

Southeastern Space Supporter

Newsletter of HAL5 – the Huntsville Alabama L5 Society chapter of the National Space Society

Volume 8, Number 4 — July–August 1999

FIRST WORD

HAL5 Hosts a Successful Southeast Space Summit

(by Greg Allison, HAL5 President)

Three NSS chapters from the southeast (Region 5) staged a summit meeting on the 17th and 18th of July in Huntsville, Alabama. The chapters in attendance were NSS Atlanta (which supplied 6 members), Middle Tennessee Space Society (which supplied 2), and the host chapter, HAL5 (which supplied 11). Bill Wood from NSS Memphis was also scheduled to attend, but had to cancel at the last minute. Michael Gilbrook of the Metro Orlando Space Society, had expressed interest in participating, but had a work conflict.

Though the meeting was staged with little notice and little planning, it was a **huge success!** 19 members of these chapters participated in two days of chapter management workshops and planning sessions at the Holiday Inn.

(see Summit on page 3)

HAL5 Program Night

Thursday, October 7, 1999

7 to 8:30 p.m. (with social afterwards)
Huntsville Public Library Auditorium

“Aerospace Planes: A New Arena for the Home Builder”

Guest speaker will be HAL5 member Dr. John A. Bossard, B.S. Aerospace and Ph.D. Mechanical Engineering.

All HAL5 and NSS members are encouraged to attend, and to bring interested friends and coworkers. Open to the public. Free admission.

Photo by Ronnie Lajoie

The Mighty Saturn V Stands Tall Again



Huntsville Alabama L5 Society

President — Greg Allison
Day: 544-4440, Eve: 859-5538
Vice-President — Gladys Young
Day: 852-0561, Eve: 852-0561
Treasurer — Ronnie Lajoie
Day: 971-3055, Eve: 721-1083
Secretary — Wade Dorland
Day: 551-0008, Eve: 534-2566
Membership — Philomena Grodzka
Day: 536-8638, Eve: 536-8638
Communications — Ellen Cozelos
Day: 726-6387, Eve: 883-4873

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Volume 8, Number 4
July / August 1999

The *Southeastern Space Supporter* is a bimonthly publication of the Huntsville Alabama L5 Society (HAL5), a not-for-profit 501(c)(3) organization devoted to the goal of seeing everyday people living in thriving communities beyond the Earth.

Any opinions expressed in this newsletter are those of the authors or of the Editor, and, unless expressly so stated, are not necessarily those of HAL5 or the NSS.

Visit the HAL5 Web Page on Internet via:
<http://advicom.net/~hal5/>

HAL5 encourages its members to speak out on space-related issues, and welcome submissions of both fact and opinion articles of interest to HAL5 members.

Submit letters or articles to: Ronnie Lajoie
162 Kirby Lane, Madison, AL 35757
Day phone/message: 256-971-3055
Night/Weekend phone: 256-721-1083
FAX number: 256-971-3333
Electronic mail address: hal5@advicom.net

Deadline for submittal is the last day of the following months: February, April, June, August, October, and December.

Preferred format for plain text is ASCII (text with graphics is *MS Word* or *WordPerfect*) either sent by E-mail or on a PC diskette. Also acceptable are letters and articles sent by mail or faxed; however, the more retyping required, the less likely the acceptance. HAL5 is not responsible for receipt of mailed submissions; none will be returned unless sent with a SASE. Hand-delivered diskettes will be hand-returned. No compensation is paid for submissions.

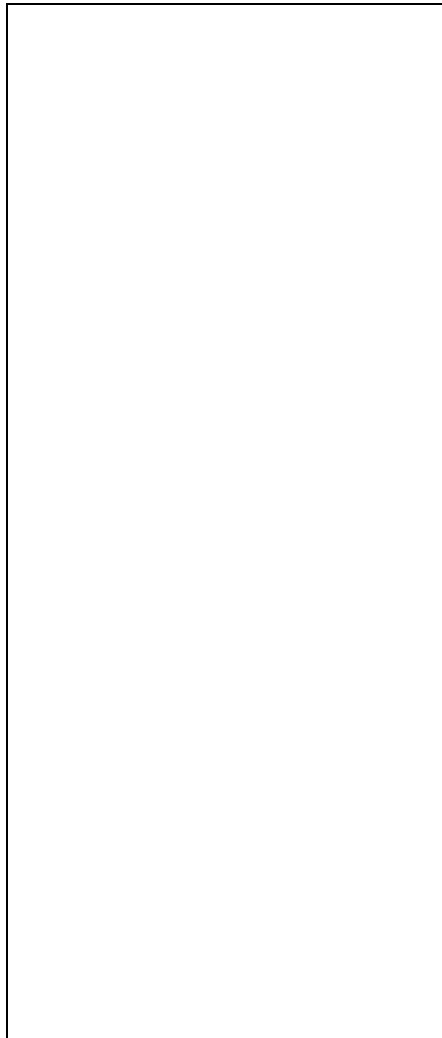
The Saturn V Rises Again

(by Ronnie Lajoie, HAL5 Member)

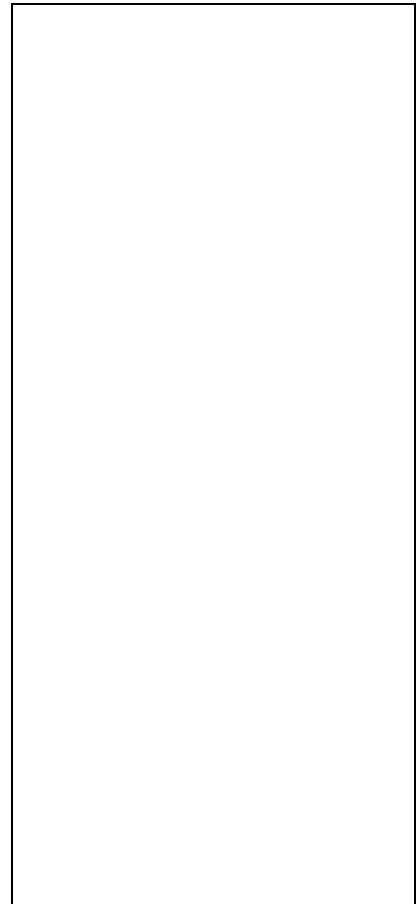
On July 13, the Turner Universal Construction Company completed — on schedule, albeit with the accidental loss of worker Ed Stovall — a full scale replica of the Saturn V launch vehicle.

On July 18, the U. S. Space and Rocket Center dedicated the replica with official Apollo astronaut representatives. On July 19 and 20, the Center celebrated the dedication and the 30th Anniversary of the Apollo 11 Moon landing with both reenactments and fireworks.

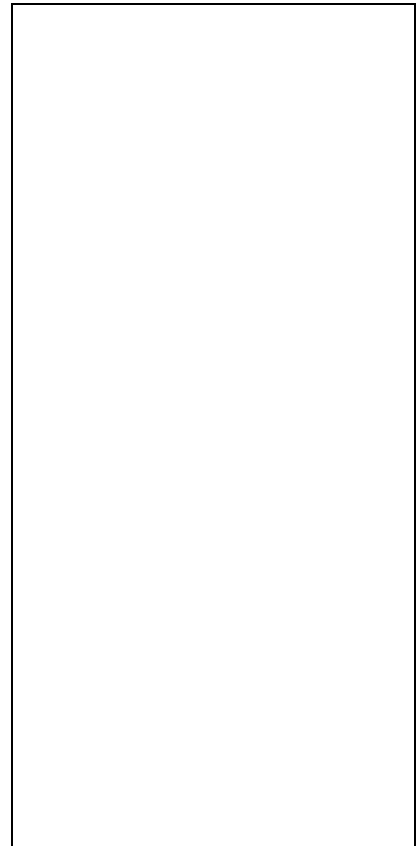
I captured these photographs and many others during these events. I will bring them to the next Program Night in case members want to buy reprints. ☆



Huntsville celebrates the dedication of the new Saturn V with fireworks.



The Saturn V replica at sunset.



Full Moon touching the Saturn V.

(Summit, continued from page 1)

We took a break on Saturday afternoon to attend Apollo 11 30th anniversary festivities at the Marshall Space Flight Center. There the attendees saw a host of Apollo astronauts, including **Buzz Aldrin**. They got to meet some members of the German Rocket Team (just a few are remaining) like **Konrad K. Dannenberg** (Who used to be an L5 Society Director), and the engineers who designed the Saturn V moon rocket. **Shuttle astronaut Jan Davis** joined with us for a group shot a large bust of the **Founder of the NSS, Dr. Wernher Von Braun**, with a 1 tenth scale replica of the Saturn V behind us.

Southern Space Council

The three chapters in attendance banded together to form the **Southern Space Council (SSC)**. Together we plan to develop regional summit meetings, regional conferences, and foster new chapter startups. We hope to get all of the chapters in Region 5 participating in the SSC and its activities. Some of Region 3's more eastern chapters may also join in if so inclined. People have come from Arkansas in the past to attend meetings in Huntsville.

Regional Conference

We are currently looking into having the first regional conference in April 2000 in conjunction the anniversaries of the first manned launch into space (Yuri Gagarin on 12 April 1961) and the first shuttle launch (12 April 1981 — exactly 20 years after Gagarin orbited the Earth). This conference is planned to also be held in conjunction with an exclusive gala event which HAL5 is planning to host.

By staging this as an annual event on these anniversaries, we will be

well positioned to capitalize on being center stage of the celebrations which will take place in April 2001 for the 20/40 year festivities. We also plan to tie in the theme of 2001. Imagine HAL5 and HAL9000 invites you to a Space Odyssey in 2001! (Well, we'll have to work on that a bit!)

We will highlight the anniversaries, where we thought we would be in space, and what its going to take to get there. We expect to get national draw with this event. The most important aspects of this conference will be the workshops which are intended to build stronger chapters and merge the SSC into a more effective organization.

There is no better way to lead than to lead by example. We hope that through our example, and with my prodding, assisted by the chapter's plan (which I distributed to other chapters early this year) that chapters in other regions will pick up the torch and initiate regional conferences. Every one who attended this first summit was quite pleased and motivated to do more in the future. ☆

My Space Summit Experiences

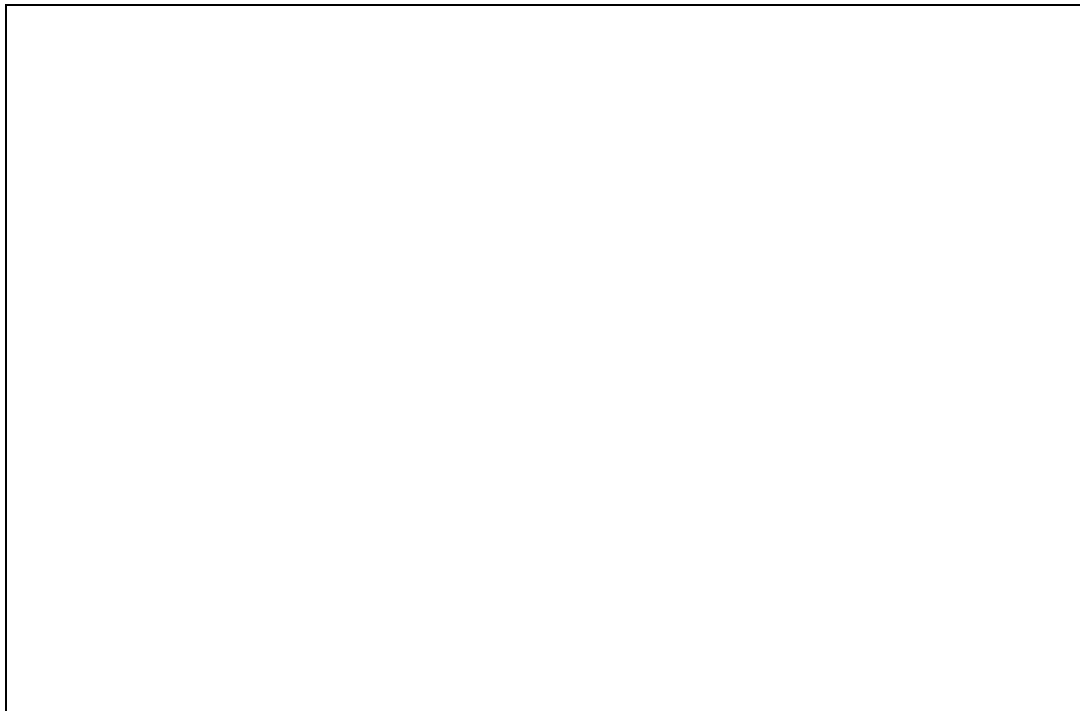
(by Ronnie Lajoie, Event Coordinator)

I want to take this opportunity to add my thoughts of the recent Southeast Space Summit and to expand on some of the topics mentioned in Greg's article.

Genesis

Following the 1993 ISDC, and throughout 1994, no one in HAL5 wanted to do a space conference, even a small one. Instead we began Project HALO, a large, hands-on, technical project.

In 1996, with HALO progressing well, the itch to host a space conference came back, at least as far as hosting a 3-day regional one or a 2-day seminar. An attempt was made to plan a Southeast Space Development Conference to be held that October. There was even an announcement in the January 1996 issue of this newsletter (a bit premature). That plan fell through, however, due to a lack of sufficient pre-registration sales at the 1996 ISDC in New York City.



The Southeast Space Summiteers pose with a model Saturn V, a bust of rocket pioneer Wernher von Braun, and Shuttle astronaut Jan Davis. L-R: Mike Skinner, Bill Gardiner, Greg Allison, Gladys Young, Bill Brown, Gene Young, Violet, Robert Tonini, Tony Thomas, Jan Davis, Chuck Schlemm, Earl Babbitt, Bob Prager. Photo by Ronnie Lajoie

The years went on and Project HALO became more intense, until a shortage of funds put the project into a virtual coma following the first Sky Launch 2 launch attempt in June 1998.

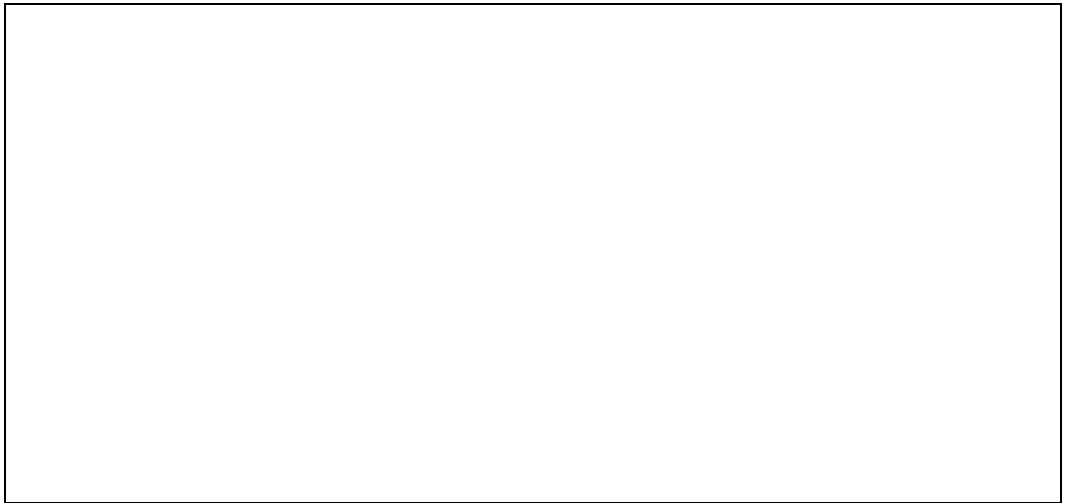
In early 1999, the HAL5 Executive Committee began discussing finally hosting a regional space development conference, including voting to allocate up to \$200 in seed money, and once again announcing it in the January newsletter issue. This time, the conference would be held in July, to tie in with the 30th anniversary of the Apollo 11 moon landing.

Planning — Or Lack Thereof

Six months to plan — no problem! Did not happen. While there was sufficient interest in attending a regional conference among the membership, there was a severe lack of sufficient interest or availability in helping to plan and execute it. Unlike the 1993 ISDC, a small regional conference does not have the same “Wow!” factor that generated many volunteers to help plan that event. The Executive Committee also had its hands full with other events, including the “October Sky” premiere, an USIS conference in D.C., and the NSS “Ad Astra Survey” processing crisis.

By the time of the 1999 ISDC in May, no hotel had been reserved, no schedule of activities was made (except for the one borrowed from the aborted 1996 SSDC), no registration form was made (let alone any pre-registration sold), and no official announcements were out. Things looked pretty bleak for July.

To best salvage the situation and still hold some kind of event in July, the Region 5 chapter members present at the 1999 ISDC agreed to participate in a much smaller and more intimate “space summit” that would involve only chapter members and not the general public. Rather than create our



The Southeast Space Summit at the Holiday Inn. L-R: James Dobbins, Robert Tonini, Bob Prager, Mike Skinner, Earl Babbitt, Chuck Schlemm, Clay Sawyer, Ellen Cozelos, Mechele Woodall, Gene Young, Gladys Young, Bill Gardiner. Photo by Greg Allison

own attractions, we would instead attend the many number of Apollo 11 30th anniversary events scheduled to be held around the time of our summit.

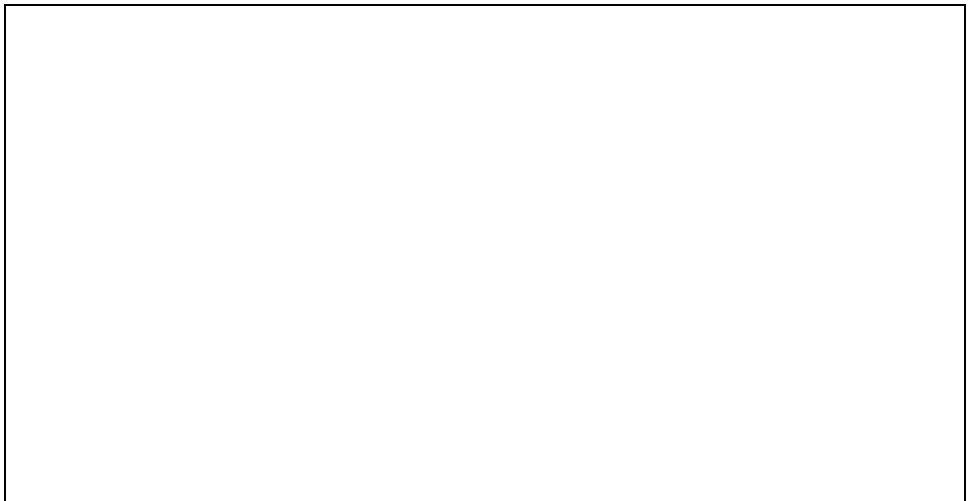
How to Plan a Summit in Two Weeks

Talk about quick planning! The 1999 Southeast Space Summit came together in just two weeks, following an email invitation that went out at the beginning of July. The invitation included a list of Apollo 11 30th anniversary events for us to work around, and a questionnaire on the number and types of activities and meal events that were desired. Without email, such rapid planning would have been next to impossible — or at least very expensive and time-consuming (via

telephone calls). Did I mention that my parents were in town visiting me during this entire planning period????

On July 9, Greg Allison and I agreed on a draft agenda which would involve using only one meeting room all day Saturday and a half day Sunday. A second meeting room might be required only for meal events on Saturday, pending sufficient interest. Only the meal events would have speakers, if they could be found quickly enough. This draft agenda was quickly emailed to all chapters in the NSS Region 5. Feedback came quickly and the agenda was finalized by Wednesday, July 14.

Meanwhile, meeting room arrangements



The Southeast Space Summiteers discuss membership recruiting methods.

were started with the Holiday Inn hotel. Unlike the 1993 ISDC, there was no chance that the few room-nights we could have arranged would remove the burden of paying \$250 per day for the meeting space. Fortunately, the hotel was willing to charge us less for meeting space depending on the number of meals we purchased. Since we would have needed to eat lunch and dinner somewhere anyway, the committed attendees agreed to lunch and dinner meal events on Saturday, and none on Sunday. A small registration fee of \$5 per person was determined to be sufficient to cover the remaining meeting space cost and other expenses (TV rental, snacks, etc.)

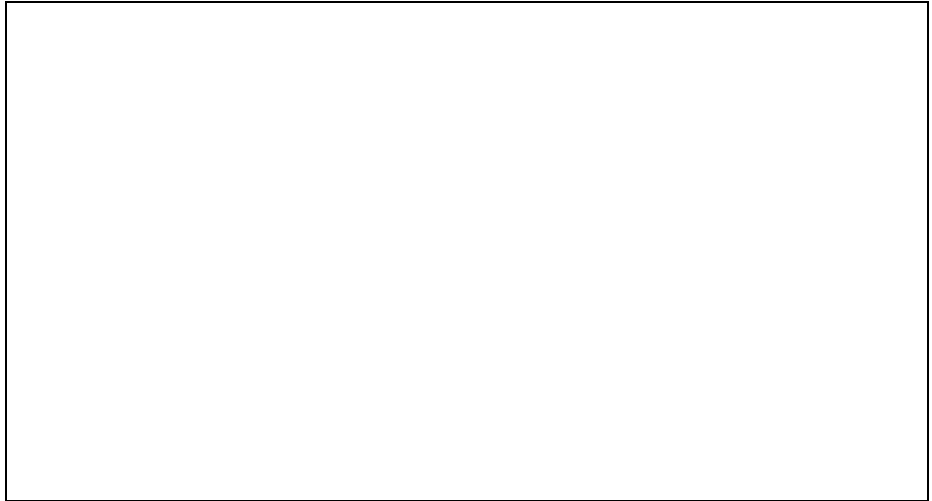
Southeast Space Summit Day 1

When Ron Lajoie is the first person to arrive at an event, one starts getting worried! It was 8:15 AM when I arrived at the hotel (15 minutes behind my original schedule), with the Summit due to start at 9:00 AM sharp — and no one else was there! I began unpacking my car, which was fully loaded with leftover ISDC supplies, my overhead projector and screen, a large TV whose use was donated by HATS (thus saving us \$50 per day in rental fees), and the HALO exhibit — including the SL-2 motor.

At 8:30 AM, Mechele Woodall, HAL5's newest member to date arrived. One half hour to go and only two attendees are present — what a first impression that must have made on her! Fortunately, she was willing to help and I sent her out to buy the doughnuts.

By 9 AM, most of the HAL5 attendees had arrived, plus the two members from the Middle Tennessee chapter, Chuck Schlemm and Robert Tonini. Together we set up our mutual exhibits and readied the room to start the Summit — albeit a little late. Needless to say, the doughnuts, juice, milk, tea, and coffee were welcome distractions.

By 10 AM, when the six members of the Atlanta chapter arrived, it was apparent that the final draft of the agenda was not likely to be followed. After a quick review, we settled on a new agenda that would guide us for the rest of the day.



Bob Prager of NSS Atlanta shares with the group what attracted him to NSS.

Membership Recruiting Discussion

Since I had just finished up four years as Chair of the NSS Chapters' Assembly, I began the Summit with a summary of the new NSS Campaign for the Future membership drive, then led a discussion on recruiting methods that work well and those that work poorly (for NSS).

Recruiting methods that Summiteers said work well include:

- Personal contact
- Phone calls
- Projects
- Major events
- "Doing Something"
- Personal notes and postcards
- Open house events

Recruiting methods that Summiteers said work poorly include:

- Mass mailings
- Stack of forms on a table

Upon a suggestion by Gene Young, we then took turns describing what made each of us join the NSS and/or one of its chapters.

- Gene & Gladys Young joined HAL5 in 1997 because of its Project HALO.
- Bill Gardiner joined the L5 Society in the 1970s after seeing a satellite launch and reading an article by Gerard K. O'Neill.

- Tony Thomas joined NSS Atlanta after seeing their table at *Dragoncon*, a local science fiction convention.
- Ron Lajoie actively sought out HAL5 after joining NSS at the 1991 ISDC.
- Greg Allison joined the L5 Society in the 1970s after realizing that our future is dependent on space and later seeing the shuttle *Enterprise*.
- Chuck Schlemm joined the National Space Institute and later the L5 Society in the 1970s.
- Robert Tonini met astronauts at an NSS chapter program, and signed up.
- Mike Skinner joined NSS Atlanta after seeing the chapters list in *Ad Astra*, following joining NSS in 1998.
- James Dobbins joined NSS Atlanta after receiving a letter from then President Earl Babbitt, who saw his name among new NSS members.
- Bob Prager read science fiction and O'Neill's "High Frontier"; and saw an NSS talk at a non-NSS event.
- Earl Babbitt joined the L5 Society in the late 1970s, then joined NSS later.
- Clay Sawyer loves space and rocketry and joined HAL5 in 1996 for HALO.
- Ellen Cozelos grew up in space family, saw chapters list in *Ad Astra*. Suggested a poster with a mirror on it with the title "My Favorite Martian".
- Mechele Woodall has "space mom" and joined NSS and HAL5 after seeing their Web sites.

(see Summit on page 8)

Huntsville Alabama L5 Society (HAL5)

your local chapter of the

National Space Society

presents



Aerospace Planes



A New Technical Arena for the Home Builder

a free public presentation by

Dr. John A. Bossard

B.S. Aerospace Engineering, Ph.D. Mechanical Engineering

Thursday, October 7, 1999

7:00 pm to 8:30 pm at the

Huntsville/Madison County Public Library

The public is invited. Admission is **FREE**. A social at Shoney's will follow the meeting.

For more information: call Ronnie Lajoie at 971-3055 (day) or 721-1083 (evenings).

HAL5 CALENDAR OF MEETINGS AND EVENTS

August 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	HAL5 Monthly Program Nights are now the First Thursday of each month			

September 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
September HAL5 Program Night "Capacitive Propulsion — Is This Anti-Gravity" with live demonstration by Jeff Cameron, Physicist 7-9 PM, Thursday, Sep. 2, Huntsville Public Library			1	2 ^{☉ ☿} HAL5 Program "Anti-Gravity" 7 pm at Library	3	4
5 Daylight Saving Time Ends	6 Labor Day	7	8	9 [♁] HAL5 & Project HALO Meeting Noon at Ponds	10 Rosh Hashanah	11
12 National Grandparents Day	13 Luna 2 impacts moon 1959	14	15	16 HAL5 & Project HALO Meeting Noon at Ponds	17 ^{♁ ☉} Citizenship Day	18
19 Yom Kippur	20	21	22	23 HAL5 & Project HALO Meeting Noon at Ponds	24 Big Spring Jam at Big Spring Park near VBC	25 [♁] Big Spring Jam at Big Spring Park near VBC
26 Big Spring Jam at Big Spring Park near VBC	27	28	29	30 HAL5 & Project HALO Meeting Noon at Ponds		

October 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midwest Space Development Conference in Cleveland, Ohio has just been CANCELED			October HAL5 Program Night "Homebuilt Spacecraft" by Dr. John Bossard, 7-8:30 PM, Thur., Oct. 7, at Hsv. Public Library		1 ^{☉ ☿}	2
3	4 Sputnik 1 launched 1957	5	6	7 [♁] HAL5 Program "Spacecraft" 7 pm at Library	8 1999 MSDC (CANCELED)	9 [♁] 1999 MSDC (CANCELED)
10 1999 MSDC (CANCELED)	11 Columbus Day (observed)	12 Columbus Day	13	14 HAL5 & Project HALO Meeting Noon at Ponds	15	16 National Boss Day
17 ^{☉ ☉}	18	19	20	21 HAL5 & Project HALO Meeting Noon at Ponds	22	23
24 [♁] United Nations Day	25	26	27	28 HAL5 & Project HALO Meeting Noon at Ponds	29 Con†Stellation 5 pm - 11 pm Airport Sheraton	30 Con†Stellation 9 am - 11 pm Airport Sheraton

(Summit, continued from page 5)

Fund Raising Discussion

Greg Allison and Earl Babbitt then took turns leading a discussion on fund raising methods. Greg described his experiences raising money for Project HALO; Earl described his experiences with the Space Grant Consortium, which he reported has been encouraged to work with the National Space Society.

The Summiteers agreed that large projects (such as HALO) and major events (such as conferences) attract sponsors, especially if they are somehow tied to education or helping students. As an example, Greg told the group about that Greg Warren’s Student Experimental Payload Program receives a grant of over \$20,000 per year.

Lunch and NASA Break

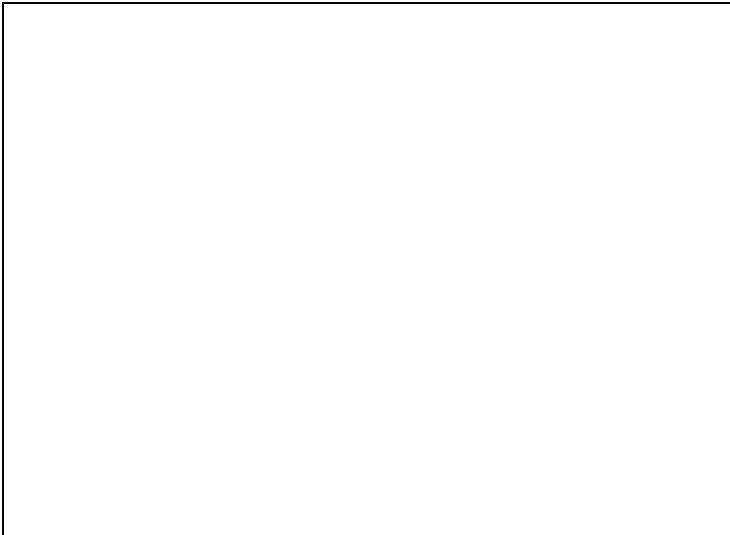
After several hours of discussion, the group was ready for lunch. Lunch consisted of NOT-lemon chicken (somehow we got roast turkey and dressing instead) with au gratin potatoes, peas & carrots, assorted pies, iced tea, and (of course) lots of interesting discussion.

Since lunch was served in a separate room, we had to wait until we were finished to file back into the meeting room for the lunch program. Bill Brown and Greg Allison gave a presentation on the Sky Launch 1 HALO mission. We were about an hour behind schedule at this point, with no time left for more Summit programming until after the break to attend the events at NASA.

Three hours were allocated to attend the Apollo 11 30th Anniversary events at NASA Marshall, including a half hour on each end for driving between the hotel and Redstone Arsenal. We arrived just before 3:00 PM and the ceremonies

began shortly thereafter. (For details of the events, please see the next issue.) Following the ceremonies, we happened to catch astronaut Jan Davis and she agreed to take part of a group photo of the Summiteers near the bust of pioneer Wernher von Braun (see page 3), a statute built for the 25th anniversary.

Driving back from the Arsenal, many of us spotted Greg Allison’s car, which had run out of gas, on the side of the freeway. Eventually, most of the Summiteers were gathered around the car, happily waiting for the rescue party to return with gasoline. While waiting, we spotted a beautiful display of sunbeams (officially “crepuscular rays”) and could not help but take photos.



What Can Chapters Do? Plenty!

After we finally reassembled back in the Holiday Inn, Greg Allison gave the talk, as Vice-President for Chapter Affairs, that was originally scheduled for 9:00 AM, and led a discussion on what can NSS chapters do.

Chuck Schlemm made a motion for the chapters present to form an alliance to be called the Southern Space Council. The motion passed unanimously. This group would eventually take over the planning and execution of regional space development conferences.

Ellen Cozelos described her concept of a “garden party” to be held in conjunction with the regional conference. The gala

event would be an exclusive formal affair, designed to attract the most prominent people from North Alabama, to mingle with as many prominent people within the NSS that we could gather together. She stated that she raised thousands of dollars in this manner for a local cultural organization. The group liked the idea and agreed to allocate seed money for the invitations.

Dinner and “Strange Physics”

Dinner consisted of roast beef with oven browned potatoes, vegetable medley, fruit cobbler, iced tea, and again lots of interesting conversation.

Following dinner, NSS Atlanta member Bill Gardiner gave a very good presentation on advanced space propulsion and how the promising breakthroughs from “new physics” are a lot closer to reality than many of us imagine. He questioned the assumption of “universal” physical constants based only on Earth observations, and stated that different values of the “gravitational constant” are possible and do not violate Einstein’s theory of relativity.

Space Summit Day 2

Summit Day 2 turned out to be a very casual affair. The group, sans many HAL5 members, and apparently tired of “official” programming, decided to hold several mini-group conversations instead. Discussions included chapter administration, chapter resources, and chapter newsletters. Both Middle Tennessee and Atlanta chapters agreed to consider making the *Southern Space Supporter* a regional newsletter.

Overall the first Southeast Space Summit can be deemed a big success, both functionally and fiscally. Of the \$200 seed money allocated to the event, only \$45 was actually required. This leaves more money in the HAL5 coffers for future activities. ☆

PROJECT HALO NEWS

Friendly Rival JP Aerospace's Successful launch to 72,223 feet

(JP Aerospace Press Release, May 23, 1999)
(photos from CNN Interactive Web site)

The weekend of May 22 and 23, JP Aerospace went to Black Rock, NV to attempt the first amateur flight to space. We utilized a rockoon system consisting of a launch platform carried by an array of stacked weather balloons with a solid propellant rocket. Both the rocket and the launch platform carry a sophisticated telemetry system with GPS for tracking.



JP Aerospace team carries their rocket.

We arrived on the desert Thursday and setup our launch complex. This consists of antenna towers, workshops, mission control stations, generators, etc. We went with a crew of 30.

Saturday morning at 3:30am the balloon fill teams began inflation. At 4:45am the final series of phone calls for the launch clearance went out to the FAA, (air traffic, regional control, west coast control, etc.).

After the balloons are filled they are raised into a 620 foot vertical stack. This is the most critical time. During raising the surface winds picked up to 7 knots and we aborted the launch.

Sunday morning we were out repeating the same process. We had brought two complete systems, two rockets, two launch platforms, two sets and balloons and helium. At 6:30am we had lift off. We knew from the winds aloft from

Saturday night that we would not be able to reach our goal of 320,000 feet. The winds would push the launch platform beyond our operations range before we reached the 100,000 launch altitude. We would need to decide to launch early and fly to a lowed altitude or abort the mission. We learn nothing from a rocket on the ground so we decided to cycle the system and verify that the launch system works.

At 25,000 feet we took a final system status, both platform and rocket. After a final telemetry check and a pan with the on board video, we armed the launch system. At 26,000 feet we launch the rocket.

The platform video showed a clean launch. The entire system was close enough that the launch was seen by people at the launch site. CNN got video of the rocket climbing vertical up and out of sight.

Shortly after motor burnout we reacquired eight satellites with the GPS (on the rocket). The Telemetry string also showed a solid system and batteries. The highest altitude fix we received was at 72,223 feet. This transmission also gave at velocity of 800 feet per second still climbing. We missed the apogee transmission. We have calculated that altitude but since we can't verify it we're not going to talk about it. After apogee we received about 25 position fixes during decent till landing.

Total Rocket launch weight: 17 pounds
Launch platform weight: 23 pounds
Total balloon lift: 72 pounds
Launch altitude: 26,000 feet
Maximum verified altitude from the rocket: 72,223 feet
Number of satellites acquired during position fix: 8

Monday morning around 3:00am the arrived back home, tired but feeling great about the launch. Even though we didn't go to space we are very happy about that success of the launch and performance of the system. This was



Balloons used to boost JPA rocket.

the 28 launch in the program. We be back out again soon for another.

Goals of JP Aerospace

JP Aerospace, an amateur aerospace organization located in Sacramento, California attempted to make aerospace history by launching the first amateur rocket into space. This was to be accomplished by lofting a launch system to an altitude of 100,000 feet by balloon. The rocket would then be launched to an altitude of approximately 60 miles, providing telemetry & GPS positioning, with full recovery expected upon return. This system has its roots in the very successful Rockoon, BATO and Farside balloon/rocket programs carried out in New Mexico and the Arctic.

The rocket for this mission has been christened the "Spirit Of Freedom 7" in honor of the first American in space, Alan B. Shepard Jr., and the rocket that carried him there.

About JP Aerospace

JP Aerospace is an innovative, amateur aerospace organization dedicated to providing cheap access to space using existing technologies and off-the-shelf materials. Based in Davis, California, the 20 year-old organization consists of members who represent a wide variety of backgrounds, from former aerospace engineers and a physicist to computer programmers.

John Powell, President of JP Aerospace, is now a subscriber to the HAL5 newsletter. He reports that he is preparing to try again in November. ☆

SPACE NEWS

Mir's Last Full-Time Crew Returns to Earth

(from *Florida Today*, August 27, 1999)

For the first time in 10 years, there's nobody in space. In an emotional overture to a fiery grand finale, an international crew abandoned Russia's aging space station Mir Friday, reducing Earth's orbital population to zero.

What's more, the exodus from Mir — which had been occupied for 3,641 consecutive days — set the stage for a dramatic suicide dive back through the atmosphere next year. "This is a prelude to the big ending for Mir," said Dennis Newkirk, author of the *Almanac of Soviet Manned Space Flight*.

The impending demise of Mir — the last of eight space stations launched by the former Soviet Union — also marks the end of 28 years of Russian dominance in Earth orbit. "We went to the moon, but they elected to establish orbital space around the Earth as their domain, and Mir really is the culmination of that effort," said Jerry Grey, director of science and technology policy for the American Institute of Aeronautics and Astronautics.

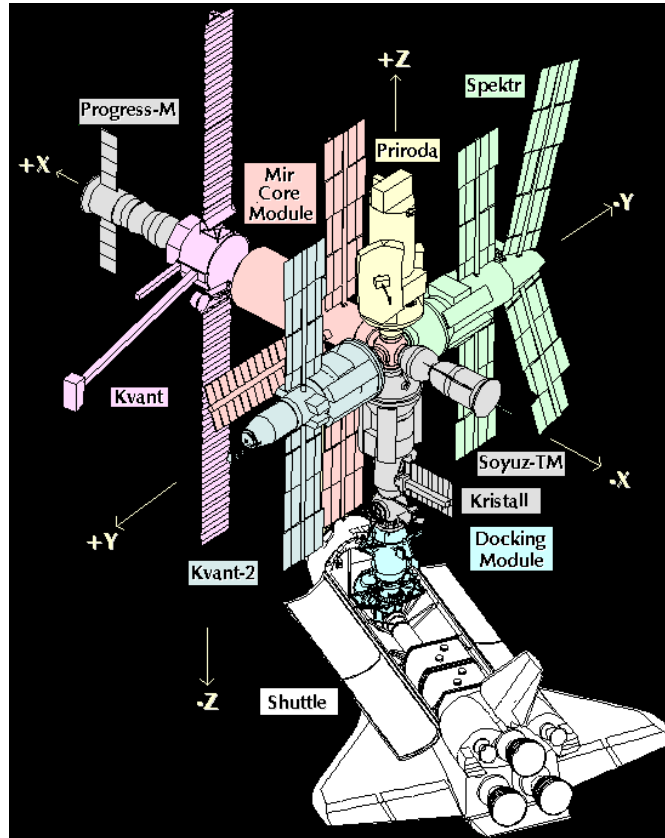
"What were basically seeing here is the end of the Cold War in a true sense," added David Webb, founder of University of North Dakota's Space Studies Institute. "The Cold War propelled the space programs of both the United States and the Soviet Union, and this is the end of the era of single nations going it alone in space."

Russian and French Homecoming

Strapped into a bug-shaped spaceship, Mir commander Viktor Afanasyev, flight engineer Sergei Avdeyev and

French astronaut Jean-Pierre Haignere pulled out of the station at 5:17 p.m. EDT. Their departure followed a hectic two weeks in which the crew shut down station laboratories, filled up its garbage scow and switched off all but essential systems. With the station left on autopilot, the cosmonauts and their French colleague landed on the steppes of central Asia at 8:35 p.m. EDT.

Grassroots Efforts to Save Mir



Back in Moscow, a grass roots push to save the station continued. For the past month, Russian scientists, politicians, clergymen, writers, journalists, musicians and cosmonauts have been lobbying the Duma, the lower house of parliament, for money to keep Mir aloft.

"It must become a national concern to prolong the life of the orbital complex, the pride of the Russian science," Nikolai Ryzhkov, an influential politician, told reporters gathered at a news conference earlier this week.

But it's unlikely that Mir — which was launched at the height of the Cold War and flew through the 1991 fall of the Soviet Union — will survive the collapse of the Russian economy.

Teetering on the brink of bankruptcy, the government cut off cash for Mir on August 1 so scarce money could be put toward the Russian segment of the new \$60 billion international station being built with the U.S. and 14 other nations.

Commercial Efforts Fail

Russian aerospace giant RSC Energia holds exclusive rights to operate Mir on a commercial basis and insists the old outpost could fly another three years. But the company so far has been unable to find private investors willing to pay the \$100 million to \$250 million it takes to run the station on a yearly basis. The company's scramble for cash is expected to continue for another six months while ground controllers gradually lower Mir ever closer to the edge of Earth's atmosphere.

And while aerospace analysts doubt Energia can find the money to keep the 130-ton station afloat, they expect the drama to drag out like a soap opera. "They're going to push it as far as they possibly can because having a space station is better than not having a space station," Newkirk said. "I mean, it gives certain people power and prestige and they are going to cling to it as long as they can."

Skylab 2

A new crew, meanwhile, is being trained for a short mission that might be needed to make final preparations for what would amount to a burial-at-sea. The cosmonauts would fly to Mir in February or March to oversee the arrival of a fuel-filled Russian space freighter. The freighter would periodically fire onboard thrusters, nudging Mir into an

orbit about 125 to 135 miles above Earth. The crew then would abandon ship and return to Earth before the freighter gives Mir a powerful last push into the upper atmosphere.

Most of the T-shaped cluster of labs would disintegrate as temperatures exceeding 3000 degrees Fahrenheit burned up the station like a marshmallow tossed on an open fire. TV and toaster-sized chunks, however, are likely to survive, so the atmospheric reentry will be targeted over uninhabited areas of the Pacific Ocean. Whether this can be done safely is anybody's guess.

Charred wreckage from the first U.S. space station — Skylab — rained on the Australian outback in 1979, capping what had become a media event of Chicken-Little proportions.

Mir's immediate predecessor — the Soviet's Salyut 7 space station — suffered serious systems failures in its final days and made an out-of-control over remote areas of South America in 1991.

Russian Space Job Cuts

Today, ground controllers at Russia's Mission Control Center in the town of Korolev north of Moscow make about \$200 a month but often go half-years without pay. Many moonlight. They sell homegrown vegetables at market, drive westerners around Moscow or peddle T-shirts on the streets to make ends meet.

Deep job cuts are anticipated now that Afanasyev and his crew have returned to Earth. Whether the Russians can bury Mir without endangering the world at large remains an open question. "They should be able to do it. There's a lot of ocean out there, and the capability to bring it down into the sea certainly is there. It's just a matter of whether they do it right, or screw it up," said Grey.

"We'll just have to wait and see" added Newkirk. "That's going to be an interesting story — much more interesting than just the last crew leaving Mir." ☆

Water Found in Meteorite

(Washington Post, August 27, 1999)

A meteorite that whistled into a West Texas yard last year contained the first extraterrestrial water ever captured on Earth, scientists reported yesterday.

Like a cosmic message in a bottle, the microscopic bubbles of primordial water are locked inside crystals of halite, the mineral that makes up table salt, but in this case has been turned blue and purple by radiation. The crystals and their liquid cargo appear to date from the dawn of the solar system about 4.5 billion years ago.

The discovery provides scientists their first chance to study actual samples of water that may have existed in interstellar space before the sun and planets were born. It also suggests that there was much more water on early asteroids than anyone suspected, the researchers said, and it could help reveal the unknown processes by which this essential ingredient of life was distributed in the early solar system. ☆

Meteor Impact in Barents Sea

(Norwegian Inst. of Tech., January 1999)

Armageddon, the earth's meeting with a giant meteor, has been Hollywood's latest terror scenario and big money earner. But the phenomenon is real. During the summer of 1998, geologists from IKU Petroleum Research drilled into the center of a gigantic meteor crater in the Barents Sea. The "hole" is 40 kilometers in diameter and is evidence that a giant from the asteroid belt entered the earth's atmosphere and struck right off Norway's northern coast.

The severe collision with a meteorite occurred about 150 million years ago and may have led to an extensive environmental catastrophe. Hollywood movies have certainly amply nourished our fantasies, but temperatures of around 10,000 degrees Celsius and flood waves which spread from Canada

to Russia are hard to relate to. Mud, rock and materials from the sea floor were flung into the atmosphere in a violent inferno. When the enormous forces finally settled, it became cold and calm. Dust and particles created a carpet that blocked out the sunlight, and what followed is known as an atomic winter. The event had great effect on life on earth. Large parts of the organic life were affected. And the Mjølñir Crater was created.

Rare discovery

The discovery of the crater in the Barents Sea was a coincidence. Norway's sea area is systematically mapped, using seismic registration in a continuous search for potential oil and gas reservoirs. It was in this way that the enormous formation, north of Hammerfest, was noticed. In the beginning, geologists thought it was an ordinary salt formation or submarine volcano. But this was later dismissed.

After an extensive study of 400,000 quartz grains from the actual area, the work provided the answers. Some of the grains contained traces of shock deformation, a characteristic crackle in the species of rock that evidence that enormous forces had worked their way in. Traces of iridium were found, a rare element in the platina group that is far more common in objects from space than on the earth's surface. With two such clear indicators, the researchers could establish that they had found one of the world's 7 marine meteor craters.

"The Mjølñir Crater is extremely well preserved because ... the environment in the sea takes care of the layer of sedimentary rock on the sea floor. All the geological layers in and under a submarine meteor crater function as solid documentation on the earth's development over millions of years."

The crater was drilled by a team from IKU. The 121 meter long core sample is described within the subject as a "geological gem". The Mjølñir Crater is one of the few instances where both the crater and the displaced material were found and described. ☆

HAL5 Membership Report

The following is a list of additions to the current paid membership of HAL5, which includes 33 renewals and 12 new members, for a total of 45, plus four newsletter subscribers. Welcome to all our new and renewed members and subscribers!

David	Dean	(R)
Peder	Kilness	(R)
Mechele	Woodall	(N)
John	Powell	(S)

(N) - New Member
 (R) - Renewed Member
 (S) - Newsletter Subscriber

HAL5 welcomes back previous members David Dean and Peder Kilness. Peder and certain other HAL5 members can now finally attend our monthly Program Nights, thanks to our new night (Thursday).

HAL5 also welcomes its new member Mechele Woodall, who joined at our Southeast Space Summit in July.

HAL5 also welcomes its new newsletter subscriber John Powell, who joined at the last United Societies in Space conference in August. John is the President of JP Aerospace, a non-profit organization attempting to open the space frontier using rockoon technology, similar to Project HALO. For more on his efforts, see article on page 9.

Upcoming Events of Interest to HAL5 Members

- Thu., Sep. 2 — 7:00 - 8:30 PM **HAL5 Program on “Capacitive Propulsion — Is this Anti-Gravity?”** by Jeffery A. Cameron, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-971-3055
- Thu., Sep. 23 — 5:00 - 6:30 PM **HATS General Membership Meeting**, at the HATS Office, University Square, Suite 3; free; questions: 256-837-4287
- Fri., Sep. 24 to Sun., Sep. 26 **1999 Big Spring Jam Music Festival**, at the Big Spring International Park; \$10(?) fee; questions: 256-971-3055
- Thu., Oct. 7 — 7:00 - 8:30 PM **HAL5 Program on “Aerospace Planes: A New Technical Arena for the Home Builder”** by member Dr. John Bossard, Aerospace and Mechanical Engineer, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-971-3055
- Fri., Oct. 8 to Sun., Oct 10 **1999 Midwest Space Development Conference (MSDC)**, has just been CANCELED; questions: 256-971-3055
- Fri., Oct. 22 and Sat., Oct 23, 2pm & 7:30pm shows **Huntsville Community Chorus** program on “**Out of This World: A Salute to Space**” at the Von Braun Center; \$10 fee matinee, \$15 fee nights; questions: 256-533-6606
- Fri., Oct. 29 — 7:00 - 8:30 PM **NASA Space Club** hosts the annual “**Von Braun Memorial Dinner**”, at the Von Braun Center; formal attire; large fee
- Fri., Oct. 29 to Sun., Oct. 31 **NASFA** hosts the annual “**Con+Stellation XVIII: Lupus**” science fiction convention, at the Airport Sheraton Hotel; \$30 fee to Sep. 27, then \$35; questions: 256-880-8210
- Thu., Nov. 4 — 7:00 - 8:30 PM **HAL5 Program on “Preventing Launch Vehicle Failures”** by Bob Thomas of Wyle Laboratories, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-971-3055
- Thu., Dec. 2 — 7:00 - 8:30 PM **HAL5 Program on “Space Biology”** by Marianne Lewis, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-971-3055

Special Announcement

HAL5 October Program Night on

“Homebuilt Spacecraft” by

Dr. John A. Bossard

Thursday, October 7, 7–9 pm

Huntsville Alabama L5 Society
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