CENTRAL ILLINOIS AEROSPACE

# Informant

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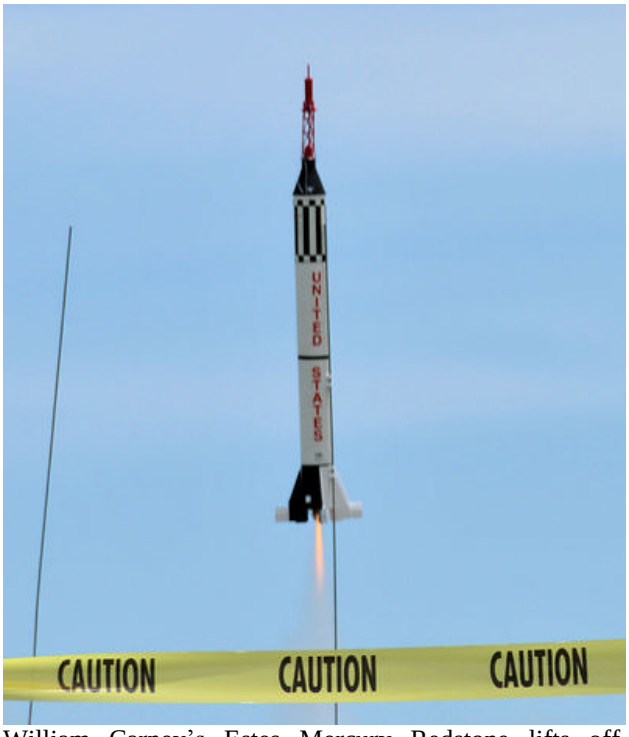
Randy Torbeck preps his ARV Condor. Photo by Alan Carroll.

## GARLO 2008

By Jonathan Sivier

This year the theme for GARLO was "50 Years of U.S. Spaceflight", celebrating NASA's 50th anniversary. To go with this we had hoped to have people flying a large number of scale models of rockets from the U.S. space program. Unfortunately we only had a few entries in this category. Luckily everyone will get another chance next year at GARLO 2009 when the theme will be based on the Apollo program for the 40th anniversary of Apollo 11 landing on the moon. So get working on your Saturn rockets and let's have a great assemblage of rockets from the Apollo program.



William Carney's Estes Mercury Redstone lifts off. Photo by Alan Carroll.

The weather for the launch wasn't ideal. The wind was from the west, which was good, but a bit stronger than we like and there was rain threatening throughout the day. This meant we didn't have as many large rockets fly as we have in past years. However we still had a good turnout and quite a large number of flights of smaller rockets.

Micah Sweeney's Skywinder hanging on the Caution tape. Photo by Jonathan Sivier.

There were many memorable flights made during the course of the day. Here is the list of awards that were presented.

**Best Looking Rocket**
1. Stephen Juneau's Pterodactyl
2. Doreen ?'s Fat Girl
3. Doug Torbeck's ARV Condor
4. Doug Torbeck's Phoenix

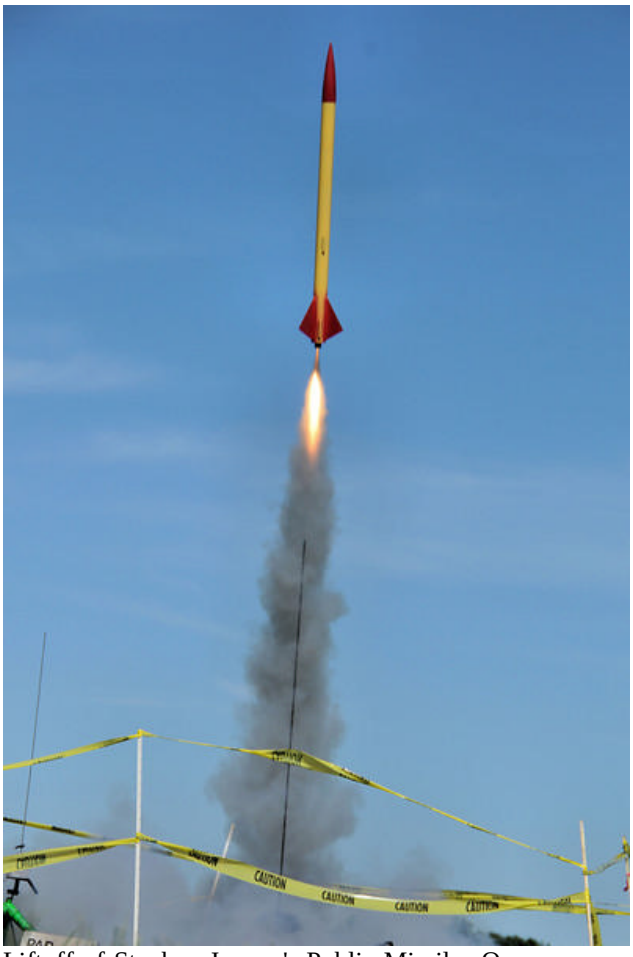
**Best Flight**
1. Chris Deem's Snitch on a G75J
2. Mark Joseph's Horizon on an H148R with dual deployment
3. Greg Smith's Helios II on a G64W
4. Micah Sweeney's Skywinder which landed on the Caution tape around the launch area

**Best U.S. Space Program Rocket**
1. Will Carney's Mercury Redstone
2. Will Carney's Little Joe II

**Best Rocket Designed by Wernher von Braun**
1. Greg Smith's V-2
2. Chris Deem's V-2
3. Mike Driskell's V-2

**Best Big Finned Rocket in the 1950's Style**
1. Chris Deem's BATFE Special

**Closest Landing To Marker**
1. Corwin Carroll's Mini Rage, 5' 10"
2. Will Carney's Mercury Redstone, 16' 2"
3. Randy Torbeck's Nike Arrow, 20' 4"
4. Will Carney's 38 Cinco, 51' 8"



Liftoff of Stephen Juneau's Public Missiles Quasar on an Aerotech G64 reload. Photo by Alan Carroll

We gave out two Prang awards for a couple of flights that didn't go as planned. Ben Evans was given a 1st place Prang award when his Big Daddy took a nosedive and Lon Westfall was awarded a 2nd place Prang ribbon for his

Airspike which had an E30 motor CATO. At first we thought it was just a chuff or the igniter failed to start the motor, but upon closer inspection it was found that the motor had blown out its rear end. The rocket was unscathed though and lived to fly again.

One thing that made this year's event standout was that Bill Saindon from Balsa Machining Service came down and was selling rocket kits, parts and motors on the field. It was great to have him there and we hope to see him again at future launches.

This year the post-GARLO cookout was held at Robert Brunner's house. We had an enjoyable time sitting out on his back porch having dinner and reliving the events of the day. While we were waiting for everyone to arrive Robert kept us entertained, and provided appetizers for to keep us going until it was time for dinner, by deep frying a variety of items.

# GARLO 2009

**"Destination Moon"**

The Great Annual Rocket Launch Of 2009 will be held on Saturday, June 27, 2009. It will run from 10 a.m. to 4 p.m. at Dodds Park in Champaign. This is our biggest annual event, a purely-for-fun rocket launch. We will be awarding ribbons and prizes for winners of 6 fun events.

To celebrate the 40th anniversary of the moon landing we will be featuring contests with a lunar theme. The main event will be for the best scale model of any rocket related to the Apollo program. The second contest will be another try at the Lunar Landing event. We tried this at GARLO 2004, but the launch was cut short by rain. The object will be to get your rocket, or some portion of it, to land on legs or fin tips.

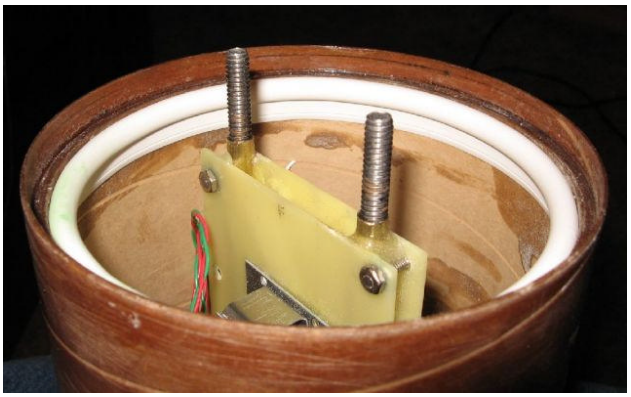
Then, of course, there will be the events we hold every year, Best of Show (Static), Best of Show (Flying) and Spot Landing (uncontrolled and controlled). We also have a large number of "Prang" ribbons as consolation prizes. It should be a great day of flying and we hope everyone will plan on being there.

Testing the parachute. Photo by Tim Dixon.

# High Power Level 2: Part 2

By Tim Dixon

I hope you were able to read Part 1 of this article which covered the genesis of this project, its design, and the work on the airframe, fins, electronics and electronics bay. The article was concluded with the comments, "Don't miss Part 2 of this article when I discuss both the innovation and mistakes I made in the recovery system." Sorry to disappoint, but now for the life of me, I cannot figure out what I was referring to when I said 'innovation.' Maybe it's because I'm just too familiar with the design at this point. So maybe it's just best if I go ahead and highlight some of the design and build techniques I used and then maybe the innovation part will come to me.



The electronics bay seal. Photo by Tim Dixon.

We left off with an external picture of the electronics bay so let's continue at that point. One thing that I used in this design that worked very well was the installation of a seal at the removable bulkhead of the electronics bay. Here's a picture of the bay when opened. You might recognize the white rounded rubber edging as a type of weather seal you can purchase at Home Depot or Lowe's. It is very flexible and seals the bay very well. To install, I simply put a bead of CA on the flat surface of the rubber edging, aligned and applied with pressure.

Kevlar on the forward end of the bodytube. Photo by Tim Dixon.

A couple of other techniques I always use with my high power rocket builds are designed to reduce chances of a zipper. Although given the use of electronic deployment, the chance of a zipper is low I always would rather be safe, than sorry. The first technique is to add a couple wraps of Kevlar matting of about 2 inches in width at the appropriate opening of the airframe as shown in the accompanying picture. This snapshot is of another rocket where the Kevlar was installed on the inside of the airframe (note yellow material), in the case of my L2 build, the wraps were put on the outside of the frame.

Now to be really safe, I also install a poor man's version of the Giant Leap Fireball. This is made from a section of foam pipe insulation (again found at Home Depot or Lowe's) wrapped with high quality duct tape and then cinched in place on the shock cord with zip ties. The picture below shows an example of the zipper protector on another rocket (also used on my L2 build though).

A homemade Fireball. Photo by Tim Dixon.

Now continuing with the recovery system, as mentioned in the first part of the article, I used dual deployment with redundant electronics. The recovery was done via a 36 inch Ultra X-Type parachute from Top Flight Recovery for the drogue, and a 120 inch main from Spherachute. I have used Spherachutes for some time and have been very happy with them. They have been tested on flights in which the parachute deployed during a near ballistic descent and have never failed. Another advantage is the very tight packing afforded by the hemispherical design and materials used by Spherachute. The action of the main chute is demonstrated by my wife's nephew in the accompanying picture.

Since my rocket builds have become larger and the parachutes have become more expensive, I decided it may be wise to begin using a deployment bag. The problem was that I did not really want to spend $35 to $50 for an appropriately sized bag. So I decided to design and build my own. There are many D-Bag designs from Rocketman, SkyAngle, Aerocon, etc. Personally, I liked the design of the deployment bag from Giant Leap, so I decided

to steal (maybe this is where the innovation comes in, huh?) the overall design concepts and build my own. I purchased some Nomex cloth, Kevlar thread and some heavy duty elastic bands. Thankfully my wife is an excellent seamstress and she built a set of three bags to my specifications. The bag used on my L2 rocket is shown in the picture below. If you would like a copy of the build instructions for the deployment bag design simply email me at info@apex-consult.com and I will forward you the design instructions.

The deployment bag. Photo by Tim Dixon.

Now, moving beyond the build techniques and components there of course was a ton of finishing work. For the fiberglassed airframes I built I use Super Fil ultra lightweight filler from Polyfiber. I purchased mine from Stits (www.stits.com) but there are a number of vendors nationwide. If you have used this product before, you know how good it is at filling and smoothing a fiberglass finish, but when dry the product is very hard. When applied it reminds me of a light-blue ice cream cone (see picture to the right). To help cut through and shape the filler I went to Sears and purchased an excellent tool. This variable angle, rotating sander is a dream to use (see picture below) and I would highly recommend it.


Variable angle, power sander. Photo by Tim Dixon.

Well, enough of the build techniques. One thing you certainly want to pay attention to when completing any new high power design, especially one that will be involved in a certification flight, is ground testing. This was completed about six weeks before the maiden flight. It took three or four tests to determine the right amount of black powder (well actually I use Triple-7 smokeless powder from Hodgdon) for reliable deployment. In the end, I used 1.5 grams and 3.0 grams respectively for the drogue and main deployment charges. See the picture below for the results of the main (fore) charge.

Ground testing of the deployment system. Photo by Tim Dixon.

My certification flight was scheduled for the NAR's National Sport Launch (NSL) to be held in Muncie, Indiana on June 1-3, 2007. Unfortunately, I have exceeded my word limit for this article (jeez, I talk a lot) and I encourage

you to "tune in" for Part 3 when I will finally report on the nail-biting maiden flight and reveal the significant "mistake" in this L2 design which became very obvious in its third flight during Midwest Power V in Princeton, Illinois and observed by a couple of other CIA members.

Mark Joseph's Estes Silver Streak takes off. Photo by Greg Smith.

## A Memorial Day Launch

By Jonathan Sivier

Our last launch of 2007 was held on November 10. Although we still scheduled launches twice a month as usual throughout the winter and following spring by the time the end of May 2008 rolled around the weather had kept us from successfully holding any launches for over 6 months. We had a launch scheduled for Saturday, May 24, on the Memorial Day weekend, and we were hopeful it would take place. Unfortunately this was not to be as the wind kept us from flying.

However the following Monday, May 26, Memorial Day, was much more suitable with the weather clearing late in the afternoon resulting in temperatures in the mid-70's, partly cloudy skies and a light wind from the southwest. At some point in the afternoon I thought this might be a reasonable day to do some flying and decided I would go out to the park in the evening to fly a few rockets. It also occurred to me that some of the other club members might be interested in joining me. So a bit before 5 o'clock I gave Greg Smith and Chris Deem a call. They both said they were busy so I figured it would be just me, but I sent an email to the CIA list just in case someone else might be free.

I headed out to the park at 6 p.m. and set up a couple of Estes Portapads and launch controllers just off the south parking lot at Dodds Park. Shortly after I got there Greg showed up. He had rearranged his schedule so he could come out and fly. So we started prepping some rockets.

After we had made a few flights Mark Joseph also showed up. He said he had been at Hobby Lobby browsing the model rocket section when he got my email on his Blackberry. He felt this was an omen and so he gathered some stuff and came out to the park. He also told a friend of his named Mark Garrett about the launch and he arrived a little while later. So we ended up with 3 fliers and 1 spectator for our impromptu launch.

Despite the hastily thrown together nature of this launch I flew 7 rockets, which is very good for any of our launches. This included my Centuri Long Tom which I had recently repaired, flown as both a single and two stage. Mark also felt he probably flew more rockets than he does at many regularly scheduled launches. He had half a dozen flights including the Estes Silver Comet he purchased from Rick Kramer last year and his Alien Enterprises monocopter.

## Contest: Insurrection VIII

By Christopher Brian Deem

We held our Insurrection VIII contest during our September 9, 2006 launch at Dodds Park. We only had four competitors for the contest, William Carney, Jonathan Sivier, Greg Smith, and me. This was our first contest in over a

year, and the rocket gods were angry. They demanded sacrifice, and boy did they get it.

Our first event was 1/4A Super-Roc Duration. For those of you not familiar with NAR contests, Super-Roc Duration is scored by multiplying the flight duration in seconds, by the rocket's length in centimeters, up to the maximum length for each motor class. For 1/4A, the maximum length is 50 centimeters, or about 19 3/8 inches.

We had attempted to hold this event two, or three times previously, so everyone had several months to build a rocket for this event. Thus, it will come as no surprise that Jonathan and I were the only ones who had actually built something, and I had just finished mine a couple of weeks earlier.

Jonathan had a very nice rocket, a BT-50 sized base with a long BT-5 extension. Unfortunately, it was just a wee bit heavy for a 1/4A motor. I want to make it quite clear that it did eject before it hit the ground, if only by a few inches. The total flight duration was 3 seconds, and Jonathan declined to try it a second time. This left it up to me to try to beat the 3 second mark. My rocket was a full length, 18 inches, BT-5 with a plastic nose cone. You can't get much of a parachute out of a BT-5, but it went a lot higher than Jonathan's rocket for a 15 second duration. I tried it a second time and got an 18 second duration, which gave me first place, but is well short of the record.

Our next event was C Egg Lofting Duration, with all four competitors. Greg Smith, who holds the national record for D Egg Lofting Duration, used the same model with a huge Mylar parachute he used to set the D engine record. His flight was a thing of beauty, a joy to behold. We watched it transfixed, and watched, and watched, and watched. Children were born, grew up and died, nations rose and fell, the galaxy rotated, and still we watched. It would have been another record, but there is that pesky return rule. It actually rose in altitude before we lost sight of it. It probably came down some where near St. Joseph. Greg's second attempt didn't drift out of sight, but the shock cord broke, which is a disqualification.

Greg Smith's Egg Lofter from our contest in summer 2008. The rocket is similar to and the parachute the same as the one that drifted away. Photo by Greg Smith.

Next was Jonathan with a Custom Rockets Elite, which also separated, and Jonathan didn't try again. William Carney used an Estes Egg Lofter kit, he doesn't purpose build contest rockets he uses one of his many already built rockets. Will got a 20 second duration on his first try, and proved once again that Estes is more than just a little optimistic about the performance of some of their heavier rockets. Will's second attempt didn't go as well, it made what is called a ballistic arc and ejected about the same time that it hit the ground. My first flight got a 45 second duration, which isn't close to my personal best, but was the best that day, so I only made one attempt.

Our last event was D Streamer Duration, with the same four contestants as egg lofting. In fact, Greg used an egg lofter for his first flight, just to see how it would work. The answer was "poorly", without an egg up front the rocket was unstable (much like our competition crew). His second attempt, on a more streamer duration type model worked much

better. In fact, it worked so well it's still up there. It was a one inch diameter rocket on an 18 millimeter composite D that pretty much vanished into the clouds.

Jonathan flew his Maniac with a cloth streamer for durations of 25 and 21 seconds. I flew a basic three fins and a nose cone BT-50 sized rocket for durations of 34 and 58 seconds. William grabbed a likely looking rocket out of his big ol' box-o-rockets, and put it up for 82 seconds, which wasn't just the longest single flight of the event, it was longer the my first, and both of Jonathan's flights put together. He then tried it again for 50 seconds, and first place.

So, the end results are: 684 contest points for the club. Greg Smith, in spite of a fantastic Egg Lofting Duration flight, got zero points and last place. Jonathan Sivier was third with 122 points. William Carney, who doesn't understand why we waste so much time building specialty rockets for contests, was second with 206 points. And last, or rather first, your humble contest director is club champion with 356 points. As always, you are encouraged to enter one of our contests and give it a shot, the more, the merrier. You too can win one of our hand lettered contest ribbons. They are suitable for framing, or tossing into the back of your underwear drawer.

# Goddard and Stumpy

By Mark Page

Episode nine was very challenging to construct. I relied on the visuals heavily to describe what was happening. The lesson is so basic, but you still see the occasional Brave Hombre with their noggin over the rocket. The time, 7:47 p.m. is an aeronautical reference as is "Ole Venturi's Mine." (On page 10)

# Other Clubs

**Tripoli Central Illinois**

The Tripoli Central Illinois folks launch from November to April at the Tuscola Airport on various Sundays. They have a 10,000' waiver. Newcomers are always welcome. They do require that people who fly motors larger than G be NAR or Tripoli members with insurance.

Contact: Don Reasor
Phone: 217-253-2586
Email: Don.Reasor@netcare-il.com
**http://www.tripoli.org/launches/TRA_Central_IL.shtml**

**Fox Valley Rocketeers**

Monthly launches and meetings. Northwest of Chicago.

**http://www.foxvalleyrocketeers.org/**

**Illinois Society of Amateur Rocketry**

Monthly launches and meetings. Suburban Chicago area.

**http://www.isar-rocketry.com/**

**Northern Illinois Rocketry Association**

NIRA holds regular launches in the Chicago area

**http://www.NIRA-rocketry.org/**

**Willow Hill Rocketry Group**

An NAR section serving Peoria, IL and surrounding communities.

**http://www.willowhill.org/**

**NAR of the Quad Cities**
**Tripoli Quad Cities**

Model and High Power rocketry for Eastern Iowa and North Western Illinois.

**http://www.tripoliquadcities39.com/**

**Tri-State Rocketry**

Serving Quincy, Illinois and surrounding communities.

**http://www.geocities.com/tri_state_rocketry**

**Indiana**

There are various clubs in Indiana who hold regular launches.

**http://www.indyrockets.org/**

**St. Louis**

The St. Louis Rocketry Association holds model and high power launches approximately monthly.

**http://www.stlouisrocketry.org/**

# Local Vendors

Here are some local places to get rocketry supplies.

**Hobby Lobby:** 2102 N. Neil St. in Champaign near Market Place mall. Check the paper and their web site for occasional 40% coupons. **http://www.hobbylobby.com/**

**Leisure Time Pet & Hobby:** 807 N. Mattis.

**Rocket R&D:** Call Gary Buck at 217-841-4777 for parts.

**Slot and Wing Hobbies:** Just north of I-74 on the east side of Prospect.

# Call for Submissions

If you have something to share with the other members we would love to hear from you. Possibilities for submissions include: reports on launches or other events, technical articles, rocket plans, contest and flying tips and hints, reviews of models or motors, books, software or other items of interest to rocketeers and photos taken at launches. If you have something in mind to submit for the next issue, hopefully in early 2009, contact the editor.

# CIA Officers

Here is the contact information for the officers of the CIA.

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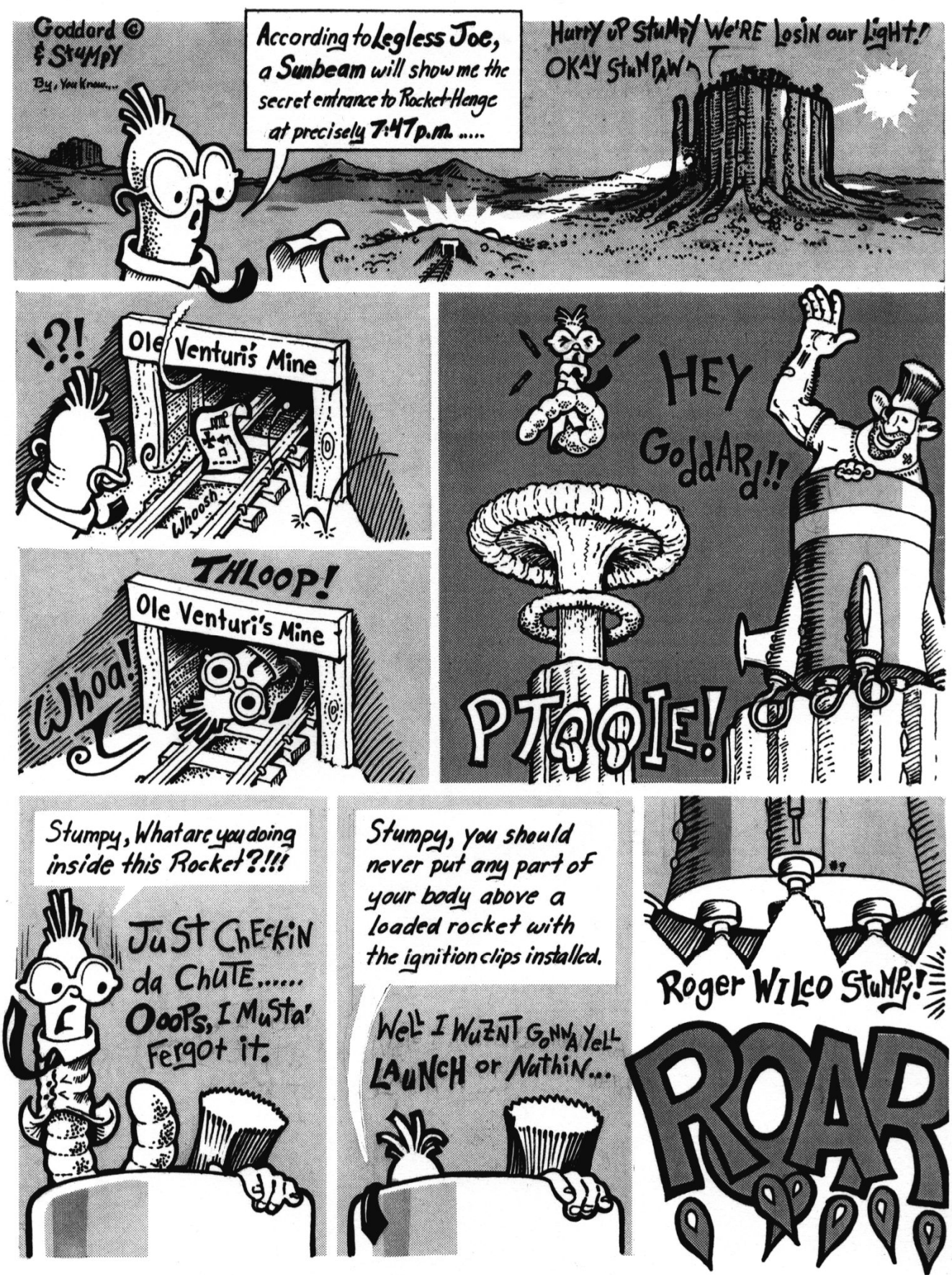
Goddard © & Stumpy
By, You Know...
According to Legless Joe, a Sunbeam will show me the secret entrance to Rocket Henge at precisely 7:47 p.m. .....
Hurry up Stumpy We're Losin our Light!
OKAY Stumpaw
!?!
Ole Venturi's Mine
Whoosh
HEY GoddARd!!
PTOOIE!
THLOOP!
Ole Venturi's Mine
Whoa!
Stumpy, What are you doing inside this Rocket?!!!
JuSt ChEckiN da ChuTE..... OoPs, I MuSta' FergOt it.
Stumpy, you should never put any part of your body above a loaded rocket with the ignition clips installed.
Well I WuZNT GoNNA YeLL LAuNCH or NuthiN...
Roger WILco StuMPy!
ROAR