U-Boat!  German Subs in two World Wars

Revealed!  The 3-D Secret of Goo

Riverside’s for You in 2002
by Mark A. Willke

Stereo in Stereo!

It's always fun to find old stereo slides that include stereo photography equipment! I occasionally find ones in which the photographer has accidentally left his stereo camera case where it is visible in the background, but views that intentionally contain stereo equipment are more fun to discover.

Our first find this time shows two gentlemen enjoying some stereo slides with a couple of Realist red-button viewers. That slide storage box on the table is actually the base of an original box from a Realist ST-41/ST-61 camera and viewer set. In addition to the stereo interest contained in this shot, I also enjoyed that wallpaper, the little knick knock shelf and the lamp in the background.

The film chips of this unlabeled image were attached to one of the early Realist paper masks using the Realist heat-seal mounting kit. I've wondered whether this view might have been a self-portrait set up by one of the two men in the photo (perhaps using a tripod and a self-timer on the camera), but since it is unlabeled, the photographer and the people in the view are all unidentified and unknown.

Our second view also includes a Realist red-button viewer, but my favorite part of this scene has to be the woman's hat with that curly decoration on the top! (Is that some sort of feather?)

Labeled only with the couple's last name, this slide was mounted in an aluminum mask and glass. The photographer is unknown. From what I can tell from other slides in this collection, she and he operated a women's clothing store in Portland, Oregon, in the 1950s. (Watch for an interior shot of their store in a future installment of this column! In fact, since there is a stack of fabric samples on the table between the pads of paper, my guess is that she and he are shown here in the process of ordering new merchandise for their store. Could she be referring to stereo slides of the styles available?)

This column combines a love of stereo photography with a fondness for 1950s-era styling, design and decor by sharing amateur stereo slides shot in the "golden age" of the Stereo Realist—the late 1940s through the early 1960s. From clothing and hairstyles to home decor to modes of transportation, these frozen moments of time show what things were really like in the middle of the twentieth century. If you've found a classic '50s-era slide that you would like to share through this column, please send it to: Fifties Flavored Finds, 5610 SE 71st, Portland, OR 97206.

As space allows, we will select a couple of images to reproduce in each issue. This is not a contest—just a place to share and enjoy. Please limit your submission to a single slide. If the subject, date, location, photographer or other details are known, please send that along too, but we'll understand if it's not available. Please include return postage with your slide. Slides will be returned within 6 to 14 weeks, and while we'll treat your slide as carefully as our own, Stereo World and the NSA assume no responsibility for its safety.

A taste of the late '40s through the early '60s found in amateur stereo slides

Volume 28, Number 3 STEREO WORLD
CONTENTS

3 Riverside’s for You in 2002

4 U-Boat! German Submarines Through Two World Wars
by Richard C. Ryder

22 Goo and the Stereo Realist Permamount
by Mark A. Willke

32 A Berkshire 3-D Adventure

Regular Features

2 Editor’s View
Comments and Observations
by John Dennis

20 The Society
News from the Stereoscopic Society of America
by Norman B. Patterson

33 NewViews
Current Information on Stereo Today
by David Starkman & John Dennis

34 Classified
Buy, Sell, or Trade It Here

Front Cover:
The recent discovery of this nearly 50-year-old tube of adhesive inspired research into its surprising role in stereo history. See the article on “Goo” by Mark A. Willke on page 22.

Back Cover:
“Fleet of murderous ‘U’ boats, the greatest menace that ever faced our Empire, surrender at Harwich,” No. 188 by Realistic Travels. This is just one of 21 U-boat related views in Richard Ryder’s fascinating article “U-boat! – German Submarines Through Two World Wars” on page 4.
Our backlog of material has been almost embarrassingly full for some time, and there comes a point when the choice is between publishing more or buying another file cabinet. The mailing proximity of this issue to the previous one reveals what the choice was, but a glance at the editorial office makes the new file idea sound good anyway.

Articles in various stages of preparation tend to remain stacked in a sort of holding pattern, with the pick of which ones land on our pages first determined more by available space and the editor’s hours of sleep than anything else. Last issue’s “Polarizing 3-D Viewers” by William Eburn was a relatively recent submission, but the available space was a good fit. Besides, it was hard to resist quickly sharing this story by a person so directly responsible for sparking or reinforcing an addiction to all things 3-D in so many people—yours truly included.

“The Little Yellow Dinosaur” in the last issue and this issue’s “Goo” and “U-boat!” came from very different places in the holding pattern, but their variety of subject matter and obvious quality of research, images and writing provided a good balance while reducing (a little) the backlog. With luck, they will inspire readers to submit more articles of similar quality and make our backlog “problem” even worse!

9/11 3-D

The response to (and even ahead of) the editorial invitation in Vol. 28 No. 1 for stereos of events, people and places related to the attacks of September 11 has been overwhelming. Images and stories from five stereographers have arrived so far, in quantities ranging from two to 60. Our next issue will feature this unique stereoscopic coverage of an event that will continue to trigger both the best and worst reactions around the world for years to come.

Kaiser Credit Overdue

Not mentioned in our feature “The Kaiser Panorama Phenomenon” (Vol. 28 No. 1) was the fact that copies of the copyrighted stereoviews illustrating it had all been supplied by the Munich Photo Museum (Fotomuseum im Münchner Stadtmuseum). Our apology for the omission and our thanks for this special use by Stereo World of the Kaiser Panorama views go to Dr. Pohlmann, director of the Munich Photo Museum.

Upcoming NSA National Conventions

July 11-15, 2002
At the Holiday Inn in Riverside, California
Contact Mike Aversa: mikjr@aol.com
or Lawrence Kaufman: kaufman3d@earthlink.net
for more info or questions.
Visit the NSA 2002 web site at:http://www.3dgear.com/NSA

July 23-29, 2003
At the Embassy Suites in North Charleston, South Carolina
Contact Bill Moll for more info or questions: whmoll@aol.com

July 2004
At the Doubletree Jantzen Beach in Portland, Oregon
Contact Diane Rulien for more info or questions: dianeru@uswest.net

Explore the World
of 3-D Imaging, Past & Present,
in

Only $26 a year from

P.O. Box 86708
Portland, OR 97286
Riverside's for You in 2002
2002 National Stereoscopic Association Convention, July 11-15, Riverside, California

There is literally something for every taste within a few miles of Riverside. Here are just a few of the nearby attractions:

- California Speedway (15 miles)
- California Youth Soccer Stadium (15 miles)
- Ontario Mills Outlet Mall (15 miles)
- Galleria at Tyler Mall (5 miles)
- Hidden Valley Golf Course (10 miles)
- March Air Force Base and Museum (6 miles)
- Castle Amusement Park (4 miles)
- Disneyland – Magic Kingdom and California Adventure (45 miles)
- Knotts Berry Farm (45 miles)
- Lake Arrowhead/Mountain Resorts (32 miles)
- San Manuel Casino (22 miles)
- Temecula Wineries (40 miles)
- Raging Waters (40 miles)

- Pharaoh's Lost Kingdom Mini Golf (8 miles)
- Antique Pedestrian Shopping Mall (0.10 mile)

For more information, visit: http://www.3dgear.com/NSA/.

Located close to the convention site, the UCR/California Museum of Photography houses the vast Keystone-Mast Collection of 350,000 stereoviews. A visit will be among the activities scheduled for the convention. What looks like a huge box camera in the top center window is actually a walk-in camera obscura, one of the permanent attractions in the museum. (Stereo by Lawrence Kaufman)
U-boat!

German Submarines Through Two World Wars

by Richard C. Ryder
Every pair of eyes on the bridge of the submarine was focused on the tiny speck on the horizon. Kapitanleutnant Walther Schweiger of the U-20 stared at the image taking shape in his binoculars. Passenger liner certainly. Big, with four stacks. There certainly weren’t many of those. British, obviously. Too fast to catch. But maybe he wouldn’t have to; the big liner was coming toward the U-boat, angling to cross Schweiger’s bow at fairly close range.

Schweiger submerged the boat and moved to the attack. It would take a lucky shot on his part for, after a week on patrol in the Irish Sea, U-20 had only a single torpedo available (actually three, but Schweiger intended to retain two for emergencies during the voyage home). The big ship changed course to starboard, moving even closer to the hidden U-boat. Schweiger fired. The torpedo left the tube and streaked relentlessly the striking the starboard side of the liner just aft of the bridge. The initial hit was fol-

“The Lusitania Leaving Dock in New York City,” No. W26101 by Keystone. The sinking of the giant Cunard liner by Schweiger’s U-20 off southern Ireland on May 7, 1915 paralyzed US-German relations. An advertisement placed by the Imperial German Embassy appeared in New York papers the day of the liner’s departure warning that Americans who sailed on British ships did so “at their own risk.”

“Fleet of murderous ‘U’ boats, the greatest menace that ever faced our Empire, surrender at Harwich,” No. 188 by Realistic Travels. Scores of U-boats turned themselves in at Harwich, the designated assembly point, at the end of the war. Note the sawtoothed net-cutter for penetrating anti-submarine nets on the boat at the lower right.
flailed by a second, greater explosion, probably either coal dust in the nearly empty bunkers or the big ship’s boilers, but almost certainly not the cargo of contraband ammunition which the liner was, however, illicitly carrying. The great ship listed heavily to one side, preventing the launching of most of her lifeboats, and sank by the bow in only sixteen minutes, leaving hundreds of tiny figures flailing about in the chilly waters.

Only as the ship went down could Schweiger make out the letters on the stern. *Lusitania*.

Fast forward a quarter century.

Captain Gunther Prien carefully edged the prow of the U-47 gently between the dark hulk of the sunken blockship and the island dimly seen to starboard. Despite an almost moonless night, the northern lights danced on the horizon and cast an eerie shimmer on the surface of the water. The nerves of everyone aboard the surfaced U-boat were stretched to the limit. For the small gap ahead was a tiny chink in the armor of a giant and it wouldn’t do to ring the doorbell. In front of them lay Scapa Flow,
the main anchorage of the powerful British Home Fleet and the site of the German Navy’s greatest humiliation, the scuttling of the Kaiser’s proud battleships in 1919.

Against all odds, Prien would succeed, torpedoing and sinking the battleship Royal Oak, which had been lying blissfully at anchor, in the very heart of the enemy’s greatest naval base. Furthermore, U-47 would cap this temerity by escaping, gliding silently out the way she had come, while the enemy searched futilely for the culprit. Prien might have achieved still more, had not the bulk of the British fleet moved to an anchorage off the west coast of Scotland just days before. Nevertheless, this brash young officer had achieved the seemingly impossible and U-47 returned home to a hero’s welcome.

These two incidents, twenty-four years apart, represent both the most infamous and the most glorious moments of the German U-boat service, one of the most renowned yet controversial aspects of the two great wars of the twentieth century. (The term U-boat itself derives from “unterseeboot” or “underseaboat,” the German equivalent of our word “submarine.”)

The sinking of the Lusitania in May of 1915 was widely condemned throughout the world, and most particularly in the United States, as a barbarous act of piracy committed against innocent women and children, a flagrant violation of international law, and the ultimate example of Germany’s notorious policy of “Unrestricted Submarine Warfare.” Yet, although the policy would poison Germany’s relations with the United States, the sinking itself did not, contrary to popular belief, lead directly to war.

The British government, though obviously distressed by the huge casualty toll, was not entirely displeased by the results of the Lusitania sinking. The prevailing attitude of “Germany as villain” was one that Great Britain, with her widespread control of both the sea and international communications, was only too happy to encourage.

By 1939, the year the Second World War broke out, the German submarine policy seemed somehow less horrifying, in a conflict that would ultimately include the widespread terror bombing of civilians, use of the atomic bomb, and the wholesale genocide of entire populations. Yet once again it would be the U-boats that would bring America to the brink of war, even if it was Japan’s attack on Pearl Harbor that pushed her over the edge.

Nevertheles, in both conflicts, “Unrestricted Submarine Warfare” was a policy that was largely forced upon Germany by circumstances, particularly her relative position of inferiority as a naval power. Prior to 1914, the rules of “cruiser warfare” against commercial vessels had been clearly spelled out in a series of international agreements to which Germany herself was a signatory. Specifically, these rules stated that neutral vessels could be detained if suspected of carrying “contraband” (war supplies) to an
enemy nation. Such vessels were to be escorted into a friendly port and searched; any contraband found could then legally be seized before sending the vessel on its way. Neutral ships were never to be sunk. On the other hand, enemy merchant ships could be sunk, but only after warning the ship in order to allow the passengers and crew, as noncombatants, time to seek safety in the lifeboats. These rules worked fairly well for the surface warships for which they had originally been written. Unfortunately, they hadn't been written with submarines in mind.

When, in the summer of 1914, the First World War broke out, Germany's battle fleet was largely confined to the North Sea and Baltic by the presence of the greatly superior British Grand Fleet, based in the north of Scotland, exactly like a cork in a bottle. Meanwhile, England clamped a tight blockade on Germany—expanding the definition of "contraband" to include such non-military items as food. America's trade with Germany vanished while that with the Allied Powers increased dramatically. America protested—feebly—against the British actions.

With her access to the world's oceans denied, Germany turned to her new and as yet untried U-boat fleet. Nevertheless, she did try to observe the rules of "cruiser warfare"—at least at first. Yet, when the British Admiralty (of which the ever aggressive Winston Churchill was then the head) began to arm merchant ships and instructed them to try whenever possible to ram the fragile U-boats, the Germans were faced with a dilemma. Not only were submarines slower and more vulnerable than almost anything else afloat, but their greatest advantage was stealth, the ability to approach a target unseen and unsuspected. The Germans could either violate the rules or vacate the seas. They chose the former.

Nevertheless, the Germans argued, unsuccessfully as it turned out, that equipping merchant ships with guns made them "de facto" warships and thus liable to attack without warning. Even giant liners like the Lusitania might be fair game.

Fair perhaps, but hardly intelligent. Outrage over the sinking was so universal throughout the United States that, had President Wilson not been wholeheartedly committed to keeping America neutral, she probably would have entered the war then and there. As it was, Wilson's vociferous protests to Germany were too bellicose for Secretary of State William Jennings Bryan, who resigned rather than send them.

But Bryan was wrong. Despite additional incidents, Wilson's patient diplomacy eventually got the Germans to abandon "unrestricted submarine warfare"—for the time being at least.

By the start of 1917, however, Germany was clearly losing the war. Faced with the prospect of starvation in German cities, courtesy of the British blockade, and the imminent collapse of the German army, bled white by the attrition of a "two-front" war, the Kaiser's military advisors saw only one way out. Perhaps the U-boats could force England's surrender before an unprepared America could make its presence felt in the trenches of the Western Front. Anything was preferable to simply sitting back and waiting for the inevitable.

As it turned out, the decision to resume "unrestricted submarine warfare" was both unsuccessful and unnecessary. America did enter the war, in April of 1917, as foreseen, propelled by the resumption of the U-boat attacks as well as a German attempt to embroil Mexico in a war with the United States by promising the return of
Texas, New Mexico, and Arizona. The Mexicans were too smart to fall for the bribe, and the "Zimmermann Telegram" (as the offer was called) was intercepted by the British, who promptly released its contents to the suitably outraged Americans. Ironically, on the Eastern Front, the Russian army collapsed and the country itself was soon wracked by bloody revolution. Within months, hundreds of thousands of German reinforcements could be shipped from the Eastern Front to France. Had the Germans only held off on the decision to unleash the U-boats, they would unquestionably have won the war in the spring of 1918! But by then the Americans had arrived and Germany tottered to defeat.

Surprisingly, given what had transpired, Germany had not even built her first submarine until 1906 and, by the outbreak of World War I still had only 45—fewer than Britain, France, the United States, or even Russia. The German war on shipping did not commence until February of 1915 and even then no more than 20 U-boats were available for offensive operations. The typical German U-boat of World War I had a surface displacement of some 600 to 900 tons, a speed of 15 or 16 knots on the surface and a mere crawl of 7.5 knots submerged. It carried an armament of from 10 to 16 torpedoes (but only 4 to 6 torpedo tubes) and one or two deck guns. There were also a few specialized "U-cruisers" capable of operating at much greater range from base but carrying fewer torpedoes, plus a number of small UB-boats designed primarily for coastal defense, and the even smaller UC-type minelayers. During the war, the Germans had employed a total of approximately 360 submarines of all types in active operations, although no more than about 60 were in use at any one time.

Nevertheless, by the end of the war, U-boats had sunk, either through direct attack or mining operations, some 5,234 merchant ships of more than 18 million tons, along with 10 battleships, 18 cruisers, 20 destroyers, and 9 submarines. In the course of this mayhem, a total of 187 U-boats had been lost, but not until the institution of an effective convoy system late in 1917 did the Allies gain the upper hand. One U-boat ace, Lothar von Arnauld de la Periere, in U-35, managed to sink a staggering 54 ships totaling 91,150 tons in a single month, mostly by gunfire, and he did so without ever violating the rules of "cruiser warfare!" In all, de la Periere sank more than 200 ships, establishing him as the most successful U-boat skipper of all time. In the spring of 1918, another U-boat, in an exceptionally rare appearance in American waters, actually succeeded in laying minefields in the Chesapeake and Delaware Bays. For a time, it had seemed that the U-boats might succeed in starving Britain into submission.

Although attention has tended to focus largely—and deservedly—on the practice of "unrestricted submarine warfare" against merchant shipping, this was not the only dimension of the U-boats' contribution to the German war effort. The undersea craft also achieved several noteworthy successes against enemy warships, torpedoing and sinking a number of the older pre-Dreadnought battleships and lesser warships, particularly in the more restricted waters of the Mediterranean. Perhaps the most spectacular achievement of this nature occurred early in the war, before either side really understood the U-boat's potential. On September 22, 1914, U-9, under Lieut. Otto Weddigen, torpedoed and sank three British armored cruisers, Aboukir, Cressy, and Hogue, in broad daylight in waters not far.
from the Dutch coast. The success, which claimed 1,460 lives, would not have been possible had Cressy and Hogue not stopped to rescue survivors from the first victim.

Furthermore, not all of the U-boats' successes involved the use of torpedoes and deck guns. Several of the craft were also equipped to carry and lay underwater mines, and a few, such as the diminutive UC-5, were designed solely for this purpose and did not carry torpedoes at all. The most spectacular victim of a submarine-laid mine was the British armored cruiser Hampshire which struck a mine and sank rapidly in heavy seas near the Orkneys, north of Scotland, on June 5, 1916. The mine in question was apparently one of a group placed by U-75 (Lieut. Commander Beitzen) on 28-29 May, in an attempt to disrupt British fleet movements before the Battle of Jutland. The attempt paid an unexpected dividend. At the time of the sinking, the Hampshire was carrying the British Secretary for War, Field Marshal Lord Kitchener, on a top secret diplomatic mission to Russia and the Field Marshal was not among the few survivors. Arrogant and notoriously difficult to work with but nonetheless brilliant, Kitchener had established an enviable reputation during the Sudanese and Boer Wars at the turn of the century and had masterminded British mobilization at the start of WWI. His looming, pointing likeness adorned a famous British recruiting poster that would subsequently provide the model for James Montgomery Flagg's legendary "I Want You" poster featuring Uncle Sam in a similar pose in the U.S.

Curiously, the Germans were not the only ones to employ "U-boats" in the First World War. Their allies the Austro-Hungarians also used them with some success in the Mediterranean and Adriatic. Austria's leading U-boat ace, Linien-schiffsleutnant Georg Ritter von Trapp, in the Austrian U-5, sank the French armored cruiser Leon Gambetta (U-boats did seem to have a penchant for this class of warship!) just off the heel of the Italian "boot" in April of 1915. Von Trapp, whose exploits also included sinking an Italian submarine, would go on in 1938 to an even more courageous act—refusing a commission in Hitler's new German Navy in the wake of the Nazi takeover of Austria. Instead, von Trapp led his wife and large family in a daring escape from their homeland, an adventurous flight to freedom immortalized in the musical The Sound of Music.

The Allies struck back at the U-boats with a series of countermeasures which became ever more sophisticated as the war progressed. Chief among these was the invention of the "depth charge," a powerful underwater bomb which could be dropped from a warship like a destroyer or catapulted sideways from a "K-gun" to form a ring of death around the suspected position of a submerged U-boat; the depth charge sank to a pre-set depth where the water pressure set off a trigger mechanism and caused it to explode, sending powerful shock waves against the fragile hull of a nearby submarine. Since WWI U-boats could not dive to very great depths to evade the charges and the Allied warship had only the most imprecise idea of where the U-boat might be, the attack became something of a potentially lethal game of underwater tag. Even if U-boats were rarely destroyed in such attacks, they could sometimes be damaged and forced to the surface where they could be finished off by gunfire or ramming.

Another problem was the "Q-ship," a small merchant ship of deceptively innocent appearance that was in fact a powerfully armed decoy vessel designed as a U-boat killer. Because U-boats had very limited capacity and carried relatively few torpedoes in WWI, they often preferred to attack...
German Submarines, U-139 and U-159, in Cherbourg Harbour, No. 5151 by W. E. Troutman. The large "U-cruisers" U-139 and (possibly) U-159, the latter never completed, were among Germany's largest U-boats. The similar U-151 laid minefields in American waters and sank the liner Carolina by gunfire off the New Jersey coast—one of the ship's lifeboats, crammed with survivors, reached shore amid a crowd of astonished beachgoers in Atlantic City!

smaller targets on the surface, using their deck guns. If the target turned out to be a Q-ship, hidden guns would suddenly appear and the U-boat, to its dismay, would discover a Lilliputian with fangs. Q-ships accounted for a fair number of U-boats sunk during World War I.

Surface gunfire attack by a U-boat held other perils, besides Q-ships. If a U-boat ventured too close to its intended victim, it might find itself the target of an attempted ramming. If successful, such a deliberate collision would almost always have fatal results for the U-boat and a number met their end in this way. Among the vessels that succeeded in sinking U-boats in this manner were the large British battleship Dreadnought and the White Star liner Olympic (sister-ship of the ill-fated Titanic).

Despite all these measures, U-boats remained such a threat that the Allies would, in 1918, attempt to seal them up with the so-called North Sea Mine Barrage, a supposedly impassible barrier extending from the Orkneys to Norway, a distance of 230 miles, with a width of from 15 to 25 miles. It failed to have the desired effect, although a smaller field off Dover successfully closed off the English Channel to the U-boats. The North Sea Barrage employed more than 70,000 mines—and accounted for no more than a single U-boat!

No more effective was an attempt by the British Navy to shut up the German U-boat base at Zeebrugge, Belgium, by a daring April 1918 raid. A force of marines was landed on the harbor's defensive mole or jetty from the old cruiser HMS Vindictive but failed to reach its assigned objectives. Furthermore, a number of blockships, sunk in the channel entrance, failed to adequately seal off the U-boat base. Nevertheless, it was a gallant effort and the mere fact that it was tried shows the concern inspired by the U-boats even at this late date.

Woodrow Wilson had made "freedom of the seas" a key element of his "Fourteen Points" peace plan and the punitive Treaty of Versailles that followed deprived Germany of her U-boat fleet. The peace was needlessly vindictive, placing the entire blame for the war squarely on Germany and making her pay through the nose. For a country whose economy was already wrecked by the effects of the long war and the crippling blockade, Germany was forced to give up colonies and territory, stripped of most of her army and navy, and saddled with huge "reparations" payments for all the damages caused by both sides in the war. Premier Clemenceau of France even wanted Germany to foot the bill for lifelong pensions for French war veterans! Essentially, the Germans were forced to sign a "blank check" for these reparations, the full amount of which would be determined by the Allies at a later date.

Predictably, the Germans neither forgot nor forgave the humiliation of Versailles. The German economy soon collapsed utterly, with the German mark rendered totally worthless as hyperinflation ran amuck. Germany was in chaos, with rioting in the cities and a Communist revolution a distinct possibility. All of which led to the rise to power of a former corporal in the Kaiser's army, Adolf Hitler.

And it was largely Hitler's attempts to regain German territory lost at Versailles that led directly to the outbreak of World War II and the reappearance of the U-boats.

By September of 1939, what Winston Churchill had called the "twenty-year truce" was over and Europe was again at war. Once again, Germany found itself hopelessly outclassed at sea and, once
again, she would turn to the U-boats to redress the balance.

In the wake of Hitler's denunciation of the Versailles Treaty, Germany had again begun to build U-boats in 1935. Nevertheless, the Fuhrer had informed his naval planners that there would be no war before about 1944 and U-boat construction had accordingly received a low priority in comparison to larger surface vessels like the imposing battleship Bismarck. As a consequence, the outbreak of war caught the German Navy largely unprepared, with only 56 U-boats in service, only 22 of which were capable of long-range Atlantic operations. Although the German "Kriegsmarine" contained some of the finest and most powerful warships in the world, they were even more hopelessly outnumbered than the Kaiser's fleet had been in 1914 and the onus would once again fall on the U-boats.

The "Battle of the Atlantic" lasted from September of 1939 to May of 1945 and was the longest battle—or more appropriately "campaign"—of World War II. The key weapon in this lengthy struggle was the U-boat and once again it would take the Allies approximately four years to finally master their undersea foe. In the course of the struggle, the Germans built and deployed almost 1200 U-boats, which destroyed nearly 2800 Allied merchant ships of some 14.5 million tons, more than 62% of the total Allied losses from all causes. A total of 781 U-boats were lost. Winston Churchill, who, before becoming Britain's Prime Minister in May of 1940, had reprised his First World War role as First Lord of the Admiralty, would later write that "the only thing that ever really frightened me during the war was the U-boat peril." And he was in a position to know.

By far, the great majority of German U-boats employed during the Second World War were of the Type VII-C variety, more than 700 such vessels being built. The Type VII-C boat was some 220 feet long, with a displacement of 769 tons (871 submerged), attained a speed of 17 knots on the surface (7.5 submerged), and carried a total of fourteen torpedoes (fired from four bow and one stern tube), along with one 3.5-inch and several smaller deck guns and a crew of 44. It had an operating range of 6,500 miles. Although technically more sophisticated and capable of superior performance, such vessels differed little in most respects from the U-boats of the First World War. The most notable change was not in the boats themselves but in their weapons—torpedoes of far greater speed, range, accuracy, and explosive power.

In response to Hitler's invasion of Poland, Britain and France declared war on Germany on September 3, 1939, and within a day a German U-boat had sunk the small British liner Athenia, killing a number of American passengers and evoking memories of the Lusitania. In little more than a month, in addition to Prien's exploit at Scapa Flow, another U-boat succeeded in sinking Courageous, one of Britain's few aircraft carriers, which had been futilely engaged in hunting submarines. (U-boats would also account for the aircraft carriers Ark Royal and Eagle and the battleship Barham, all torpedoed in the Mediterranean between 1941 and 1942.)

If anyone thought that the Second World War in the Atlantic would simply be a replay of events from twenty years before, they were mistaken. In the spring of 1940, Nazi armies quickly overran Norway, France, and the Low Countries. Now Britain stood alone. German U-boats and even battleships, operating from bases in occupied France and Norway, could easily reach the shipping lanes of the North Atlantic. Furthermore, with escort vessels in critically short supply, the
British were reluctant to institute a convoy system and most merchant ships sailed independently, trusting to luck to see them through. The result was what became known in the U-boat service as the “Happy Time,” with plentiful targets, minimal risks, and almost no U-boat losses in exchange for massive enemy tonnage sent to the bottom. One skipper, Otto Kretschmer of U-99, alone sank 44 ships, a record seven in a single patrol, and that didn’t include the two that became so panicked by his attack on a convoy that they collided and sank themselves! On one occasion, Kretschmer even whimsically ordered a small freighter to sail to France and turn itself over as a prize to the German authorities there. The ship dutifully tried to do so but was sunk en route.

The answer to the U-boat problem in the Second World War proved to be the same as it had been in the First: the use of convoys. A convoy was a large group of merchant ships sailing in a box-like formation and surrounded by a protective screen of destroyers and other escort vessels. Although a convoy covered a large area, it was still hard to locate in the vast expanse of ocean and there was now but a single target to find where there previously had been dozens of individual ships. Furthermore, any U-boat attacking a convoy risked destruction from the escorting vessels, even if successful. Now the U-boats had to come to the enemy on his terms. The number of sinkings declined while U-boat losses grew. The “Happy Time” came to an end in March of 1941 when Germany’s three greatest U-boat aces, including Prien, were eliminated in little more than a week.

The German response to the adoption of convoys had been creation of the “wolfpack”—a group of submarines that initially formed a scouting line to locate a convoy, then coordinated their attacks so as to overwhelm the escorts. Now a single convoy battle might involve a dozen U-boats, last for a week or more, and result in the sinking of a score of merchant ships, with their precious cargoes of food, munitions, and fuel.

Hitler’s invasion of the Soviet Union in June of 1941 expanded the conflict into the icy Arctic seas, for the only way to supply Russia with much-needed war materials was by sea past the long coastline of German-occupied Norway to Russia’s few Arctic ports—a particularly dangerous and brutal voyage known in the convoy trade as the “Murmansk Run.” The Russian convoys stretched British naval forces to the limit.

What was happening in the Atlantic brought the war ever closer to America’s shores as well. President Franklin Roosevelt, mindful of the prevailing mood of isolationism in the United States, was nevertheless determined to do all he could “short of war” to aid Britain in the struggle. The result strained American neutrality to the breaking point. This was especially true of the President’s swap of 50 WW1 for American use of British naval bases in the Western Atlantic. When the U.S. began as far as Iceland, it was inevitable that armed with the U-boat fired on the destroyer USS Greer in September of 1941, FDR ordered his Navy to “shoot on sight” at any German warship, neglecting to mention that the destroyer had been provocatively dogging the U-boat’s position at the time of the attack. The result was an “undeclared naval war” between the U.S. Navy and Hitler’s forces, a contest in which the U-boats drew first blood, torpedoing one American destroyer and then sinking another, the USS Reuben James, in Octo-

"Glorious Vindictive, whose gallant exploit at Zeebrugge will live for ever in the annals of our Navy," No. 114 by Realistic Travels. This caption is somewhat misleading since Vindictive was not lost during the famous Zeebrugge raid but was however sunk as a blockship in an equally futile attempt to close the channel leading to the German U-boat base at Ostend the following month.

No. 7 by Realistic Travels. This caption is somewhat misleading since Vindictive was not lost during the famous Zeebrugge raid but was however sunk as a blockship in an equally futile attempt to close the channel leading to the German U-boat base at Ostend the following month.
"Unterseeboot. Im vereisten Hafen des Stützpunktes; die über Kreuz laufenden Leinen - die Springs - sind wegen des Eises lang geschoren, um die Bewegungen, die durch die Gezeiten und den Tidenhub im Hafen entstehen, bie diesem Eisgang besser ausgleichen zu können." [A U-boat at the submarine base in an ice-clogged harbor. The mooring lines - the springlines - extending out to the boat are long and have a lot of slack to allow for movement of the boat caused by rising and falling tides and drifting ice.] - No. 51 in the Raumbild "Kriegsmarine" set; photographed by Dr. Trotter.

"Unterseeboot. Im Paket, d. h. nebeneinander liegen im Stützpunkt. Auf dem vorderen Boot ist zur Musterung angetreten." [A pack of U-boats moored alongside one another in the submarine base. On the nearest boat, the crew is assembled to stand inspection.] - No. 53 by Raumbild; photog. Engelmeyer.

ber. As a result, Germany and America were already poised on the brink of war when the Japanese attack on Pearl Harbor rendered the entire question academic.

America's entry into the war simplified matters for the U-boats and provided them in the spring of 1942 with a "Second Happy Time" off the east coast of the United States, where merchant ships continued to sail independently, often silhouetted at night against the glow of coastal cities. Nevertheless, the Americans learned quickly and shipyards were soon turning out large numbers of "Liberty ships," prefabricated merchant ships designed to be built more rapidly than the U-boats could sink them. In essence, the Battle of the Atlantic came down to a war of numbers, the ratio of tonnage sunk to that of new ships built, what Churchill called a "shapeless, measureless peril, expressed in charts, curves, and statistics."

As escorts became more plentiful and better armed, it became even harder for the U-boats to penetrate the convoys. Even night surface attacks, which had offered the surest chance of success, became more difficult to pull off. In place of the primitive sound-detecting hydrophones of World War I, many destroyers, destroyer escorts, and corvettes now carried radar capable of detecting a surfaced U-boat, sonar (called asdic by the British) for underwater detection, and H/F D/F (high-frequency direction-finders) for pinpointing a U-boat's radio transmissions, along with improved sound-detecting gear. In addition to the ever-pre-
were often unpleasantly surprised to find the Allies waiting at the scheduled rendezvous point.

To avoid the constant threat of air attack, the Germans adopted a Dutch invention, the "schnorkel," an extendable tube that brought air from the surface, allowing the U-boat to operate its diesels and recharge its batteries without surfacing. The Germans also introduced an advanced acoustic torpedo that home in on the sound of a target ship's propellers. An entirely new kind of U-boat, capable of unprecedented underwater speed, might have created real havoc among Allied shipping but, fortunately for them, was developed too late to enter active service before war's end.

None of this made any difference and, by May of 1945, Hitler's "thousand-year Reich" was finished. The U-boats had once again fought with great tenacity and had suffered an unbelievable 60% casualty rate. Fully 28,000 of their men would never return from patrol, and another 5,000, including U-99's Kretschmer, were prisoners. Once again, as in the first war, they had almost driven Britain to her knees, but they had been utterly unable to interfere with the vast Normandy invasion and, despite their unquestioned courage, ultimately failed in their overall mission.

After the war, the victorious Allies placed the surviving Nazi leaders on trial at Nuremberg for war crimes. Among the defendants was Admiral Karl Donitz, head of the U-boats and briefly, following the death of Adolf Hitler, Nazi Germany's second and final fuhrer. Despite the fact that several British and American admirals were prepared to testify in his defense that the German Navy had fought a "clean" war and that the U-boats had done nothing in the Atlantic that the United States had not done, with more success, against the Japanese merchant marine in the Pacific, Donitz was sentenced to ten years in prison. Despite the fact that several British and American admirals were prepared to testify in his defense that the German Navy had fought a "clean" war and that the U-boats had done nothing in the Atlantic that the United States had not done, with more success, against the Japanese merchant marine in the Pacific, Donitz was sentenced to ten years in prison. Given the death of Adolf Hitler, Nazi Germany's second and final fuhrer.

None of this made any difference and, by May of 1945, Hitler's "thousand-year Reich" was finished. The U-boats had once again fought with great tenacity and had suffered an unbelievable 60% casualty rate. Fully 28,000 of their men would never return from patrol, and another 5,000, including U-99's Kretschmer, were prisoners. Once again, as in the first war, they had almost driven Britain to her knees, but they had been utterly unable to interfere with the vast Normandy invasion and, despite their unquestioned courage, ultimately failed in their overall mission.

After the war, the victorious Allies placed the surviving Nazi leaders on trial at Nuremberg for war crimes. Among the defendants was Admiral Karl Donitz, head of the U-boats and briefly, following the death of Adolf Hitler, Nazi Germany's second and final fuhrer.

Although far from plentiful, stereo images of U-boats do exist from both world wars. Given the fact that the First World War was abundantly covered, with Keystone, Underwood, W. E. Troutman, and the British company Realistic Travels each producing literally hundreds of views, along with the supreme notoriety of the U-boats, it is perhaps surprising that there are not more views of them. But it must be remembered that the war was stereographed primarily from the Allied side and there were few opportunities to document enemy naval activities. Furthermore, the First World War was not as widely stereographed as might at first appear. Although World War I views are by far the military stereographs most commonly encountered by collectors today, this is due almost entirely to the incredible volume of Keystone sets produced during the early 1920s, and there are probably fewer different images of World War I than of the Civil War or some other conflicts. Furthermore, a great number of the Underwood images eventually wound up in the Keystone set and do not therefore represent different views. I have personally encountered no more than a dozen actual U-boat stereographs, although a greater number perhaps relate directly or indirectly to their activities. All of the U-boat stereos themselves show captured or surrendered vessels and most were taken subsequent to the armistice of November 11, 1918.

An apparent exception to this are two views by Realistic Travels of the small submarine minelayer, UC-5, which went aground off the British coastal town of Harwich and was captured on April 20,
1916. It was subsequently displayed in the Thames and was apparently the only German U-boat open to public inspection during the war. One of the smallest of the U-boats, the UC-5 had been built by the A. G. Vulkan works in Hamburg and launched in June of 1915. Only 111 feet long and displacing a mere 168 tons (183 when submerged), UC-5 carried a crew of only 14. It was equipped with six mine tubes and a total of 12 mines but no torpedo tubes and only a single light machine gun.

Coincidentally, it was Harwich, located at the southern end of the North Sea, that was chosen as the primary receiving port for surrendering U-boats at the end of the war, and other exceptional Realistic Travels views show some of the dozens of German submarines anchored there. These views preserve much interesting detail, such as the saw-toothed net cutters over the bow, designed to assist the undersea craft in avoiding entanglement in anti-submarine nets. Realistic also included at least two views of U-boat interiors, both allegedly taken in the forward torpedo room of the U-135. However, given that no more than two torpedo tubes are visible, it is probable that the views in fact show the stern torpedo room. Oddly, many of the Harwich boats soon fell victim to looters, who even attempted to pry the reflecting lenses from their periscopes.

Perhaps the most unusual of the Realistic views is one that shows a German submarine “of the Deutschland type.” Deutschland and six similar boats were designed not as combat craft but as large undersea freighters for transporting highly valuable cargo through—or rather under—the British blockade. Before America entered the war, this privately-built undersea blockade-runner made a daring trip to the United States, on her return carrying a million-dollar cargo of vital war materials from Baltimore to Bremen. Such mercantile U-boats were impractical, however, and the Deutschland and its sisters were soon converted into combat craft.

Not all the U-boats surrendered at Harwich, and Troutman issued a view of two boats, apparently U-139 and U-159, in the French Channel port of Cherbourg. The accuracy of the latter identification is open to question, however. Furthermore, as is typical of the Troutman views, the quality of the prints leaves much to be desired.

At 311 feet in length and a displacement of 1,930 tons (2,483 submerged), U-139 was one of the largest of the German U-boats of the First World War. Built by Germaniawerft of Kiel and launched in March of 1917, it carried 6 torpedo tubes (4 bow, 2 stern), two 5.9-inch deck guns, and a crew of 62. It also was one of only a handful of U-boats to bear a name rather than simply the customary number, being officially designated as the “Kapitanleutnant Schweiger” in honor the skipper who had sunk the Lusitania.

At 234 feet and 811/1,034 tons, U-159, if she is indeed the other boat in the view, was substantially smaller. Also built by Germaniawerft and launched in May of 1918, she was designed to carry 6 torpedo tubes, two 4.1 -inch guns, and a crew of 39. She never saw action, however, and is listed as having been broken up before completion. This does not necessarily preclude her having been moved to Cherbourg prior to scrapping, but it does call into question Troutman’s identification of the ship.

Perhaps the most dramatic of all the U-boat stereographs is also the most common, a Keystone image (No. 225 in the 300-card set) of a large boat stranded high and dry on the “south coast” of England after the surrender. This unique perspective reveals some of the features of U-boat construction normally obscured when the boat is viewed in its natural element. These include a pair of torpedo
tubes on the port (left) side of the bow and a horizontal series of water-intake apertures for flooding the space between the outer and pressure hulls when diving the boat. A number of boats were driven ashore on the English coast during storms while being towed to scrapping facilities between 1919 and 1922; this is apparently the 267 foot, 1,164/1,512 ton ocean minelayer U-118, which was armed with 4 bow torpedo tubes and a 5.9-inch deck gun, and capable of releasing up to 48 mines from a pair of tubes in the stern.

As far as U-boat related stereographs are concerned, both Keystone and H. C. White issued views of the great Cunard liner Lusitania, and other prominent U-boat victims were stereographed as well. These included the armored cruiser Hampshire, mined off the Orkneys in 1916, in a pre-war view by H. C. White, as well as the ill-fated warship's most renowned passenger, Field Marshal Lord Kitchener, in a wartime view by Realistic Travels. There are several other stereographs of pre-Dreadnought battleships and liners that met their fate at the hands of the U-boats, mostly taken in the years before the war. Among these is a most unexpected discovery, a Keystone view, actually fairly common, which is mislabeled merely as a "French battleship"; in fact it turns out to be von Trapp's victim, the armored cruiser Leon Gambetta. Also included in the "U-boat related" category are views, most notably a group by Underwood of the Cunarder Aquitania, showing liners and troopships painted in bizarre "dazzle" camouflage schemes in an effort to thwart the undersea raiders. Not only enemies but friends of the U-boats are shown as well. Realistic, for example, produced a number of views of the German battleship Kaiserin and battlecruiser Derfflinger, taken at the large British naval anchorage of Scapa Flow after their surrender. It was here that they and the other great vessels of the High Seas Fleet would be scuttled by their proud crews in 1919 and here too that Prien's U-47 would avenge them twenty years later.

The U-boat's weapons of choice were also recorded, in a view (No. 71) from the Keystone set showing a torpedo and mines on display in London; the torpedo was taken from the famous German cruiser-raider Emden that was wrecked in the Indian Ocean, but differed little from those employed by the submarines. Views of anti-submarine warfare and the ships engaged in it are likewise scarce, although two views by Realistic Travels are worthy of mention. One shows an officer, apparently looking for submarines, peering over the side of a patrolling destroyer, hardly an efficient method of locating the undersea craft, a pair of additional destroyers may be seen in the distance. The other is a most dramatic shot, taken from shore, purportedly showing a stranded submarine being blown up in the near shallows, while a large number of Allied warships and transports look on in the distance. Unfortunately, there is nothing about the large explosion that even remotely suggests the actual presence of a U-boat and the whole view, which may have been taken at the Dardanelles (and more likely represents the blowing up of an underwater mine broken free from one of the extensive fields there), should be regarded as suspect. The image was probably chosen (and appropriately relabeled) to complete the story begun with the "patrolling destroyers" view, which it immediately followed in the Realistic set.

Lastly, there are a number of views taken in the aftermath of the epic 1918 raid on the German U-boat base at Zeebrugge, Belgium. These include a pair by Keystone (Nos. 223-224 in the 300-card set) showing the defensive mole assaulted by the British landing force and the wreckage of a submarine at the base at the end of the war. This is probably a U-boat,
although an old British submarine, crammed with explosives, was used during the raid in an attempt to destroy part of the harbor defenses. Perhaps more interesting is a view by Realistic Travels that shows one of the British blockships sunk in the channel in the failed attempt to block the U-boats’ access from their base to the sea. Curiously, the ship is identified as the *Vindictive*, but this is puzzling. The old British cruiser was not employed as a blockship at Zeebrugge, but rather to convey the raiders attacking the mole to and from their target. Perhaps this is one of the two blockships, *Iphigenia* and *Intrepid*, employed at Zeebrugge. Alternatively, the *Vindictive* was expended in an equally futile effort to block another German U-boat base a few weeks later. The view can be either *Vindictive* or Zeebrugge, not both. It does however graphically illustrate this dramatic phase of Allied anti-submarine operations toward the close of the war.

Surprisingly, there may be more actual stereo images of U-boats in World War II than in World War I, thanks to the Raumbild-Verlag *Die Kriegsmarine* book set of 100 stereographs. Written by Korvettenkapitan Fritz Otto Busch and published by Otto Schonstein of Munich, the 84-page volume contains a folding metal viewer, pocketed, like the views, inside the heavy cardboard front and back covers. As with the Raumbild volumes dedicated to other aspects of the German military, this one provides a spectacular overview of the Reich’s Navy, with numerous views of the battleships *Scharnhorst* and *Gneisenau*, destroyers, minelayers, E-boats (similar to the American PT boats), various auxiliaries, and coast defense forces along the Channel coast. There are also the U-boats and their crews, a series of a dozen images, including one of a crew meeting with Admiral Karl Donitz, who headed the U-boat wing of the German Navy and lost two sons of his own in the sea war. Nevertheless, one gets the impression that the photographers, Dr. Troller, Engelmeyer, and an individual identified only as M. W., all attached to the Oberkommando der Wehrmacht (the German High Command), were not really into submarines. All of the stereographs are exterior views, none are taken of the conning tower, control room, torpedo rooms or other crew quarters below decks, and not one of the images is actually taken from a U-boat’s deck but rather from dockside or other vessels. Moreover, some of the Engelmayer and M.W. views are relatively distant shots, with little of stereoscopic interest to recommend them. One can certainly sympathize with the rigorous and difficult conditions under which Dr. Troller carried out his assignment, given the heavy pack ice surrounding the U-boats in his two rather striking views. Nevertheless, the other types of vessels, particularly the battleships, seem to have gotten more comprehensive, not to say preferential, treatment.

Perhaps the most famous U-boat in the world today achieved that status not through any sensational exploits in the war at sea but by the whim of chance. On June 4, 1944, two days before the Normandy landings, an American hunter-killer group under Captain Daniel V. Gallery and built around the small escort carrier *Guadalcanal* encountered U-505 and forced the German vessel to the surface. As the submarine crew hastily abandoned ship, a boarding party of American sailors from the destroyer escort *Pillsbury* raced onto the sinking U-boat, disarmed the scuttling charges, and succeeded in towing the craft back to port, the first enemy warship captured by the U.S. Navy through boarding since the War of 1812. The U-boat, with its “enigma” cipher machine and code books intact, provided...
German battle cruiser 'Derfflinger,' which hauled down its flag at sunset to Admiral Beatty, "No. 192 by Realistic Travels. In 1919, many of the finest ships of the German High Seas Fleet were scuttled by their crews here in the huge British anchorage of Scapa Flow, north of Scotland, which was also the scene of Prien's sinking of the battleship Royal Oak twenty years later.

exceptionally valuable information to its captors. Today, U-505 resides not far from the shores of Lake Michigan, high and dry on the grounds of Chicago's Museum of Science and Industry, where it was the subject of a View-Master reel, part of the GAF three-reel pack, "Colleen Moore's Fairy Castle and the U-505," No. M-2 in the United States Travel category. Images on the reel include an exterior view of the submarine itself, plus interior shots of the control room, conning tower, galley, torpedo room, and officers' quarters.

It has been almost ninety years since Germany—and the world—discovered the potential of the U-boat, a frighteningly innovative weapon that perhaps more than any other helped to introduce the twentieth century concept of total war. Questions remain—about the morality and consequences of its use, the effectiveness of its employment, its impact on the two great wars in which it played such a vital part, and the responsibility for the horrors it engendered. This is particularly true of its most famous—and infamous—act.

Today, the Lusitania lies on her side 300 feet down on the bottom of the Irish Sea, wrapped in an inadvertent shroud of fishing nets, with a peculiarly flattened appearance imparted as her internal bulkheads gave way. (Curiously, because of the length of the great ship, her bow had actually struck the bottom while her stern still protruded high above the surface.)

How had this great leviathan fallen victim—and so quickly—to a single torpedo?

And who bore the responsibility for the nearly 1200 people, including 94 children and 128 Americans, who lost their lives in the tragedy? Was it the Germans, with their supposedly inhumane policy of "unrestricted submarine warfare"? Or had the British Admiralty, hoping to lure the Americans into the war, deliberately set up the great Cunard liner? And why didn't Captain Turner, Lusitania's skipper, exercise more prudence when he entered waters in which he knew U-boats were operating?

The answer to many of these questions may never be known. When Bob Ballard, who discovered the Titanic, dove on the Lusitania in 1993, he found that the wreck was lying directly on the fatal hole caused by the second explosion. Despite the problems in examining the wreck, Ballard concluded that the explosion of the torpedo had set off a volatile mixture of coal dust and air in the ship's bunkers. Others are not so sure.

Disputes remain over exactly how much and what type of munitions the Lusitania was carrying. Apparently the Germans knew of the secret cargo. Did that justify the sinking, even if only in a narrow, legal sense?

As to the charges that the British Admiralty, and especially its devious First Lord, Winston Churchill, had a hand in the sinking, this is most unlikely. Those who prefer to see a conspiracy in the series of confusing signals the Admiralty sent to the doomed liner in the days before the sinking ignore a number of important but not readily apparent facts. Yes, Churchill had commissioned a secret study on the likely American reaction to the possible sinking of a large liner. But it was part of his job to foresee contingencies and it would have been irresponsible for him to ignore the possibility. Furthermore, the German U-boat campaign against shipping had only been in operation for two and a half months and the British were still assessing the initial results. So, although the British were concerned about the threat to the Lusitania, they weren't quite sure how to react to it.

(Continued on page 31)
Reinvention

Some things and some people have been accused of periodically reinventing themselves. Surely photography, and in particular stereography, fall into this category. It is a way of life and a renewal of life that leads to better things. But not everybody is ready or willing to go along with the flow. Change is not universally welcomed, but in the past has been the irresistible force. (Sometimes, one is dragged screaming into the 21st century, as the expression goes). The Stereoscopic Society has had to deal with this all along and has survived for a long time. That implies a certain flexibility among those drawn into the delights of 3-D imaging.

I expect that many people found a digital camera in their holiday stocking in 2001. It is part of the current upheaval affecting photography within all of its many facets and we really do not know where it will lead us. According to the dictionary, "photography" is the art of producing images on a sensitized surface by the action of radiant energy, and especially light. That leaves a lot of leeway for interpretation and a sea of uncharted territory to explore as technology opens vast new possibilities.

In The Beginning

Photography, as we recognize it, began in the late 1830s with the daguerreotype on silver-mirrored plates. Looking at one with a magnifying glass, it was observed, was like looking at nature through a telescope—the detail captured was mind-boggling. Each picture was unique but reversed left to right. The "picture in a mirror" has its own charm not really matched by later photographic processes that are much more practical to deal with. I love daguerreotypes but I never felt the compulsion of trying to make one—to do it properly is tedious and difficult. We have our own methods now, more adapted to our times.

Almost simultaneously with Daguerre, Fox Talbot in England was inventing paper photography. Though initially limited in resolution by the paper texture, it produced a negative and the promise of multiple copies, which in the end would assure that this approach, when eventually perfected, would prevail. I love talbotypes (sun drawings) but I never felt the compulsion of trying to make one—to do it properly is tedious and difficult. We have our own methods now, more adapted to our times.

Stereography, as we would recognize it, began almost immediately after the first successful photographs were made. The principles had been known for a long time. Only the means of carrying them out had been lacking. It was more than doubly difficult to make an acceptable stereograph in those early days but there were those who tried. I love the earliest stereographs, though each will likely have serious flaws. I wouldn't want to try to duplicate them though. We have our own methods now, more adapted to our times.

Art?

Almost at the start the question was heard "Is photography Art?" or "Can photography ever be Art?" usually meant as a putdown. The question still is heard today and, in my opinion, I think it always misses the point. Photography is not Art and should not be constrained by such a comparison—it is so much, much more than Art. Indeed, it can be as artistic as one might desire. But it is a gem of many facets and has been used in wondrous ways—with things undreamed of yet to come.

The Print Society

For the first half-century, and more, of its existence the Stereoscopic Society (founded in England in 1893—American Branch organized in 1919) dealt with monochromatic stereo prints presented in standard Viewcard format. That defined stereoscopy for the participants. Unending discussions were carried on about mixing homemade developers and other matters of importance to the darkroom enthusiast, in addition to the ever-present admonitions and tutoring about proper alignment and stereo window. Transparencies appeared during this time in the form of Viewcards that one could see through—black & white, and often home-mounted with difficulty. These were resisted at first but later accepted by enough members so that separate transparency folios were circulated in some instances. But it was still traditional darkroom photography.

1 in 200

It was reasonably estimated long ago that for every 200 serious amateur photographers there was perhaps 1 who was knowledgeable in stereo photography. I cannot verify that but I would be surprised if it were very different today, however much has changed in the meantime. We are advocates of a specialty that strongly attracts only a limited subset of the population. Most of the people don't really like viewing devices and that has been a barrier time and again in the story of the public acceptance of stereoscopy. But the true stereo afi-
cionados are so taken by the 3-D effect that they will make any adjustments needed to enjoy it.

**Realist Revolution**

About 1950 former Society member Seton Rochwite upset the status quo with his Stereo Realist system and the reality of 3-D in full living color, projected or in a hand viewer, was a new type of siren—hard to resist. The old hands held out and died hard but by 1975 the print circuit was virtually defunct, having been supplanted by circuits that accepted only entries compatible with Realist-type viewers. But photography doesn’t stay still—it is always moving on, sometimes slowly, and at other times uncomfortably fast.

**Viewcard Revival**

The slow but sure advent of better quality color prints (albeit of questionable archival properties) started a print circuit revival that was not based necessarily in hands-on darkroom work by the participants. One could use commercial processing—something the old Society members would not have condoned. Today, PSA approved international stereo print competitions are abundant. Viewcards are back on the front line of amateur stereo formats.

On the other hand, some decline in the popularity of transparencies is detectable, although dedicated advocates are still abundant and doing great work. But in the popular culture, it is no longer so welcome to get out the projector and turn out the lights to treat your visitors to your latest efforts, whether wearing Polaroid glasses or not. If all, people want to see it on the TV screen with the lights on (what they have become accustomed to) and for stereo that is still not feasible in any practical manner.

**Digital and Online**

There has been a growing slowdown in Society folio activity. The boxes aren’t moving as fast. Everyone is pressed for time. This is concurrent with increased Internet involvement. Most Society members have email addresses now and communications between members has never been easier or so frequent. Yet the folios move slower.

I believe that currently the most active Society circuit is its newest one, SSA-ONLINE. All activity, posting of pictures and comments on them, and so forth, is done on the Internet. It is abuzz with activity and its list of participants is growing at a steady pace. (One side effect is the growing respectability of the anaglyph as a really feasible option for onscreen viewing—digital does wonders for it). For sure, photography and stereography are entering a time of great change—a reformation. And the creative potential for new and innovative developments in stereo applications seems unbounded. But, like silver screen legend Betty Davis in the movie *All About Eve* we could all be in for a BUMPY ride.

---

**Riverside’s for You in 2002**

2002 National Stereoscopic Association Convention, July 11-15

Holiday Inn, Riverside, California

Contact Mike Aversa - mikjr@aol.com or Lawrence Kaufman - kaufman3d@earthlink.net for more information.

NSA 2002 Riverside website: http://www.3dgear.com/NSA/

**Hotel Information and Room Rates:**

Holiday Inn Select, Riverside (host hotel)
(877) 291-7519 ext. 7110

Request the National Stereoscopic Association group rates of $75.00 (single/double/triple/quadruple); $95.00 Concierge level (Includes: Breakfast, hors d'oeuvres, soft drinks, beer and wine in the afternoon in the Concierge Lounge; or $100.00 Jr. Suites (also Executive Suites at regular prices).

The Historic Mission Inn (overflow hotel)
(800) 843-7735 or (909) 784-0300 ext. 850

Request the National Stereoscopic Association group rates of $89.00 (single/double) Additional guests are $15.00 each, children under 18 stay free with adult. Rollaway beds - $15.00.
As an admitted die-hard Stereo Realist fanatic, I've probably spent more than my share of time exploring the various accessories sold by the David White Company over the years. A good way to appreciate the extent of what was available during the Realist's heyday is to read through the company's brochures and dealer price lists from that era. These often went on for many pages, neatly cataloging an amazing array of products. Everything from the Stereo Realist camera itself to a packet of paper slide labels was listed, and each item was assigned a unique David White Company part number. While some listings included detailed descriptions or at least a few key features that would differentiate a particular item from other similar ones, there were always other listings with only cryptic names and little or no additional information.

One of my favorites in this last category has always been ST-21-15, simply listed as "Goo" with the description "for Permamounts". I couldn't help wondering if "Goo" was a misprint or a joke the first time I came across it on a price list. I've learned additional information about it over the years, but in a decade of collecting Realist items since first seeing Goo on a price list, I had never found any of it. My luck changed recently though, as this tube of Goo (now dried to a solid state) was discovered safely tucked away in an old partially used box of Realist mounts, where it had probably been for nearly 50 years. The actual size of the tube (including the metal stopper) is about 5 inches long. (All photos by the author unless noted.)
The David White Company's new stereo mounting system was featured on the front page of the March, 1953 issue of The Realist News. Some details about the mounts described in the article were revised by the time they actually became available, and even the name "Permamount" was to come later.

when I discovered the tube illustrated here in a partially used box of Realist mounts. My wife had a hard time understanding my excitement over an old dried out tube of glue, and I'll have to admit feeling a little silly myself as I proudly held it in the air for the family to appreciate!

A slide mounting saga

It turns out that Goo is just a small part of an interesting and problem-filled chapter in Stereo Realist slide mounting. With the introduction of the Stereo Realist camera in 1947, the David White Company's original slide mounting system consisted of thin die-cut paper masks with a layer of heat-activated adhesive on one side. The ST-2 mounting kit contained the necessary equipment to adhere pairs of film chips to these masks, which were then inserted into cardboard folders or sandwiched between glass before viewing. While the results obtained with this system were satisfactory for use with a hand viewer, the alignment of the film chips was sometimes less than ideal. Also, the paper masks were only available in two versions: "Distant" for most scenes, and "Close Up" for very close subjects. There was no "Medium" for scenes shot somewhere in between, which sometimes created problems with proper image spacing and handling of the
Stereo pictures for projection have definite limitations as to the distances that can be accommodated on the same slide. In the past, each slide necessitated major adjustments to the projector because the film was always placed in the same position in the mask. As a result, audiences were subjected to considerable eye-strain during the adjustment process.

The new system is based around three different spacings of the windows and three different openings. By selecting the proper mask for the mounting of individual stereo pairs, slides come on the screen very close to perfect alignment. The spacing decided upon for the three masks has proven to be the complete answer to the projection problem.

The three different versions of the mount were listed as "Distant" (for subjects from 5 feet to infinity, with the stereo window set at 7 feet), "Medium" (for subjects from 3 to 15 feet, with the stereo window set at 4 feet), and "Close-up" (for subjects from 2.5 to 4 feet, with the stereo window set at 2.5 feet).

The new slide frame itself is molded from black plastic and is extremely simple to assemble. The two pieces of glass for the slide are slightly smaller than the glass used to date. After cleaning the glass and dusting the frame, one sheet of glass is placed in the plastic frame. The film is then dropped into accurately molded recesses and the second sheet of glass is placed over the film. The entire unit is sealed together with a self-sealing adhesive paper, which has space for labeling.

In addition to the ease of assembly and being adaptable for both projector and viewer, the new system has many other advantages. It is extremely accurate. There is no chance of the film slipping, coming off the mask, or getting out of alignment. It eliminates the need for an aligning jig, as well as the heating unit and iron. ...One major advantage to those who desire to mount their own slides is that the pressure-sensitive paper sealer completely eliminates any need for taping slides. The slides are absolutely uniform and very neat when grouped in a file box. Although lighter in total weight, the combination plastic-glass mount is much more resistant to breakage than other materials.

The end of the article stated that the new mounts were available at authorized Realist dealers in boxes of 20 for $3.00 or boxes of 100 for $13.50.

The trouble begins

Four months later in the next issue of The Realist News (July 1951), a small article appeared under the headline "New Perma-mounts Encounter Delays," which was probably of particular interest to those who had attempted to obtain the new (and previously un-named) mounts.

When trouble strikes it has the annoying habit of striking in bunches. And it really struck hard at the David White Company after the convention in Atlantic City.

The smallest package of Perma-mounts available was priced at $3.00. Each box contained 20 mount frames, 40 pieces of glass, and 20 Prestoseal stickers. Although Perma-mounts seem to have had a rather brief production period, they can be found in several styles of packaging. The green and ivory box (left) was the earlier style, and the textured silver box (right) appeared in the mid 1950s.
At this trade show, the manufacturers of the Stereo Realist built the major portion of their exhibit around an exclusive method of mounting and companion Permamounts which were the final answer to all the problems of mounting for projection. Before the show opened, orders were placed for the material from which to make the Permamounts, and an adequate supply of samples were received. Hundreds of dealer orders were taken at the show, publicity and advertising material was sent out, and announcement was made in The Realist News.

And then, BAM! The roof fell in!

First of all, immediately after the convention word was received that the material for the Permamount was not available. Secondly, the adhesive used on the sealer proved to be in short supply and a substitute was needed.

As we go to press, samples of new materials are expected almost hourly. A better adhesive has been discovered, and the proper plastic is assured by the producer. Announcements will be made as soon as possible.

One change has been made in the Permamounts. Instead of being black in color, they will be a light color. Not only is the appearance of the slides improved, but the light color reflects heat from the projector instead of absorbing it and chances of warpage from heat are greatly reduced.

No News is Bad News?

The next few issues of The Realist News contained not a single mention of the Permamounts, and from this lack of an update, some readers might have assumed that the problems had been overcome and the mounts were in the stores. However, in the May 1952 issue, more than a year after the first announcement, was the headline "Stereo Perma-mounts Will Reach Dealers' Shelves This Month."

Realist Perma-mounts are ready! According to the latest information, the long-awaited stereo-mounting system will be introduced this month and limited quantities of the new mounts should begin to appear on dealers' shelves around the nation.

Development of this new and correct system of mounting is one of the most significant things done by the David White Company since the Realist and companion viewer were engineered. Its true value to stereo in general and stereo projection in particular will become apparent after it is in wide-spread use and people see for themselves what it does.
Goo to the Rescue!

With the good news came some bad news though—a problem with the paper seal occasionally coming loose was mentioned later in the same article. Since this seal was responsible for holding the entire assembled slide mount together, a failure of this element was no small matter! It seems likely that contributed to the long delay in getting Permamounts into production.

Permamounts are being released knowing that in possibly 5% of the slides that have been mounted, the adhesive used on the paper has not held. Due to weather conditions, occasionally it is impossible to take all of the curl out of the film by rewinding it backwards before mounting. This steady pressure has on a very small number pushed the paper sealer away from the plastic mount. This slight defect can be easily corrected by the use of a special, non-hardening adhesive ("GOO") between the mount and the first piece of glass and then another small amount of hardening adhesive ("COO") between the mount and the first piece of glass. A dab no more than 1/8" in diameter should be used. This takes but a few seconds and completely eliminates the problem. It also has the additional advantage of sealing the entire unit together and preventing any movement of the glass. The advantages of Permamounts so many times outweigh this very slight defect that Perma-mounts are being released with full knowledge of this slight shortcoming.

Below that paragraph, in parentheticals, were the words "Your dealer has a supply of 'GOO'," although no model number or price was given. (A dealer price list from the following year, 1953, shows the price: $8.50.)

David White Company officials point out that the regular Realist mounting kit will not become obsolete because camera owners may mount only their best pictures in Permamounts. The remaining stereo pictures can be mounted in the regular cardboard folders for reasons of economy if desired.
One more problem?

Stereo photographers who had been anxiously waiting all this time for Permamounts to finally appear would have to wait some more! The latest difficulty was explained in the October 1952 issue of The Realist News, although it was somewhat buried in an article about problems that had been corrected with the ST-63 Handi-Viewer.

Permamounts were ready for release several months ago. But "fortunately," a truck strike came along and held up shipments. And it was a lucky thing, because it was discovered in the meantime that although Permamounts worked beautifully with older film, it was a different story with fresh film. In some cases, the fresh film was slightly larger than the mount, causing it to buckle inside the mount.

Some months ago Eastman improved its film base, and is now using material that does not shrink over a period of time as did some of the older film. As a result of the shrinkage, recesses on the Permamounts were found to be about 1/4 inch too small.

I have been unable to find any further reports of delays in the release of the Permamounts, so it appears that they must have finally arrived in the stores, more than a year and a half after they were announced. Seventeen months later, in the March 1954 issue of The Realist News, a front page story noted the introduction of the Stereo Realist aluminum mounts, and the discontinuance of the original paper masks. Production of the Permamounts apparently continued for a while after that, but I found no reference to them in any David White Company or Realist price list or brochure after 1954, leading me to believe they were only available for a few years.

I spoke to Ron Zakowski, longtime (and now retired) David White Company employee, to see if he might know how long the Permamounts were manufactured. He kindly took the time to search for the original production records but was not able to locate them. However, he felt that the mounts were probably still available into 1955 or 1956.

A Labeling Twist

One interesting peculiarity of the Permamount is that its label is located on the back of the slide, instead of the front as with most other types of stereo mounts. This is because the actual edges that mask and define the borders of the image were molded into the mount itself, and therefore could only be located on the side opposite the Prestoseal sticker. In order to create the sharpest edges during viewing or projection, this frame has to be in front of the film, thereby relegating the label to the back. This was a change that many people must have found confusing or at least uncomfortable. I have not compiled any actual statistics, but I would say that many of the stereo slides I've seen mounted in Permamounts have been mounted backwards, with the film's emulsion facing the front of the mount. That way when the slide's image is viewed correctly, the label would seem to be on the front of the mount where most people would expect it to be. However, the die-cut openings in the Prestoseal sticker are larger than the windows in the mount's frame, so they will not properly mask the image, and since the windows in the mount's frame in this case would be located behind the film, they would not provide a sharp edge around the image either.

Actually, even when a Permamount slide is mounted correctly, the masking of the film chips will not be quite as precise as with some other mounting systems, because the windows in the Permamount's frame are always held away from the film by the thickness of
Contrary to what most people were accustomed to at the time, this side of the Permamount was intended to be the front of the mount. The Prestoseal sticker (with its space for labeling the slide) was placed on the back of the mount.

A piece of glass. In contrast, aluminum masks and even some paper masks are positioned right up against the film for a precise razor-sharp edge, and then glass (if used) is placed on the outside of the mask rather than being contained inside of it.

**Going by the numbers**

Permamounts were assigned the following part numbers:

- **ST-21-10**
  - "Distant" Permamount

- **ST-21-11**
  - "Close-up" Permamount

- **ST-21-12**
  - "Medium" Permamount

I am puzzled about why ST-21-11 was not the "Medium" mount and ST-21-12 was not the "Close-up" mount, since that would put them in order of largest window size to smallest, just as the aluminum masks were eventually numbered. It makes me wonder if the "Medium" version was not originally planned (similar to the lack of a "Medium" version of the original paper masks) and was added to the other two somewhere further along in the design process.

The glass and the "Prestoseal" stickers were assigned their own part numbers, even though they were supplied along with the mounts, since they could be purchased separately if desired. And of course, Goo had its own number as well.

- **ST-21-13**
  - Permamount Prestoseal stickers

- **ST-21-14**
  - Permamount slide glass

- **ST-21-15**
  - Goo

Besides the three stereo versions, a Permamount was also made for standard 2-inch x 2-inch 35mm slides. I have not been able to determine exactly when these were produced though, and there was no mention of them in *The Stereo Realist News* articles. I did run across several boxes of them a while back though, so I know they do exist. They were assigned the following part numbers:

- **ST-21-50**
  - Permamount (2x2)

- **ST-21-51**
  - Permamount Prestoseal stickers (2x2)

- **ST-21-52**
  - Permamount slide glass (2x2)

**A permanent mount?**

Unfortunately, time has often not been kind to slides mounted in Permamounts, making their name seem rather ironic. Many of the Permamounted slides that I’ve seen from the 1950s are in pretty sad shape today. The Prestoseal sticker’s adhesive has often dried out, sometimes resulting in the glass (and the film chips) coming loose from the frame. On slides that are still in one piece, the Prestoseal sticker has often shrunk or wrinkled, and its adhesive has sometimes oozed out onto the glass, quickly attracting and holding any nearby dust or lint around the edges of the images before drying out.

On the other hand, I have also seen Permamounted slides from the same era that appeared to have just been mounted yesterday, so it’s hard to know what to expect! I suspect that storage conditions over the decades have probably had a considerable effect on how well these slides have survived, but I also wondered if perhaps more than one formulation of adhesive may have been used on the Prestoseal stickers during the mount’s production, resulting in some mounts that have aged better than others.

That suspicion was confirmed by Ron Zakowski, who explained that the final runs of Prestoseal stickers were made with an improved adhesive that did not need the assistance of Goo and did not dry out as quickly. In fact, he sent me a couple of unused Prestoseal stickers that appear to have come directly from the 1950s by way of a time machine! Over the years I have come across many unused boxes of Permamounts in which the Prestoseal stickers have all.

*The crisp edges of the Permamount’s plastic windows is often now obscured by a rough edge of adhesive that has oozed out from under the Prestoseal sticker.*

(Original photographer unknown)
dried and hardened into a single solid lump, so seeing Ron’s pristine samples was quite a surprise!

The use of an improved adhesive toward the end of production would also explain why the original (typewritten) Permamount instruction sheet included several paragraphs about the need for and use of Goo in the mounting process, but the later instruction sheet (which was actually typeset, illustrated with photos, and printed on much nicer paper) didn’t even mention Goo at all.

I have not had the opportunity to dissect any Permamounts that had been assembled with the addition of Goo, so I can’t report first-hand about the condition of such slides. However, judging by the strength of the dried blobs of Goo on the outside of the tube, I would suspect that a slide containing Goo could not be disassembled without breaking the mount. This seems to have been an amazingly strong adhesive! The “Fix it Forever!” slogan on the front of the tube may not have been much of an exaggeration. (Other selling points on the tube included: “Tough,” “Flexible,” “Won’t crack,” “Waterproof,” and “Oil and gasoline resistant.”) Of course, there’s a good chance that the Prestoseal sticker on a slide mounted with Goo would have still oozed adhesive and wrinkled over the years, but at least the mount wouldn’t fall apart.

Who made Goo?

Despite the wrinkles and scrapes in my tube of Goo, I was still able to make out the words “Wm. K. Walthers, Inc., Milwaukee, Wisconsin.” around its top. Just out of curiosity, I checked a current Milwaukee phone directory, and was surprised to find the company still listed there. I wrote to them with the hope that someone would still recall the Goo adhesive that they produced for the David White Company nearly 50 years ago. My letter was promptly answered by Mr. J. Phillip Walthers himself, the president of the firm and the third generation Walthers to hold that position. He provided a brief history of his company, which began in 1932 as a manufacturer of hard to find parts for model railroads. Over the years it has grown into one of the largest suppliers of parts, supplies and accessories for that hobby. Their current catalog contains thousands of products related to model railroading, and although Wm. K. Walthers, Inc. manufactures many of them, they carry items from over 300 other manufacturers as well. You’ll find a complete searchable catalog, a more detailed history of the company, and lots of other information on their website: www.walthers.com.

Mr. Walthers did some research into the history of Goo and found that it was first introduced in 1948, which would have been about four years prior to its recommendation for use with Permamounts. He noted that Goo was initially developed to permanently affix porous and non-porous items. Although it was not unusual for the David White Company to have some of its products custom-manufactured by outside suppliers.
a few items that were assigned David White Company part numbers over the years were originally invented and sold by such firms for less specialized uses before being adopted into the David White Company product line. Such was the story with Goo. Even though it was made by a company dedicated to model railroading and was not originally intended for slide mounting, the David White Company apparently considered it such an ideal solution to the Permount adhesive problem that they assigned it a part number and sold it in photo stores along with the mounts. (Another existing product that became a David White Company accessory was the ST-59 Kinnard tripod (see SW vol. 22, no. 5, page 16), which, coincidentally, was made by yet another unrelated Milwaukee firm!)

In his search for information about Goo and its use by the David White Company, Mr. Walthers shared my letter with his father, Mr. Bruce Walthers, long-time employee and current chairman of the board. He did not remember the specific arrangement that the two companies had in which one sold the other's product under its own part number, or how such a deal came to be, but he did recall having the David White Company as a customer in the early 1950s.

One more surprise

Considering the seemingly brief production of the Permount, I was curious about whether Goo had fared any better. I asked Mr. Walthers if his records showed how long the company had manufactured Goo, but his answer to that question was completely unexpected: Goo is still available today! The Walthers website includes a locator feature that determines the nearest hobby shops where you can find items from their catalog, so I used it to find a shop in my area. Sure enough, there was a good supply of Goo in stock, and the proprietor there assured me that it was still a favorite among model railroaders. In fact he told me that there was a brief period a few years back when the production of Goo was slowed or halted, but there was such an outcry from people who had come to depend on it that it was soon available once again!

What is it about Goo that has gained it such a following? It remains slightly flexible when it dries, explained the shop proprietor, which allows it to absorb shocks and stress while maintaining its permanent hold. He provided an example of a situation in which this flexibility makes Goo the perfect solution. Small metal weights are often attached inside model railroad cars, so that the cars' small-scale overall weight more closely corresponds to that of their full-size counterparts. An adhesive such as super glue or an epoxy could be used to attach these weights, but the rattling and vibrations of the cars moving over the tracks would be enough to eventually break the bond of these somewhat brittle adhesives. The lasting flexibility of Goo allows it to easily withstand such condi-
U-Boat!

(Continued from page 19)

That threat, if Captain Turner had followed his orders, should have been minimal in any case. There were only a few U-boats operating off the British Isles, so the odds of encountering one were relatively slim. The liner should have been able to outrun any U-boat (except one submerged directly ahead), and the ship should not have succumbed to a single torpedo. Yet Captain Turner, who evidently thought he knew more than the Admiralty, was not staying well offshore to avoid the potential U-boat threat but had instead closed the Irish coast to check his position, and he was not steaming at full speed as instructed but had slowed to time his arrival at Liverpool with a favorable tide.

Lastly, Churchill was preoccupied at the time with the Dardanelles campaign just then beginning in the Mediterranean, an innovative plan for which the First Lord bore the prime responsibility and which, had it been carried out properly, might well have ended the war with an Allied victory in 1915. It was the failure of the Dardanelles, not the Lusitania, that drove Churchill from power and tarnished his career for twenty years. Yet one wonders whether he was not from time to time haunted by images of the great liner sinking by the bow five miles off the Old Head of Kinsale on that bright May afternoon so long ago.

The author wishes to acknowledge the gracious assistance of Duncan Woods of Cygnus Graphics and Ernst Weber in providing translations of the Raumbild-Verlag material used in this article.

“German U-505 Submarine” - overview of the captured German Type IX U-boat outside Chicago's Museum of Science and Industry; from the View-Master packet Colleen Moore's Fairy Castle and the U-505 (No. M-2).

“Submarine Control Room” - Some of the complicated equipment required by a skilled and highly-trained crew to operate a World War II German U-boat; from the U-505 View-Master reel.
ARCHIVAL SLEEVES: clear 2.5-mil Polypropylene

CDV (3 318' X 4 318')
- per 100: $8
- case of 1000: $70

CDV POLYESTER (2-mil)
- per 100: $13
- case of 1000: $120

CDV PAGE 6-pocket top load
- per page: $0.50
- case of 100: $20

4' x 6'
- per 100: $9
- case of 1000: $80

STEREO / #6 3/4 COVER (3 314' x 7')
- per 100: $10
- case of 1000: $90

STEREO POLYESTER
- per 100: 2-mil $16 or 3-mil $22

CABINET / CONTINENTAL (4 3/8' X 7')
- per 100: $11
- case of 1000: $100

#10 COVER (4 3/8' x 9 5/8')
- per 100: $22
- case of 500: $100

5' x 7'
- per 50: $8
- case of 200: $30

BOUDOIR (5 1/2' X 8 1/2')
- per 25: $7
- case of 500: $50

8' x 10'
- per 25: $9
- case of 200: $45

11' x 14'
- per 10: $9
- case of 100: $50

16' x 20'' New! Improved! Sealed!
- per 10: $22
- case of 100: $140

Russell Norton, PO Box 1070, New Haven, CT 06504-1070
Connecticut orders add 6% tax on entire total including shipping.

PRECISION FOLDING STEREO VIEWER

For all standard Realist 3D stereo slides.
Glass or cardboard mounted. Folds flat, weighs only 1 oz.
Prepaid minimum order $10.00. Add $2.00 for shipping and handling.
FREE CATALOG AVAILABLE.
TO ORDER CALL TOLL FREE
800-223-6694
MAJOR CREDIT CARDS ACCEPTED
TAYLOR MERCHANT CORP. 212 West 35th Street • New York, NY 10001

FREE
3-D Catalog

- Supplies for Stereographers
- 3-D slide viewers
- Print stereoscopes
- 3-D slide mounts
- 3-D slide mounting supplies
- Books about 3-D & in 3-D

Visit our World Wide Web Catalog at www.stereoscopy.com/reel3d

Reel 3-D Enterprises, Inc.
P.O. Box 2348
Culver City, CA 90231 USA
Telephone: +1 (310) 837-2368
Fax: +1 (310) 558-1653
e-mail: reel3d@aol.com

A Berkshire 3-D Adventure

A special exhibit of 3-D perception, imaging and history will run at the Berkshire Museum in Pittsfield, MA, from January 19 through May 6, 2002.

On the weekend of March 15-16, each night a different 3-D movie will be shown: March 15 Fri. 8pm House of Wax and March 16 Sat. 8pm Dial M for Murder.

Titled "Adventures in 3 Dimensions", the exhibit takes visitors through the history and development of 3-D, from Victorian-era stereoscopes and post-World War II View-Masters to modern-day applications. The exhibit captures and celebrates the timeless appeal of 3-D with a fun, 1950s retro-style design while offering hands-on activities for visitors to explore how our eyes and brains work together to view the three-dimensional world.

Call the museum for hours and admission rates at (413) 443-7171.
The movies are not yet listed on the website: www.berkshiremuseum.org but it provides more about the rest of the exhibit.

Since 1978!

A Berkshire 3-D Adventure

3-D DIMENSION

"HOUSE OF WAX"
**Shady Respite for Realist Lenses**

The Realist lens cover acts as a partial lens shade for light from directly above, but offers no shade for any light from the sides. Over the many years of their existence, Realist lenses have experienced countless cleanings, and not always with the safest materials. The accumulated scratches (many visible only under magnification) can degrade images causing reduced contrast, haziness, and an impression of poor focus. Real lens shades can help, and the 3D Development Company has recently removed the need to hunt down vintage shades. Their "Pro-Shades" are machined from polymer material that won't scratch the chrome plating of Realist lenses, and simply slide over the lenses like filters. Pro-Shades are $38.50 plus shipping from 3D Development Company, PO Box 100, Savage, MN 55378, sales@representatives.com or www.representatives.com/3D.

**Virtual Stereo Library Open**

The Stereoscopic Displays and Applications Virtual Library is a new online repository of selected Stereoscopic Imaging publications now out of print and difficult to obtain. It is the goal of the Virtual Library to make some of these volumes easily accessible once again by converting selected publications into electronic editions.

The first title in the SD&A Virtual Library is the 1982 book *Foundations of the Stereoscopic Cinema* by Lenny Lipton, which provides a wide ranging analysis of many stereoscopic topics. The book’s primary focus is the stereoscopic cinema but several background sections are equally relevant to the many different types of stereoscopic display devices available today. This book provides a wealth of information for both the novice and those already active in the field of stereoscopic imaging. (See SW Vol. 9 No. 4, page 20.) Included with the download is a 5 page errata list for the original book. *Foundations of the Stereoscopic Cinema* is available now as a free download from the SD&A Virtual Library: [http://www.stereoscopic.org/library](http://www.stereoscopic.org/library).

**Upcoming Stereo Exhibitions**

Included here are closing dates and contacts for upcoming PSA approved stereo exhibitions. The PSA Stereo Division’s website: [http://members.aol.com/psastereo](http://members.aol.com/psastereo) has a number of current exhibition entry forms available.

- **Cascade.** Formats: Slides, Cards & Digital (participants may enter any 2 of the 3 sections). Closing date: June 8, 2002. Shab Levy, 6320 SW 34th Ave, Portland, OR 97201-1082, email: shab@easystreet.com Fees: N. America $7, Others $7.
Buy, Sell, or Trade it Here

For Sale

3-D BOOKS, VIEWERS, and paraphernalia to suit every stereoscopic whim and fancy, all at terrific prices! For a free list, write, call or fax Cygnus Graphic, PO Box 32461, Phoenix, AZ 85064-2461, te/te (602) 279-7658.

3D NUDES and erotica CD-ROM: 400+ contemporary images by award-winning photographers Boris Starosta and Larry Ferguson. Full screen stereo pairs and anaglyphs. Includes 3D glasses. Information: www.3d6.com; beauty3d@3d6.com; Dynamic Symmetry, POB 772, Charlotteville, VA 22902.

ADULTS ONLY - 3D nudes and Erotica Online. Visit awesome3d.com and xxx3d.com to see our adult products. Over 50 sexy amateur and centered/covered models on our sites. Take $5 off any order of $25 or more, just mention this ad. Awesome 3D, 100-E-highway 34 - PMB 155, Matawan, NJ 07847 - Sample Slide set of 8 only $25.

BOOK, The Siege at Port Arthur; hardcover 3-D viewer. $15 Econ Air. (Cash preferred). Ron Blum, 2 Hussey Ave., Oaklands Park SA 5046, Australia.

CENTRAL PACIFIC RAILROAD Photographic History Museum. Stereographs of the first transcontinental railroad are now on display at: http://CPRR.org


NEW BUBBLE LEVEL for Stereo Realist. Advanced polymer ring with precision glass bubble. Simple installation, just snap in the center viewfinder, precision engineered by 3D Development Company. Visit us at: www.representatives.com/3D or e-mail: info@representatives.com.

For Sale

SINGLE CAMERA 3D slidebar with 6 inch exposure distance with vertical adapter $30.00 u.s. Twin camera slidebar with 24 inch exposure distance in vertical format. 17/inches in horizontal. $45.00 u.s. See www.ematic.com/Paul3DPhotography or 250-514-1080, pauls3d@hotmail.com.

STEREO REALIST f=2.8 camera. Superb condition with like new case. $385.00. T.C. 716 projec

STEREO VIEW & VIEWER collection to be sold to the highest bid. Detailed list for $1.00. Submit to D.P. Parisi, 38 Ardmore Place, Buffalo, NY 14213-1146.

STEREO VIEWER LENSES. - two wedge-shaped lenses, each molded and embodied in 1.5 square frame. Precision optical quality: build, experiment. $7.95 postpaid (USA). Taylor-Merchant Corp. 212 W. 35th St., New York, NY 10001, (800) 223-6694.

STEREO VIEWS for sale on our website at: www.daves-stereos.com e-mail: wood@pikeonline.net or contact us by writing to Dave or Cyndi Wood, PO Box 838, Milford PA 18337 phone (570) 296-6176. Also wanted, by views, L. Hensel of NY and PA.

STEREOVIEW PRICE GUIDE. Only $7.00! Great for people buying from auctions and for collectors who want to know the latest realized auction values. Only numbered views over $50 are listed. D. Boehme, 1236 Oakcrest Ave. W. Roseville, MN 55115 www.iampdoc.com.

STEREOVIEWS, CDVs, CABINETS, etc. Direct sale: send me your wants. Tim McIntyre, 137 Nile, Stratford Ontario, N5A 4E1, Canada. Tel: 519-273-5360, Fax: 519-273-7310, email: timonir@orc.ca. web page: http://www.orc.ca/~timoni. I collect: Canada and Europe views - let me know what you have.

SUBSCRIPTIONS: award winning contemporary stereoscopic images by Boris Starosta. Erotic or Contemporary/ Digital image subscriptions available in various formats. Information: www.starosta.com; boris@starosta.com; 3D Showcase, POB 772, Charlotteville, VA 22902.

VIEW-MASTER COLLECTION, 2000 plus reels, viewers, Chinese Art, Mushroom reels (-1) Hand
detailed, single and three reel, and Foreign, $4.00 for all. Jack Scannell, RR1, Box 232, Haskell, OK 74436, (918) 482-2384 or (918) 494-6298.

Visit stereoviews.com, the Maine Antique Photo
graphica Gallery, for stereoviews and other fine 19th and 20th Century photographs, books, ephemera and equipment.

Wanted

ALWAYS BUYING STEREO VIEWS AND REAL PHOTOS of U.S. Mint, U.S. Treasury, and Bureau of Engraving & Printing. High prices paid for stereo views and real photos I need of U.S. Mint coinage operations, Treasury and BEP paper money engraving & printing operations 1860s-1920s. Especially seeking U.S. Mint interiors and exteriors from Philadelphia; San Francisco; New Orleans; Denver; Carson City, Nevada; Dahlonega, Georgia; Charlotte, NC; plus U.S. Treasury & Bureau of Engraving & Printing operations, Washington, DC and various U.S. Assay offices. Please e-mail the image to dundrum@littletocoin.com or mail or FAX photo copies, with price and condition noted. I'll reply within 48 hours. Attn Dave Sundman, c/o Littleton Coin Co., One Littleton Coin Place, Littleton, NH 03561, FAX 603-444-3512, (est. 1945).

ARE YOU Sure you still need your vintage Germany stereo cards? Please check your collection and contact me. Klaus Kemper, Kommerschei
derstr. 146, D-53505 Niegege, Germany.

AUSTRALIAN IMAGES, stereo or otherwise, ephemera, comics, etc. Pay cash, or trade in cards. Warren Smythe, 258 Cumberland Rd. Auburn, NSW 2144 Australia, asmythe@bigpond.com.au.

BICYCLES AND MOTORCYCLES. Any stereoptics, photographs, ephemera, medals, catalogs, memorabilia, etc. related to early cycling. Singles or collections. Generally 1860-1955. Permanent want. Loren Shields, PO Box 211, Chagrin Falls, OH 44021-0211, Phone (905-886-6911, vintage-antique@home.com.

BUYING SAVANNAH GEORGIA and southern stereoviews. Also buying pre-1930 Georgia and southern postcards. Historical Savannah items also wanted. Call (912) 447-9868 or write Clifford Burgess, 404 E. ogilbover Avenue, Savan
na, GA 31401.

COLLECT, TRADE, BUY & SELL: 19th Century images (cased, stereo, CDv, cabinet & large paper) Bill Lee, 8658 Galtiator Way, Sandy, UT 84094, billlittleton@juno.com Specialties: Western, Locomotives, Photographers, Indians, Mining, J. Carbutt, Expeditions, Ships, Utah and occupational.

CORTE-SOCO VIEWS or sets, any subject or condition. No vieweers unless with views. John Waldsmith, 302 Granger Rd., Medina, OH 44256.

EMPTY KEYSTONE BOX for 100 card Engand Set and Primary Vol. 3&4 set, good condition. Also looking for complete Primary Vol. 5&6 set. James Farrell, (510) 537-4904, jwfarrell@aol.com.

FAIRMONT, WEST VIRGINIA stereoviews and stereoviews from elsewhere in West Virginia. I also buy other West Virginia photos, including postcards, and old paper items. Tom Prall, PO Box 155, Weston, WV 26452, wyabooks@aol.com.
Wanted

FOOD-RELATED STEREOVIEWS: fruit and vegetable harvesting, dairies and farms, factories, dining scenes, open-air markets, general stores. The more unusual the better. Quick reply guaranteed from Jeane Schinto, 53 Poor Street, Andover MA 01810-2501, rjls@medaionline.net.

I BUY ARIZONA PHOTOGRAPHS! Stereoviews, MUYBRIDGE LOUIS HELLER of Yreka and Fort Jones, California. INDIANS YOU COULD HAVE told the world of your stereo views. STEREO REALIST 1525 Accessory Lens Kit for SINGLE VIEWS, or complete sets of "Longfellow's NEWBURYPORT, MASS stereoviews by Meinerth, REALIST VISTA stereo viewer. D. O'Sullivan, Hillers, etc. Rob Lewis, 1560 Broadway #1500, Denver, CO 80202, (303) 861-2828, rplewis@denverlaw.com.

LOUIS HELLER of Yreka and Fort Jones, California. Anything! Also, any early California or western views wanted. Carl Mautz, cmautz@dnccn.net, (530) 478-1610.

MUYBRIDGE VIEWS - Top prices paid. Also Michigan and Mining - the 3Ms. Many views available for trade. Leonard Walle, 47530 Edinborough Lane, Novi, MI 48374.

NEWBURYPORT, MASS stereoviews by Meinerth, Mosely, Reed and others. Buy or trade. Scott Nason, 12 Marlboro St., Newburyport, MA 01950, (508) 462-2953.


SINGLE VIEWS, or complete sets of "Longfellow's Wayside Inn" done by D. C. Osborn, Artist, Assabet, Mass., Lawrence M. Rochette, 169 Woodland Drive, Marlborough, MA 01752.

STEREO REALIST 1525 Accessory Lens Kit for Macro Stereo Camera; Realist 2066 Gold Button Viewer; Realist 6-drawer stereo slide cabinet in Exc.+ or better condition (must contain Realist logo); Baja 8-drawer stereo slide cabinet with plastic drawers marked "Versatile". Mark Wilkie, 200 SW 89th Ave., Portland, OR 97225. (503) 797-3458 days.

STEREOVIEWS OF OCEANLINERS, steamships, cruise ships - all periods, any format. Also, views of Catalina Island, CA. Philip Baskin, 3 Bull St., Newport, RI 02840, pyalmar@home.com.

YOU COULD HAVE told the world of your stereo needs in this ad space! Your membership entitles you to 100 words per year, divided into three ads with a maximum of 35 words per ad. Additional words and additional ads may be inserted at the rate of 20¢ per word. Send ads to the National Stereoscopic Association, P.O. Box 14801, Columbus, OH 43214. A rate sheet for display ads is available upon request. (Please send SASE for rate sheet.)

THE TAYLOR-MERCHANT #707 STEREOPHOTOCO Scene Viewer
BRINGS YOUR IMAGE TO LIFE!
Quality lenses.
Exceptional durability.
Weighs 1/2 oz.
Simple, easy operation.
Folds flat.
American Paper Optics, Inc., the world's leading manufacturer of paper 3D glasses, is your one-stop source for all your paper 3D and stereo viewer products. We specialize in the custom manufacture of printed 3D glasses with the following optics:

- **Anaglyphic** (red/blue - red/green)
- **Polarized** (linear and circular)
- **Diffraction** (3D Fireworks)
- **Eclipse** (safe solar viewers)
- **Pulfrich** (television and video)

American Paper Optics is the exclusive manufacturer of 3D glasses with ChromaDepth® and HoloSpex™ lenses, and our unique patented paper stereo viewers.

Call, fax, or email for samples of our amazing glasses.
Take advantage of my powerful, extensive, and ever-expanding mailing list, built up through world-wide advertising and reputation so you the consignor can benefit from excellent prices on choice material.

**TERMS FOR CONSIGNMENT**

**EACH LOT IS CHARGED ITS INDIVIDUAL COMMISSION DEPENDING ON ITS REALIZED PRICE.**

<table>
<thead>
<tr>
<th>Lot Realized</th>
<th>Commission</th>
</tr>
</thead>
<tbody>
<tr>
<td>$40 or less</td>
<td>30%</td>
</tr>
<tr>
<td>$41 to $200</td>
<td>25%</td>
</tr>
<tr>
<td>$201 to $500</td>
<td>20%</td>
</tr>
<tr>
<td>$501 or more</td>
<td>15%</td>
</tr>
</tbody>
</table>

**STEREO CARDS** Ranging in price from bulk lots at 25 cents per card, to single-card lots at hundreds of dollars per card. I also handle viewers, Richard glass views, full-size glass views, tissues, cased images, boxed sets, and more (from 1850s to 1930s).

Contact me to get on my mailing list. Please specify if your interest is Stereo Cards, View-Master, or both.
Fleet of murderous "U" boats, the greatest menace that ever faced our Empire, surrender at Harwich.