thin slab of a special plastic material sandwiched between two electrical contacts. When the contacts are electrically bridged, shutter release is initiated. Finger force on the shutter button strains the plastic, which then becomes a conductor, thus electrically bridging the contacts and completing the circuit. The attraction of such an arrangement is that wires can be attached across the shutter switches of a pair of XAs so that either switch, or an external parallel switch, will simultaneously activate both shutters. Unlike single lens reflex cameras, the shutter is immediately released. There is no chain of time variable events such as mirror retraction and aperture change pre-
Images from the dual-XAs can be used as separate 2X2 slides or trimmed and mounted in various standard stereo slide mounts, as with this 7-sprocket example taken by the author.

Closing the shutter release. Synchronization is, therefore, excellent, with no need for the selection of matched cameras.

CAMERA MODIFICATION

Although the switch contacts can be exposed by prying off the red plastic shutter release button and removing an exposed screw, I strongly recommend that the modification be performed by Camera Works, 9266 SW Beaverton-Hillsdale Highway, Beaverton, OR 97005; phone 503-297-5723.

They will modify two XAs for approximately $80.00. When contacting them, ask for Dave.

The modification results in two short wires with male and female PC connectors. This allows an extension PC to be used for wide base work. The shutter release of either camera can be used.

MOUNTING

Side-by-side mounting will provide a lens separation of about 4 inches. Staggered mounting as shown in the photograph of figure 1 results in a lateral lens separation of 3 inches and a fore-to-aft separation of 1½ inches. I have chosen the staggered configuration because the 3-inch lens spacing permits a minimum subject distance of 7 feet for good projection. The 4-inch separation enforces a minimum subject distance of 9.3 feet, which is difficult to accommodate in many picture-taking situations.

The fore-to-aft separation of 1½ inches will create a difference in image size for the two cameras for all objects which are not at infinity, with the close objects suffering the greatest disparity. A quantitative assessment of this image size difference is, therefore, in order.

Since the minimum subject distance is already dictated by projection requirements to be 7 feet, that is the distance of interest.

The difference in distance between the two cameras to an object at 7 feet can be simply expressed as the ratio 1½ inches divided by 84 inches (7 feet), which is equal to 0.018 or 1.8%. The difference in image sizes will, therefore, be equal to 0.018 or 1.8% for objects at 7 feet, with greater distances exhibiting smaller differences.

In addition, the actual homologous point separation caused by image size difference is one half of 1.8% or 0.9%, because the entire difference can be split between points located on opposite sides of the screen center line.

If the images are projected at a height of 6 feet or 72 inches, the vertical displacement between homologous points at the top or bottom of the screen will be 0.65 inches.

By misaligning projected images with two projectors, I have viewed images with vertical misalignments and have found that a 0.65-inch misalignment is not objectionable when viewed at the orthostereo distance or greater.

SYNCHRONIZATION TESTS

A 20-inch radius arm pointer was attached to the shaft of a 72 rpm stepper motor. This arrangement provides a tip velocity of 151 in/sec, the inverse of which is 0.0066 sec/in.

The spinning pointer was photographed against a scale with ½-inch divisions. The two cameras were triggered with a single, common switch. Black and white film was used and the incandescent light sources manipulated to create shutter speeds ranging from the maximum speed of 1/500 sec. to 1/10 sec.

The negatives were examined with a 10× magnifier and reticle. The difference in position of the pointer at the beginning of exposure for each pair of negatives in the series was approximately 1/10th inch. This indicates a synchronization error of 0.66 milliseconds (0.00066 secs.).

Synchronization of better than one thousandth of a second is acceptable for the majority of picture-taking situations.

CAMERA MOUNT

The mount for the two cameras can be cut from 1/8 to 1/4 inch aluminum sheet stock following the dimensions shown in the actual-size drawing. The alignment lip along surfaces A and B is optional since the cameras can be easily aligned in azimuth by eye.

I do recommend that the mounting surface side of the mount is lapped to flatness to assure good elevation alignment. This can be done by taping a sheet of fine sand paper to a glass plate. The mount is then rubbed against the sand paper in random directions and with as even a pressure as possible.

Split ring lock washers are recommended for use with the 1/4-20 mounting bolts, which may need to be cut short enough to fit the camera-mount-and washer combination.

A pair of XA cameras provides the 3-D photographer with a system which is extremely light in weight and simple to use. I have similarly mounted a pair of Rollei SL2000 35mm cameras, and, because of their weight, the XA system is used 95% of the time.

The total cost of the system, including modification, is about $320.
MORE STEREO SLIDE MOUNTING SERVICES

Following the end of Kodak's mounting service for stereo slides in June (May/June '86 page 26) we have published the names of ten labs offering this service (Sept./Oct. '86 page 30). Some specialization has already occurred, with the recent announcement of two new mail order services aimed directly at the stereo market.

EXCLUSIVELY STEREO, 6711 El Colegio Rd. Box 47, Santa Barbara, CA 93117 offers processing of both Ektachrome and Kodachrome (K-14 through Kodak) with realist format mounting in cardboard heat-seal mounts. Write for their price and ordering brochure.

THE THIRD DIMENSION, PO Box 44916, Phoenix, AZ 85064 offers stereo mounting in aluminum masks and frames for those wishing something other than cardboard mounts. Write for prices and processing information.

As usual, this list is not an endorsement of any services by the NSA or STEREO WORLD. No one can mount your slides for you as well as you can do them yourself given a bit of practice, some cotton gloves, and a well illuminated surface where the cat doesn't sleep.

CUSTOMIZED EUROPEAN VIEW-MASTERS

Dedicated View-Master fanatics now have three models of re-lensed viewers to choose from for greater magnification. Based on the European "Delux" model, each style of the altered viewers offers magnification of 10.5:1 compared to the 5:1 of standard viewers (although the models being altered exceed that slightly). Each viewer is fitted with a pair of fully coated three element lenses. "Model 1" being the least expensive with fixed focus lenses. "Model 2" comes with focusing lenses, while "Model 3" is a lighted viewer with focusing lenses.

Model 1 is offered at DM 140, Model 2 is DM 267, and Model 3 is DM 315 (all plus DM 20 shipping). Clearly out of the toy market, regardless of any current exchange rate. To order or ask about current availability, write to H.U. Moller, Fuchsweg 26, 5630 Remscheid 11, Federal Republic of Germany.

NEW VIEW-MASTER ARRIVES—ALMOST

Those wishing greater View-Master magnification without the cost of a customized job from Germany or the trouble of doing their own lens conversion may be happy to learn that the new "push button" viewer is now available in a number of stores around the country. (See Newviews, March/April '86.) Then again, they may not be so happy when they pick one up and notice the horrendous grain imparted to the image by the plastic diffuser/front. The effect is bad enough that people may not at first notice the viewer's other problem. The "fingers" holding the reel in position are exactly at the edges of the image area. Since the rectangular holes around the reel allow it to slide left or right on the tips of the "fingers," advancing a reel moves the left edge of the left picture behind the finger, blocking light from an obvious strip down that side and rather crudely altering the window.

Fortunately, both problems are easily solved with nothing more complex than a screwdriver and a sharp knife. The next issue of STEREO WORLD will include illustrated instruction on opening the viewer and trimming the fingers. (The diffuser is "fixed" by simply adding a piece of frosted mylar across the front.) The larger lenses are quite sharp with no evident distortion, and the images really are bigger than those of standard models. The new reel advance system sounds and feels clumsy at first, but may actually be the best yet designed. The positioning fingers hold the reel in perfect register and are independent of the advance system, so there's no need to fuss with the lever to correct a picture that didn't land quite right.

All things considered, it's an interesting viewer well worth buying and fixing.
KEYSTONE-MAST TO MOVE DOWNTOWN

About a year after welcoming the 1986 NSA Convention to its facilities, the California Museum of Photography will relocate from cramped quarters on the campus of UC Riverside to a downtown mall near the historic Mission Inn in Riverside, CA.

The move, anticipated for fall of 1987, will provide greater public access to the $12 million collection of cameras and photographs housed at the UCR museum. It also is expected to enhance the museum's stature as a repository for the West's most comprehensive public collection of photographs and photographic apparatus.

"The California Museum of Photography is a well-kept secret," said museum director Charles Desmarais. "The new building is really going to help us make that secret public."

Relocation of the museum to Riverside's Main Street Mall was made possible by a partnership between town and gown to purchase and renovate the 56-year-old Kress variety store building, a two-floor, 22,500-square-foot structure located in a city redevelopment area.

The move downtown, in addition to placing the 13-year-old museum in a high-traffic area near other cultural attractions, will help revitalize the mall by attracting thousands of people to the area.

The Kress building also presents a unique opportunity for San Francisco architect Stanley Saitsowitz, an internationally recognized artist-architect selected to design the museum's new home.

"Museums are the new testing ground for architectural ideas," Saitowitz said. He will be working closely with Desmarais and university architects in the coming months to transform the building into an architecturally distinctive museum.

"We want to create...a modern, vital space, not a dusty old closet for objects," said Desmarais, who became the museum's first full-time director in 1981. At the same time, the redesigned building will respect its links to the past, he said.

The building was purchased in an agreement between the city and university.

Provisions of the agreement called for the city Redevelopment Agency to contribute $650,000 to the effort, a sum covering the building purchase. The Riverside City Council also donated another $50,000 toward the museum relocation.

In return, the university will be responsible for renovation costs, estimated at $1.25 million. Plans currently are underway to raise funds from local businesses, private citizens, federal granting agencies, local government, and corporate foundations, said Esteban Soriano, UCR director of development.

The California Museum of Photography currently is headquartered in Watkins House, a rambling brick building near the entrance of UC Riverside that once served as the campus' religious and social gathering spot.

Nevertheless, according to Desmarais, Watkins House is inadequate for the needs of the museum.

"Exhibition space is limited. Storage space for the museum's 12,000 cameras and photographic accessories is cramped. And there is no library, cataloguing work area or seminar room.

Space limitations even require that the Keystone-Mast Collection, at 350,000 negatives the world's largest assemblage of stereography—be housed in the basement of the Humanities building two blocks across campus. (See photo in Sept./Oct. '86 STEREO WORLD)

The relocation will provide nearly five times the exhibition space currently available and will allow the museum to consolidate its collections in one location.

It also will expose the museum to greater public visibility. Already the museum is recognized in the world of photography as unique in both its collections and its broad, humanities-oriented approach to photography. It is the repository for nearly 400,000 prints, stereographic negatives, prototype cameras and other photographic apparatus that trace the history of photography.

Parts of its collection are absolutely unduplicated at other institutions.

The museum's reputation among the general public as an enjoyable and educational experience is still growing. The relocation to a tourist-oriented sector of downtown Riverside would increase its exposure to the public, Desmarais said.

"The idea of being in the community we're meant to serve is really important," he said. "If you're doing this for the public, clearly you should be where people can reach you easily."

To attract greater public visitation, plans call for three types of exhibition space in the renovated Kress building.

A long-term exhibition will be established for the museum's collections of photographs and photographic equipment. The space will allow the museum to put more of its significant holdings on public display.

Among the collections to be highlighted in the permanent exhibition are: the Keystone-Mast Collection of three-dimensional images documenting a century of world history; the 8,000-item Zeiss camera collection; the Bingham collection representing cameras of all periods of photographic history; and some 12,000 photographs by...

(continued on page 37)
About 1938, a photographer from the TRU-VUE Company of Rock Island, Illinois visited the A. C. Gilbert Co. in New Haven, Connecticut, to obtain the stereo pairs later released as SANTA CLAUS' WORKSHOP: "Where Dreams Come True For Boys." Obviously produced on a modest budget, this title provides us today with an invaluable record of the equipment and facilities used to manufacture American Flier electric trains prior to World War II. Because A. C. Gilbert did so much to brighten our Christmas Days of yesteryear, it is most appropriate that our "in depth" look at the American Flier factory be accompanied by a brief history of the man and his company.

A. C. Gilbert. If you're over 30, that name probably conjures up memories of when an A. C. Gilbert "Erector" set or American Flier electric train were among the most treasured of Christmas presents.

The owner and driving force behind the company that bore his name was Alfred Carlton Gilbert, born on February 15, 1884, in Salem, Oregon.

An active, energetic child, Gilbert's two major interests were magic and athletics. In 1904, he enrolled at Yale University with the intention of becoming a physical education director.

An accomplished amateur magician, one of Gilbert's money-making activities at Yale was giving magic demonstrations in the community. As a result of these performances, many people asked him to teach them magical tricks. Accordingly, Gilbert made up a series of simple tricks which could be performed with a minimum amount of practice. These tricks sold so well that, after graduating in 1909, Gilbert organized the Mysto Manufacturing Company to package and sell boxed magical tricks on a full-time basis.

During business trips over an "electrified" section of the New York, New Haven & Hartford Railroad, Gilbert's interest was attracted by steel girders being "erected" alongside the track to support the overhead electric wires. In the fall of 1911, an idea blossomed in his mind: a construction toy for boys which would allow them to build objects by putting separate pieces together. Gilbert made up some cardboard "girders" and, using an assortment of nuts and bolts, began to build things out of them. Later, a machinist reproduced these cardboard prototypes in metal. Gilbert spent all of 1912 and most of 1913 developing his idea. Introduced at a toy fair in 1913, "Erector" sets were an instant success.

Moving to a larger facility in New Haven, Connecticut, the Mysto Mfg. Co. soon became the A. C. Gilbert Co. Microscopes, chemistry sets and other scientific toys were added to the catalogue. A. C. Gilbert was soon the nation's largest manufacturer of scientific and educational toys.

A train enthusiast, Gilbert numbered among his close friends W. O. Coleman, Jr., whose father had founded the Chicago-based Chicago Flier/American Flier Electric Train Co. in the early 1900's. In 1937, Gilbert announced to Coleman that the A. C. Gilbert Co. was going to bring out a line of "HO" gauge electric trains. Coleman's rejoinder was that Gilbert should take over American Flier. A liberal payment agreement was worked out and American Flier became part of Gilbert's organization.
In January and February of 1938, all of American Flier's tools, dies and machinery were shipped from Chicago to Gilbert's New Haven factory so that production could begin in time for the 1938 Christmas season.

Once under Gilbert's active control, American Flier underwent dramatic changes. Trains became more realistic, less toy-like, and showed much greater surface detail. \( \frac{3}{4} \) inch scale equipment (running on traditional three-rail "O" gauge track) was brought out in 1939. By 1941, Gilbert was producing highly-detailed die-cast locomotives, freight and passenger cars.

During World War II, the A. C. Gilbert Co. converted over almost entirely to making war material such as Colt automatic pistols, Browning machine gun magazines, and gas mask parts. With no new product available to sell, national ads urged boys to invest their money in war stamps and wait to buy an "Erector" or American Flier train set after peace was restored.

The first and biggest change introduced by Gilbert after the war was a new line of "S" or \( \frac{3}{16} \) gauge American Flier trains. (This is the gauge most of us remember when we think of American Flier.) Several of the new S gauge locomotives came equipped with mechanisms to make smoke and a "choo choo" sound. Adding to this prototype realism, American Flier S gauge equipment ran on new two-rail track, also in \( \frac{3}{16} \) scale. These innovations gave Gilbert a distinctive line of trains that was far superior to the competition's still toy-like product.
Throughout the late '40s and 1950's, many new engines, cars, accessories and scenic supplies were introduced for the American Flyer line of S gauge trains. The public relations departments of major railroads such as Santa Fe and Union Pacific were eager to have their company names and distinctive paint schemes reproduced on American Flyer equipment. This was American Flyer's golden age.

A. C. Gilbert passed away in 1961 at the age of 76. Ironically, that year was the last year that his company showed a profit. Toy industry people blamed this decline on a failure to adapt to the toy-buying public's tastes of the '60's. In an ill-advised attempt to regain some of its slipping market, the company supplemented its famous lines with novelty toys based on the craze for superspies James Bond.
and "The Man from U.N.C.L.E." Most of these new items were manufactured abroad, with inferior quality resulting in almost all cases. The poor quality of the new product and deteriorating quality of standard items such as "Erector" sets and American Flier trains only added to the company's woes. In 1967, after six straight years of losses, the A. C. Gilbert Company closed its doors.

The American Flier S gauge line was purchased by Fundimensions, parent company of Gilbert's long-time rival Lionel. At this writing, Fundimensions still continues to manufacture American Flier trains and equipment for loyal collectors, many of whom got their first American Flier train sets back in the '40's and '50's.

The stereo connection with Gilbert products has truly come full circle. The ERECTOR SET line was sold in 1967 to Gabriel Industries, and later to Ideal Toy Company. Then, in early 1986, Ideal was purchased from CBS Inc. by the same company which had long ago acquired Tru-Vue and its "Santa Claus' Workshop" films: VIEW-MASTER.

—Ed.
Arizona Territorial Stereography

Part V

by Bruce Hooper
Commercial Stereography's Waning Years in Arizona: The Kolb Brothers and Keystone c. 1910-1930

In my last article, I failed to give a detailed account of the Kolb Brothers and their place in Arizona stereographic history. I hope to correct this problem with this article.

Both Ellsworth and Emery Kolb were born in Smithfield, Pennsylvania, a settlement near Pittsburgh, in 1876 and 1881, respectively. They were sons of Austrian immigrants. Both men quit school before graduating to seek employment in the Pittsburgh area. Ellsworth was employed at various occupations, while Emery worked on a drill press at Pittsburgh Westinghouse Electric Company. Ellsworth injured himself in one of the steel mills and was forced to seek lighter work. This incident happened about 1900. He left Pittsburgh for California, working various jobs in Colorado, Yellowstone, and Yosemite. On his way east, he visited the Grand Canyon and found employment at the Bright Angel Lodge. Within a year, he had saved enough money to visit home. Meanwhile, Emery became interested in photography and acquired a small view camera and installed a darkroom in his home. One of his most popular items was "button pictures." These were small pictures mounted on buttons in gold frames, a popular turn-of-the-century item. When Ellsworth returned home, he informed Emery of the opportunity to photograph tourists riding mules into the Grand Canyon. This excited Emery, but their mother insisted that Ellsworth return first and find Emery a job. Ellsworth eventually found Emery a job at an asbestos mine in the Grand Canyon.

Emery Kolb arrived in Williams, Arizona aboard the Santa Fe train in 1901. Here, he stopped at a photo shop to buy some darkroom paper. Upon learning of Emery's intention to become a photographer, the shop owner, a Mr. Arbogast, disclosed that he was moving and his place was for sale. Emery explained that he had no money, so Mr. Arbogast asked him to send his brother in. When Emery arrived at the Grand Canyon, the mine was closed, so he substituted for Ellsworth at the Bright Angel Lodge early the next morning, while his brother travelled to Williams to talk to Mr. Arbogast. When he returned that evening, the Kolbs were owners of a photographic shop in Williams. For the next year, Emery operated the shop in Williams while Ellsworth continued to work at the Grand Canyon. The bulk of the early business consisted of portrait photographs of Williams saloon girls. On weekends, the Kolb Brothers set up their equipment near Bright Angel Trail and photographed tourists riding mules into the Canyon. In 1902, they moved their photographic business to a new location on the South Rim of the Grand Canyon.

The Kolb's first darkroom consisted of an old prospect hole in the side of a canyon wall covered with a blanket. Every trail party was photographed, using glass negatives. Orders were taken at the depot, a converted boxcar, as tourists prepared to leave on the evening train. Finished prints were mailed to customers. In 1904, they constructed a small wood-frame studio on the edge of the South Rim. They continued making additions to this gallery until 1926. In 1906, the Kolb Brothers erected a finishing room at Indian Gardens.

Ellsworth Kolb at Glenwood Springs, Colorado on the Colorado River. What at first appears to be a large stereo camera may be a hand cranked motion picture camera. (Courtesy of Emery Kolb Collection. NAU Special Collections Library, Flagstaff, AZ.)

Kolb Brothers photographic material consists of lantern slides, mass produced postcards and black and white prints (panoramics, 2 1/4 " X 2 1/4 " to 11 X 14 "), motion picture film, and stereographs. Earlier photographs (1902-1911) used glass negatives, while later issues used roll film. I do not know how many stereographs were taken and published by the Kolb Brothers before their 1911 river trip from the Green River in Wyoming to Needles, California. They must have taken some stereographs of trail parties in order to compete with Underwood & Underwood and H. C. White. All of the stereographs I have seen were taken during the 1911 River Trip. The Kolb Brothers used two Weno Stereoscopic Cameras (introduced by the Blair Company in 1902) for their stereograph negatives. They also had stereoscopes for viewing their stereographs and they also gave stereopticon lectures. These stereopticon lectures never were as important as their motion picture and lantern slide shows (1915-1926). Stereographs were only taken during the 1911 river trip. They must not have sold very well, because they did not take their Weno Stereoscopic Camera along on later trips. In fact, on their trips after 1911, the Kolb Brothers used their motion picture cameras and their panoramic cameras.

The Kolb Brothers stereographic material consists mostly of un-mounted standard and cabinet sized views. Stereographs when mounted are on flat buff mounts, lack identification (no imprint), prints are domed, and occasionally there is a caption scratched into the negative. They made a lot of duplicates. I would confine the Kolb Brothers period of stereographic activity between 1902 and 1911. Kolb Brothers stereographs are quite rare in comparison to stereographs published by Underwood & Underwood and H. C. White during the same period.

Keystone View Company fills the gap between the teens and the 1930s. In addition to views by Underwood taken in the early 1900s that were republished by Keystone, there were also a number taken by their own stereographers.
Subject matter consists of the Grand Canyon, occupational, and water projects (i.e. the Coolidge Dam). They stereographed all parts of Arizona and incorporated these views into other series. Stereographs by the Keystone View Company are on dark gray mounts.

With the publishing of the Keystone View Company issues comes an end to commercial stereography in Arizona. No doubt there probably do exist some private limited issue stereo views taken after the 1930s. Today, viewmaster slides of Arizona's National Parks, sold in gift shops, are a legacy of Arizona's rich and colorful stereographic past.

SOURCES


ADDITIONAL GEMS OF INFORMATION ON ARIZONA STEREOGRAPHERS

THE STRANGE TALE OF CICERO GRIME

Cicero Grime arrived in Globe in February, 1880. His gallery was called the California Art Gallery, and he was proprietor of the I.C.U. Photograph car in California. While he took photographs in a number of formats (mainly tintsypes) he also took some stereographs. He is an excellent example of a railroad stereographer and one of many photographers who left California.

Cicero Grime's stay in Globe was brief. During the summer of 1882 his brother, Lafayette (Fate), was hanged for robbery and murder. Unfortunately, Cicero was implicated in the robbery and was sent to Florence for safekeeping and then tried, convicted, and sentenced to the penitentiary at Yuma. He eventually was sent to the insane asylum at Stockton, California where he escaped and travelled to Oregon where he was met by his wife and four little girls. All this happened between 1882 and 1884.

(Arizona Silver Belt, April 3, July 24, 1880).


C.W. BARNETT, 1858-1928

C.W. Barnett was born in San Bernardino County, California on September 29, 1858. He became interested in photography at an early age and in 1879 established a gallery in Bodie, California. Before coming to Arizona he visited the mining camps of Nevada. In 1881 he established a gallery in Mesa, Arizona Territory that lasted for a year. Barnett then removed to Phoenix, A.T. where he constructed a gallery and operated it for a number of years, eventually forming a partnership with George H. Rothrock that lasted until 1894. At the same time he owned a three hundred acre ranch near Mesa where he resided until 1897. Barnett was made deputy county recorder in January 1897 and in 1898 was the Republican candidate for assessor of Maricopa County. In 1900 his name was placed on the party ticket as candidate for county collector. He eventually was elected to the post and served as county assessor during the early 1900's and the teens. Barnett married Hattie E. Barnum, Prescott, A.T. native.

Agent, New York Life—c. 1900-1904 (Skinner's Phoenix Directory, 1903, p. 19.)

City Assessor and Tax Collector—1905-1918

City Commissioner—1919-1921

SOURCE: ARIZONA BUSINESS DIRECTORY. 1905-1921.

Sanitary Inspector, Street Dept.—c. 1922-1925

Inspector City Engineer—1926-1928

(Portrait and Biographical Record of Arizona, pp. 348-349.)

(Phoenix City Directory, 1923-1928)

RANDOM ADDITIONAL NOTES ON STEREOGRAPHERS

Charles R. Savage: ARIZONA ILLUSTRATED BY C.R. SAVAGE—front of mount

PHOTOGRAPHIC SCENES IN UTAH, ARIZONA, MONTANA,
IDAHO, AND WYOMING TERRITORIES. Views of the Most Interesting Points on the Union Pacific, Central Pacific, and Utah Central Railroads, GROUPS OF INDIANS, AND PORTRAITS OF THE REPRESENTATIVE MEN OF UTAH TAKEN BY C.R. SAVAGE, PIONEER ART GALLERY. East Temple St., Salt Lake City, Utah.—back of mount Mount color—Green Mount size—Std. Mouth of the Black Canyon of the Colorado River.

During the 1890's the photographer Henry Goddard Peabody gave lectures of the western United States that included views of the Grand Canyon. These views were taken by Peabody and represent the low level of stereograph production in Arizona Territory during the last decade of the nineteenth century.

W.H. Williscraft—William Hamilton Williscraft
Aztlan Lodge, No. 1—Prescott—1895—Master Mason, suspended for non-payment of dues in 1896.
D.F. Mitchell—Daniel Francis Mitchell
Erwin Baer

Henri Penelon was born in Lyon, France in 1827. He was a portraitist, fresco painter, and photographer in Los Angeles beginning about 1853. He died at the residence of William H. Buffum in Prescott.


George H. Rothrock also published views on orange/pink mounts in 1876. About 1890, he formed a partnership with a photographer named Barnett. He seems to have also switched back to orange/lavender mounts. From what I have seen so far, Rothrock did not number these stereographs. D.P. Flanders probably also stereographed San Xavier in 1869.

Underwood & Underwood tinted some of the stereographs in the 18 card sets of the Grand Canyon.

Wittick stereographs of Arizona Territory are on orange/lavender, cabinet size mounts imprinted Wittick & Russell, Albuquerque. Series is "Views in New Mexico, Arizona, and Mexico."

George H. Rothrock married Eliza Woods and had five children, but only one, Flora, survived. The others: George died at two years of age. Lilla died at one year, Lucretia died at birth and May lived for one day. From: Reader, Sally O'Donnal and O'Donnal, Leah Skouosen. (Burial Records of Phoenix, Maricopa Co., Arizona 1872-1914. 1st ed., 1970.)

Charles O. Farcot toured Arizona Territory through most of 1879. He arrived in Globe in November 1879 and stayed until January 1880. (Arizona Silver Belt (Globe), January 24, 1880, p. 1, col. 3.)

E. L. Clement of Oak Park, Illinois took stereographs of the Grand Canyon during the late 1890s.

James Hildreth visited Globe from late May to mid-June 1886. Arizona Silver Belt (Globe), May 29, June 5, 1886, p. 3, col. 1.)

F.A. Cook—Francis Augustus Cook
(Source: Peter Palmquist)
F.A. Cook's gallery was located on Cortez Street in Prescott. (Weekly Arizona Miner, November 12, 1870, p. 3, col. 2.)
F.A. Cook was elected to the office of County Surveyor in November 1870. (Weekly Arizona Miner, November 26, 1870, p. 2, cols. 3-5.)
F.A. Cook might have been part of the partnership Buck & Cook, American Restaurant in La Paz, A.T. before moving to Prescott. (Weekly Arizona Miner, October 26, 1864, p. 3, col. 2.)
First photographic partnership: F.A. Cook & L.W. Worth (Weekly Arizona Miner, September 11, 1869, p. 3, col. 4.)

A second gallery was constructed on the rim of the Grand Canyon by Fred Harvey in 1914 in order to compete with the Kolb Brothers.

Erwin Baer came to Prescott from St. Louis in May 1883. (Arizona Weekly Journal-Miner, May 11, 1883.)

With the exception of Erwin Baer, J. C. Burge and George Benjamin Wittick, a number of Arizona's stereographers came from California, e.g. Henry Buehman, George H. Rothrock, Charles O. Farcot, Camillus S. Hay, D.F. Mitchell, and W.H. Williscraft.

A.S. Addis bought out Porter in October 1879. Address: Corner of Campe Convent Sts., Church Plaza. (Arizona Daily Star, October 17, 1879, p. 3, col. 1.)

Emery Kolb at a campsite on a 1911 Colorado River trip. (Emery Kolb Collection. NAU Special Collections Library, Flagstaff, AZ.)
From September 15 to November 1879, Buehman travelled to Camp Huachuca, Charleston, Tombstone, Forts Bowie, Apache, and Thomas. At Camp Huachuca he took a dozen views of the camp and scenery: at Charleston, views of the Tough Nut and Corbin Mills, and at Tombstone, views of the Tough Nut, Contention, Grand Central and other mines. At the forts, he took views and along the route used the camera liberally. (Arizona Daily Star. November 4, 1879, p. 3, cols. 1 and 2.)

Correction: D.F. Mitchell possibly found out about San Xavier from George H. Rothrock early in 1878. Probably between 1878 and 1880, Mitchell visited San Xavier.

D.F. Mitchell and W.H. Williscraft probably were at one time residents of Junction City, Kansas. They visited Junction City during the 1870s. They were probably also friends of A.P. Trott, a photographer in Junction City. D.F. Mitchell made frequent visits to Southern Arizona during the late 1870s and the 1880s, particularly Phoenix, Tucson, and Florence. D.F. Mitchell, W.H. Williscraft, George H. Rothrock and Henry Buehman stereographed much of Central Arizona during the 1870s and 1880s. George H. Rothrock reprinted some of his negative numbers from the Forts, he took views and along the route used the camera liberally. (Arizona Daily Star. November 4, 1879, p. 3, cols. 1 and 2.)

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**Checklist of Underwood & Underwood Stereographs of Arizona Territory—buff and gray mounts**

**Copyright 1901**

- The Presidential Party descending the 3,000 ft. shaft into the Congress Gold Mine, Phoenix, Arizona.

**Copyright 1902**

6167. At breakfast [Three Navajo Indians posed outside their hogan near Flagstaff].

- Mary Funston N.A.N.S. Class '02 [Group photograph of Flagstaff Normal School graduating class of 1902 standing in lava bed at Sunset Crater].

**Copyright 1903**

6145. Loading Surface Ore, Metcalf Copper Mines, Arizona.

Ellsworth and Emery Kolb in a rowboat trying to rescue a burro in the river. (Emery Kolb Collection, NAU Special Collections Library, Flagstaff, AZ.)

6158. 7 cowboys examining a yearling's brand, Sierra Bonita Ranch, Arizona.


- Inclines to the Copper Mines, Metcalf, Arizona.

- Drilling Copper Ore, one Mile underground—the Wilson Mine, Metcalf, Arizona.

- In the Mountain's Heart—running out Copper Ore, Wilson Mine, Metcalf, Arizona.

- The Detroit Copper Company's Concentrator in the Copper Hills of Morenci Copper Mines, Arizona.

- Where Copper is King, Clifton, Arizona.

- Mountains of Copper Ore, King Canyon, near Metcalf, Arizona.

- The Rain dancers (Kachinas) leaving Oraibi, largest of the Hopi Indian Villages, Arizona.

- Terrace homes of Hopi Indians, Oraibi.

- Runaway Fox (Kewanwatiwa) & his home.

- Home duties of the Hopi Man.

- [Two Indians with mules posed in foreground. Hopi blgs. in back].

- [Woman weaving blanket. brave with bow & arrow poses in front of Hogan, Navajo Reservation, Arizona].

- [Typical Hopi Indian home. nude child in front with mules and turkeys, another on ladder, woman stands, Mishongnowi, Ariz.]

(30) —6156. Among the 30,000 Cattle at Sierra Bonita ranch,—roping a yearling, Arizona.

(81) —6187. At breakfast—typical desert home of Navajo Indians (S.W.), Arizona. Seething Waters of the Colorado—looking down from Pipe-Creek, Grand Canyon of Arizona.—Copyright 1903.

- Thirteen Miles from Rim to Rim—North from Sentinel Point, Grand Canyon of Arizona.

- A mighty red rift in the earth—Bright Angel Canyon from O'Neill's Point, Grand Canon of Arizona.

- UNDERWOOD & UNDERWOOD GRAND CANYON OF ARIZONA (18 Card Set) Works and Studies—Copyright 1903

**H.C. WHITE Checklist**

12201. Overview of Grand Canyon as seen from Sentinel Pt.

12208. Colorado River, Grand Canyon.

12218. Grand View Point in Grand Canyon.

(4) 12206. N.W. down the Granite Gorge from Plateau below Bright Angel, Grand Canyon, Arizona, U.S.A. copyright 1905.

In the Rapids" Three unidentified men at upper left. (Emery Kolb Collection, NAU Special Collections Library, Flagstaff, AZ.)

(10) 12215. When the storm clouds hang low—across Grand Canyon, from Bright Angel, Ariz., U.S.A. copyright 1906.
12224. Dendritic stalagmites in a limestone cave, Grand View trail into the Grand Canyon, Arizona. copyright 1905.

CHECKLIST OF WATKINS NEW SERIES OF ARIZONA TERRITORY (1880)
(Courtesy of California State Library, Sacramento.)

4837. Casa Grande; Pre-historic ruins, Arizona
4838. Casa Grande; Pre-historic ruins, Arizona
4839. Casa Grande; Pre-historic ruins, Arizona
4840. Casa Grande; Pre-historic ruins, Arizona
4841. Casa Grande; Pre-historic ruins, Arizona
4842. Cactus, (Cereus Englemanni.) Arizona
4843. Cactus, (Opuntia Arbouscula.) Arizona
4844. Cactus, (Opuntia Echinophlora.) Arizona
4845. Cactus, (Opuntia Bigelovii.) Arizona
4846. Cactus, (Fonquiera Splendens.) Arizona
4847. Cactus, (Cereus Giganteus.) Arizona
4848. Cactus, (Cereus Giganteus.) Arizona
4849. Cactus, (Cereus Giganteus.) Arizona
4850. Cereus Giganteus in blossom. Arizona
4852. Fort Yuma, from Yuma City
4853. Fort Yuma, from Yuma City
4854. At Fort Yuma
4855. At Fort Yuma
4856. City of Yuma from the Fort, Arizona

Unidentified man in the distance, running in the rapids (center left). (Emery Kolb Collection, NAU Special Collections Library, Flagstaff, AZ.)
No doubt there are many interesting things going on at any time in the world, and though a large percentage are photographed, few are captured in stereo. I am amazed in recent years at how often an unscheduled event, such as a crashing air liner, has been captured on film by some nimble, camera-ready amateur. But stereo photographers are few and what we do capture is mostly determined by happenstance. Even Keystone View Company professionals in the 1910-1940 decades, when they chanced to stereograph well-known personalities, did so in a candid, snapshot manner that was an infrequent occurrence judging by the surviving pictures.

All of this is reflected in the folios of the Stereoscopic Society. For the most part, each folio contains a wide range of subject matter with no particular idea connecting the pictures submitted by the various members of the circuit. Usually this adds to the interest generated in not knowing what will come next...and many are the pleasant surprises. It also allows each person to concentrate on what his or her interests are and also what they may come upon by chance.

SPECIAL FOLIOS

This is not to say that there are no attempts to organize or direct the subject matter. In every photography club of any sort which produces and exhibits pictures there are always periodic suggestions that everybody concentrate on a selected type of subject for a given meeting, exhibit, or folio. ("Let's have a sunset category at the next meeting," says the chap who has just come back from Bali with a camera full of them, and who has noted in the past that even spectacular sunset photos did not do well because someone convinced everyone that such a subject was trite). Usually such a subject is tried but is only partially successful because most of us are not really enthused with pursuing the other fellow's interests.

The Stereoscopic Society circuits do have some limited special topic folios which have been successful for several years. In transparencies there are two which continue to generate good response and interest. These are called the HUMAN INTEREST and the TRANSPORTATION folios. If one has no appropriate entry, then the usual type of entry is welcomed rather than 'sitting out' that round of the circuit. But we tend to save appropriate pictures for such folios and the general idea is kept by a large percentage of the entrants.

"Human Interest" is hard to define but usually implies a picture in which there is some special appeal in the subject and probably something less than perfect in the composition, lighting, or whatever. Such views are almost universally enjoyed but would get no votes in competition with 'serious' entries. (Well, even the best comedies are effectively eliminated from 'Best Picture' consideration in filmdom's
The late E.K. Emslie, a longtime Society member, enjoyed capturing art pieces such as these sculptures by W. Brown. Lighting and camera angle offer many possibilities.

Academy Awards! The HUMAN INTEREST folio is the place to put that picture of Aunt Nellie that one just has to show, while admitting it has nothing in common with salon quality. It serves a very useful purpose and there are those who say its arrival brings more joy than any of the others.

The TRANSPORTATION folio is just what it implies...lots of views of planes, trains, boats, autos, streetcars, etc. But we are very loose in interpretation and there is always a percentage of pictures of shoe leather, pogo sticks, gondolas, and sled dogs. It is a lot of fun and there are always some real gems included.

The print circuit has gone another direction and has an ASSIGNMENT folio. It takes about a year to make the circuit and each time it arrives it indicates the subject to be entered on the next trip through. In recent years it has featured such topics as 'Public Buildings,' 'Water,' 'A Public Event,' 'Self Portraits,' and 'Home.' One especially interesting round was 'My First Stereograph' in which we dredged up our first attempts at making stereographs and showed them with all their warts. It was very instructive. Nearly everyone made all of the classic errors in taking and mounting their first views and yet even these flawed results hooked us forever on stereo. The thrill of making our own 3-D blinded us to everything else. We each did it alone without instruction and confirmed to ourselves that 3-D is better than 2-D...by far. But we certainly had a lot to learn. A very instructive folio.

STEREOGRAPH YOUR HOBBIES

Most people who make stereographs have other hobbies...often collecting something or making something. One can do well to illustrate, in as high a quality as possible, the products of one's other hobbies in stereo. It gives an interesting alternate way of showing these things and also makes a permanent record. It might even be a good idea for the ASSIGNMENT folio.

Stereo photographers might like to double their pleasure, double their fun, by joining the Society. Contact the Corresponding Secretary, Jack E. Cavender, 1677 Dorsey Avenue, Suite C. East Point, GA 30344.

A SOUPED-UP VIEW-MASTER

by John Martz

Those of you whose binoculars are in shambles after the Mar./Apr. 1986 STEREO WORLD article showing how to build the Adjustable Achromatic Stereo Viewer can continue to salvage parts for a good cause, namely better aspects of stereo viewing. The wide angle eyepieces make excellent magnifiers for View-Master sized images. Used in the macro mode (view thru end opposite that used in binocular), the eyepiece gives a reasonably flat field with good color correction. The much-shortened focal length makes adjustment critical, but with increased image size (2½X regular V-M) and sense of presence, detail can be seen as never before.

The Model No. 2014 viewer was chosen for its flat rear (lens side) surface and generally squared shape. Earlier viewers along with contemporary models have irregular curved surfaces making modification difficult. With a coping saw, the old V-M eyepiece section can be removed with care. Cut the sides thru first, then starting across the bottom (viewer up side down), evenly work to the top. File off any rough edges.

Several other improvements are made to the reel/view changing section before attaching the new eyepiece assembly. Carefully pry apart the two plastic halves of the
reel changing section using a broad screwdriver or wedge. About 4 loose items should fall out upon separation of the halves—the changer plate with spring attached, and two flat brass registering fingers.

Remove the 4 flat gripper rivets from inside the corner and drill 4 holes 1/4" dia. in the front half where the rivets were. A 1/4" self-tapping screw is used to thread the 4 rear half locations after smaller pilot holes are drilled thru. The two halves can now be screwed back together (1/8" dia. X 1/4" screws) after other modifications are complete.

On the changer plate, a new finger button replaces the older plastic version. Drilling a 1/4" dia. hole at the arm's tip, a new 1/2" dia. chrome-plated disc nut is attached with a small screw.

The old spring is replaced with a new spring about the same diameter and length but with more coils. This reduces tension, eliminating much of the return slap often felt when changing views.

### PARTS & ASSEMBLY

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<tr>
<th>No.</th>
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<th>Description</th>
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<tbody>
<tr>
<td>(1)</td>
<td>1 ea.</td>
<td>Reel/View Changer section from Model No. 2014 Viewer. See text for modification details.</td>
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<tr>
<td>(2)</td>
<td>1 ea.</td>
<td>1/8&quot; dia. X 3/4&quot; Chrome-plated screw-mounted from inside reel/view changer section.</td>
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<td></td>
<td>3 ea.</td>
<td>3/8&quot; dia. (7/32&quot; hole) flat washers</td>
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<td>3/8&quot; hex-head nut</td>
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<td>(3)</td>
<td>2 ea.</td>
<td>1/2&quot; dia. X 3/4&quot; 5-turn spring</td>
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<td>(4)</td>
<td>2 ea.</td>
<td>Sliding Lens Mount—41 X 41mm X 1/4&quot; Masonite with a 3/4&quot; dia. hole</td>
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<td>(5)</td>
<td>1 ea.</td>
<td>Center assembly mount and pivot—41mm X 20mm with a 1/8&quot; dia. hole aligned with screw on changer and lens aligned in openings.</td>
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<td>(6)</td>
<td>1 ea.</td>
<td>Assembly Frame—1/4&quot; Channel X 12&quot; Hobby Brass. Corner intervals 41mm high X 110mm wide with 2mm tab to solder after No. 4 &amp; 5 are inserted into channels.</td>
</tr>
<tr>
<td>(7)</td>
<td>1 ea.</td>
<td>1&quot; dia. Chrome-plated Disc Nut with 3/8&quot; thread</td>
</tr>
<tr>
<td>(8)</td>
<td>2 ea.</td>
<td>Plastic sleeves cut from Kodak 35mm film cans</td>
</tr>
<tr>
<td>(9)</td>
<td>2 ea.</td>
<td>Eyepieces from 7 X 35 Wide Angle Binoculars</td>
</tr>
<tr>
<td>(10)</td>
<td>2 ea.</td>
<td>1/8&quot; dia. X 3/8&quot; Brass Round Head Screws—Pre-drill holes in frame and masonite before inserting screws.</td>
</tr>
</tbody>
</table>
The two brass registering fingers may need adjusting. If dark streaks and grooves are seen around the edge of a reel used in that viewer, the fingers should be re-bent to reduce pressure. This may require several tests with a reel and temporary assembly.

Drill a $\frac{5}{16}$" dia. hole in the center of the plastic pivot retaining located inside the rear half of the reel/view changing section. Before installing the $\frac{5}{16}$" dia. lens mount/focusing screw, you may want to remove the frosted plastic diffusers from the front half for cleaning, and spray the outside of both halves with flat black paint. With the adjustments and additions made, the changer section is put back together and set aside.

The eyepiece assembly shown is designed for maximum viewing flexibility. A 1" dia. disc nut located at the center makes critical focusing easy. The assembly swings, allowing for eyes having different accommodations, and a $\frac{1}{4}$" inter-ocular adjustment lets the eyes center on each view pair.

My eyepieces are $1\frac{1}{16}$" dia. which fits nicely into a plastic Kodak 35mm film can. With a $1\frac{1}{4}$" dia. hole in each sliding lens mount, the lens with plastic sleeves can be fitted snugly into the mount holes still allowing for some adjustment. Fronts of the lens should slide into the reel changer openings with close clearances top and bottom. Clearance (eyepiece diameter) may vary with different binoculars, so adaptation may be necessary.

Image size may vary from 2X to $2\frac{1}{2}$X increase in magnification depending on the oculars. One very striking difference I noticed in addition to detail and presence was the roundness in the earth and moon views (they are indeed 3-D) of the space exploration series, instead of the flat appearance as seen thru a regular viewer. Older 50's views have a good bit of grain and fading, but the more recent series with newer films compare in quality to the Realist. The Souped-Up version will give you good reason to re-explore your reel collection with 4 times the enjoyment.

KEYSTONE-MAST TO MOVE
(continued from page 23)

pioneering photographers, major art photographers and contemporary innovators.

Temporary exhibits will feature borrowed works from private collectors and other institutions, as well as work by contemporary photographers.

And, taking a cue from its enormously successful 1984 "Light, Camera... MAGIC!" exhibition, the museum will create a family-oriented, interactive installation designed to introduce new visitors to photography and challenge even sophisticated viewers.

The Kress building also is roomy enough to provide the museum with several new features, including a 300-seat auditorium, library, museum shop, seminar room and work area for scholars to study museum collections. The museum invites all interested to help with the campaign to fund the relocation. Send donations (payable to UCR Foundation) to Capital Campaign, California Museum of Photography, University of California, Riverside, CA 92521.

A FEDERAL GRANT TO SAVE STEREO NEGATIVES

The California Museum of Photography has won a $10,500 federal grant to help preserve the world's largest stereographic collection, an assemblage of historical photographs that would be lost forever if the negatives were allowed to decay.

The award from the Institute of Museum Services is one of two grants the museum received from the agency. A second grant of $40,050 will be used for overall improvement of the museum's educational services and publications.

The focus of the smaller grant is the Keystone-Mast Collection, a gift to the museum from the Mast family of Davenport, Iowa, in 1977. It represents the entire surviving archive of the Keystone View Company.

Conservation of the collection has been an increasing concern because of the age of the glass negatives and cellulose nitrate negatives which provide the only permanent record of the Keystone View Company.

"The grant will allow for a much more organized approach to the problem of conservation," said Ed Earle, curator of the Keystone-Mast Collection and conservation project director. "A lot of history would be lost if this project weren't conducted."

Nearly 200,000 glass negatives dating from the 1860s to 1920s are still stored in the original paper envelopes containing acid that could destroy the emulsion, the portion of the negatives containing the image.

The Institute of Museum Services grant will provide money to expand a volunteer group that is resleeving the negatives in acid-free sleeves. And there are plans to organize another volunteer group meeting on Saturdays.

The resleeving project was begun two years ago with a grant from the National Endowment for the Arts and has been continued ever since strictly on a volunteer basis.

"It's absolutely essential to transfer those negatives to acid-free sleeves to prevent further decay," Earle said. "They'll last for hundreds of years if kept in the right conditions."

Other images showing signs of decay are contained on cellulose nitrate film, a highly unstable film base widely used after the turn of the century and until the 1930s. A group of about 450 negatives, including images of Franklin Delano Roosevelt and the 1933 World's Fair in Chicago, will be copied on modern silver-based film.

The third part of the grant project will be devoted to making prints from some original negatives in the collection that have never been printed. Some 3,500 negatives have been located for which no print exists, he said.

The project started in October, '86 and will run for 18 months.

The grant to the California Museum of Photography is one of 260 grants totalling $3.2 million offered by the Institute of Museum Services for the fiscal year beginning Oct. 1.

IMS is an independent agency within the National Foundation on the Arts and the Humanities that offers conservation project funds to the nation's museums.

For more information on the grant project or the programs of the California Museum of Photography, call (714) 787-4787.
FOR SALE

STEREO REALIST from $125. Kodak $100, TDC Colorton II with case Ex $150, View-Master Personal $90, w/IB. 100 day warranty. Revere with case $125. Ex Brumberger viewer $25. Revere viewer $27. All post-paid. Stereo views by the subject lot. LSASE for new price list including many closeout specials. Stereo Photography Unlimited, 8211 27th Ave. N., St. Petersburg, FL 33710.


MEMORABILIA COLLECTORS: 3-D photos of Miss Liberty Centennial Celebration and a handcrafted Holmes-type viewer with a polished solid brass hood, $29.95 + $3.00 UPS. G.H. Sergio, 760 Clawson St., Staten Is., NY 10306.

100 VIEW-MASTER REELS, mostly scenic USA from late 1940s. 50¢ each. Send SASE for list. Richard Orr, 6506 Western Ave., Omaha, NE 68132.


3-D PRINT VIEWERS, $1.00 each postpaid. Also, stereo slides (Realist), scenic, travel, through Penthouse models. Please state subjects of interest. Stamp appreciated for list. Hollywood Stereo, Box 7331, Burbank, CA. 91510.

1. BELPLASCA in excellent condition $600. US, 2. NU 3-D VU viewer; new, $30. J. Richard's Le Taxiphot $45 × 107 with two trays and glass plates, 4. Two projection View-Master lenses $20. 5. Write, please to: D. Smekal, 1765 Rosebery Ave., West Vancouver, B.C., Canada V7Y 225.

19TH & 20TH CENTURY images. Serious Collectors, send me your wants. Free Search Service.

As part of their membership, members are offered Free use of classified advertising. Members may use 100 words per year, divided into three ads with a maximum of 35 words per ad. Additional ads or words may be inserted at the rate of 20¢ per word. Please include payment with ads. Deadline is the 10th of the month preceding publication date. Rate sheet for display ads available upon request. Send ads to the National Stereoscopic Association, Box 14801, Columbus, OH 43214 or call (614) 895-1774.

STITZ STEREO SYSTEM, inc. Beam Splitter w/ case—slide viewer, 52mm Ring Adapter, unit stand for projection, 35mm Bell & Howell projector w/5" cubes for slides and case in EX to very good condition. Trade for a "Realist" format camera 35mm in EX to very good condition, or sell all for $250. Call to hold item, (504) 647-0325 and send M.O. or trade item to: J.F. Rando, 13365-1 Areal Borgeois Rd., Gonzales, LA. 70737.

WANTED

STEREO VIEW cards of New Zealand by Walter Burke, stereographer, Sydney (Aust) and Auckland (N.Z.). Q. Burke, Box 118, Holtville, CA. 92250, (619) 356-2995.

PHOTOGRAPHS or negatives of streetcars or street railways in Scranton, Pa. Charles Wrobleski, Box 663, Scranton, PA. 18501.

VIEW-MASTER Personal camera and cutter. A.E. Clark, PO Box 1597, Bracebridge, Ontario, Canada, POB 100.

COLLECTOR desperately searching stereo views of Pontiac, Michigan and immediate vicinity, e.g. Orchard Lake, Pine Lake, Birming- ham, Lake Orion. John Cameron, Oakland University, Rochester, MI. 48063.


WAR STEREOs. All makers including Anthony, T&H; Gardner, Cooley & Soule. Also post war views by Anderson, Tipton, etc. Civil War CDVs & other images. Send $1, for paper & image catalog. Gordon Totty, 576 Massachusetts Ave. Lunenburg, MA. 01462.


KNUD KNUDESON stereo cards of Norway. Please list the number and title of the view as well as condition. Neil Morgenstern, 2607 Tally Lane, Wantagh, NY. 11793.


NEW MEMBER wants all baseball stereo views, plus any other views, etc. specifically "Realist" or Religious material. Billy Sunday, D.L. Moody, etc. Tom Benke, 804 E. High, Jefferson City, MO. 65101.
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 32816.

Long Island, NY. Stereos and real photo post cards wanted. Brooklyn, Coney Island, Queens, Nassau and Suffolk Counties. Stereos by Hammond of Greenpoint specially sought. Send xerox or on approval to Fred Rodriguez, PO Box 132005, Miami, FL 33111.

Gold & Silver Mining. All original photographic images (stereo views, etc. up to 1910 (no foreign). Prospectors, mine interiors, exteriors, mining equipment, mining towns, etc. Also wanted anything Numismatists, views of U.S. Mints & Assay Offices (Philadelphia, New Orleans, San Francisco, Denver, etc.), and mint and coinage operations. Also, views of U.S. Bureau of Engraving & Printing (Washington, DC) and its paper money operations. Plus any similar views of private Banknote Engravers. Please send photocopies with prices and description, or send for my approval. I will respond quickly. David Sundman, Littleton Coin Company, 253 Union St., Littleton, N.H. 03561.

Post Office. Related photographs in any format wanted. RFD wagons and carriers on post cards, mailmen, interior of post offices, real photo post cards and postal history wanted. Send on approval or xerox to Fred Rodriguez, PO Box 112005, Miami, FL 33111.


Re Marbles—trading cards, post cards, stereo cards, tokens, or medals awarded to people at marble competitions. Top prices paid. Bertram Cohen, 169 Marlborough St., Boston, MA. 02116.


Hoff, Hissong, Chapman and any other stereo views or other formats by LaGrange, Indiana photographers. Will pay cash or trade stereo views of large format albums. Richard Marks, 219 S. Sherman St., LaGrange, IN. 46761.


Polarized Glasses (red automobile) from a bigger finish to send the crowd out with, most of the special commemorative t-shirt featuring a rainbow slash stretched out of Tomorrowland and all the way down Main opening sequences. "Captain Eo" would have benefitted mission rates and group packages. During the weekend, opening the park for a 60-hour weekend, with special ad-

Events

Jan. 11
Sixth Annual Santa Barbara Camera Show & Sale, Earl Warren Showgrounds, Hwy. 101 at Las Positas Rd., Santa Barbara, CA. Contact Bill McBride, Box 6237, Santa Bar-

bara, CA 93160. Call 805-684-7268.

Feb. 1
Silver Spring Photofair, Armory Place Exhibit Hall, Silver Spring, MD. Call 201-533-1991.

Feb. 7-8

Feb. 14-15 (NSA EVENT)
Florida Photocollector's 11th Annual Camera & Photographic Show, IN CONJUNCTION WITH NSA REGIONAL CONFERENCE. At the North Miami Ar-
mory, 13250 NE 8th Ave., North Miami, FL. Saturday, Sunday, 10:00 to 4:00 PM. Contact Florida Photo Collectors, PO Box 15224, Plantation, FL 33318. Call 305-473-1596.

Feb. 21 (NSA EVENT)
NSA REGIONAL MEETING, Saturday, Feb. 21st at 7:30 PM. In conjunction with the San Jose Photo Fair (Feb. 21-22), Gateway Hall, Santa Clara County Fairgrounds (344 Tully Road, San Jose, CA). Special programs plus "Show & Tell." Contact Lou Smaus, 668 Oakwood Ct., Los Altos, CA 94022.

Feb. 20-22

Feb. 22

Mar. 21-22
The 4th Annual Omaha Camera Show, Sokol Hall, 13th & Marsha, Omaha, NE. Call Jim (mornings) 402-558-9473 or Jay (eves) 402-453-4065.

Apr. 4-5
The Boston Show (27th Annual) sponsored by the Photographic Historical Society of New England at the Armenian Cultural Center, 47 Nichols Ave., Watertown (Boston) MA. Contact PHSNE, c/o David Berenson, 32 Colwell Ave., Brighton, MA 02135. Call 617-254-1565 from 3 to 11:00 PM EST.
ARIZONA TERRITORIAL STEREOGRAFHY

(continued from page 33)

4859. View from Fort Yuma, Arizona
4860. Colorado Bridge, from Fort Yuma, Arizona
4861. R. R. Depot, Yuma, Arizona
4862. Colorado Bridge, Yuma, Arizona
4863. R. R. Depot, Steamer Landing, Yuma, Arizona
4864. Colorado River Steamer and Bridge, Yuma, Arizona
4865. Colorado Bridge, from Fort Yuma, Arizona
4866. Barge No. 3 going through the draw, Yuma, Arizona
4867. Colorado River Bridge, Yuma, Arizona
4868. View up the Colorado, Yuma, Arizona
4869. Colorado River Bridge, Yuma, Arizona
4870. Colorado River Steamer “Gila,” Arizona
4871. View of the Colorado River, Yuma, Arizona
4872. R. R. Depot, Yuma, Arizona
4873. R. R. Depot, Yuma, Arizona
4874. View over the City of Yuma, Arizona
4875. View over Yuma, from near the Depot, Arizona
4876. View up the track from Depot, Yuma, Arizona
4877. Along the Gila at high water, Yuma, Arizona
4878. Home Comforts, Yuma, Arizona
4879. Yuma Indian, Yuma, Arizona
4880. Yuma Indian, Yuma, Arizona
4881. Yuma Indian, Yuma, Arizona
4882. City of Tucson, Arizona
4883. Sentinel Mountain from Palace Hotel, Tucson, Arizona
4884. Flour Mill, foot of Sentinel Mountain, Tucson, Arizona
4885. Palace Hotel, Tucson, Arizona
4886. View from the Palace Hotel, Tucson, Arizona
4887. View from the Palace Hotel, Tucson, Arizona
4888. View from the Palace Hotel, Tucson, Arizona
4889. View from the Palace Hotel, Tucson, Arizona
4890. View from the Palace Hotel, Tucson, Arizona
4891. View from the Palace Hotel, Tucson, Arizona
4892. View from the Palace Hotel, Tucson, Arizona
4893. Street in Tucson, Arizona
4894. Wood Train in Tucson, Arizona
4895. Park Brewery, Tucson, Arizona
4896. Park Brewery, Tucson, Arizona
4897. Park Brewery, Tucson, Arizona
4898. General View San Xavier Mission, near Tucson, Arizona
4899. San Xavier Mission, near Tucson, Arizona
4900. San Xavier Mission, near Tucson, Arizona
4901. San Xavier Mission, near Tucson, Arizona
4902. Contention Mill, Contention, Arizona
4903. Contention Mill, Contention, Arizona
4904. Mason’s Western Hotel, Contention, Arizona
4905. W.F. España Office, Contention, Arizona
4906. Charleston, Arizona
4907. Residence R. Gird, Esq., Millville, Arizona
4908. Gird’s Mill, Millville, Arizona
4909. Gird’s Dam, Millville, Arizona
4910. Corbin’s Mill, Millville, Arizona
4911. Tombstone, Arizona
4912. Tombstone, Arizona
4913. Tombstone, Arizona
4914. Street in Tombstone, Arizona
4916. California Store, Tombstone, Arizona
4917. View in Tombstone, Arizona
4918. View in Tombstone, Arizona
4919. View in Tombstone, Arizona
4920. Tough Nut Hoisting Works, Tombstone, Arizona
4921. Contention Works, Tombstone, Arizona
4922. Contention Works, Tombstone, Arizona

Stereographers who published and pirated local Arizona Views

AMERICAN VIEWS—New “H” Series—Miller & Best, Boston
CONTINENTAL STEREOSCOPIC COMPANY—New York (Major publisher of Arizona Views)
Eduoart & Cobb, San Francisco
Littleton View Company—Littleton, N.H.

FOR THE COLLECTOR’S POCKET
Doug Walberg has announced the publication of The Photographic Collector’s Pocket Handbook—a comprehensive listing of notable photographers and photographic terms for the collector and dealer. The book includes a listing of major international photography dealers and is printed in a handy pocket size for instant reference “in the field” at shows, auctions, etc. Also included are values of photos from $100.00 to $170,000.00 and information on what some leading investors, museums, and archives are seeking. The guide is priced at $10 for one copy, $20 for three copies, and $55 for ten copies, with all prices including shipping. Send orders to Doug Walberg, Rte. 1, Box 428, Bandon, OR 97411 (503-347-3881).

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CABINET (4 3/8x7") per 100: $9 case of 1000: $80
5 x 7" per 50: $5 case of 1000: $80
6x10" per 25: $6 case of 200: $34
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As for past unknowns, Francis Rizzari identified the view at the bottom of page 18 in the JUL/AUG '86 issue as being Green River, Wyoming. It is similar to Charles Weitite's No. 450 of the rock formation "Castle Barkalow." Francis speculates that the view at the top of page 19 in the same issue may be a Utah town, but is still researching it.

Rusty Norton furnished the information that the view at the bottom of page 19 in the aforementioned issue is "No. 11 The Identical Salem Witch Pins." The back of the view was published on page M-14 of Stereoview Backlists.

Send information on these or other past unknowns to Neal Bullington, 137 Carman St., Patchogue, NY 11772. Please do not send any views for the time being because we have a good backlog to draw upon.
This view is Keystone #26408, card No. 1 in their "Tour of the World" set. But who ARE these men and why should they have such a special place in Keystone's coverage of the world? See the feature in this issue by Norman B. Patterson, "Past Forgetting—The World Flight of 1924."