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3-D Imaging Past & Present

STEREO WORLD

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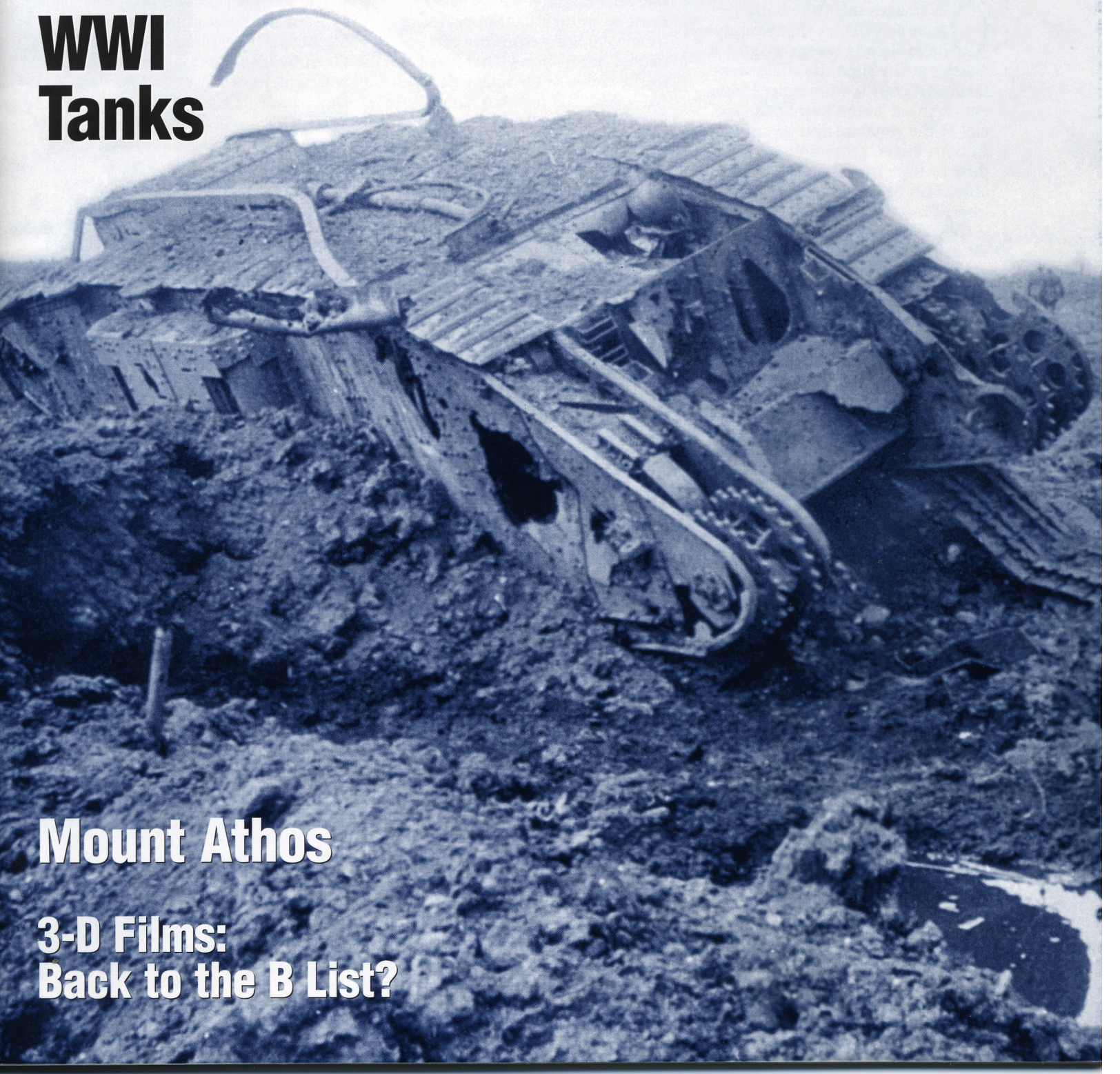
Association, Inc.

WWI Tanks

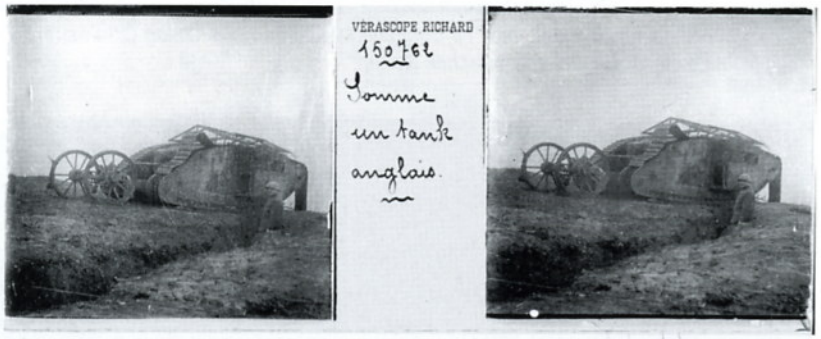


Mount Athos

3-D Films: Back to the B List?

The Great War and the First Tanks

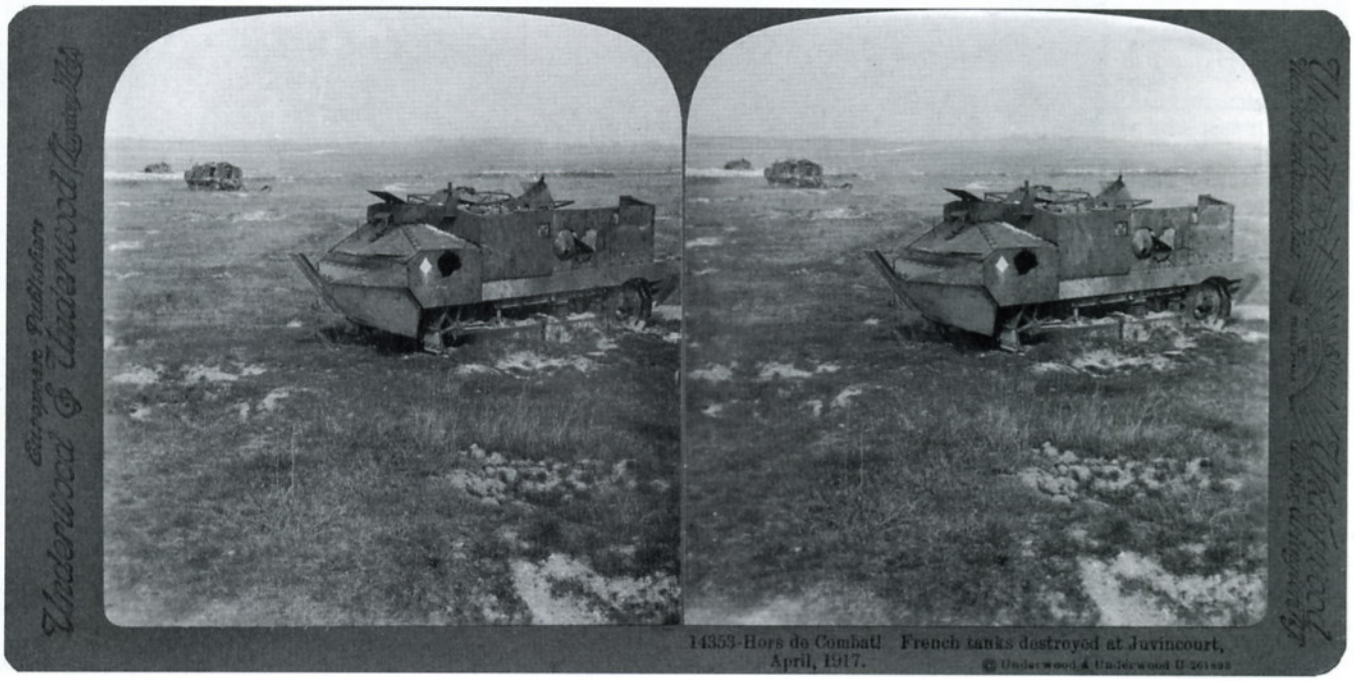
by Ralph Reiley



Verascope Richard No. 150762, "Somme un tank anglais" showing the 45 x 107mm glass view at actual size. Taken just after the battle of Flers in September 1916, where tanks were used for the first time, this is a Mark I with a broken track. It is a female version, armed only with machine guns. The male version carried 6-pounder guns, one on each side. The relaxed nature of the French soldiers, and their lack of gas masks, indicate the photo was taken well behind the front line. Note the pair of steering wheels at the rear. These were of dubious value and were left off of later models.

Underwood & Underwood (London) No. 14353, "Hors de Combat! French tanks destroyed at Juvincourt, April, 1917." A field of knocked out French Schneider tanks, taken during the Nivelle offensive of 1917, which lead to the French Army mutinies. This tank was slow, prone to break downs and did not travel across open terrain well. This view was acquired from Underwood by Keystone in 1920, and is also found Keystone's massive 400-view World War set of 1932.

The First World War has become a dim memory, although the effects of that war are still unfolding 90 years later. In August of 1914, the soldiers of Europe sang as they marched to battle, convinced they would be victorious, and home before Christmas. The generals had glorious dreams of sweeping the enemy from the field with grand maneuvers in the style of Napoleon. The reality of the war proved to be quite different, and by January of 1915, it was clear to all nations involved the war was not going to be short or glorious. The generals stubbornly held to traditional ideas for the conduct of the war, ignoring the lessons they should have learned by observing the Boar War in 1900, the Russo-Japanese War in 1905, and the Balkan War in 1912. The weapons used in 1914 made

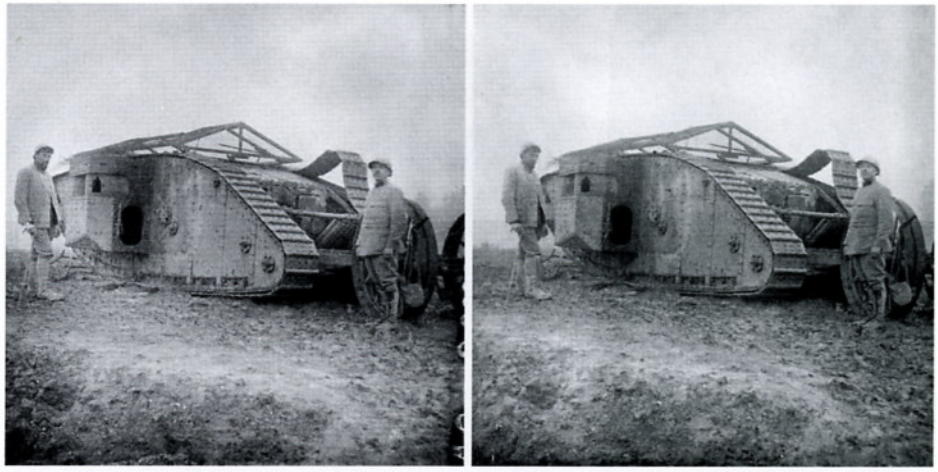


Napoleonic style maneuvers obsolete, if not suicidal. Determined men with machine guns supported by rapid-fire artillery were nearly impossible to dislodge from entrenched positions, especially if they were protected behind barbed wire. By November of 1914, the war of movement had ended. Both sides dug in from the English Channel to the Swiss border, creating a 500-mile front line. By early 1915, shortages in munitions, and mounting casualties finally forced the generals to begin searching for an alternative to the frontal assault, where success was measured in yards of territory gained, usually at the cost of thousands of men killed and wounded.

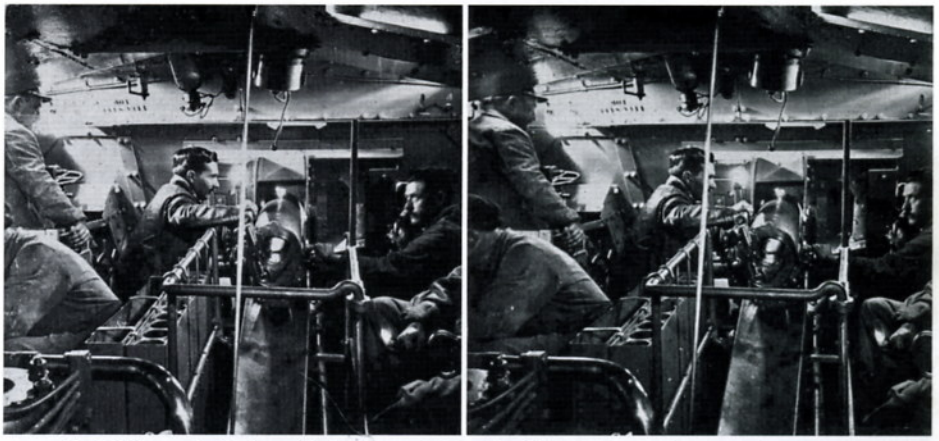
It is an odd aspect of our modern culture that war drives science and technology to develop at speeds never matched in times of peace. During the Great War weapons went from the drawing board to the front lines in a matter of months. Pre-war inventions such as the submarine and airplane evolved from crude and flimsy machines into deadly weapons by the end of the war.

Various methods were employed to break the stalemate. Long artillery barrages were used to pulverize the enemy's front lines. This tactic only alerted the enemy where an attack was about to take place. Poison gas was used, and was initially successful, until gas masks were developed. Tunnels were driven under the enemy's positions, and blown up prior to an assault. This did destroy the enemy's position, but left the ground so torn up, it was impossible to bring up supplies and reinforcements to exploit the success. The flame-thrower was used to incinerate the enemy inside his impregnable entrenchments. None of these weapons succeeded in breaking the deadlock, they only added to the misery of those serving on the front lines.

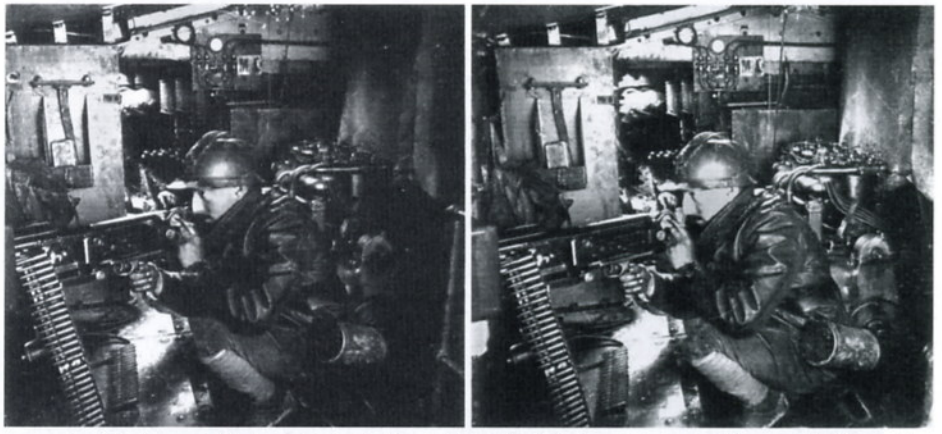
One of the new ideas to break the deadlock was an armored vehicle that could cross No-Man's Land and cut the enemy's barbed wire. This would allow the infantry to follow behind and get through the enemy's front line position. In late 1914, both the British and French began to think about an armored



Verascope Richard No. 150764, "Somme un tank anglais" shows the same tank as No. 150762, the 45 x 107mm glass view reproduced here in a larger format. The structure on top of the tank is a wood frame covered in Chicken wire as a hand grenade defense. In theory, hand grenades thrown on top of the tank would roll off and explode harmlessly on the ground.



La Stéréoscopie Universelle (LSU) No. 0951, "Intérieur D'un Tank - Modele St Chamond" showing the interior of the St. Chamond heavy tank. It was armed with a very powerful 75 mm field gun and four machine guns. It was also slow, prone to breakdowns, and did not travel well over open terrain.



La Stéréoscopie Universelle (LSU) No. 01399, "Mitrailleur - Tank St. Chamond." Near this machine gun port, the engine can be seen open to the crew in the very cramped conditions. The use of flash for the photo greatly exaggerates the interior lighting level of the tank, which was normally very dark.

Enlargement from a 45 x 107mm glass stereo by an unknown French photographer showing a St. Chamond heavy tank named Cyclop. The 75mm gun prominent at the front of the tank was the most powerful gun ever mounted on a tank until WWII. The round commander's cupola is also prominent at the left front side of the tank. Note how far the front of the tank overhangs the treads. The rear also over hung the treads. This prevented the tank from crossing trenches or terrain full of shell holes. While the caption on the photo indicates that the tank is engaging the enemy, I doubt the photographer would have survived out in the open in No-Man's-Land to take a picture. This was most likely taken during a training exercise.

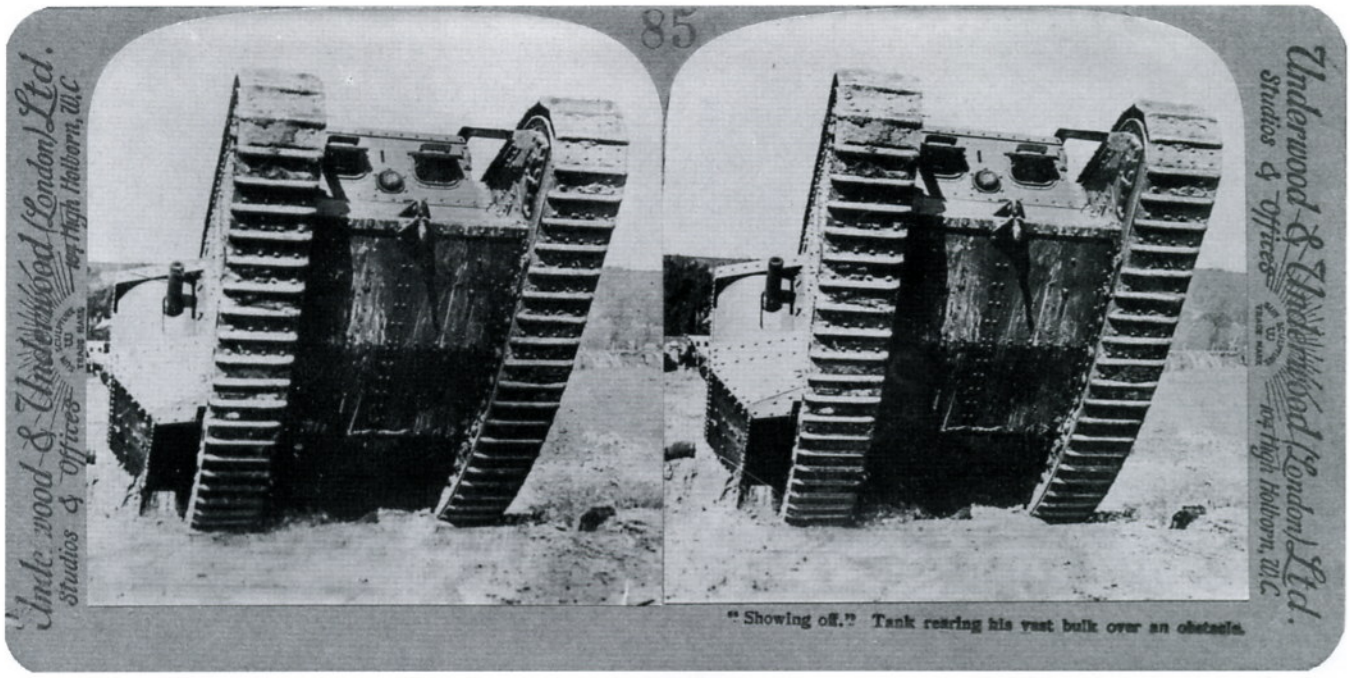
Enlargement from a 45 x 107mm glass view, "Gros Tank Francais." What may look like a garbage truck is actually the rear of a St. Chamond tank in use as a transport vehicle, clearly showing the long overhang.

wire-cutting vehicle. On the German side, every offer to build an armored vehicle was turned down by the high command. The British army also had little interest is such an outlandish idea. Oddly, the British Navy was interested. In 1914, the British army and navy had separate air forces, the Royal Flying Corps and the Royal Naval Air Service. The navy sent over some primitive armored cars with the air squadrons to help protect the airfields, and theoretically to rescue downed pilots in hostile territory. Before the onset of trench warfare, the small armored car section of the RNAS earned quite a reputation by harassing the Germans with hit and run raids.

Winston Churchill, First Lord of the Admiralty, approved funding, and formed the Landships Committee. Work on an armored wire-cutting machine started in February of 1915. The idea that proved most promising was based on the American designed Holt caterpillar tractor. The first design, called Little Willy, was a large armored box on top of the Holt tractor. The workers in the factory were told they were building mobile water carriers for the troops fighting in the Middle East, to disguise the nature of their work. At some point the name was shorted from Water Carriers for Mesopotamia to Tank. Little Willy proved to be unsuitable for rough terrain, but the lessons learned were used for a new vehicle, Big Willy. Later the name was changed to Mother. Its shape was rhomboid, and it had side mounted guns, in sponsons, a naval term for a gun mounted on the side of a ship. The caterpillar tracks were redesigned so that they rolled over the top of the vehicle, and made wider to reduce the ground pressure. This allowed the heavy vehicle to cross rough terrain. The shape allowed the tank to drive into and climb up out of shell holes. The side-mounted guns allowed for a lower center of gravity, so that the tank could cross an eight-foot wide trench. Its large size and slow speed made it a true land ship. By September of 1915, it was ready for testing. The tests proved successful, and the army, finally interested, ordered 100 machines. The tanks were put under the command of the army, in the Heavy Branch of the Machine Gun Corps.

When 50 tanks were ready, the army pressed them into service. On September 15, 1916, at Flers, during the Somme offensive, the British launched the first tank attack. All 50 tanks were taken to the front. Ten were held in reserve, 32 made it to the front lines, nine made it across No-Man's-Land, and three made it into the German rear area. Some were knocked out by German artillery fire, but most broke down due to mechanical failures. Still, they were quite effective. The German front line troops panicked when their rifle and machine gun fire had no effect on the mechanical monsters slowly moving forward, and the German line was breached.

Unfortunately, the opportunity was missed, and there were too few reserves on hand to exploit the success. The Germans quickly counterattacked, and regained their lost positions. The French were furious at the English for giving away the surprise. They wanted to wait until they had hundreds of tanks on hand so they could deliver a decisive blow. While the

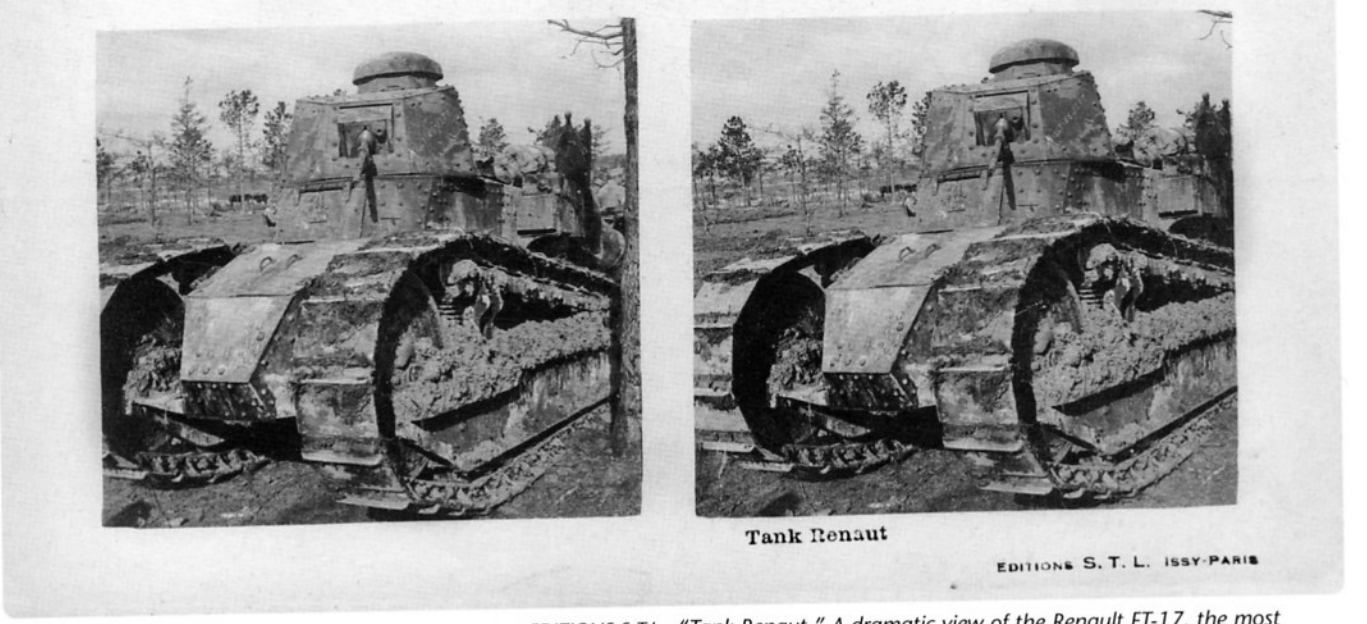


Underwood & Underwood (London) "'Showing off.' Tank rearing his vast bulk over an obstacle." This is the Mark IV tank, as used at the battle of Cambrai. It is the male version, with a short barrel 6-pounder gun. The photo was taken during a training session, but this is the view German soldiers would have had as it slowly approached their trenches. The Germans learned that a flame-thrower or bundle of hand grenades would stop a tank. Later on they had a large Mauser 13mm single shot bolt action antitank rifle that would punch through the armor or break a tread and thus immobilize the tank. There was also a Krupp 37mm antitank cannon for front line use.

tanks were a surprise, they did not overly impress the German General Staff, although they soon began an armored vehicle program of their own, as well as work on a 13mm anti-tank rifle and a 37mm light anti-tank gun for use in the front line trenches. While waiting for these weapons to arrive, the German front line soldiers found the flame-thrower to be a very effective anti-tank weapon, as well as a bundle of grenades tossed on top of or under a tank.

After the battle of Flers, the British high command increased their order from 100 tanks to 1000, and renamed the Heavy Branch of the Machine Gun Corps to the Tank Corps. They continued to use tanks in small numbers in poorly

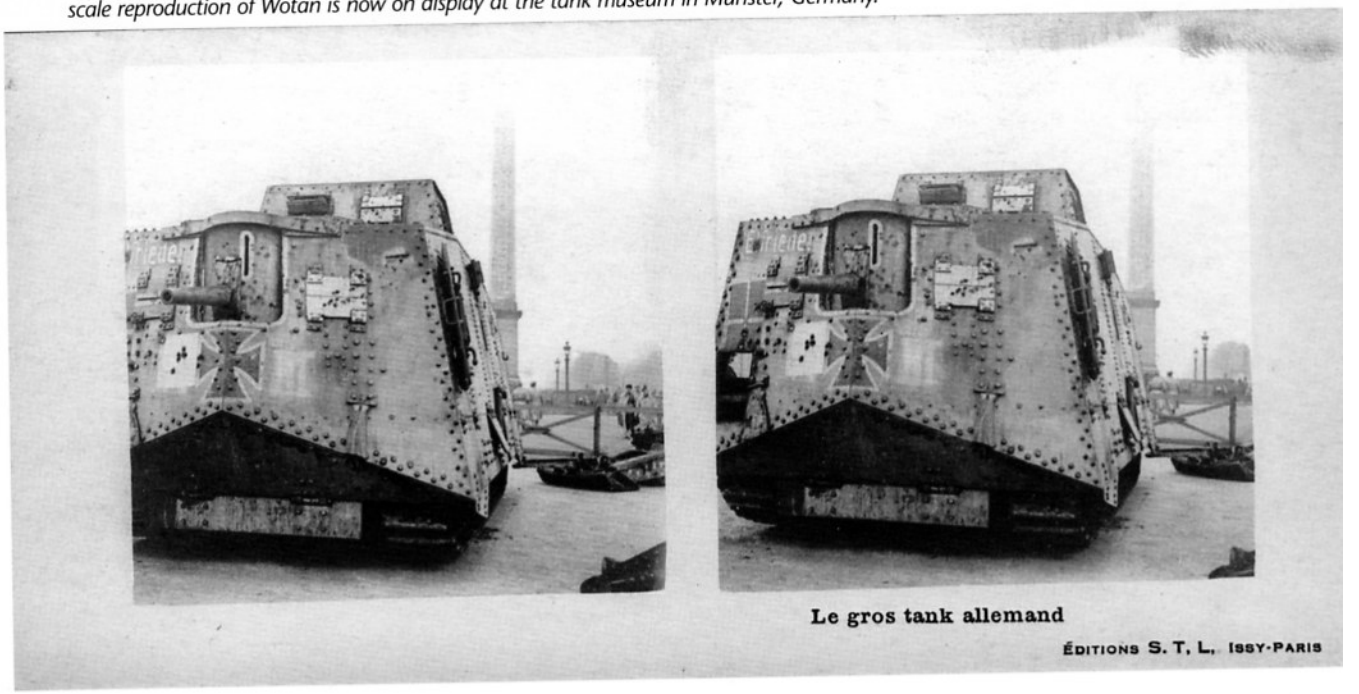
Underwood & Underwood (London) No. 14406, "Ripped and battered to death by the enemy - a derelict tank Cambrai." Photographed shortly after the battle of Cambrai in 1917, this is a Mark IV tank, the female version, armed only with machine guns. It was hit by an artillery shell while crossing No-Man's-Land. WWI tanks were more or less bullet proof, but they were not proof against artillery, flame throwers, or bundled hand grenades. This photo was acquired by Keystone in 1920 and was a standard in all their World War view sets after 1921.

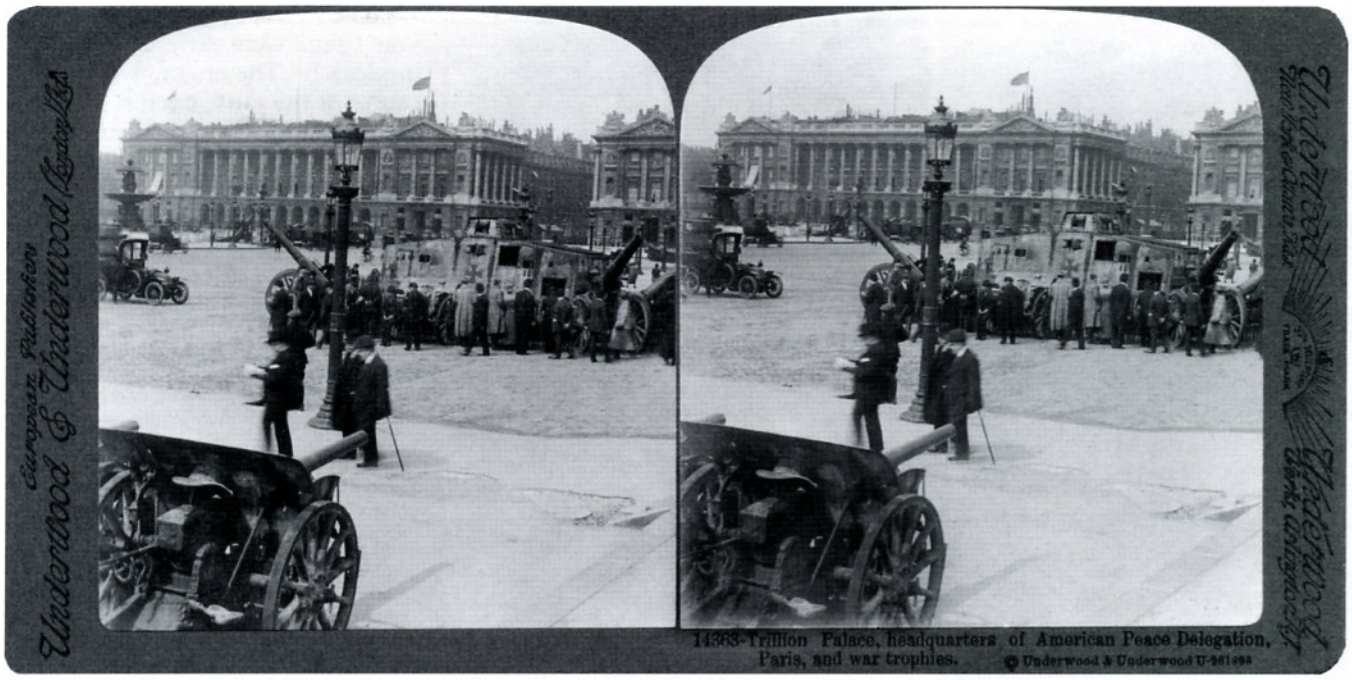


EDITIONS S.T.L., "Tank Renaut." A dramatic view of the Renault FT-17, the most effective tank of WWI. It is armed with the 8mm Hotchkiss machine gun that had a slow rate of fire but was extremely reliable. Other versions of this tank were armed with a 37mm cannon.

conceived battles. Tanks were used at the battle of Arras in April 1917, the battle of Messaines in June 1917, and at the battle of Passchendael in October 1917, all to little effect. The French continued to build tanks until they had 300 in reserve. Where the British had a single committee working on the problem of tank design, the French had multiple conflicting lines of development. One of the major French arms manufactures, Schneider, took the lead in January of 1915. Their design was also based on the Holt caterpillar tractor. The initial design was for a mechanical wire cutter, and added guns as an after thought. By January of 1916, they had an order for 400 tanks, although they only delivered 150 of them. The Schneider tank was armed with a short 75mm gun and 2 machine guns. The body extend-

EDITIONS S.T.L., "Le gros tank allemand." The German A7-V tank, one of only 20 tanks of this type to reach front line use before the war ended. This tank weighed 32 tons and had a crew of 18 men. It was heavily armed with a 57mm gun in front, and six machine guns, two on each side, and two in the rear. Note the cupolas on top of the tank. This covered the commander and driver's position, which was placed over the twin Mercedes engines. All of the A7-V tanks were named, this one being Elfriede. Mephisto is the only A7-V that still exists. It was captured by Australian troops and is on display at the Queenstown Museum in Brisbane, Australia. A full-scale reproduction of Wotan is now on display at the tank museum in Munster, Germany.



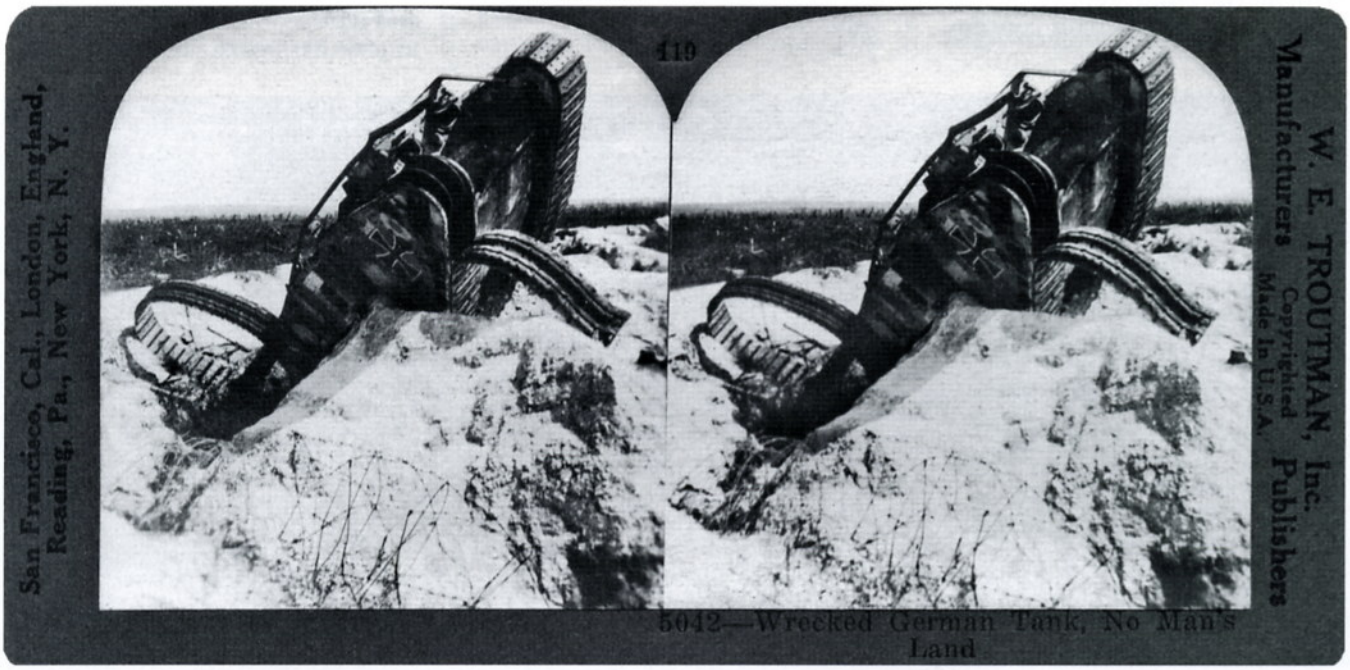


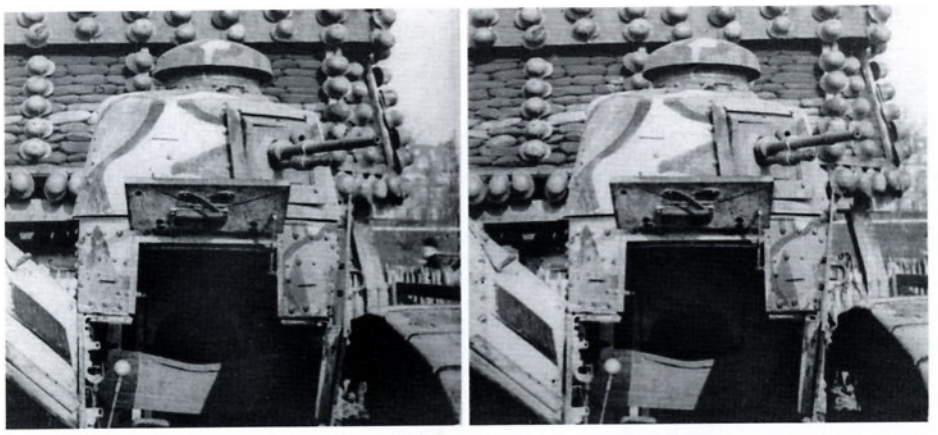
Underwood & Underwood (London) No. 14363, "Palace, headquarters of American Peace Delegation, Paris, and war trophies." The German A7-V Elfriede in Paris at the Place de Concord during the 1919 victory celebration for the Versailles treaty. Elfriede, as well as thousands of captured German guns, was moved around to several ocations during the celebrations in Paris.

ed over the treads at the front and the rear, greatly reducing its cross-country performance, and it was notoriously unreliable. Another French tank was the St. Chamond. It was not approved by the army, but by the government through an industrial lobby group, and forced upon the army. It mounted a very powerful 75mm field gun, and four machine guns. It was also based on the Holt tractor, and the armored box overhung the treads in the front and the rear more than the Schneider tank, greatly limiting it's cross-country ability. It did have an innovative petro-electric transmission, which made steering easy, although it was prone to breaking down.

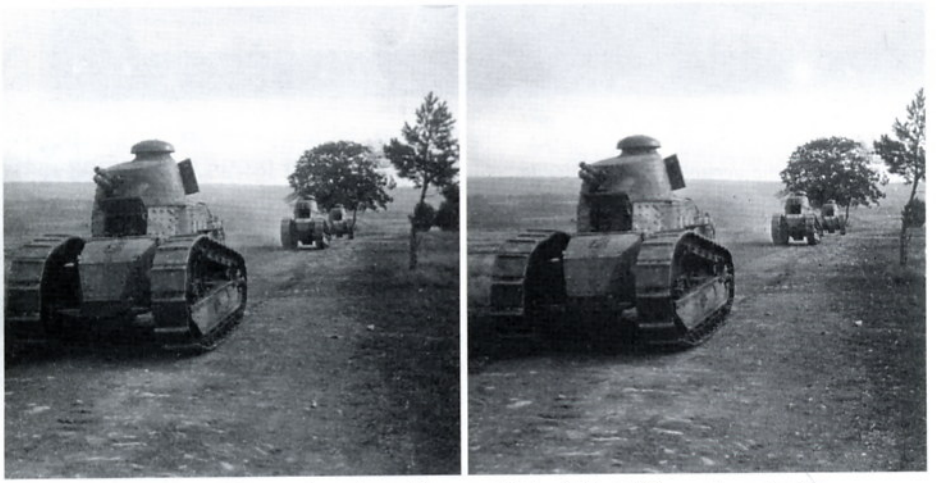
On April 16, 1917, during the disastrous Nivelle offensive that lead to the French army mutinies, 200 French tanks were used in a mass assault. The Schneider and St. Chamond tanks crossed No-Man's-Land, drove through the German

W.E. Troutman No. 5042, "Wrecked German Tank, No Man's Land." Knocked out British Mark IV tank in German colors. By 1918, the French & British were using hundreds of tanks to spearhead assaults. The Germans were never able to field more than a dozen tanks at any one time. The core of the German tank program were the 100 Mark IV tanks captured during the battle of Cambrai in 1917. A large repair facility was built at Charleroi where the tanks were repaired and crews trained to man them.





EDITIONS S.T.L., "Tank et pyramide de casques." A close up of the FT-17 with the driver's area open. Some of the gear levers and the back of the driver's seat are visible. The structure in the background is a huge pyramid covered with thousands of German helmets that was built for the Paris victory celebration on the signing of the Versailles treaty in 1919.



Enlarged from a 45 x 107mm glass view with no publisher's label, "Renault pendant la poursuite" shows a column of Renault FT-17 tanks on the move.

barbed wire, and stopped. Neither type of tank could cross a trench. With all the tanks stopped dead in their tracks, the Germans concentrated their artillery fire and tore the French tanks to pieces. Needless to say, the attack was a dismal failure.

The conditions inside a World War 1 tank were extremely unpleasant. The engine was in the center of the tank, open to the crew. The interior was filled with fumes from the fuel, motor oil, carbon monoxide, and smoke from firing the weapons, as well as the deafening roar of the engine. There was little ventilation, and temperatures could reach 120 degrees. When the fumes got too thick, a gas mask had to be worn, adding to the crew's misery. It was not uncommon for the entire crew to loose consciousness, or become violently sick. The armor plate was more or less bullet proof, but each time a bullet hit the armor, small metal fragments called splash would fly off the interior of the armor plate causing injuries and even blindness. When a rivet was hit, it could be driven through the armor plates, and ricochet around the inside of the tank damaging the engine, severing exposed fuel lines, or injuring the crew. The crew had to wear the infantry helmet and a chain mail face mask as protection from all the flying bits of metal inside the tank when under fire.

In November 1917, the British tank corps commanders finally convinced the High Command to allow them to pick the time and place for a massive tank attack. On November 20, 1917, near Cambrai, 300 tanks were used on a seven-mile front. The usual week long artillery barrage was eliminated, and replaced with a short but intense barrage the morning of the

Notes on the Publishers

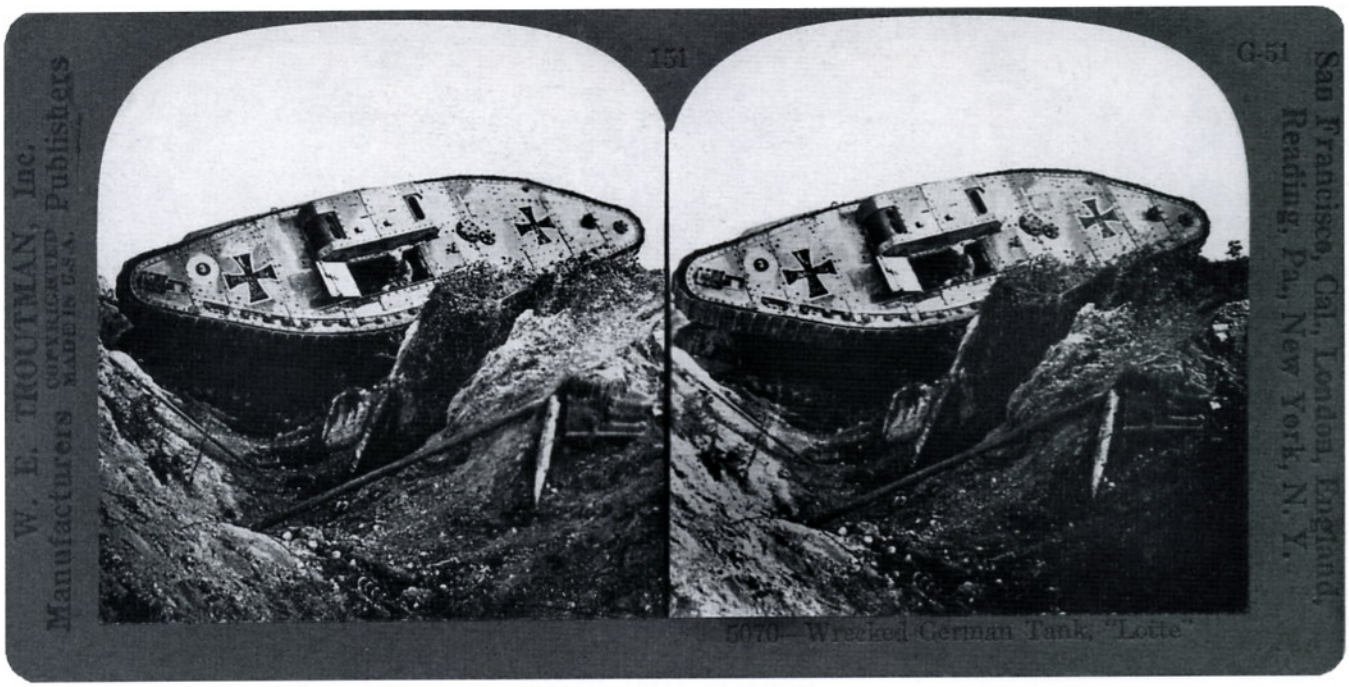
by Robert Boyd

Verascope Richard

A long-standing stereo view publisher, Jules Richard took over management of his father's camera business in 1876 and operated it with his brother for several years as Richard Frères. The firm is credited with the design of several innovative stereo cameras and viewers. The Verascope slide viewer is the best known and was available in 45x107, 6x13, and 7x13 sizes. Jules Richard was a noted photographer himself and continued in business until his death in 1930. (See *SW* Vol. 33 No. 2, page 4.) Verascope Richard stereographic images of the war are the least common of the major manufacturers. The glass stereoviews were marked "VERASCOPE RICHARD" in typescript. Individual views were numbered consecutively into subseries covering one region or subject. For example, 18 views of the Somme battlefield numbered between 150701 and 150793 suggest there may have been a subseries of 100 views covering the Somme battle in 1916.

Underwood & Underwood (London)

The company established a presence in Liverpool, England about 1887, and shortly thereafter moved their English operation to 104 High Holborn, London, near Covent Garden, as an English firm. They successfully covered



W.E. Troutman No. 5070, "Wrecked German Tank, 'Lotte.'" British Mark IV tank in German colors. This is the female version, armed only with machine guns. The use of captured tanks by the Germans was not successful. German troops tended to fire on them, even with the large Maltese crosses painted on them. German storm trooper units did not favor them either. They had been trained to move very fast across the battlefield to infiltrate the enemy's positions quickly and they outran the slow moving tanks, leaving them far behind.

battle. At dawn the tanks rolled forward on unbroken solid ground, taking the Germans by surprise. The initial attack penetrated six miles into the German rear, an unprecedented advance at this stage of the war, when success was measured in yards. Unfortunately, reserves were not available to fully exploit the success. The Germans quickly regained most of the lost ground, and recovered nearly 100 British tanks left behind in the withdrawal. These captured tanks would become the foundation of the German tank corps.

The French automobile industry was also working on tanks. Renault developed the FT-17, which proved to be the most effective tank of the war. It also proved to be the prototype of all future tanks. It had a two-man crew, a driver and a gunner/commander. It was armed with either a machine gun or a 37mm cannon. The gun was mounted on top in a fully revolving turret, and the engine was in a sealed compartment behind the crew. It could cross a six-foot wide trench. It was fairly fast, with a top speed of almost five mph (the larger tanks barely made three mph on open ground). No WWI tank was built for speed. They were intended to move at walking speed, so the infantry could keep up with them. The French built 3,700 FT-17's during the war, and some were still in use in 1945. The US army, the Soviet army, the post war Polish army, and the Japanese Army all adopted versions of this tank.

The Germans were slow to get their captured tanks in the field. They were not ready for use until

European subjects like the Boer War, Balkan wars, and royalty, and established a sizable clientele in Great Britain and on the continent. The company sold many of its images on both sides of the Atlantic, but it also marketed some stereographs specifically to English audiences. The English branch had separate photographers and a manufacturing facility in London, hence may be considered an authentically English stereoview producer despite being a subsidiary of an American company.

LSU

Surprisingly for such a prolific producer of stereo views in both small and medium formats, almost nothing is known about the company LSU. A 1938 bill provides the company address, 51 Boulevard Saint-Martin, Paris, in the center city. The total number of different LSU images is difficult to estimate. Many of their sales were of the same slides packaged in various ways, for instance the SDV series. The company also produced limited production series, including the 172 ème Régiment d'Infanterie set described above and a medical set that may have included a few dozen stereoviews of wounds, all untitled.

S.T.L.

The firm produced paper stereoviews as well as glass. Early STL paper views had black center title bars and were not marked with the company name. Later editions had titles and the company name printed at lower right. Both were usually unmounted. Early paper versions are contact prints of 6x13 cm glass originals mounted on 85 x 170 mm cardstock. These have typed titles in the center. Later cards were usually unmounted on 85 x 165 mm photo paper with the titles under the right images.

Most of what is known about this company comes from its stereoviews. The STL studio was located in the Issy section of Paris. The owner is unknown. Before the

Keystone No. 19101, "The British Tank Britannia Used in the Liberty Loan Campaigns." A War Bond Rally in New York City. Tanks were used in England, Canada, Australia and the USA to help sell war bonds. If you purchased a war bond, you were allowed to go inside and inspect the interior of the tank. The public's curiosity about these new monster machines was an effective propaganda tool in selling bonds. For some reason this interesting view was only available in 1918, and was not part of a standard set of war views, making it fairly scarce today. Keystone began publishing war views in 1915. The first set had 30 views. Each year the sets of war views were changed and expanded until 1923 when their standard 300 view set was published. This set sold very well, and in 1932 it was expanded again into a set of 400 views.

the spring offensive of 1918. They were also working on a unique tank design of their own, the A7-V. It was a 32-ton monster, with a crew of 18 men, and range of 21 miles. It also used the Holt tractor as a base, with a very large armored box, that overhung the tracks in front and rear. It had a 57mm gun in the front, and six machine guns, two on each side, and two in the rear. It was very slow, had very poor cross-country ability, and only eight inches of clearance from the ground. Only 20 of them made it to front line service before the end of the war.

The first tank on tank battle occurred at the end of the German 1918 spring offensive. One of the last German attacks took place where the British sector met the French sector. It was hoped that this area would be a weak spot, and they could force a breach between the British and French armies. On April 24, 1918, the Germans attacked on a wide front. Near the village of Villers-Bretonneux, three of the A7-V tanks were used to support the assault troops. There are various conflicting versions of the first tank on tank encounter, most of which exaggerate the short tank action. Three Mark IV British tanks had come up to support the infantry, two female tanks, armed only with machine guns, and one male tank, that had machine guns and two six-

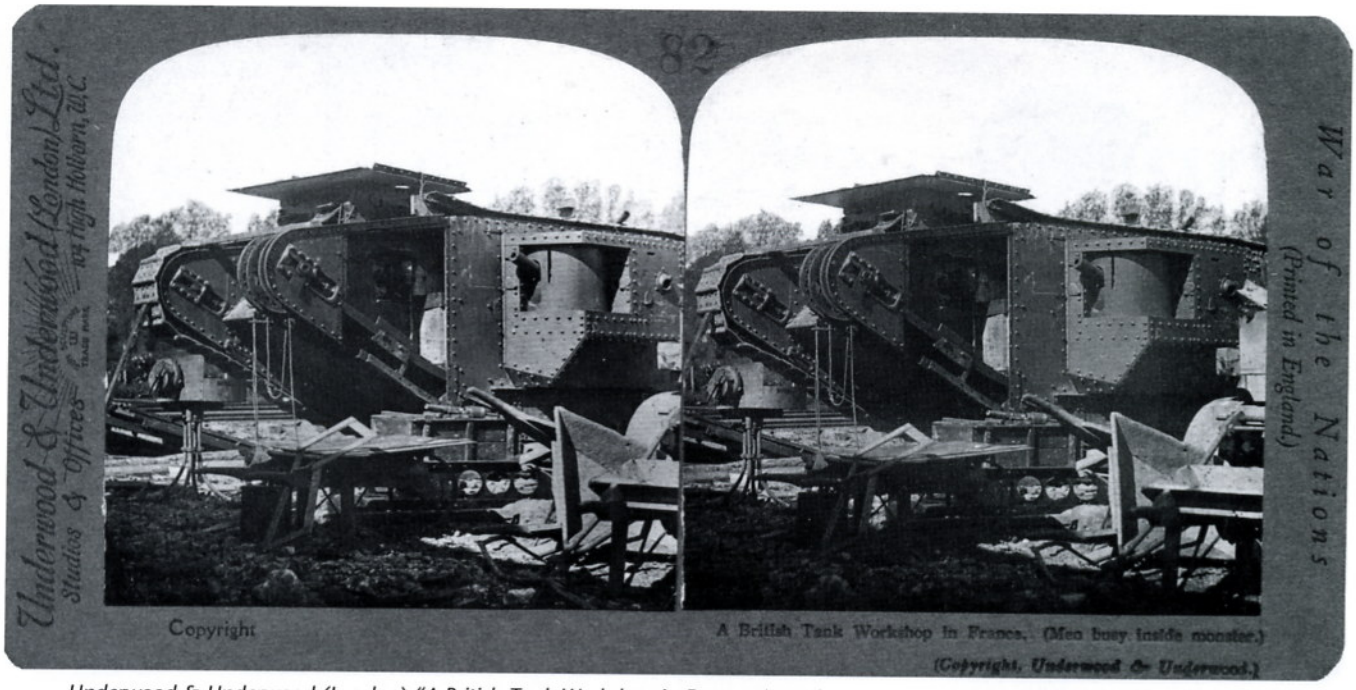
war, the studio published a number of risqué photos. It was one of the most prolific producers of glass and paper stereoviews during World War I, and continued to publish photographs at least through World War II. A few STL stereoviews appeared in Troutman, Fisherview, and Keystone sets, but the company was not a major source of views for American manufacturers. Some STL views with titles in English were marketed in the UK, but whether by STL or a British retailer is unknown.

Troutman

According to the Historical Society of Berks County, Warren E. F. Troutman was an illustrator who ran a photography supply store under the name W. E. Troutman, Inc. in Reading, PA in the Twenties. Born in 1899, he would have been a youthful competitor of Keystone View Company, which is not known to have bought out Troutman as it did most other American stereo view companies. Troutman published a single World War I set of 300 cards that was also available in a smaller edition of 100 cards. The set was assembled without any attempt at organization by chronology or topic, so it is a disjointed collection of 300 different images. The period the set was on sale is unknown, but the boxes used by Troutman were virtually identical in construction, fabric, and lettering to those used by Keystone in the Twenties. The only difference is the name at the bottom of each volume.

Troutman and his employees never traveled to France to photograph the battlefield. At least 190 of the 300 views in his WWI set are copies of French stereographs. The remainder are stock postwar views that could have been readily obtained from photographers on the Continent or in the USA. Troutman primarily used French stereograph images from Paris Stéréo and LSU.

The high proportion of French stereo views offered



Underwood & Underwood (London) "A British Tank Workshop in France. (Men busy inside monster.)" Part of the War of the Nations series published right after the end of the war. In keeping with wartime government censorship, the location of the tank repair workshop is not given in the caption. WWI tanks were on the cutting edge of technology at the time. The Mark IV tank weighed 28 tons, and was powered by a 150 hp engine, the largest available. The engines worked at near capacity just to move the heavy underpowered tank at barely 4 mph on roads, and about 2 mph off road. They were very complex machines, and needed constant maintenance to keep them running. Note the side armor panel resting on top of the driver/commander's cupola at the front of the tank, and the idler wheel tensioning springs at the front on each side of the track frame.

pounder cannon. It is unclear if the two female tanks were knocked out of action or withdrew when faced with the German tanks. The remaining British tank opened fire on the lead German tank with one of its six-pounder guns. The German tank commander wrote that conditions inside the tank were so horrendous that they were unaware they were under attack until a six-pounder solid shot punched a hole in the side of the tank. They tried to turn the unwieldy tank so that they could return fire, but the tank became stuck and they could not bring their gun to bear. With six-pounder shells penetrating the amour, and the tank immobilized, they chose to abandon the tank. The other two German tanks then withdrew from the field. Shortly after this, German artillery fire drove the remaining British tank away. Later that night, the Germans returned, started up the abandoned tank, and drove it back to the repair facility. The Germans failed to force the French and British armies apart, and their spring offensive wound down due to lack of reserves to continue offensive action.

The Allies quickly rebounded, and reinforced with American troops and hundreds of tanks, began a summer offensive that

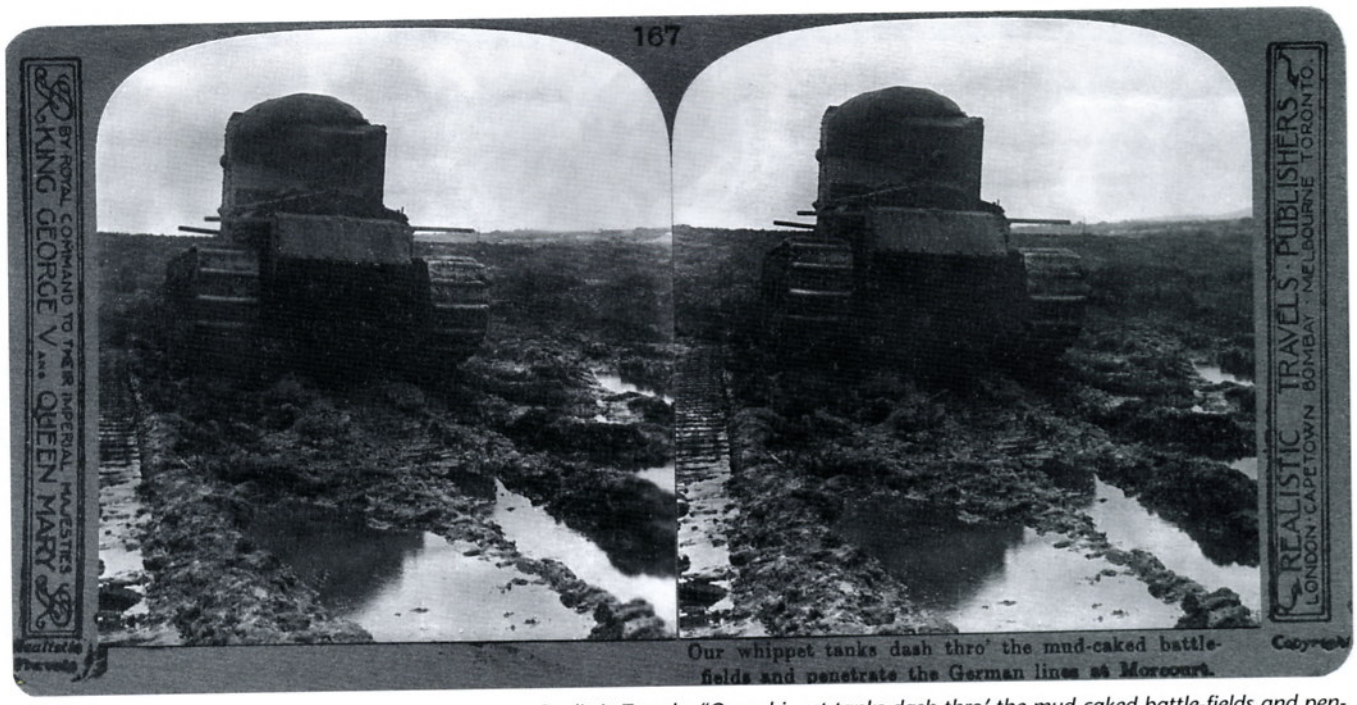
Troutman the opportunity to produce an appealing World War set, but instead of acquiring rights to a sizable number of glass stereo views, Troutman used many of the relatively tame paper stereo views from Paris Stéréo. The technical quality of Troutman WWI stereographs is the poorest of any manufacturer, with high contrast and loss of fine detail the norm.

Realistic Travels of London

Founded by H. D. Girdwood, the company produced high quality stereographs for British audiences. There were several different sets, most or all produced after the war. The primary set contained 600 views, which was sold in 100-view volumes. While Realistic Travels stereo views are popular and command premium prices in the United States, they are not aptly named. The shots purporting to be of combat or its immediate aftermath are obviously staged, usually in training areas far from the front. Night shots of raiding parties were taken with flashes, something that would have compromised the raid and drawn immediate fire from the enemy.

Unlike most makers, Realistic did not use image numbers, only sequence numbers. While the Set of 600 sequence numbers are most common, other sets used different numbering schemes, so the same images are found with different numbers. There were often minor sequence changes, and cards that were available were substituted for the intended cards, so minor variations in numbers should be expected.

Despite deficiencies in structure, realism, and breadth, the Realistic Set of 600 was marked by excellent technical quality and coverage of aspects of the war not seen elsewhere.



Realistic Travels, "Our whippet tanks dash thro' the mud-caked battle-fields and penetrate the German lines at Morecourt." The Whippet was the British version of a light tank. It had a crew of three, a driver, a gunner and a commander. It was armed with four machine guns, one at the front, one on each side and one in the rear. This was a fast tank, with a top speed of almost eight miles per hour, and a range of 38 miles. Only 50 of the order of 200 machines made it to the front lines. At the end of the war the order for the remaining 150 tanks was canceled. On a number of occasions, several of these tanks made their way into the German rear areas in the final battles of the war, wreaking havoc on German supply lines, train depots and headquarters in the way that cavalry once harassed the enemy's rear areas. This was a tactic the Germans put to use in 1939, and the French and British did not.

continued to drive the Germans back, until November 11, when the armistice was signed. In July, at Soisson, the French attacked the Germans supported by 480 tanks, most of them the Renault FT-17. The French, reinforced with a large contingent of American forces, opened a short but intense artillery barrage on the German lines. The tanks rolled out, with the infantry following close behind. The Germans were taken off guard, and fell back.

On August 8, 1918, the British began an offensive against the German line outside Amien with 420 tanks. On the first day 30,000 German troops were lost to 8000 British and French casualties. A large number of German soldiers surrendered. Eric von Ludendorf, von Hindenburg's chief of Staff, called it the Black Day of the German Army. They realized that the war was lost, as the German soldier's morale had finally begun to crack.

The tank was a lasting military innovation that is still in use. By 1918, it had become an important factor in the success of the last Allied offensives. In the final months of the war the French, British, and Americans were using hundreds of tanks in their final offensives, as well as hundreds of ground attack aircraft. The tanks allowed them to attack the Germans at any place at any time on the 500 mile wide Western Front without a long drawn out preliminary bombardment to give the location of the attack away.

Conditions inside these early tanks were horrendous, as well as highly dangerous. The men who served as crew in these primitive machines had a devotion to duty and a sense of bravery that is truly admirable, as did all the soldiers who served in World War 1.

I would like to thank Robert Boyd for his generous use of stereo views from his collection. For those with an interest in stereo views of World War 1, I suggest that you take a look at Robert Boyd's well-researched web site, www.GreatWar-Photos.org.

Ralph Reiley lives outside of Atlanta in Tucker, GA, where he is an architect and president of the Atlanta Stereographic Association but describes himself as a "piker" both as a stereographer and a stereoview collector.

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