



THOR.

May/June 2002

VOLUME 9 NUMBER 3

Spring Meeting Schedule :

Tuesday May 7th, Tuesday June 4th, and Tuesday July 2nd. Each meeting will start at 7:00 PM at the La Vista Community Center.

May/June 2002 Events Calendar

May

Event: High Power Launch.
When: Saturday the 11th, 9:00 AM to 5:00 PM.
Where: Pickrell, NE.
Ceiling: 10,000' with a window to 15,000.
Fee: \$5.
Description: Mainly a high power event, but regular model rockets are flown, too.
For More Information: Check the rocketry hotline (1-402-896-2069 or 1-888-546-0396) for any delays or cancellations if weather looks questionable.

Event: Low Power Launch.
When: Sunday the 19th, Noon to ?
Where: La Vista Sports Complex.
Fee: Free.
Description: Low power sport flying.
For More Information:

Event: National Sport Launch.
When: Saturday the 25th through Monday the 27th.
Where: Rainbow Valley, AZ.
Description: NAR's annual sport launch.
For more information: Go to www.sssrocketry.org/nsl2002.htm.

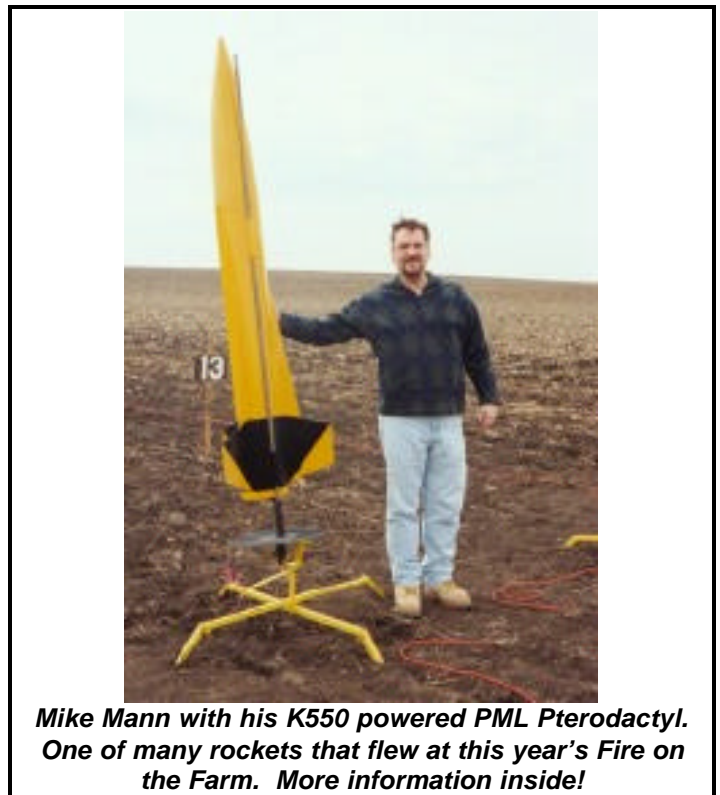
June

Event: Low Power Launch.
When: Sunday the 9th, Noon to ?

Where: La Vista Sports Complex.
Fee: Free.
Description: Low power sport flying.
For More Information:

Event: High Power Launch.
When: Saturday the 29th, 9:00 AM to 5:00 PM.
Where: Pickrell, NE.
Ceiling: 10,000' with a window to 15,000.
Fee: \$5.

Description: Mainly a high power event, but regular model rockets are flown, too.
For More Information: Check the rocketry hotline (1-402-896-2069 or 1-888-546-0396) for any delays or cancellations if weather looks questionable.



Mike Mann with his K550 powered PML Pterodactyl. One of many rockets that flew at this year's Fire on the Farm. More information inside!

Rocketman Central

By Richard Burney, Secretary and Newsletter Editor
THOR# 8, NAR# 69543, TRA# 6140



No longer the Syracuse Rocketman...

It's hard to believe that it was just a little over two years ago when I moved down to Syracuse, NE. I had the opportunity to help my friend John launch his business and it gave me a chance to be out on my own. Though things did not develop the way I had wanted them to, over all this was a valuable experience for me on many levels. But yet at the same time, I am happy to be back in Omaha where the majority of my friends, family, and activities are at. One thing's for sure, I'll be able to attend a lot more of THOR's low power launches and group projects in the months ahead!☺

Due to the whole upheaval of moving and starting back at my old job during the last few weeks, I have had little time to go through all the information gathered at Fire on the Farm V a few weeks ago. I was able to get a summary of FOTF V compiled and will get a much more detailed write up (with lots of pictures!) prepared for the July/August issue. To fill in for the FOTF V article, I have included part of an article which was passed on to me a while back (either it was by Mike Collins or Dan Cramer) which delves into the history of rocketry. Enjoy!

Summary of Fire on the Farm V

By Richard Burney

Fire on the Farm... it's hard to believe that the fifth one has already come and gone! This particular FOTF is worthy of mention simply because of the fact that flying actually took place on all three days!

Like last year, the best day, weather wise, was Friday the 12th. A total of about 10 flights took place (I

should mention that somebody told me that there may have been as many as 20 flights, but if people aren't going to fill out their flight cards, then that's just too bad!). The most powerful flight of the day was a rocket built by Fred Gruis using a green flame L1100... I see Fred actually flew one of these experimental motors instead of just burying them in the ground.☺

Saturday the 13th was a pretty breezy day with a high somewhere in the 60's with winds in the 10 to 20 mile-per-hour range, but this did not stop a total of 66 flights from taking place. As with the previous FOTF's, a banquet and raffle took place at the Carroll chapter of the Knights of Columbus that evening.

Sunday the 14th was a pretty close parallel to the second day of last year's FOTF. The morning started VERY windy with winds gusting up to 30 miles-per hour. By noon, the winds had died down enough to let some flying begin. Throughout the afternoon, the wind conditions greatly improved and the beautiful sunshine raised the temperatures into the upper 70's. A total of 63 flights took place on Sunday even with flying delayed for a few hours in the morning.

Of the nearly 140 flights that took place, the total amount of Newtons/Seconds of power burned came out to about 30,000 N/S (there are a few motors I am still trying to figure out the N/S for and a few people didn't write down the motors they used, though most of those flights were probably low power). The most popular motor used was Estes' C6 family of motors (17 C6's of different varying delay lengths), but the most popular overall class was H (24 motors burned). Jeremy Vetter had the most recorded flights (11) while Fred Gruis' single L flight made him the person who had burned the most N/S (3,000). There were seven Level 1 flights and three Level 2 flights; Ryan Dove had the distinction of certifying both Level 1 and 2 during the weekend!

In the July/August newsletter, I'll have a more detailed article covering some of the flights along with pictures I took (if anyone else has some pictures to send me, let me know and I'll add them to the article). Thanks again to all who participated!

AeroTech Files Suit Against Clark County Fire Department

(courtesy of Rocketry Online – www.rocketryonline.com)

AeroTech, Inc., the nation's premier manufacturer of composite propellant hobby rocket motors, today filed a lawsuit against Clark County, the Clark County Fire Department (CCFD), two fire investigators and a private company that worked with the County in responding to an October 15, 2001, fire at AeroTech's Las Vegas facility.

The Complaint alleges that, contrary to the County's published report, there were two separate fires at the AeroTech facility. The first, which resulted in the death of AeroTech employee Avelino Corpuz, was

quickly extinguished. However, CCFD management ignored information gathered during prior inspections and poured water on materials that, they knew, catch fire when water is applied to them, endangering the lives of the firefighters they supervised.

Not only did their actions endanger the lives of its employees, their actions also began a series of reactions that resulted in an explosion and fire that erupted three hours after the first fire was extinguished. The second fire destroyed the entire building and disrupted all businesses in it.

The suit alleges that, following the second fire, agents of CCFD repeatedly entered the former AeroTech facility without a warrant and, over AeroTech's repeated objection, seized an unknown amount of property. In violation of AeroTech's civil rights, they refused to return the property to AeroTech or even report what was taken. They also disturbed the scene to such an extent that AeroTech cannot conduct a meaningful investigation of the cause and origin of the fire.

In attempting to respond to rumors and allegations about the fire, AeroTech repeatedly requested the return of its records and records of all prior inspections of its facility. Shortly after one of the requests was made, on November 6, CCFD Chief Greene admitted that documents were shredded. No one has yet disclosed the contents of the now shredded records.

Finally, although it repeatedly stated that it was conducting an investigation of the fire, CCFD issued a four paragraph report stating that the origin of the "fire" was "accidental," completely failing to acknowledge that there was a second fire and strongly implying that the first fire resulted in the building's destruction.

The property seized from AeroTech has lost much, if not all, of its evidentiary value. The seizures and disturbances have severely impeded AeroTech's ability to conduct a meaningful, independent investigation. In addition, CCFD followed its botched investigation by shredding documents and issuing a misleading report. As a result, AeroTech has been unable to defend itself from both the allegations made by the other tenants of the building, accusations leveled by CCFD, and most recently, the state legislature.

Plaintiff's attorney Mark N. Savit said, "AeroTech, its employees, its fellow tenants in the building and the firefighters who risk their lives every day to protect us are all victims of the outrageous conduct of Chief Greene and CCFD.

"The lawsuit filed this morning seeks not to enrich AeroTech, but to help it and the others who shared in the tragic loss of October 15, 2001, to get on with their lives and livelihoods.

"More importantly, it seeks to restore public trust in CCFD by putting an end to the mismanagement, deception and destruction that led to the disruption of so many lives and businesses and the insidious attempt to hide that conduct."

Mr. Savit is partner with Patton Boggs LLP. The firm has offices in Washington D.C., Northern Virginia, Dallas, Denver, Boulder and Anchorage.

Joint Statement on ATF Litigation

March 2, 2002 - In mid-January 2002, we received multiple reports of increased demands made by ATF inspectors on NAR and TRA members with Low Explosive User Permits. In particular, these inspectors demanded motor types whose propellant grains consisted of 62.5 gram and smaller units, generally referred to as "easy access", now be subject to the magazine and record keeping requirements of larger motors if the propellant are designed or intended to be combined and used in a rocket motor whose total propellant weight is greater than 62.5 grams. Our members received at least two instances of written notice of this completely unexpected change in regulation. After consultation with counsel, we also discovered that ATF had filed a motion for summary judgment against three out of four counts in our complaint. After further review by counsel, on Wednesday, February 27, 2002, the NAR and TRA filed a motion for a preliminary injunction against ATF. We asked that this illegal change in regulation be rescinded and that any further attempts at unwarranted and illegal regulation of the sport rocket hobby be stayed while our complaint was before the court. Our counsel has been unusually thorough and complete in the preparation of our motion, and we believe we have an extremely strong legal case to present to the court, particularly in light of ATF's action against our members in January. As we have further information on this situation, we will provide it at our websites. We appreciate your constant moral and financial support as we continue to work to secure an unregulated, safe sport rocket hobby.

Mark Bundick, President, National Association of Rocketry
Bruce Kelly, President, Tripoli Rocketry Association

THOR Meeting Minutes: March/April 2002

Compiled by Richard Burney, Secretary

THOR Meeting Minutes 3/5/02

Attendance: Kevin Trojanowski, Don Rice, Richard Burney, Greg Rothman, Kevin Rich, Vicki Rich, Jeff Moon, Jeff Dell, Jon Damme, Jeff Kelly, Dan Cramer, Arley Davis, Candy Davis, Jacob Davis, Shaun Landgraf, Bruce Lee, Larry Drake, Devin Rich, and Tyson Christiansen.

Meeting starts at 19:15.

Bruce gives an update on the situation involving the BATF trying to require LEUP's for purchasing, storing, and using Easy Access motors. NAR and Tripoli have filed an injunction against the BATF regarding the BATF's latest actions.

Thanks to Matt Jones, THOR now has a toll free hotline number: 1-888-546-0396.

THOR's auction starts at 19:30.



Some of Rich Burney's stuff up for auction.



Jon Damme had some mid 1990's vintage issues of HPR up for auction.



A smattering of kits (built and unbuilt) up for auction from Arley Davis, Dan Cramer, and Kevin Rich.



The next kit that Bruce Lee grabs to be auctioned is an MRC Standard ARM...



...and in the back, Jeff Moon bids \$5.00 for it!☺

Auction ends at 20:55.

FOTF V is in about 6 weeks (April 12th, 13th, and 14th). As usual, the waiver for the launch will be to 5,500 feet AGL.

The show that Bruce is involved with (by the producers of *Battlebots*), may air as soon as July.

Meeting adjourned at 21:10.

THOR Meeting Minutes 2/5/02

Attendance: Richard Burney, Larry Drake, Bruce Lee, Jeff Moon, Arley Davis, Jacob Davis, Candy Davis, Shaun Landgraf, Tyson Christiansen, Devin Rich, Greg Rothman, Kevin Trojanowski, Peter Konudson, Kevin Rich, Vicki Rich, and Kathy McGinnis.

Meeting starts at 19:20.

Bruce shows a 2 minute promotional tape for *Sky Wars* (tentative name). This promotional piece uses footage that had been shot for some of Rocketman Enterprise's tapes. The narrator for this tape is the very same guy who narrates *Maximum Exposure* (another show produced by the *Battlebots* people).

Peter Konudson is introduced to the club. Peter attends Chreighton Prep and has friends who may be interested in joining THOR.

FOTF V is a week from this weekend. THOR and I-SOAR (Iowa Society of Amateur Rocketeers) will be running the show. 35 commemorative shirts are to be made for FOTF V (*Editor's note: a special thanks goes to Kathy McGinnis for having the shirts made*).

Bruce discusses the court case schedule pertaining to Tripoli and NAR's lawsuit against the BATF.

Frank Kosdon's Tripoli membership was recently reinstated. His membership was suspended due to some of his questionable activities involving motor manufacturing, sale, and flying under waivers established by himself that were set up separately from the local Tripoli Prefecture.

AeroTech has filed a lawsuit against the local fire department that was responsible for putting out the fire at AeroTech's Las Vegas shop last October. It appears that the fire department's carelessness resulted in the second fire which destroyed the rest of the shop and records pertaining to the investigation of the fire may have also been shredded.

AeroTech has started to ship some of its Easy Access motors to some of their distributors (such as Magnum).

Treasurer's report - \$527 balance in our account.

Rich Burney is moving back to Omaha. (*Editor's note: besides moving back to Omaha, I am also working once again at Radio Engineering Industries, which is where I worked from 1995 to 2000*). Rich's AeroTech G-Force, was found by a friend of Kevin Trojanowski's son at the Pickrell launch last weekend.



Thanks to Kevin Trojanowski's son's friend, I got my beloved AeroTech G-Force back!

Vicki Rich shows what's left of her pink painted PML Patriot after the Pro 38 motor burned at both ends

melting the Patriot's Quantum tubing. The burning rocket landed in the dry grass resulting in a fire.

Kevin Trojanowski shows the components to his Hypertek M1000 (that is one big, long motor!).



Kevin Trojanowski and his Hypertek M1000 hybrid motor.

Kevin was able to secure a waiver until the end of the year for our Pickrell site that gives us a 10,000 foot waiver from 8:00 in the morning to 5:00 in the afternoon with a window to 15,000 waiver from 1:00 to 3:00 in the afternoon. The waiver is able to be activated any day of the week with the proper 1 hour plus notice.

Greg shows a custom transmitter he built. Uses a ham radio receiver to help locate it.

Arley and family have moved into a new home, which is right near South High. Arley shows some of the new Estes kits that were recently released. Arley also passed around a Fat Cat Rockets (formerly Starship Enterprises) sci-fi kit he recently bought.

Jeff Moon is planning on modifying the big Estes V-2 kit for 29mm motors.

Rich shows part of the production *Rocket's Red Glare* which aired on TLC a few months ago. Lots of rockets mishaps and disasters.

Meeting ends 21:20.

A Brief History of Rocketry

(Part 1)

Courtesy KSC/NASA.

The earliest solid rocket fuel was a form of gunpowder, and the earliest recorded mention of gunpowder comes from China late in the third century before Christ. Bamboo tubes filled with saltpeter, sulphur and charcoal were tossed into ceremonial fires during

religious festivals in hopes the noise of the explosion would frighten evil spirits.

It's probable that more than a few of these bamboo tubes were imperfectly sealed and, instead of bursting with an explosion, simply went skittering out of the fire, propelled by the rapidly burning gunpowder. Some clever observer whose name is lost to history may have then begun experiments to deliberately produce the same effect as the bamboo tubes which leaked fire.

Certainly by the year 1045 A.D.--21 years before William the Conqueror would land on the shores of England--the use of gunpowder and rockets formed an integral aspect of Chinese military tactics.

A point of confusion arises tracing the history of rocketry back before 1045. Chinese documents record the use of "fire arrows," a term which can mean either rockets or an arrow carrying a flammable substance.

By the beginning of the 13th Century, the Chinese Sung Dynasty, under pressure from growing Mongolian hordes, found itself forced to rely more and more on technology to counter the threat. Chinese ordnance experts introduced and perfected many types of projectiles, including explosive grenades and cannon.

Rocket fire-arrows were certainly used to repel Mongol invaders at the battle of Kai-fung-fu in 1232 A.D. The rockets were huge and apparently quite powerful. According to a report: "When the rocket was lit, it made a noise that resembled thunder that could be heard for five leagues -- about 15 miles. When it fell to Earth, the point of impact was devastated for 2,000 feet in all directions." Apparently these large military rockets carried incendiary material and iron shrapnel. These rockets may have included the first combustion chamber, for sources describe the design as incorporating an "iron pot" to contain and direct the thrust of the gunpowder propellant.

The rocket seems to have arrived in Europe around 1241 A.D. Contemporary accounts describe rocket-like weapons being used by the Mongols against Magyar forces at the battle of Sejo which preceded their capture of Buda (now known as Budapest) December 25, 1241. Accounts also describe Mongol's use of a noxious smoke screen--possibly the first instance of chemical warfare.

Rockets appear in Arab literature in 1258 A.D., describing Mongol invaders' use of them on February 15 to capture the city of Baghdad. Quick to learn, the Arabs adopted the rocket into their own arms inventory and, during the Seventh Crusade, used them against the French Army of King Louis IX in 1268.

It is certain that, not later than the year 1300, rockets had found their way into European arsenals, reaching Italy by the year 1500, Germany shortly afterwards, and later, England. A 1647 study of the "Art of Gunnery" published in London contains a 43-page segment on rockets. The Italians are credited, by the way, with adopting military rockets for use as fireworks -- completing the circle, so to speak, of the bursting bamboo used at the Chinese festivals 1,700 years earlier.

The French Army traditionally has been among the largest, if not THE largest, army in Europe and was quick to adopt rockets to military operations. Records from 1429 show rockets in use at the siege of Orleans during the Hundred Years War against the English.

Dutch military rockets appear by 1650 and the Germans' first military rocket experiments began in 1668. By 1730, a German field artillery colonel, Christoph Fredrich von Geissler, was manufacturing rockets weighing 25 to 54 kilograms (55 to 120 pounds).

As the 18th Century dawned, European military experts began to take a serious interest in rockets -- if only because they, like the Magyars 500 years earlier, found themselves on the receiving end of rocket warfare.

Both the French and the British, during the Eighteenth Century, began wrestling for control of the riches of India. In addition to fighting one another, they also found themselves frequently engaged against the Mogol forces of Tippoo Sultan of Mysore. During the two battles of Seringapatam in 1792 and 1799, rockets were used against the British. One of Tippoo Sultan's rockets is now displayed in the Royal Ordnance Museum at Woolwich Arsenal, near London.

Tippoo Sultan's father, Hyder Ally, had incorporated a 1,200 man contingent of rocketeers into his army in the year 1788. Tippoo Sultan increased this force to about 5,000 men, about a seventh of his total Army's strength.

Profiting from their Indian experience, the British, led by Sir William Congrieve (KON-greeve), began development of a series of barrage rockets ranging in weight from 8 to 136 kilograms (18 to 300 pounds). Congrieve-design rockets were used against Napoleon.

It is surprising that Napoleon seems to have made no use of rockets in the French Army but it must be remembered Napoleon was an artillery officer and may have simply been too hide-bound a traditionalist to favor new-fangled rockets over more familiar cannons.

The scope of the British use of the Congrieve rocket can be ascertained from the the 1807 attack on Copenhagen. The Danes were subjected to a barrage of 25,000 rockets which burnt many houses and warehouses.

An official rocket brigade was created in the British Army in 1818.

Rockets came to the New World during the War of 1812.

During the Battle of Bladensburg, August 24, 1814, the British 85th Light Infantry used rockets against an American rifle battalion commanded by U.S. Attorney General William Pickney. British Lieutenant George R. Gleig witnessed the Americans' response to the new threat. "Never did men with arms in their hands make better use of their legs," he wrote.

On December 4, 1846, a brigade of rocketeers was authorized to accompany Maj. Gen. Winfield Scott's expedition against Mexico. The Army's first battalion of rocketeers -- consisting of about 150 men and armed with about 50 rockets -- was placed under the command of First Lieutenant George H. Talcott.

The rocket battery was used March 24, 1847, against Mexican forces at the siege of Veracruz.

On April 8 the rocketeers moved inland, being placed in their firing position by Captain Robert E. Lee (later to command the Confederate Army of Northern Virginia in the War Between the States). About 30 rockets were fired during the battle for Telegraph Hill. Later, the rockets were used in the capture of the fortress of Chapultepec, which forced the surrender of Mexico City.

With typical foresight, as soon as the fighting in Mexico was over, the rocketeer battalion was disbanded and the remaining rockets were placed in storage.

They remained in mothballs for about 13 years -- until 1861 when they were hauled out for use in the Civil War. The rockets were found to have deteriorated, however, so new ones were made.

The first recorded use of rockets in the Civil War came on July 3, 1862, when Maj. Gen. J.E.B. Stuart's Confederate cavalry fired rockets at Maj. Gen. George B. McClellan's Union troops at Harrison's Landing, Va. No record exists of the Northerners' opinion of this premature "Fourth of July" fireworks demonstration.

Later in 1862, an attempt was made by the Union Army's New York Rocket Battalion -- 160 men under the command of British-born Major Thomas W. Lion -- to use rockets against Confederates defending Richmond and Yorktown, Virginia. It wasn't an overwhelming success. When ignited, the rockets skittered wildly across the ground, passing between the legs of a number of mules. One detonated harmlessly under a mule, lifting the animal several feet off the ground and precipitating its immediate desertion to the Confederate Army.

The only other documented use of rockets is at Charleston, S.C., in 1864. Union troops under Maj. Gen. Alexander Schimmelfennig found rockets "especially practical in driving off Confederate picket boats, especially at night."

As an interesting sidelight, the author Burke Davis, in his book "Our Incredible Civil War," tells a tale of a Confederate attempt to fire a ballistic missile at Washington, D.C., from a point outside Richmond, Va.

According to the author, Confederate President Jefferson Davis witnessed the event at which a 3.7 meter (12 foot) solid-fueled rocket, carrying a 4.5 kilogram (10 pound) gunpowder warhead in a brass case engraved with the letters C.S.A., was ignited and seen to roar rapidly up and out of sight. No one ever saw the rocket land. It's interesting to speculate whether, almost 100 years before Sputnik, a satellite marked with the initials of the Confederate States of America might have been launched into orbit.

The military appears to have remained underwhelmed with the potential of rockets. They were employed in fits and starts in many of the brushfire wars which punctuated the otherwise calm closing days of the late Victorian Era. If the military was lukewarm to rockets, another profession welcomed them with open arms.

The international whaling industry developed rocket-powered, explosive-tipped harpoons which were most effective against the ocean-going leviathans.

During the First World War, rockets were first fired from aircraft attempting to shoot down enemy hydrogen gas-filled observation balloons. Successes were rare and pilots resisted being asked to fire rockets from the highly flammable, cloth and varnish covered wings of their biplanes. The French were the principal users of aerial rockets, using a model developed by a Naval lieutenant, Y.P.G. LePriour.

The principal drawback to rockets throughout this period of development was the type of fuel. Both here and abroad, experiments were under way to develop a more powerful, liquid-propelled rocket. Two young men stand out in this effort -- one an American, Robert H. Goddard -- the other a German, Wernher von Braun.

Radio commentator Paul Harvey tells a story of how young von Braun's interest in rocketry almost got him labeled as a juvenile delinquent. At the age of 13, von Braun exhibited an interest in explosives and fireworks. His father could not understand his son's consuming interest in so dangerous a hobby. He feared his son would become safecracker. One day the young teenager obtained six skyrockets, strapped them to a toy red wagon and set them off. Streaming flames and a long trail of smoke, the wagon roared five blocks into the center of the von Braun family's hometown, where the rockets finally exploded.

As the smoke cleared, the toy wagon emerged as a charred wreck. Young von Braun emerged in the firm grasp of a policeman. Despite being severely reprimanded by his father, the youngster's interest would not be denied. By the age of 22 he had earned his doctorate in physics. Two years later he was directing Germany's military rocket development program.

Von Braun and his colleagues produced a number of experimental designs, the most famous of which was the A-4 rocket, which has gained distinction in history under another name -- the vengeance weapon number two -- V-2 for short. The V-2 was the first successful, long range ballistic missile, and von Braun is credited as its principal developer.

As World War II drew to a close, von Braun led his contingent of several hundred rocket scientists and engineers -- all marked for death by the Nazis to prevent their capture by the Allies -- into American lines.

In 1946, von Braun and his team arrived at White Sands, N.M., where, for the first time, von Braun learned of work done by the American rocket pioneer Robert Goddard.

Goddard's interest in rockets began in 1898 when, as a 16-year-old, he read the latest publication of that early science fiction writer, English novelist H.G. Wells. The book which so excited Goddard was later made into a 1938 radio program that nearly panicked our entire nation when it was broadcast. Orson Well's too realistic rendition of the "War of the Worlds" still causes many to shudder.

Part 2 in the next issue!

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THOR on the Super Information Highway!

TRIPOLI NEBRASKA WEB PAGE

www.tripoli.org/tra_ne/nebraska.htm

THOR WEB PAGE

www.tripoli.org/tra_ne/THOR/thor.html

What is THOR?

The Heartland Organization of Rocketry (THOR) is both an officially sanctioned prefecture of the Tripoli Rocketry Association (Tripoli Nebraska #46) and is an officially sanctioned Section (#562) of the National Association of Rocketry. THOR conducts low through high power model rocket activities through out the year. THOR strictly adheres to the safety guidelines that have been established by the NAR and Tripoli.

When and where does THOR meet?

Meetings are usually held the first Tuesday of the month at 7:00 PM (different days or times will be announced in advance) at the **La Vista Community Center at 8116 Parkview St., La Vista, NE** (turn east at the Sinclair Gas Station on 84th St. and go a block east). Visitors are welcome to attend.

For additional information...

For club launch times, launch locations, or for those with additional questions call THOR at (402) 896-2069 or 1-888-546-0396 (there is a voice mail option at the end of the message). Interested parties may also write their inquiries to the address to the right and are also welcome to contact any of THOR's officers.

THOR Membership Application

Personal Information

Name: _____

Address: _____

City: _____

State: _____ Zip Code: _____

Phone Number: _____

E-mail: _____

Hobby Information

How long have you been in model rocketry: _____

Do you belong to a national rocketry organization (enter your number to the applicable organization):

NAR# _____ TRA# _____ NERO# _____

Are you certified for high power rocketry (check mark your applicable TRA or NAR Certification Level):

Level 1 _____ Level 2 _____ Level 3 _____

Membership Rates

½ year memberships will divide by 2 and add \$1. Write your check payable to "The Heartland Organization of Rocketry" or "THOR". Mail it to the below address or pay at the next meeting.

Family Membership - \$36

Senior Membership- 18 and over - \$24

Junior Membership - Under 18 - \$12

Correspondence Membership - \$10

(Members over 50 miles from Omaha)

Newsletter Only (6 issues a year) - \$6

I agree to comply with THOR's policies as pertains to the safety guidelines set forth by the NAR and Tripoli. Failure to do so is grounds for expulsion.

Signature: _____

Dated: _____

The Heartland Organization of Rocketry

6211 South 141st St.

Omaha, NE 68137

Membership in the Heartland Organization of Rocketry is open to all interested parties.