" The Towbar"

The Official Newsletter of the

Fort Snelling Military Museum

Volunteers, Inc.

"Dedicated to the remembrance of veterans of all wars and the preservation of the military equipment they used."

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Website: www.fsmm.org

Open House 2011 Cancelled

This spring, the Volunteers were informed that some of the Museum's equipment would be transferred to other Army locations, and this would affect both operational and non-operational equipment.

The moves have started, and due to the reduction in display equipment that will result, we aren't sure what will be available for both display and demonstration on the planned July Open House weekend.

Accordingly, the FSMMV Board of Directors had no option other than to cancel the Open House.

WWII Computers?

Until the advent of the electronic computer, a "computer" was a person who computed. Long before the age of calculators and desktop computers, the tedious work of solving large problems had to be broken up into discrete, simple parts that could be done by hand.

World War I shifted the focus of computing to two kinds of questions: military problems concerning artillery trajectories and atmospheric drag, and economic problems concerning production, as the United States worked to outfit, feed, and arm the American Expeditionary Force.

During WWII, calculating ballistics for artillery and anti-aircraft munitions was coordinated by the Aberdeen Proving Ground in Maryland, with actual computing primarily conducted at college campuses. The main task was revising the existing theories of ballistics trajectory. Human computers struggled to calculate trajectories and end points for aerial bombs, anti-aircraft artillery, and air-combat weaponry.

After a short, but intense, introduction to ballistics calculations, the "computers" worked 3 shifts per day, 6 days per week.

At the time, there were almost no researchers whose primary interest was computing, since it was still seen as subservient to other, more consequential scientific interests. But this changed as machines began to outperform human computers.

The war ended in 1945, but the work of the human computers continued as they learned to use the first electronic computer: The ENIAC.

The Electronic Numerical Integrator and Computer, created by Penn scientists John Mauchly and J. Presper Eckert Jr., weighed more than 30 tons and contained about 18,000 vacuum tubes. It recognized numbers, added, subtracted, multiplied, divided and a few other basic functions.

After the machine had been built, the human computers debugged its every circuit, relay, and vacuum tube and learned how to make it work. Early on, they demonstrated to the military brass how the computer worked, with the programmers setting the process into motion and showing how it produced an answer. They handed out its many pounds of punch cards as souvenirs. They'd taught the massive machine do math that would've taken hours by hand.

The rest is history.

Stanley Hiller

Stanley Hiller became one of the dominant helicopter manufacturers of the 1950s when his model 360 was adopted by the US Army as the H-23 helicopter.

Hiller's orders skyrocketed with the start of the Korean War that saw a massive demand for utility helicopters to perform numerous missions for the US Army. The Army purchased 1200 H-23 helicopters, primarily for use in medical evacuations.

Hiller also was responsible for some more unusual inventions, such as the Flying Platform. The Flying Platform was first flown in 1955 and was moderately successful. Though it was stable enough for it's pilot to hover and fire a rifle, it's biggest drawback was that if the engine failed, it fell like a rock.

Last WWI combat vet dies

The last known combat veteran of World War I has died

Claude Stanley Choules died in a Western Australia nursing home on 5 May, 2011, at the age of 110.

Choules and another Briton, Florence Green, became the War's last known surviving service members after the February, 2011 death of Frank Buckles.

British veterans Henry Allingham and Harry Patch, aged 110 and 113 respectively, both died in 2009. The last combatant from the opposing side, Franz Kuenstler of the then Austro-Hungarian Empire, died aged 107 in 2008.

Choules was the last known surviving combatant of the war while Green, now 110, served in the Women's Royal Air Force in a non-combatant role.

Gas Bag Cars?

The combination of high wartime military requirements for gasoline, plus the requirement to import all liquid fuels, resulted in severe gasoline rationing in WWII England, Australia, Scandinavia, and Germany. This rationing affected virtually every non-military vehicle, from private automobiles to trucks to municipal buses.

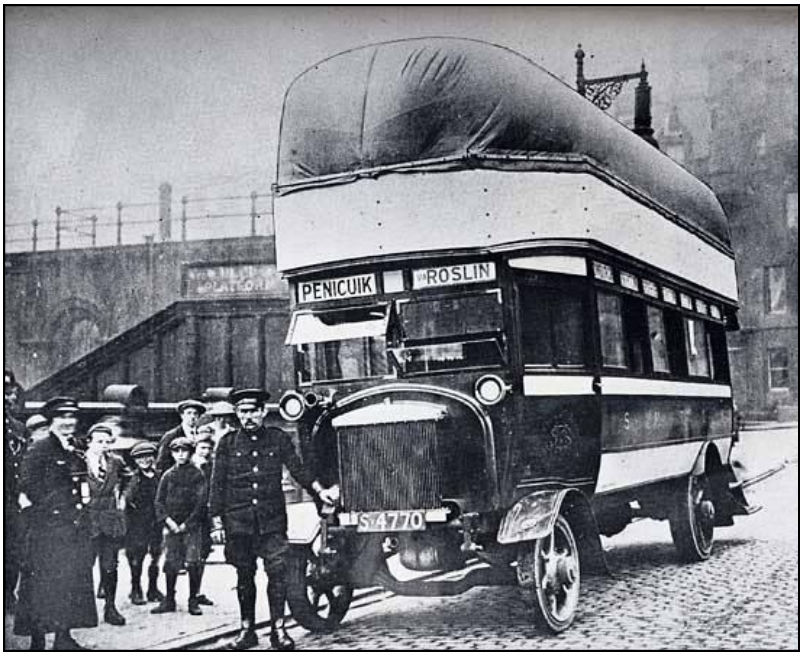
Other than horses and bicycles, there weren't a lot of options available, but Britain and Europe have large coal reserves, so that became the solution—Coal Gas!

Coal was commonly gasified by cooking it in large kilns by municipal utilities, with the coal gas being used for domestic heating and cooking. Some drivers installed large inflatable gas bags on the roofs of their cars, which they filled from their home's gas line. The end result looked like a barrage balloon on wheels, but it kept the cars driving, but at a low speed to avoid damaging the bag. It would typically take all night to fill a storage bag.

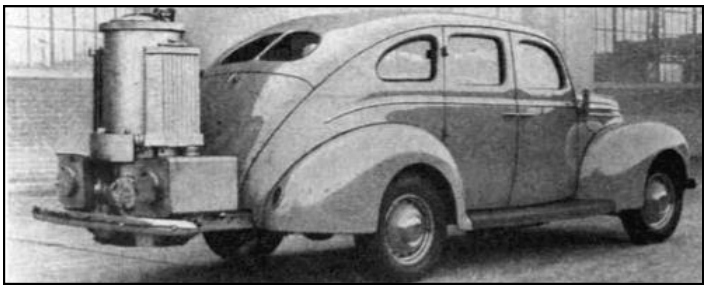
Larger vehicles, such as municipal buses, often used the same fuel, but they frequently installed a gasifier on the rear of the bus or towed a trailer-mounted coal gasifier. The drivers would stop from time to time and add more coal to the gasifier. Bags had only limited success on buses due to clearance problems when a gas bag was added to a bus that was already a high vehicle.

The gasifiers let vehicles operate, but the result was a vehicle that could carry half the load at half the speed. The gas filter had to be cleaned regularly to prevent coal dust from being carried over into the engine. Even with careful maintenance, engine life was severely limited. Mileage, assuming a good anthracite coal and a light load, would typically run about 1 mile per pound of coal.

Since the technology could be used with either wood or coal, it still has users in parts of the world where liquid fuels are difficult to obtain or expensive.



Both Britain and all of Europe relied on coal gas-fueled vehicles in both WWI & WWII. Britain used coal gas fueled city buses in both WWI (top left photo) & WWII (bottom photo), while Germany also converted many non-tactical vehicles— note the gasifier fueling hatch in the vehicle's "hood".



A tune up took on a whole new meaning when it now had to include checking out the gasifier. The gasifier's output had to be carefully filtered to minimize coal dust carryover into the engine, and the filters required very regular cleaning. It was reported that the life expectancy of engines running on coal gas was significantly reduced as well (top left photo).

Any way you looked at it, a gasifier was never the first choice for vehicle fuel—in addition to looking like an escaping moonshiner, access to the trunk was usually impossible (left photo). Fortunately, distances in Europe were relatively short, and cars didn't need to stop for "gas" on the way.

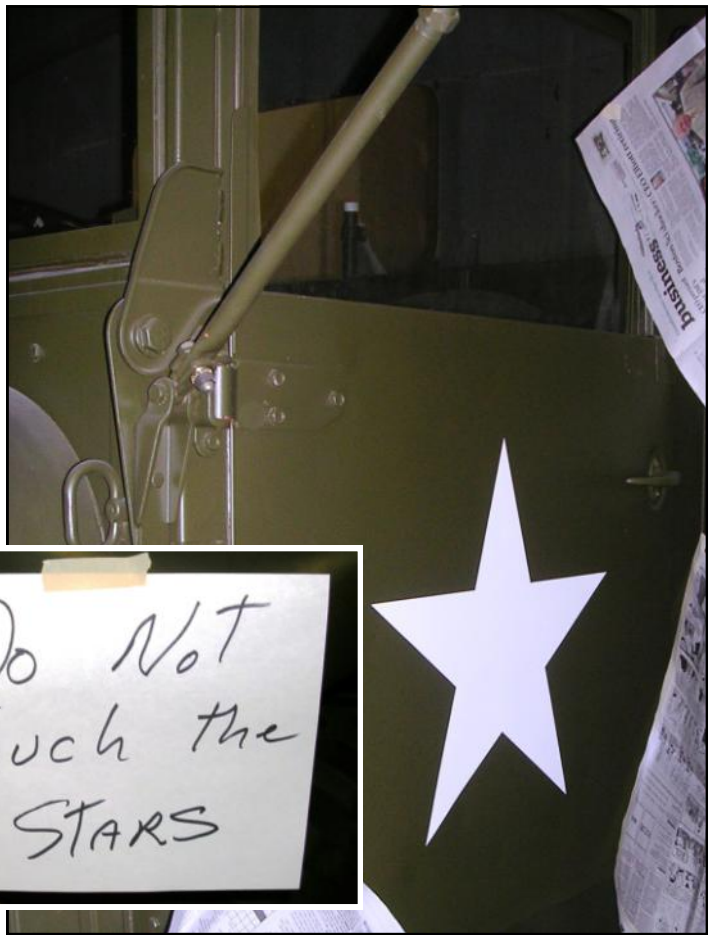
In some cases, vehicles were converted to operate on kerosene as well as gasoline. The vehicle would first be started on gasoline from an added 1 1/2 gallon tank, then a valve would switch over to kerosene. Kerosene required that the intake air be heated, so a combined intake / exhaust manifold was used. Since kerosene burns 80° hotter than gasoline, heavier engine oil was also required, as well as more frequent oil changes. The engine's compression ratio also had to be reduced to 4.5 or 5:1. Kerosene conversions were popular for many years after the War's end, primarily due to kerosene's low cost.

Vehicle collecting and restoration is a world-wide hobby—but how would you like to restore a coal gas fueled car (below). It just goes to show that somewhere, there is someone who collects anything.

T'anks a lot!

Thank You to all our donors and volunteers for your tremendous help and support. We are making continuous progress on our restorations, facilities, and public education and displays. We are growing every year and spreading the word of our dedication to the veterans and the equipment they used.

(Servicing the Museum's M3 halftrack requires a copy of the TM (Technical Manual), the LO (Lubrication Order), a flashlight, and a helping hand to hoist the 1/4" armor plate hood (top photo). Even with the soggy spring weather, Dan lucked out and found a sunny day to service trailer brakes (bottom photo). Adding the stars to the M221 tractor had the usual problem that all wet paint has—"Is it dry yet?"



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The official newsletter of the:

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Meetings are the second Saturday of each month, with work following on that day and Sunday.

Peroxide Power

Back in the 1960's, during the height of the Cold War, protection against nuclear fallout and chemical/biological warfare was an ongoing challenge for shelter designers.

One idea that was evaluated was the design and use of a hydrogen peroxide fueled turbine that would both produce oxygen and power for use with shelters. A 100 man shelter would only require 40 gallons of hydrogen peroxide per day to provide oxygen, water, and 500 watts of electrical power.

An experimental unit was built and evaluated, however the research never went any farther. There were a few problems:

1. A decomposition catalyst was required for the process, but if any of the stored peroxide ever came in contact with the nickel/cerium oxide/silver catalyst, the result would be an explosion.
2. The equipment required very careful decontamination after construction or repair in order to avoid any potential contamination of the peroxide, which could result in an explosion.
3. The equipment needed to build these installations was not available off-the-shelf in 1965. The state-of-the-art needed to advance before this technology would be commercially viable.
4. The waste heated produced by the decomposition of the hydrogen peroxide would only be valuable if the shelter required heat—if it did not require heat, then the processes overall efficiency would be less.
5. Startup of the process required about 1/2 hour for full performance, versus the comparatively fast startup of a conventional petroleum-fueled generator.

Fort Snelling Military Museum

Membership Categories

Individual (18 or over)	$ 30 per year	Life	$ 300
Household	$ 45 per year	Sustaining	$150 or more
Student (up to age 18)	$ 15 per year	Corporate	$ 500

NAME: _____

ADDRESS: _____

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Fort Snelling Military Museum Volunteers
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The Fort Snelling Military Museum has non-demilitarized weapons and under Federal Statue, State Statue, and Museum By-Laws, all members are required to disclose any and all felony convictions and all convictions of assault or domestic violence. Failure to disclose any convictions will result in immediate dismissal from the Museum and possible criminal charges. The Fort Snelling Military Museum has been incorporated under Articles of Incorporation, State of MN and Federal, exclusively for charitable and educational purposes.