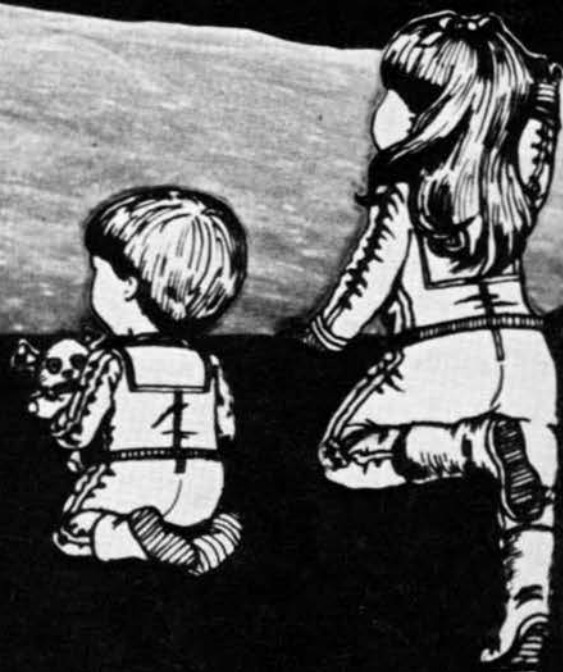


L5 NEWS

December 1979



**L-5 in Transition
Moon Treaty Update**

L-5 NEWS

A PUBLICATION OF THE L-5 SOCIETY

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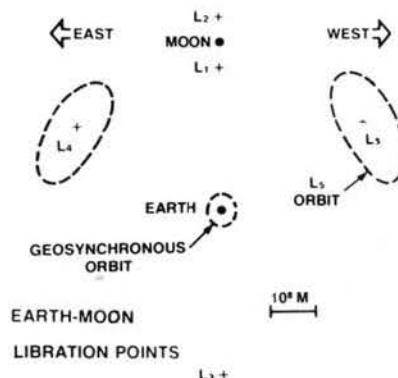
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The L-5 Society was formed in September 1975 with the purpose of promoting space development in governmental, industrial and private sectors. L-5 is the abbreviation for the Lagrange libration point number five (see diagram to the left), a proposed site for the final meeting of the L-5 Society before the turn of the century.

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The President's Column

This issue of the **L-5 News** marks an historic occasion; for the first time in the history of the Society, the last name of the President starts with a D and not an H! For those of you not already aware of it, let me relay that our most beloved former President, Carolyn Henson, is about to bring forth into our world another future space colonist! Physical and emotional strains placed on Carolyn by her many activities and involvements led to the most difficult of decisions: not to seek the office of President again this term. Keith, the other half of this dynamic duo responsible for the very existence of our Society, felt the responsibilities of the pending birth, his research in space manufacturing and the time-consuming fight against the deplorable Moon Treaty made his assumption of the President's role impossible. It was a great honor for me to be asked to assume the responsibilities associated with this post and a challenge of the first magnitude considering my strong belief in the importance of the Society in the future of world affairs. If that piece of rhetoric surprises you, then read on and hopefully you will see where I am coming from.

First, let me digress for a moment and express a few thoughts relative to the positions to be occupied by Carolyn and Keith in the history of universal humanity. The Hensons and I were present at the dinner gathering at Princeton University in May of 1975 when several people came to the open microphone provided for general comment and expressed the need for an organization, something to bind those of like mind and purpose. I wanted to coordinate research; others wanted a conduit for information on developments in space colonization; still others wanted information on productive political action. Keith and Carolyn Henson took it as a challenge of significance so great as to permeate their very existence. Money earmarked for personal belongings such as furniture and automobile repair and purchase was expended on creating and nurturing the L-5 Society. Personal sacrifices of long hours spent at nights and on weekends working on correspondence and getting the early versions of the **News** out (never missing an issue and always on time, by the way) were recognized by only a few. Then there were the massive telephoning campaigns to try to raise enough money to cover some key congressional

hearing or support the fight against an unfortunate stand or action taken by those ignorant of our goals and purpose. Many questioned their tactics, some questioned their motivations; but no one has ever questioned their dedication and hard work. And history will record that they accomplished something unique in the history of humankind; they created an organization whose membership cuts through all boundaries and represents all walks and bents. The petty differences that spring up between factions in a closed

Dear Gerry,

Congratulations on your election to the Presidency of the L-5 Society. It was an excellent choice on the part of the Society's Board of Directors.

You and I have had a number of opportunities during the past five years to work closely together, and on those occasions your technical expertise, your good judgment, and your ability to work smoothly and cooperatively have all been very much in evidence. Those qualities will all help now to bring the Space Studies Institute and the L-5 Society closer together, an evolution that is to be welcomed. As you know, the Institute is dedicated to the support of vital research into space manufacturing and the human movement into space.

With all good wishes,

Sincerely,

Gerard K. O'Neill

Professor of Physics

Princeton University

President, Space Studies Institute

system are as common and natural as birth and death in the universe. In environment, energy, education, resources, government, and other fields we have witnessed the growth of an ever expanding number of individual viewpoints and their attendant organization. I suspect, from my wanderings and meetings with people, that there are a large number of these viewpoints represented within our Society, in peaceful coexistence with diametrically opposed views. Why? Because they all recognize one indisputable fact; humanity must have an open system, one that allows, indeed one that *promotes* human freedom. And again, Carolyn and Keith are at the forefront, fighting a proposed treaty that



New L-5 President Gerald Driggers

for all intents and purposes outlaws individual self-determination beyond the near orbits of the Earth.

Now I am to be given an opportunity to do what I wanted; to coordinate and encourage research and promotion of the humanization of space. I accept my nomination by Carolyn Henson, Peter Vajk and Mark Hopkins and my selection by the Board of Directors as a mandate to act upon this opportunity. Thus at this point I will turn my attention to the future in this first of an open-ended series of monthly columns by the President of the Society.

Within our Society today are the seeds of the greatest organization in history. Why? Because we offer hope; hope for a bright future for current and succeeding generations; hope for beneficial growth in freedom, wealth, harmony, health and joy. Are these the words of the quiet, technical, pragmatic (indeed *DULL*) Gerald Driggers known to many of you? Yes, they are. And because I have been technical and pragmatic for almost 12 years these comments are not loosely made or simply articles of faith. For 11 years I have examined the justifications for a United States space program within the context of all the common buzz words such as "spin-off," cost-benefit, technology drivers, foreign competition and public services. These are all terribly important and form a large part of the justification sought; but, although they are necessary, they are not of

themselves sufficient. The key missing elements in this panoply are the "simple" human values: hope, freedom, health, harmony, joy and, indeed, faith. These concepts encompass the fundamental motivations for new frontiers and exploration; the need for an open system instead of a closed one; the necessities of individuality. We have spent 10 years addressing ourselves to the wealth and economics issues, with token attention to the real forcing functions of civilization's advance. Don't get me wrong; economics are an absolutely essential element of humanity's expansion into the universe, but that is not really why we are *interested*, and in future issues of the **News** this concept will be considered in substantial detail.

So, where does all this bring us? Well, first, for those of you who have feared that a technologist at the helm might negate consideration of other issues, be at ease. The L-5 Society is an organization of the whole, literally and figuratively. And that is why we can become the greatest organization in human history. We allow for all aspects of the human interest in the establishment of humankind's first permanent foothold in space. We are an organization of the people and our voice will be viewed by those in authority as the responsible expression of the public will, not the "expected" pronouncements of special interest groups such as the aerospace industry. This is a grave responsibility we carry and much work will be required before we are worthy and capable of exercising it to its fullest. In some quarters our Society is viewed as a reactionary group to be scorned and avoided; in others it is regarded as simply a nuisance. To some we will always be these things and the steps necessary to overcome such mindsets would surely destroy us. In many important sectors, however, we are viewed as the necessary cutting edge of space goal planning, and as a potential political force of significance. Through the coming months and years we will be striving to minimize the former views and accentuate the latter.

Here, in the broadest terms, is how I hope, in close cooperation with the Board of Directors, to achieve these expectations.

First, we are going to establish the goals of the Society in the long range and near term in a fashion which allows focus for activity and advocacy. However, the establishment of these goals requires that the Society have a clearly defined statement of purpose which may be composed of a single or several purposes.

Every member of the Society should participate in this activity by sending in no more than *three* double-spaced typewritten or six handwritten pages to our Tucson

office to arrive before the end of January expressing your views on Society goals. Please understand that such limits are necessary to make this a feasible project in an organization of over 3000 people. After review of the input and Board action the results of the survey will be published in the **News**. This activity will also form the basis for much of our future action within the Society, so speak now!

Secondly, we are going to put everybody to work who wishes to work for the accomplishment of the stated goals. All interests will be represented and projects suitable for individual, group and Chapter action will be available. *This will not happen overnight.* Some projects of significance are already coming into existence such as the **Textbook Project** discussed elsewhere in this issue. Others will evolve in the relatively near future. The fully organized slate of activities will take months to bring into existence. So, my next request from each of you is a proposal on what you or your group would like to do or see done as a Society project over the next one to three years. Now again the necessary limitation: do not exceed one half typewritten page per proposal (or one handwritten page), or we simply will not be able to deal with the volume. Don't kid yourself that every proposed project is going to be acceptable within the goals of, or constraints on, the Society, which are more numerous than is generally realized. However, when projects are selected for general Society sponsorship, those individuals or groups most closely attuned in their response to certain actions will be looked to first as active participants. This is a very large undertaking and will take time to implement, so please be patient. Progress will be reported regularly.

Third, I am going to be working closely with the leadership of other societies which have some overlapping interest with us, both related to space specifically and our goals in general. It is likely that a variety of educational institutions and groups will fall into this latter category, for example. These efforts will be directed toward building our image and influence in a constructive manner. Joint conferences and projects around the country are activities which intuitively can be undertaken at every level of the Society with very positive results. Information on how to approach organizing and executing such joint activities will be made available over the next few months.

Fourth, the bylaws of the Society will be revised as has been previously planned. The Bylaws Committee is already in existence and active. Progress in this area will be reported in the **News** as developments take place.

Fifth, a membership campaign to promote the growth of the Society and its influence is going to be instituted. This will hopefully occur in the spring after deliberation over goals and bylaws is complete or near-complete. Hopefully, this campaign can be conducted in conjunction with projects undertaken within the Society or in cooperation with other organizations. It is imperative to the health and vitality of the Society that it grow steadily over the next few years. It is also, I believe, important to the future of the United States and the world that we grow, in order that the message of a hopeful future can be spread and key

Friends Reflect on the Presidency

Stuart Brand, Editor, **CoEvolution Quarterly**

To me, the Hensons' forming the L-5 Society was an enormous relief. It let me point the people asking about space colonies at someone else. The L-5 Society gave people a place to go who were excited about space, one that gave something back if you got involved.



Charles Sheffield, President, American Astronautical Society

Carolyn seemed able to work at Society matters when surrounded by things that would stop me completely. Working with a telephone in one hand, a nursing baby in another, while writing with a third, and somehow running a household is an impressive juggling act. As a society's president I know that getting hundreds of people active enough to write their congressmen and stuff envelopes is an enormous task. A society absolutely has to have someone like Carolyn to get people involved and keep them in tune.



Richard Johnson, Administrator, 1975 NASA/Ames Summer Study on Space Colonization

They (the Hensons) were extremely dynamic and politically savvy in forwarding L-5 goals. They served not only L-5 but everyone's interests in space as well. I have been very impressed.



Philip K. Chapman, scientist and former astronaut

And the space colony movement was without form and void. And Keith and Carolyn said, "Let there be L-5." And there was L-5. And they saw it was good. — I would hope that the end of the Henson presidency does not mean the end of Henson influence within the Society.

influences can be exerted. I believe a reasonable goal can be to increase our membership at a rate such that our Society doubles in size at least once per year. A shorter doubling time is achievable and desirable. A grassroots organization such as ours can command considerable attention during the 1984 election year if we start work now. We have the basic knowledge and tools to insure that the Orwellian '84 never comes to pass and the next five years provides us with our opportunity to use these tools.

Sixth, the L-5 News will be undergoing certain changes as yet unspecified. The News has been noted in the past for its high quality in articles and reporting and this tradition will be continued. It appears, however, that the opportunity to expand our circulation may present itself soon and it would be desirable to look at what options are available in format and content which would promote that expansion.

So, there are my six opening shots. New initiatives will evolve as I become more knowledgeable of the workings of the Society and the desires of the membership. Additionally, I plan to be constantly seeking new avenues by which the goals of the Society can be brought closer by action on our part. During the next few months I will be visiting as many Chapters as time and resources will allow so that we may meet and exchange ideas on a personal basis. The Society is entering a stage of maturity which will allow it to provide new services and challenges to the membership, manifested as both tools and direction for constructive action. Progress will appear painstakingly slow over the next few months as I work with the Board and several Society members to develop plans, then turn those plans into action, but I honestly believe the results will be worth the wait as we see our accomplishments and strength grow over the next several years.

A cliché of the Sixties was "Keep the faith, Baby" and we need to embrace that one just a little bit longer. But maybe there are a few clichés or slogans or something we can adopt in a few months which will be more timely and more expressive of our positive approach and goals, something like "New worlds in space mean new worlds on Earth" or "Have you seen the Whole Universe Catalog?" or "New Worlds in our lifetime." Well, you get the idea. Let us hear from you on such things after the work on goals is accomplished.

Procedurally, the address of the Tucson office is unchanged and all of the input requested above should be sent to that address for distribution to me or whomever is involved in helping to evaluate your comments and suggestions.

Let me reiterate that I consider this one of the greatest opportunities ever presented to anyone, to be asked to lead a truly dedicated organization into what will very possibly be the most challenging decade in the history of the United States. More about that in a future column. I pledge each of you my support and dedication and ask the same in return. If we pool our resources we will not simply reach for the stars, we will touch them.

Gerald Driggers, President, L-5 Society

A MESSAGE FROM THE EX-PRESIDENT

Last spring, when I realized a fourth little Henson was on its way, I appealed to the L-5 Board to help locate a non-Henson President. At first they didn't take me too seriously. After all, if I can diaper a baby while fielding a radio interview over the phone while signing a stack of thank-you letters, then all I have to do to cope with another baby is grow an extra arm, right?

Seriously, though, my husband Keith (the first L-5 President) and I handed the L-5 Board a tough job. It's not surprising that it took seven months and a close brush with the stork to come up with Gerry Driggers. Consider the qualifications demanded by Board members and the local chapters with which they consulted. When their requests were all added up, it turned out we were searching for someone with the brain of Einstein, the tact of Henry Kissinger, the sense of humor of Will Rogers and the hide of an alligator. And what could L-5 offer in return? Endless hard work, harassment by kooks and con artists, responsibility for getting the L-5 News out on time and answering zillions of letters and phone calls — and a chance to make history. To make a real difference in when, and how, we reach into space.

Thank heavens Gerry Driggers accepted that challenge! Besides filling the above qualifications he has worked in the aerospace field for 14 years and written over 25 technical articles. He was active in the '75, '76, and '77 Summer Studies on space settlements and a participant in a 1978 NASA space industrialization study. Insiders at Johnson Space Center call him "a national resource."

Keith and I continue to work on L-5's behalf on the Moon Treaty fight. For the most up-to-date information on the Moon Treaty and how you can help beat it, call Keith or myself at (602) 622-8520.

The best way you can show appreciation for the work Keith and I have put into L-5 over the last four and a half years is to give Gerry Driggers your wholehearted support. He can only accomplish our goal,

the large-scale industrialization and settlement of space, by enlisting the efforts of thousands of people. Working together we shall set the course of history. Reach for the stars!

Carolyn Henson

More On Lightsails

From T.A. Heppenheimer, the L-5 News received some cautions regarding Eric Drexler's lightsail concept:


"I would like to comment on the publicity which recent issues have given to the speculations attributed to Eric Drexler, which hold that we will be able to build solar sails of particularly advanced design and performance. To quote from the May issue, 'This sail might be developed with an investment as low as \$100 million.'

"In the case of these advanced solar sails, we have the speculation that they will be possible, but any estimate of developmental times or costs will be premature for a long time. We still are far from understanding their feasibility, and no one has sought or found the difficult parts of the problem, in seeking their use. In fact, all we have in that matter are some tiny samples of thin-film aluminum which allegedly are suitable for the sails."

NASA's Robert Frosch replied to these reservations and indicated the state of the agency's interest in lightsails in the following letter to the L-5 president:

"Along with a number of other people, I learned about the high-performance solar sail concept from Eric Drexler during a recent meeting at Woods Hole as noted in your letter dated June 21, 1979. Since the purpose of this meeting was to expose and discuss novel ideas for space systems and missions, Mr. Drexler's presentation was most appropriate for the occasion.

"The consensus of those present was that the high-performance sail is quite interesting and deserves more study in accord with the suggestion made by Mr. Drexler that his work should be given a rigorous review by competent specialists. NASA will conduct some form of a review, but we have not yet settled on any specific plans.

"The subject of development costs referred to in T.A. Heppenheimer's letter to the L-5 Society News was not discussed in any depth at Woods Hole. It is my impression that Mr. Drexler used some rules of thumb for making an estimate and would not claim to have made a detailed analysis of costs. I agree with Dr. Heppenheimer, however, that citing costs for a concept for which there is no comparable prior experience and so little knowledge is premature and, I might add, risky and unnecessary." 

Learning to Make the System Work for Us: Boston L-5 Lobbies in Washington

by Chris Peterson

The call came from Carolyn Henson in Tucson: "Manpower needed in Washington, DC, at the end of October to fight the Moon Treaty!" Marcia Allen, New England L-5 President, and Eric Drexler, National Director, L-5 Society, responded by organizing a small band of L-5 activists which included Jim Mabry, Spike MacPhee, Kelly Cyr, Kevin Johnson and Christine Peterson.

We gathered for a briefing at the office of the prestigious law firm Dickstein, Shapiro and Morin. The Boston group was joined by three Washington area L-5ers: Ken McCormick (L-5's "Man in Washington"), Gary Oleson and Alex Mackay-Smith. Three staff members from the law firm were present to assist, and the briefing was given by Leigh Ratiner, a partner in the firm.



Attorney Leigh Ratiner

What followed was a five-hour crash course with no breaks on how to lobby against the treaty. I wrote frantically the whole time and have 11 pages of notes. It was clear that an immense amount of preparation had gone into this meeting. Mr. Ratiner appeared to have examined the issue from almost every possible viewpoint, and to have prepared answers to every question. His task that evening was formidable: to turn a group of well-meaning, but largely inexperienced, L-5ers into an effective lobbying force. His topic: our goals for the two days we would be in town and how to achieve those goals.

Our job was three-fold:

1. Persuade Senator Frank Church, Chairman of the Senate Foreign Relations

Committee, to send a letter to the Secretary of State urging him *not* to permit US signature on the treaty before hearings could be held;

2. Persuade Representative Don Fuqua of Florida to introduce a resolution in the House condemning the treaty;

3. Persuade Representative Larry Winn of Kansas *not* to give a pro-treaty speech at the UN on Wednesday, October 31.

First we had to learn more about the treaty. Besides the five hour talk, Mr. Ratiner had prepared information packets for the legislators and a list of suggested answers to tough questions like "If the treaty's so bad, how did it get this far?" We were asked to study this material Sunday night in spite of our fatigue.

For the next two days our group, split up into teams of two or three, and guided by Leslie Rubin and Lynn Hicks of Dickstein, Shapiro and Morin visited the offices of various congressmen and talked with their staff. Our targets were the members of the Senate Foreign Relations Committee, the Senate Commerce, Science and Transportation Committee, and the House Science and Technology Committee. We had been warned to keep our presentations to the staffers down to one minute because they all were very busy with other priorities and wouldn't have time to listen any longer. We were also warned to expect the response: "The *What Treaty?*?"

Imagine our surprise to find that the staffers, albeit not yet informed, were generally interested in what we had to say. Rarely did we come across one who would give us only a minute, and usually they appeared to do so *only* because they were truly very busy. (We were there during frantic work on SALT II.) My group ran across only one staffer who thought the treaty was a good one. We left most staffers interested but uncommitted, as well they might be, since the only information they had on the treaty was what we had given them. Many were able to make tentative decisions on the spot and made offers of help ranging from names of others to contact to an offer to have a Senator send a letter to all the others giving our point of view. In a few cases we were given up to an hour to make our case!

Our topic was far easier to introduce on the second day because Mr. Ratiner's efforts to get our cause into the **Washington Post** had been successful. Headlined "Would-Be Space Colonists Lead Fight Against Moon Treaty," it consisted of over 20 column inches at the top of page three which were quite favorable to the L-5 Society. We found only one staffer who hadn't seen the article; evidently everyone on Capital Hill reads "The Paper." Also on Tuesday, Mr. Ratiner appeared on an all-news radio station interview in which the interviewer obviously sympathized with our position on the Treaty.

Our results were very positive. Senators Church and Javits signed the letter to the Secretary of State asking him not to have our UN delegate sign the treaty yet. (See article in this issue.) We have the great satisfaction of knowing that the letter is an important accomplishment of permanent political significance which will affect all future negotiations and any potential battles over ratification. Besides that, Representative Winn did not give a talk to the UN on the treaty. As we left, the House resolution condemning the treaty was still up in the air. In short, our trip was *highly* successful, *far* more so than we had expected.

How could such a small group accomplish so much so quickly? The credit for this goes *entirely* to Leigh Ratiner and his staff. Without him, we would have bumbled around for two days saying the wrong things to the wrong people and accomplishing nothing. I cannot exaggerate the value of his efforts and experience to the Treaty fight and to the L-5 Society in general. However, these efforts do not come free of charge. Mr. Ratiner is a professional lawyer and lobbyist. In addition, we have had the benefits of associating with his firm, Dickstein, Shapiro and Morin: the staff's guidance on the Hill, their research, preparation of the information packets, and their fielding of questions from the congressmen. We found that the appearance of Dickstein, Shapiro and Morin on our letterhead as "Counsel and Washington Representative" immediately established L-5's credibility in Washington and dispelled any

notion that we were crazies.

L-5 members owe two debts to Mr. Ratiner and his firm—a debt of gratitude of the kind we owe any very active and effective force on our behalf, and a monetary debt for their services. I believe there is no better way to repay the former than to dedicate ourselves to payment of the latter. Mr. Ratiner is worth every penny we pay him. Fund raising for this purpose should be a top priority for L-5ers.

What is the next step in fighting the Treaty? It depends on whether or not the

US signs it at the UN. If it does, we will have to fight against Senate ratification. If not, we will try to have it sent back to the UN committee for re-negotiation, the ideal situation from our point of view. We must be ready to respond quickly to calls from Mr. Ratiner and National L-5 Headquarters for letters, telegrams and trips to Washington. It's fun to be on the winning side of a fight in Washington, and helping the L-5 Society establish a reputation as "the group that defeated the Moon Treaty" brings our ultimate goals that much closer.

true of the draft Moon treaty. Our basic freedoms in space, including on the Moon and other celestial bodies, are already protected in the Outer Space Treaty of 1967. That document also prohibits territorial or sovereign claims in outer space. Any refinements to these principles contained in the draft Moon agreement seem insignificant in comparison to the risk to our future economic interests contained in the treaty's provisions on resources.

We are concerned that the draft Moon treaty could, over the long term, be harmful to our national security interests in two ways. First, it is impossible today to predict what future economic uses might be required of lunar and celestial resources. Yet, the treaty does not even define the term "natural resources," and the scope of the term as used is so broad as to permit arguments that it covers the atmosphere surrounding the Moon and the planets, and even the Sun's energy.

Second, the draft Moon treaty's provisions on resources could disadvantage the United States to the benefit of the Soviet Union—which may be the reason the Soviets first proposed such a treaty on the Moon. In this and similar forums, it has been the apparent objective of the Soviets to erect barriers to free enterprise development of important resources. While they were unable to achieve in the Moon treaty the moratorium they initially sought on resource-related activities in outer space, they did achieve a deterrent almost as effective—a commitment to negotiate a subsequent resource regime that could serve as a practical moratorium on private investment in the interim period. (This *de facto* moratorium is probably inevitable, even if the United States successfully preserves its legal position that the draft Moon treaty establishes no moratorium on commercial exploitation.) The end result is that the Soviets can move forward in the area of resource development at their own pace under the guise of scientific investigation, with no fear of significant competition from the West, which must rely on its industry to provide commercial initiative. Seen from a long-term geopolitical perspective, we believe this outcome could be damaging to fundamental American security requirements.

For all of the above reasons, we urge that the United States Delegation take no action during this General Assembly to further commit the United States to the draft Moon agreement. Indeed, we hope that the treaty will be returned to the Committee on the Peaceful Uses of Outer Space and not opened for state signature until revised.



Letter to the Secretary of State

The following letter from Senator Frank Church of Idaho and Senator Jacob Javits of New York, respectively the chairman and ranking minority member of the Senate Foreign Relations Committee, to Cyrus Vance, the Secretary of State, demonstrates two things. Prominent People share our concerns about the Moon Treaty, and L-5 members have been effective in getting their congressmen to express their concern. Our sincere thanks go to L-5 members in Idaho and New York who wrote their senators.

Regardless of your state of residence, a short note of thanks to the Senators would be appropriate. Write: Senate Office Building, Washington, DC 20510

Keith Henson

Dear Mr. Secretary:

We are concerned that the United States has apparently concurred in the decision of the UN Committee on the Peaceful Uses of Outer Space to approve the text of a draft treaty on the Moon and other celestial bodies. There are several aspects of this draft agreement which could prove damaging to our national economic and security interests, and we urge you to instruct the United States Delegation to the 34th UNGA not to support the opening of this treaty for signature as presently drafted.

The provisions of the so-called "Moon Treaty" borrow heavily from the Third UN Law of the Sea Conference. Of particular significance is the provision (Article XI) declaring the Moon and its resources, as well as all other celestial bodies in our solar system, to be the "common heritage of mankind." When the United States first agreed in a 1970 UN General Assembly resolution that deep seabed resources were the "common heritage of mankind," the phrase had no independent legal meaning. The United States position was that the phrase could only be given operative meaning through further negotiations on a legal regime for the exploitation of the seabed. Even then,

developing countries claimed that "common heritage" was synonymous with "common property" so that the resources of the seabed could not be exploited by any one country or its nationals without the consent of the rest of the world.

After a decade of negotiation at the Law of the Sea Conference, the set of draft treaty articles now before the Conference sets forth an interpretation of the "common heritage" which does not conform to the national interests of the United States or of other countries with free enterprise/free market economies, particularly as they relate to such matters as production limitations, technology transfer, dispute settlement and competition with the proposed international "Enterprise." Furthermore, the formula for control of the International Authority to regulate seabed mining does not provide adequate protection for developed countries in general and the United States in particular.

We realize that the United States has taken positions in opposition to most of the objectionable portions of this text, but we remain skeptical of further efforts to extend the concept of the common heritage when the understanding of this principle on the part of many countries of the world is so contrary to our own interests. In this regard, suggestions by some participants in the LOS negotiations that Antarctica also be declared the common heritage of mankind are indications of the general trend we are confronting in international forums.

Even if the United States eventually decides not to sign—or the Senate decides not to ratify—a Law of the Sea Treaty with objectionable provisions on the deep seabed, we are concerned that the LOS negotiations could create an irrebuttable precedent for the control of all resources in non-state areas. Furthermore, while the Law of the Sea Treaty may provide protection for a number of important national interests which are unrelated to resources, the same does not appear to be

METALAW AND THE MOON

by Arel Lucas



—Photo by Bob Clark

Gene Roddenberry jokes with fans after speech at Space Law Symposium.

Predicting that "we're about to break away from this ancestral egg we call Earth," author and producer Gene Roddenberry closed a two-day symposium on space law held at Rockwell International's Downey facility on October 27 and 28. Roddenberry's speech, in which he also stated that "this universe of ours may be a gigantic consciousness and intelligence-producing machine," was markedly different from the often closely reasoned arguments and carefully prepared historical and political presentations of the other speakers. The symposium's director, Professor Harold White of Western State University, indicated something of the meeting's importance when he privately noted that he had "lower level inquiries from most of the presidential candidates" for copies of the symposium transcript. Sponsors of "Instituting the Final Frontier: A National Symposium on the Impact of Outer Space Activity on Law and Public Policy" were the National Space Institute, the Los Angeles County Bar Association's Section of Science and Technology and its Committee on Aviation and Aerospace, The American Society of International Law, and the American Institute of Aeronautics and Astronautics (Los Angeles and Orange County Chapters).

The 60-75 delegates in attendance heard several speakers, including California Energy Commission advisor Dan Richards, who was formerly Deputy Assistant for Science and Technology to California's Governor Jerry Brown, emphasize the immediate and long-term benefits of space development during the Saturday session. Richards, a late addition to the agenda, mentioned the various public space programs currently under consideration. These include Governor Brown's proposed 40% increase in the NASA budget, and goals which encompass a permanent manned space station with seven years to investigate metallurgy and pharmaceutical processing; Senator Harrison Schmitt's

innovative ideas, which extend to a colony on Mars; and Senator Adlai Stevenson, Jr., who advocates, among other things, a type of space industrialization corporation. Richards noted that 450,000 jobs in California are directly tied to aerospace and electronics, amounting to \$8-10 billion in goods and services, and that California has ridden the dips and swells of inflation better than the rest of the country. The implication is that a "healthy aerospace industry is the best protection from the recessionary forces that rip the nation from time to time." As an example of what could be done to boost the aerospace industry, he presented an overview of the Syncom satellite program developed by Hughes in 1978 which the California administration had proposed for a "free ride" on the sixth flight of the Space Shuttle. "High technology," Richards affirmed, "results in lower costs."

National Space Institute Executive Director, attorney Charles Hewitt, also addressed the question of how the exploitation of energy and materials in space can be expected to generate value during his statement of the NSI's program now being presented to the government. The audience, seated almost under a full-scale mock-up of the Space Shuttle Orbiter, heard Hewitt outline the NSI's platform, which emphasizes "the creation of wealth vs. the organization of scarcity" and focuses on Earth-oriented services in order to rally support for the peaceful uses of space.

Assistant General Counsel to NASA Gerald Mossinghoff answered anticipated questions about the Space Shuttle, including a brief explanation of the present and past hold-ups to the Shuttle schedule. He mentioned a fuel valve failure, the "substantial open work" needing to be done on the orbiter *Columbia* when it was delivered, and a schedule slip on the production of the external tank, as well as the installation of the thermal protection sys-

tem (now back on target after falling behind earlier in the year) as being the major problems. Mossinghoff reiterated a March 30, 1980, launch even while reporting on skepticism among both NASA and industry officials about this date.

Mossinghoff's speech included remarks about NASA's attempt to indemnify its payload customers and other legal matters. When questioned about organizational changes at NASA, he replied that since the functions of space transportation, acquisition and flight of the Shuttle have been separated from Shuttle operations, NASA is looking for a new staff member. NASA administrator Dr. Frosch says that is the only management change he wants at present. Mossinghoff admitted, however, that "far-term" plans (after January 1980) were not included in his statement and that the only goal foreseeable is the "smooth-running weekly launch of the Shuttle."

The most lively discussions were over the draft Moon Treaty, which roused tempers on either side. Both positions were well represented on the panel of speakers. Dr. Carl Christol, Professor of International Law and Political Science at the University of Southern California took the "pro" position, and Dr. George Robinson, Assistant General Counsel for the Smithsonian Air and Space Museum the opposition.

A healthy aerospace industry is the best protection from the recessionary forces that rip the nation from time to time.

Dr. Robinson is an expert on "biojuridics," the legalities surrounding taxonomic discrepancies in human species. He spoke three times to the assembly, leaning heavily on L-5 lobbyist Leigh Ratiner's public presentations for his comments on the proposed treaty. Objecting to the language in the draft treaty, Robinson claimed that "the only real incentive for the United States to sign it would be basically for military purposes" since (referring to the Article XI "moratorium") the terms would deter any significant investment. "What business managers," he asked, "would invest in that kind of an enterprise?" Urging the California Bar to work to defeat the measure, Robinson said that the treaty's proponents are confusing methodology and concepts. Robinson's most interesting point about the treaty was the idea of "spacekind vs. earthkind" upon which he elaborated.

Robinson is the author of two books on the future of man in space: **Living in Outer Space**, Washington, DC, The Public Affairs Press, 1975; and **Space Trek: The Endless Migration** with Jerry Glenn,

Harrisburg, PA, Stackpole Press, 1978. His major argument concerns his contention that *Homo sapiens* will change so significantly in space as to constitute a separate species. Dubbing this new entity "Homo spaciens" or "spacekind," he claimed that *Homo sapiens* has no right to legislate for another species and that present trends in policy making will only result in the same sorts of colony vs. colonial power conflicts which American history already reflects. Calling for broader perspectives in space legislation, Robinson suggested that the draft Moon Treaty be shelved or sent back to the UN for further work, emphasizing that he did see the need for some sort of legal background to space exploitation. When asked if he expected the Senate to ratify the treaty, Robinson said no.

Dr. Christol, on the other hand, based his arguments exclusively on legal points and an attack on Ratiner as an advocate of mining interests. Denying that such a thing as a moratorium exists in the language of the proposed treaty Christol nevertheless agreed with Robinson that there are no provisions for a regulatory body to be set up until after exploitation has begun. Christol apparently saw no

disadvantage to this procedure, even implying that it might be favorable. Christol's lengthy discussion made it clear that it was his opinion that there would be no discrimination against or for Western or Third World Countries, that there were no disincentives to space industrialization, and that Ratiner was using "private enterprise" as a "buzzword" to frighten and arouse people.

Christol also was very definite about the provisions respecting private property in space, his statements essentially agreeing with Ratiner's and Robinson's that the proposed treaty provides that there shall be no private property of states or individuals on any celestial body. He emphasized, however, that although the language was very explicit it specified only "in situ" property as being "common heritage of mankind" and argued that once resources were removed they became like fish removed from a stream, the property of the resource user. His remarks also indicated that orbits around celestial bodies were also to be considered "common heritage," but he did not address the question of homesteading, which is obviously barred by these provisions.

White closed the arguments by won-

dering "whether or not we want to pass the treaty when we don't know what the complexion of the international regulating authority will be. It had always been a position of the negotiating team that we wouldn't okay this treaty until we knew what the complexion of the international regulating authority would be . . . The President has not decided to recommend the treaty to the Senate although he acquiesced in the consensus process" of treaty negotiation.

Those who had come out on this sunny Sunday and sat through purely legal discussions mainly to hear Roddenberry were rewarded by a humorous, witty and imaginative discourse on "Metalaw: Context and Conclusions." Roddenberry proposed that terrestrial laws, and the quibbling and lawbreaking associated with them, be left on Earth and a new discipline, "metalaw," be invented and applied to celestial bodies. Emphasizing freedom and tolerance, metalaw would abolish boundaries, assert equal rights and carry humankind to the Stars. Roddenberry also included a few words on his new movie, "Star Trek," which he said will premiere in Washington, DC, on December 6.

Ratiner Attacks Treaty

by Arel Lucas

Aerospace Industries Association committee members heard an eloquent plea from L-5 lobbyist attorney Leigh Ratiner to stop the proposed UN "Draft Moon Treaty." The October 26 speech was given before a sympathetic audience of representatives from aerospace firms who met on the second morning of a two-day AIA meeting at Los Angeles' Airport Marina Hotel. Considering the hour—7:30 a.m.—the speech was well attended by about half the 48 representatives. Ratiner handed out both a "special report and analysis" of his own and copies of the November OMNI magazine editorial in opposition to the proposed treaty.

Ratiner's remarks focused on the similarities between the proposed treaty and the "Law of the Sea" treaty. He commented on the implications of the terms "common heritage" and "rational management" and the fact that "celestial body" is not defined by the proposed treaty. He also attacked the "moratorium" which he argued would be imposed by the ambiguous phrases which describe the setting up of a future regulatory body.

According to Ratiner, "common heritage" is usually read as "common

property," and this and the lack of specifics as to what "rational management" might be will discourage industry, who "won't put money into the commercial use of outer space." He also said that the language requiring signatories to "negotiate a regulatory regime . . . can clearly be read to prohibit exploitation before international agreement is reached," thus effecting a moratorium without declaring one. Ratiner pointed out that industrial management is reluctant enough already to invest in space without further disincentive.

Another argument Ratiner presented which is not related to the actual proposed treaty itself regards a precedent set by former Secretary William Simon during negotiations for the "Law of the Sea." Ratiner said that, because of opposition from Simon's department, tax credit for seabed exploitation is disallowed, although such exploitation is internationally taxed. The attorney expected the same policy to apply to commercial uses of space.

Accusing NASA officials of saying, "It's just off in the future; it doesn't really matter," Ratiner pronounced the proposed

treaty "offensive to everything good about our system," placing "a lid," "an Iron Curtain around the Earth." While admitting that even if the treaty is signed and ratified "the US Government may well be able to muscle its way into the system," he urged that the treaty be stopped now in order to avoid a ratification fight and subsequent complications. Ratiner revealed to the group his political maneuvers to have the President's consent to sign the treaty withdrawn. He claimed he had indications from the *Washington Post* and the *Journal of Commerce* that they were in opposition to the proposed treaty, and hoped to interest the *New York Times* and the *Wall Street Journal* in the fight.

Members of the group, including chairman Jim Greenwood of Learjet who introduced Ratiner and thanked him for his presentation, were attentive. Many took notes and seemed to be in general agreement with his opposition to the proposed treaty. However, they pointed out privately that no AIA action could be taken without going through the channels of advice and consent to the AIA official governing body.



Proxmire's Waterloo?

President Carter's Office of Management and Budget cut \$208,200,000 from NASA's request for Research and Development funding for fiscal year 1980. Rep. Boland's House Appropriations Subcommittee cut an additional \$23,000,000 from the R&D budget. But Senator William Proxmire wasn't satisfied that enough had been done to curb federal spending. When the NASA budget was marked up in his Subcommittee on HUD - Independent Agencies, he moved to cut \$138,400,000 from NASA R&D. And he might have succeeded, had it not been for a save-NASA campaign by Senators Charles Mathias and Jack Schmitt.

As the ranking minority member of the Senate subcommittee, Mathias has been the principal defender there of the NASA budget for several years. This year, he has been joined by the dynamic senator from New Mexico. Schmitt's scientific training and experience as an Apollo 17 astronaut have provided him with a technical expertise which Mathias has found invaluable. Despite Proxmire's powerful position as Subcommittee Chairman, the Schmitt-Mathias combination proved too much for him this year.

Proxmire's main targets were the Galileo Jupiter orbiter and probe and the Large Space Telescope. His proposed \$83 million reduction of the \$116 million FY 1980 allotment for Galileo would have crippled that program, and in the opinion of one Mathias aide, Proxmire would have moved to entirely kill Galileo next year if he had been successful this year. The proposed \$25 million cut in the Large Space Telescope program was aimed at a one year stretch-out of the program. Mathias aides claim that a one year stretch-out of the program, although it would have reduced the federal budget by \$25 million this year, would have ultimately cost the taxpayers at least \$50 million extra, due to the costs of maintaining the program over a longer period of time. Proxmire would have also cut \$20 million for Space Shuttle thrust augmentation, \$8.4 million for aeronautical projects, and \$2 million for lunar sample analysis, leaving \$2 million in that program.

Proxmire had made it clear by his remarks in pre-mark-up hearings that he would move to cut the NASA budget, but the magnitude of the cuts he was to propose still came as something of a surprise. Schmitt and Mathias had been working steadily to line up votes behind

their own proposal for the NASA budget. When they learned the specifics of Proxmire's plan, just one day before the subcommittee mark-up of the Appropriations bill, they redoubled their efforts.

Budgeteer vs. Expansionist

Few senators have positions on any issue that stand in more diametric opposition than the Sens. Proxmire and Schmitt on the space program. The head-on collision of these two men in pre-mark-up hearings on the FY 1980 NASA budget provided some dialogue which illuminates, on the one hand, the attitude of Proxmire, the perennial budgeteer, and on the other hand, the expansionist philosophy of the former scientist-astronaut Schmitt.



Sen. Proxmire

—Photo by Charles Divine

Schmitt complained in his opening remarks that the President's budget request was insufficient to maintain U.S. leadership in space. "The President has failed," said Schmitt, "to meet his commitment that we as a nation are not going to minimize or decrease our commitment to space at all."

"I wish these kids would learn how to add and subtract and realize there are limits."

—Wm. Proxmire

"There is no clear commitment in this budget . . . to rapidly rebuild our technology foundations and the economy that goes with those foundations—the economy of the future."

"I am afraid that without absent appropriate congressional action to reverse the unfortunate trends present in this and other budgets, that this NASA budget

in particular would mark the beginning of an irreversible decline in this nation's development in space and aeronautics."

Proxmire: "This is going to be, I think, an interesting hearing. I am delighted that Sen. Schmitt has made the kind of statement he has, because it creates the conditions for the sharpest, clearest kind of disagreement. I couldn't disagree more with what the senator has said."

"I greatly respect Senator Schmitt. I serve with him on the Banking Committee. I know how diligent and intelligent he is. . . At the same time, I strongly feel that we have to hold down spending everywhere, with no exceptions. Everywhere!"

Schmitt: "Mr. Chairman . . . again, let me emphasize my agreement with the need for an austere budget. But my concern is that as we talk about austere budgets, we remove our capability to ever build deflationary pressures into our economy."

"If we keep deferring those kinds of actions, we are never going to get out of the woods."

"That is probably the basic disagreement that we have—how to both have an austere budget and also build in deflationary pressures for the future."

"I think we have to do both."

Proxmire: "Very good."

That was the last time in the hearings that the chairman was to find anything to be "very good." The debate grew increasingly acrimonious as the hearings ground on. Proxmire was to criticize virtually every NASA program in his questions to witnesses, and Schmitt was to counter each of Proxmire's criticisms through his own questions. At times, Proxmire's complaints took on a raving quality.

The Three R's vs. "Star Wars"

NASA provides, as a part of its public information program, summer employment for youths in space projects, "career days," "summer institutes," and lecturers and educational materials for schools. When Frosch described these activities, he excited Schmitt, who frequently expresses an interest in the nation's youth, and apparently also struck a sensitive nerve in Sen. Proxmire.

Schmitt: "Dr. Frosch, one of the great benefits of the space program to date has been the stimulation that it offers in sometimes very unforeseen ways to young people. I find, more now than ever before, as I go into the school systems of New Mexico and elsewhere in the country, that teachers are using space in some very

imaginative ways to teach a wide variety of subjects, not just space"

Proxmire: "Dr. Frosch, if NASA is responsible for what has happened to education in this country over the last 15 or 20 years, you have a lot to answer for. As you know, in every year since 1962 test scores have gone down, not up. It is getting to be a real problem."

"Our children are being distracted by all kinds of things, including programs like 'Battlestar Galactica' and 'Star Wars.' If we are going to bring into the classrooms things that are not as relevant as learning to read and write and add and subtract and do the simple kinds of work that are essential for an educated person, it seems to me we could be in trouble"

Frosch: "I think that what we are doing is giving teachers an opportunity to use the interest and enthusiasm of students for space as a motivation for understanding why they should pay attention to physics and chemistry and arithmetic. That is the way it is cast, not as a 'gee whiz' kind of thing"

Proxmire: "I hope they do their arithmetic to the extent of understanding the costs of the space program. I criticized the notion of having a capsule containing swimming pools, golf courses and a great suburban life rotating between Earth and the Moon. I got all kinds of irate letters from young people saying this is the best way we can spend our money. I wish these kids would learn how to add and subtract and realize there are limits."

"Even though these things are attractive and exciting, we have to have other priorities."

Schmitt: "You'd better start listening to the young people, Mr. Chairman."

Proxmire: "I listen to them. Sometimes I wish I didn't have to, but I do. They vote at 18 now."

Frosch: "I hope they don't get so concerned with adding and subtracting and multiplying and dividing that they forget to have a vision of the future as well."

Budget Cuts vs. Increases

The HUD - Independent Agencies Appropriations Bill mark-up session saw Proxmire and Schmitt at odds again. Proxmire examined each item of the bill with respect to whether or not its dollar level exceeded the FY 1979 level. This brought another mini-lecture on economics from Schmitt: "Mr. Chairman, I

hope that we can begin to draw some more subtle distinctions than whether just a dollar level goes over the budget or not, but actually look at what the different dollars do. I have tried to make that argument with respect to those expenditures which are inherently deflationary because they create new business services, versus those expenditures that are really inflationary."

Proxmire seemed not to have learned how the votes were stacked on the NASA budget issue until a brief recess for a floor vote just before the NASA budget was to be marked up. His earlier appearance of expecting a lively debate on the issue changed to a demeanor of resignation.



Sen. Schmitt

Faced with an overwhelming majority of votes against him, Proxmire could only listen ruefully as Mathias recited the terms of his proposal: full restoration of the \$23 million which the House had cut, with certain adjustments to the budget to provide for the initiation of the development of the National Oceanic Satellite System and the Multispectral Resources Sampler, both important remote sensing technology programs, and to provide increases in the funding levels of research programs—the Variable Cycle Engine program and Advanced Rotorcraft Technology—and an increase in NASA's energy technology identification and verification effort.

Proxmire tried to get a cut of the \$4 million addition to the Variable Cycle Engine Program, pleading that it must be an attempt to revive the Supersonic Transport. In response to the suggestion, Sen. Schmitt lectured Proxmire on aero-

nautic technology. He explained that VCE funding increases would provide a larger data base for understanding how advanced technology components can offer better performance with reduced noise and emissions. Further, he explained that the research is necessary if the U.S. is to retain its position in aeronautics technology.

Proxmire was forced to capitulate. Turning to Mathias, he said that he really could not agree at all with the amendment, but, he remarked, "I recognize that you have the power . . . and the glory . . ."

"Forever and ever," chimed in Senator Bayh.

Let's hope so.



Message From Mars

This year, don't give a gift to the person who "has everything." Instead, say "Merry Christmas!" to the Space Program. The inspiration for this gift suggestion comes from the Bay Area Chapter News, newsletter of the Richmond, CA, L-5.

The "Red Planet" of Mars has always intrigued Humankind. Your fascination began with Lowellian fables of canal building civilizations, and today you are frequently tantalized by the scientific mysteries revealed by the Viking spacecraft.

Three years after their arrival here, the Viking spacecraft are still transmitting valuable information back to Earth about Martian weather, "Marsquakes," and your search for life. The remaining orbiting spacecraft will run out of propellant in March of 1980, but the Viking landers will automatically continue to send back weekly bursts of data and pictures until 1987, and possibly beyond.

Whether Viking's Martian "telephone call" is answered by waiting earthbased receivers depends more on terrestrial politics than it does on events here on Mars. The funds required to receive, process and analyze Viking's data over the next seven years is pathetically small: approximately \$1 million for the total program. And the potential benefits are large; Viking's legacy will allow you to better plan for future manned and unmanned missions to Mars, thereby paving the way for a greater program of expanded planetary exploration at quite a reasonable cost. But because of funding difficulties it is by no means certain that

—Photo by Charles Divine

NASA will take advantage of this opportunity.

You do not have to rely on NASA, however. You can take the initiative. Here is your chance to have a voice in the determination of the space program. Rather than rely on notoriously fickle politicians for funds, you can help keep the huge radio dishes tracking Viking with your contributions.

You, the space enthusiasts of America and the World, can support Viking directly. Through your private donations the space program, and in particular Viking, can be kept alive. For example, if one million people such as yourself each contribute \$1, then Viking's signal will be answered for the next seven years. And if such funds are raised privately, Viking's signal will bring much more than scientific data to the halls of officialdom.

Private funding of Viking will be a graphic demonstration to Washington, D.C., of the immense public interest that exists in the space program; an interest that is presently ignored by the decision making powers.

Mail your contributions (minimum amount \$1—made payable to the Viking fund) to the VIKING FUND, P.O. BOX 7205, MENLO PARK, CA 94025. This "do-it-yourself" space program is operated by the San Francisco section of the American Astronautical Society. All contributions are tax deductible, and all contributors will receive acknowledgement of their gift, as well as an open invitation to the presentation of the Fund to NASA. The presentation will occur in Washington, D.C. on or before July 20, 1980: the fourth anniversary of Viking's landing on Mars.



Project Textbook

by Jerry Pournelle and Sherry McNeill

The L-5 Society enjoys a wide diversity of talents and resources among its members and chapters, but so far we haven't had many space-related projects in which members can participate. In the old days the American Rocket Society and the German VFR did hardware experiments and launched rockets. That sort of thing has become too expensive for a membership-funded organization, and even if we got funding, hardware experimentation would necessarily be confined to a small number of technical specialists.

Instead, the L-5 Board has recently approved **Project Textbook**, which is intended to involve as many L-5 members as wanted to work on it.

A large number of L-5 members are associated with academic institutions, either as students or as members of faculty. We should have sufficient influence to get space-related courses taught in several universities. In addition, we can encourage high schools to offer academic units in space technology as part of their science courses.

However, simple encouragement of such activities probably won't accomplish much. Organizing and arranging space-oriented courses in either the physical or social sciences is a fairly major task. There are at present few course outlines and almost no suitable textbooks. There are not many lecture notes available, and

while few educators will want to use "canned" lectures, availability of organized notes and course materials can make the difference between offering a course and merely wishing that it could be done.

Project Textbook will prepare such course materials. The goal is to have packages suitable for all academic levels from high school to advanced undergraduate. They will range from surveys and overviews to technical modules suitable as the starting point for design projects assigned to senior engineering classes. We may not be able to do all of this, but given how few course materials are at present available, almost anything we generate will be a worthwhile contribution to the space effort.

The national office of L-5 already has more than enough to do with the few resources available; this project *must* be managed by the L-5 chapters, with one of the chapters undertaking overall coordination.

Chapters are therefore invited to submit proposals for **Project Textbook** activities. These should be sent directly to:

Jerry Pournelle
Attn. Sherry McNeill
12051 Laurel Terrace Drive
Studio City, CA 91604

We will then try to allocate responsibilities and resources, and keep the work going. We emphasize that if no chapter is willing

to do the major coordination of this effort, it is not going to be done; we simply haven't the resources to do it ourselves. Ideally we will have several projects, each directed by a different L-5 chapter.

Members not associated with chapters are also encouraged to volunteer. We will send your papers to those chapters which seem best able to use them. We particularly want to hear from academicians at all levels; we will need a lot of advice on the kinds of materials to prepare. The purpose of **Project Textbook** is to make it easier to offer courses in space-related subjects. Any L-5 member who already offers such courses is encouraged and cajoled to help.

The work involves: choosing an accomplishable goal (such as planning a six-week high school course unit in introductory space sciences); determining what course materials will be needed; accumulating relevant published documents, and obtaining permission to reprint those which will be included in the course packages; identifying needed materials and data; filling in the holes by getting contributions from qualified experts (There are a lot of those in L-5, and in this regard, Dr. Charles Sheffield, President of the American Astronautical Society, has promised informal cooperation with this project so that we have access to another group of professionals); and finally assembling the materials into a publishable package.

Ideally, of course, a chapter should be working with an academician who will offer the course. That won't always be possible, but we must coordinate with educators. This will require interaction. We must ultimately furnish what they want, but many enthusiasts are not fully aware what they need. This is in fact a major reason why there are so few space-oriented courses.

Each major part of the project will be assigned to a chapter. The national L-5 office will support this project where necessary, but chapters should understand that they will be primarily responsible for accomplishing the work. Once a course package has been assembled, the L-5 Society will assist in final preparation, and will submit the materials to qualified experts for review of technical accuracy. We will also see that the packages are published, and encourage all members to bring their availability to the attention of suitable academic institutions.

Putting together education packages is certainly not as glamorous as firing off rockets; but the impact of **Project Textbook** could be enormous. It all depends on how much we're willing to do.

ad astra per aspera...

Very soon all you L-5 members will be receiving another SPS questionnaire. This one, like the last, is for the Department of Energy and will need *immediate reply* in spite of Christmas rush and delayed mails.

Remember the questions and comments you scribbled in the margins of the May questionnaire? Remember your hopes and fears and anger about the progress of solar power development? L-5, FASST, and CEP comments have been consolidated into 44 questions to which DOE experts are preparing answers right now. When we receive those answers in early December, they will be sent to you for instant response.

The fun part is that we must analyze and write up your responses so that DOE receives the results of this final round of communication by December 31, 1979.

How can we possibly do it? We have a two-part program. One, we are publishing the questions in this *News* issue to give you a little head start. Two, we are reminding you *now* that you can use express mail, mailgrams or telegrams (all basically 24-hour services) to send your replies.

QUESTIONS AND CONCERNS EXPRESSED BY PUBLIC REVIEW RESPONDENTS REGARDING THE SOLAR POWER SATELLITE OPTION

I. *About the System*

1. How stable will an orbiting satellite the size of the SPS be at GEO or could it de-orbit like Skylab, posing a danger to people on the ground?

2. How vulnerable is the SPS to partial or total destruction, especially the space segment? For example, do meteor showers pose any threat to the space segment?

3. Is there a way that rivals, unauthorized personnel, etc. can gain control of SPS?

4. What is the basis for the claim that the satellites will have a 30 year lifetime?

5. Have maintenance requirements been considered in the analysis of the reference system concept? How would maintenance be performed?

6. Will new life-support systems be required for space construction crews or is present technology sufficient?

7. What are the manpower and training requirements to build the satellite?

8. How should today's students be preparing themselves in terms of training and education so as to have a greater opportunity for more direct involvement in any future SPS undertaking?

9. Which is the cheaper reference system

design—Rockwell's or Boeing's?

10. Is the DOE considering alternative reference system concepts? If so, how much money is being allocated for these studies relative to the current reference design?

II. *About the Comparative Analysis*

1. Will there be a comparative analysis of the SPS with alternate energy technologies?

2. Has a net energy analysis been done which compares the SPS with alternative energy technologies?

3. How much disruption of human settlement patterns and wild lands will the SPS rectenna system create in comparison to coal and oil shale fuel cycles?

4. Would the SPS be functional soon enough to obviate massive coal and oil shale exploitation or do the timeframes for utilization of these alternative technologies, and attendant environmental impacts, overlap?

5. Would a breakthrough on fusion obviate the need for SPS? What forms and amounts of energy would fusion energy replace that would reduce the need for SPS?

6. Wouldn't a breakthrough in terrestrial solar technologies reduce or eliminate the need for SPS? In particular, wouldn't advances in photovoltaics benefit terrestrial applications to the point where the SPS would be obsolete or comparatively uneconomical?

7. What impact will development of the SPS have on the labor market compared to alternate energy endeavors—will it be labor-intensive or capital-intensive?

III. *About the Environmental Effects*

1. A prominent concern is the microwave bio-effects. Some people want to know what happens to people and ecosystems near the rectenna should control of beam directionality be lost.

2. What are the atmospheric heating effects of decentralized solar energy systems compared to the SPS?

3. Will the SPS damage the ozone layer and create a "greenhouse" effect by heating up the atmosphere?

4. Why have only two years been allotted for atmospheric impact studies?

5. Will communications systems already in place be disrupted by SPS operations?

6. Would the current SPS reference system design create significant additional conflict over utilization of the geostationary orbit?

7. How will SPS's in GEO affect the aesthetics of the night sky?

8. Have psychological factors affecting

manned operations in the space environment been taken into account in studies of the health and safety of the space workers?

IV. *About the Societal Effects*

1. Why do we need centralized power (baseload power) and a national energy grid? Wouldn't a system like SPS require too much control over people, and large institutions to manage it? Many people have expressed a desire to be more self-reliant through control of their own energy supply. Wouldn't reliance on the SPS inhibit this goal?

2. How could SPS development lead to de-centralization of social institutions and decision-making structures?

3. What are the opportunity costs of developing the SPS? Won't the diversion of so much capital to the SPS rob other promising energy technologies of development funds and leave the nation less flexible in responding to energy needs?

What does the country do for its energy while it waits for the SPS to come on-line?

4. Who will be the economic beneficiaries of the SPS? The impression is that only aerospace companies and their workers will benefit.

5. Who will provide insurance for the SPS? For damage claims from occupation exposure, wandering beams and crashes à la Sky Lab?

6. There is uneasiness over the whole issue of the military implications of SPS. Some people fear or suspect that its primary purpose is as a military weapon and wonder why such studies are being done in the first place. Others wonder how vulnerable the system is to sabotage (especially the rectenna) and therefore to disruption in the supply of energy.

7. Will development of the SPS seriously deplete any of the Earth's resources?

8. Have other countries been approached to participate in SPS studies? If so, which ones?

9. Who would control, maintain and provide funds for SPS development?

10. Is a disruption of SPS power likely? What happens to an area which derives some or all of its energy from an SPS should such an event occur?

11. Is there any public awareness of the SPS as a major candidate for long-term energy generation?

12. What constituencies are being studied for their probable response to the SPS concept?

V. *About the DOE Program*

1. Why is DOE even involved in the evaluation and development of the SPS—why isn't the private sector doing this on

its own?

2. Many respondents appear to believe that the objective of the CDEP effort is to plan for the commercialization of the SPS. The actual objectives of the DOE study are not clearly understood. To what areas of investigation are the program funds being allocated? How much of the total is going to environmental studies?

3. Just how much information on the SPS is available to the general public? Has such information appeared in the media? What agencies of the federal government have information that the public could obtain?

4. How realistic does DOE consider the SPS to be?

5. On what does success of the SPS depend? How much will it cost to decide whether or not to go ahead with the SPS?

6. Can energy self-sufficiency be arrived at through the SPS?

7. Does the DOE believe that SPS development will reinvigorate the U S internally and give it a renewed position of leadership abroad?

There Oughta Be A Bylaw

The Boston and New England L-5 chapters printed an appeal to the local membership for active participation in the bylaw review process. We are reprinting Richard Shields' consideration of why bylaws are important, and the questionnaire circulated by the chapters, in order to stimulate wider interest in this significant process.

Why Are Bylaws Important?

Bylaws are to an organization such as L-5 what the Constitution of the United States is to our government. They provide a framework which permits diversity and effective individual action within the structure of clearly defined national goals. As such, it is critical that they clearly define the relationships between the divisions of the organization, and provide mechanisms for handling the ongoing activities and responsibilities of the organization and its component parts. They must be able to handle disputes without repression and must command the respect of all members of the Society.

Points to Ponder

• Dissent is good. It fosters creative thinking, experimentation and innovation, as well as developing strong, effective leaders. It must be respected and, at the same time, not be allowed to tear the Society apart. Bylaws can provide channels for doing this.

• The confederation period in United States history was, until the Civil War, the

most severe challenge to the existence of this country. It resulted from an inadequate structure for handling the legitimate differences among the various regions of the country, and consequently, the country almost split into separate nations before it was five years old. The great achievement of the Constitution was the creation of a system which allowed the states to govern their own affairs while the national government carried on activities which were best handled on a nationwide basis. Essentially, it clearly defined the powers of the national government, leaving all the rest to the states. The mechanism for mediating disputes and conducting national affairs involved an ethics committee, called the Supreme Court, and a rules committee, called the Congress.

• Multiple paths to accomplish the same objective are essential. If the L-5 Society is to truly be a grassroots, democratic organization, it must include the equivalent of initiative and petition. An illustration of this is the method the ACM (Association for Computing Machinery) uses for elections. The nominating committee, which is chosen by the board of directors, nominates a slate of candidates for national office and the board. This slate is published in an issue of the **Communications of the ACM**, accompanied by biographies and statements of objectives for each candidate. If a member of the ACM feels that the nominating committee should have chosen him and didn't, he can get on the slate by having 10% of the membership sign a petition. Thus, there is the possibility of nominations from the membership at large as well as by the nominating committee.

To respond to these questions, use your own paper. Please refer to the questions by their numbers, 1-21.

BYLAWS QUESTIONNAIRE

1. What are the goals of the National L-5 Society?
2. What should the National L-5 Society do to achieve these goals?
3. What services should the National L-5 Society provide individual members and chapters?
4. What is the role of the chapters?
5. What should the chapters do to fulfill this role?
6. What services should the chapters provide to individual members and to the national organization?
7. What should the relationship be between the national organization and the chapters?
8. Should chapters be autonomous in their ability to fulfill their roles, including the raising of funds?
9. How can chapters be autonomous and at

the same time responsive to the goals of the national organization?

10. How can disputes between chapters and the national organization be settled?
11. What conditions should be required before a charter is granted to a chapter?
12. Under what conditions may a charter be revoked and how?
13. How should elections for the members of the Board of Directors and the national officers be conducted?
14. Should chapter members be required to be members of the national organization?
15. Should there be an annual national convention to which chapters send delegates?
16. What kind of financial reporting should be required of the national organization and of chapters?
17. How should the national organization be run?
18. How should the bylaws commission involve the members of the society in deliberating and reporting the issues involved?
19. Should there be a national by-laws convention to create a new set of by-laws?
20. Would you make the commitment to attend if enough notice (i.e. two months) were given?
21. Where should such a convention be held?

L-5 Society, Boston Chapter
P.O. Box 162, Prudential Center
Boston, MA 02199

High Frontier Trading Post

The High Frontier Trading Post is an L-5 member service; each noncommercial member is entitled to one free ad per year, not exceeding 40 words in length. Extra or longer ads will be charged at a rate of \$6.66 per column inch. Please allow 3-4 months for your ad to appear. All ads are subject to editorial review.

For Sale: Computer Printouts of the production possibilities of a space colony. Send \$1.00 to: Ted Apelt, 3010 NW 36 St. Ct. A135, Miami, FL 33142.

Nouvelle Ecole back issues wanted. Apocalypse camp. R.R. 2, 35-A, Carterville, IL 62918.

All engineers, doctors, biologists, physicists, applied social scientists, laymen who would like to participate in a futuristic/space life style and continued learning experience—we are accepting co-founders. Contact: Manubiosolensocionic, 112 Dana Ave., Albany, NY 12208.

WANTED: Wife (legal) for family-making—nonsmoker, nondrinker, age 18-30, L-5 eager, values survival/health not possessions; mixed racial genes (or otherwise), country-loving; Australian/N.Z. citizen preferred. Airmail: Dave Krouse (Writer, Inventor, Farmer). Box 1208, Dunedin, New Zealand.

NEWS BRIEFS

A \$25 million dollar appropriation to fund solar power satellites was OK'd by the U.S. House of Representatives by a vote of 201 to 146 on Nov. 16th. The bill has not been introduced in the Senate, however.

Five of the fifteen members of the Senate Foreign Relations Committee have committed themselves in writing to oppose the "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies." They are committee chairman Frank Church (D-ID), ranking minority member Jacob Javits (R-NY), S.I. Hayakawa (R-CA), Dick Stone (D-FL), and Richard Lugar (R-IN). No member of the committee has yet come out supporting the treaty. If only three more members of the committee join the antitreaty forces they will be able to block the Moon treaty.

Opposition to the treaty within the State Dept. grows. An internal memo argues, "Already, U.S. scientists and engineers have made imaginative proposals for the use of extraterrestrial resources in space-based industries and satellite power stations that could free future generations from the limits to growth...Yet the Moon Treaty...could close off these options to America's primary economic engines--private enterprise." The memo concludes, "The U.S. has nothing to gain from signing the Moon Treaty."

The Washington Post, Wall Street Journal and Science magazine have all credited the L-5 Society with leading the battle to block the treaty.

The Special Political Committee of the United Nations passed the "Moon Treaty" by consensus Nov. 2nd. The treaty is expected to be approved by the General Assembly Nov. 29.

Massachusetts Institute of Technology's (MIT) Dave Smith has recently completed "Extraterrestrial Materials Processing and Management of Large Space Systems," a companion study to Convair's "Lunar Resources Utilization for Space Construction." The MIT study concluded that it is "basically feasible to produce solar cells, electrical conduits and structural members in space from lunar resources."

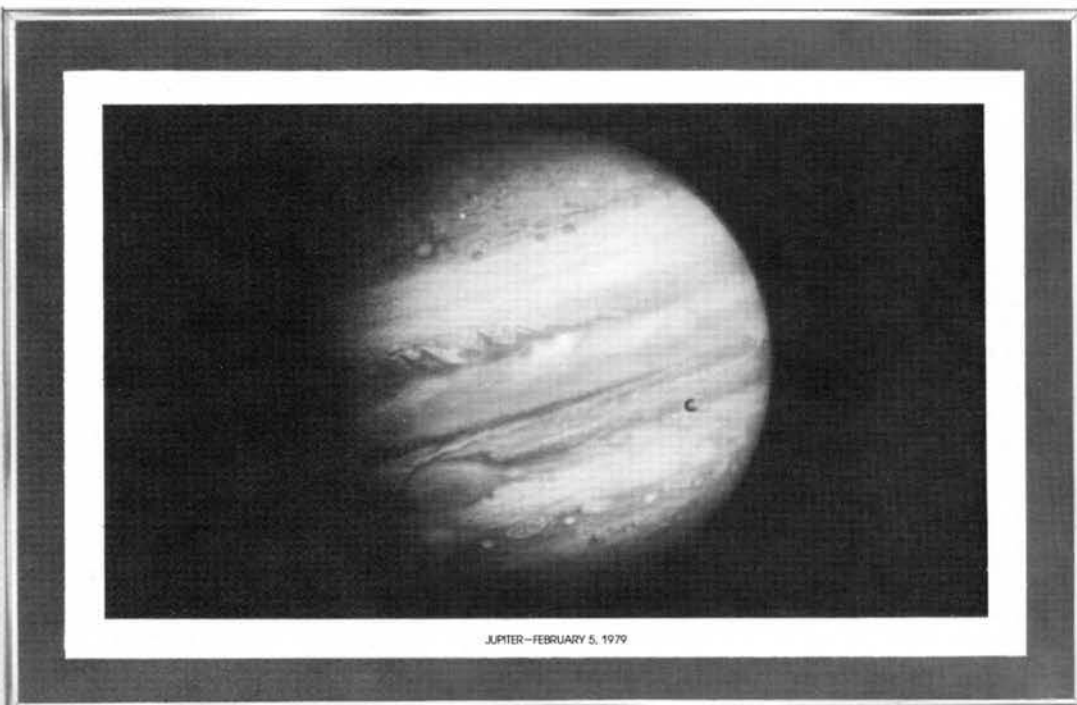
Smith reports that, while large quantities of lunar material must be shipped into space in order to pay for the lunar operation, the initial space manufacturing plant makes economic sense even if built on a very small scale at first. Smith envisions a space factory processing lunar materials as early as the late 1980's.

"Extraterrestrial Materials Processing and Management of Large Space Systems," NASA-161293, is available from the National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22161. "Lunar Resources Utilization for Space Construction," NASA-15560, is also available there.

Rice University is working on two solar power satellite contracts. Chad Gordon and Steven Klineberg of the Rice Sociology Dept. are studying societal attitudes toward power satellites. John Freeman of the Space Physics and Astronomy Dept. is conducting a \$65,000 study on offshore receiving antennas for power satellite energy reception. Peter Glaser of Arthur D. Little is working with Freeman on multiple uses of an offshore receiver such as aquaculture, while Don Hervey of Brown and Root is developing the structural design. They are considering a rectenna site 30 km south of Martha's Vineyard to service the New York/Boston region.

Advantages of an offshore rectenna, says Freeman, are that it eliminates land acquisition and population displacement, and keeps microwaves away from populated areas.

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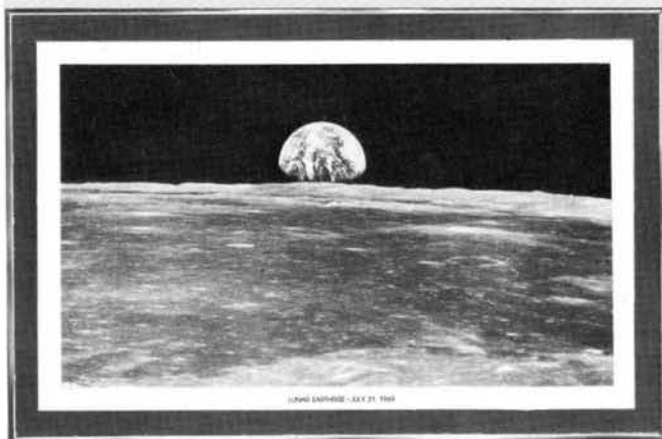


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XXXth IAF Congress:

"Future of Mankind" Has a Russian Flavor

by Frederick H. Osborn, Jr.

The XXXth Congress of the International Astronautical Federation took as its theme "Space Development for the Future of Mankind." It was held September 16-22 at the Deutsches Museum in Munich, West Germany.

There were 980 recorded participants from 36 nations. As could be expected, the largest number, 324, came from the host nation, the Federal Republic of Germany. There were 245 from the United States, 62 from France, 26 from the Soviet Union and 67 from other communist countries, 37 from Great Britain, and 30 from Japan. The XXXth Congress will be held in Tokyo in 1980.

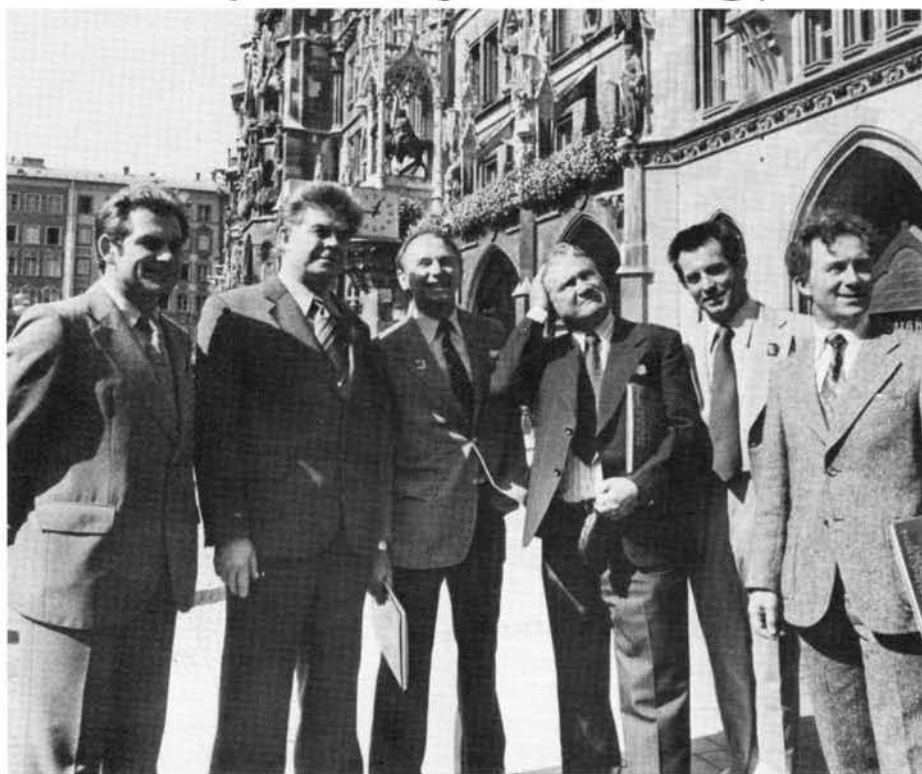
Of the 10 original founders of the IAF, Dr. Teofilo Tabanera from Argentina, Prof. Dr.-Ing. Hermann Koelle from West Germany, Arthur C. Clarke from Great Britain, Dr. Ake Hjertstrand from Sweden, and Ing. Hans-Joachim Ruckert from Austria were present, grayer, but as full of life and enthusiasm as ever.

A great many papers were highly technical. While all were undoubtedly useful, many suffered in presentation. The Soviets, in this correspondent's opinion, came away with the gold medals. Though few in number as compared with their large representation at the XXIXth IAF Congress in Dubrovnik, Yugoslavia, in 1978, they made up in quality what they lacked in quantity. They did not suffer the technical difficulties of their presentations at the XXIXth Congress.

During the past year the Soviets have done more than any other nation to extend the ability of people to live and work in space. Their Cosmonauts were present to prove it. Chief Cosmonaut Georgi Beregovoy, and his colleagues Anatoli Filipchenko, Vladimir Kovalyonok, Alexander Ivanchenko, Miraslaw Hermaszewski (Poland), and Sigmund Jaehn (East Germany) were ubiquitous, patient, agreeable, enthusiastic, admirable.

There seems to be a fundamental difference between the Soviet approach to space and our own. The U.S. seems committed to large-scale scientific efforts to obtain and organize data from which knowledge can be derived. The USSR seems committed to showing that present knowledge can be used to enable people to live and work on the new frontier.

Thursday, an audience of several hundred gathered to enjoy a film promised by the Soviet Cosmonauts. Dr. -Ing.



Gathered on the Marienplatz in front of Neue Rathaus are, left to right, Cosmonaut Vladimir Kovalyonok, Chief Cosmonaut Georgi Beregovoy, Astronaut Alan Bean, Cosmonauts Anatoli Filipchenko, Alexander Ivanchenko and Sigmund Jaehn.

Walther Rathjen, Curator for Aeronautics, Astronautics, Navigation and Oceanography of the Deutsches Museum, introduced the film. It is called, roughly translated, *Cosmos, A Long Way*, has an all-Russian commentary, and an impressive musical score. It runs 45 minutes, is in color, and competently edited in the worthy tradition of Eisenstein and Pudovkin. The film showed planning and management committees in session, Cosmonauts in training, the Soyuz spaceship being assembled, supplies being prepared and delivered, the control room, the Vostok launch, superb shots of docking and marvelous views of the earth from Salyut 6. But the best shots were those of work and repartee in the space ship in orbit; water bubbles floating about, a space-suited hand picking up a pencil to write a note, going through an airlock for EVA, welcoming visiting Cosmonauts, exercising, and kidding in orbit, landing in Siberia, and an unforgettable shot of two Cosmonauts lying like damp dishcloths in front of a descended capsule smiling gamely through the visors of their space suits. To a lay observer the film was overwhelming in its frankness and realism. This was the beginning of a way of life untethered to the apron strings of

Mother Earth. Attempts are being made to secure a copy to show scientific groups in the US.

The Soviets would like to see humankind expand into space. They have taken major steps in that direction, and, at this Congress they were able to communicate a portion of the psychological and technical armamentarium which undergirds their endeavours. Interplanetary space has energy and resources beyond imagining. If the Soviets keep on learning as fast as they have about piloted space flight, space processing of materials, and space industrialization, and if we are not able to get our space program moving again, then Shuttle or no Shuttle, we had better learn Russian if we want a piece of the action. Carter, Mondale, Proxmire, Frosch, OMB and the rest take note!

There were two full sessions on space processing of materials, at which 16 papers were scheduled. None were American. Professor Gerard K. O'Neill's excellent discussion of mass drivers in an impressive session he chaired with H.O. Ruppe of FRG and the accompanying papers on obtaining and processing lunar and asteroidal materials were all ground-based and theoretical. No one knows whether the

—Photo courtesy of Sueddeutsche Zeitung

ideas will work in space until we get there.

There were sessions on Advanced Systems, Communication Satellites, Bioastronautics, Earth and Ocean Observations, Propulsion, Astrodynamics, and the History of Astronautics. There was a magnificent current events session with NASA's most recent photos of Jupiter and its moons, which were spectacular.

Gloria Heath of SAR-ASSIST, USA, chaired excellent sessions on Space Rescue and Safety, enlarging the fine body of data and practical proposals developed in previous Congresses.

L-5 Director, former Ambassador Edward R. Finch, Jr., in a paper presented previously to the International Colloquium on the settlement of Space Disputes, reported 1,032 outer space payloads in orbit, plus 3,481 pieces of outer space debris. Of the payloads 529 are Soviet, 409 American. The HSL Colloquium also met during the Congress. There was plenty to talk about, including the draft 1979 Moon treaty and whether its provisions on "common heritage of all mankind" and a possible "international regime" later do or do not impose obstacles to free enterprise exploitation of space. But there was little, as yet, for the lawyers to get their teeth into other than the Cosmos 954 incident (that Soviet satellite with a small atomic power supply aboard which fell in the Canadian wilderness. Canada is claiming \$12 million damages), and Skylab's fall, which has produced no claims yet. The lawyers' time will come when energy, raw materials, and finished products begin arriving from orbit.

There were seven papers on Solar Power Satellites. Several ways of collecting energy from the sun in space and delivering it to base load utility grids at the earth's surface were discussed in detail and depth, from a "messy but necessary" route to an Intelsat kind of organization which J.M. Logsdon of George Washington University described, to a status report by Fred Koomanoff of NASA. There was an ingenious suggestion for an SPS without moving parts written by M. Pospisil of Czechoslovakia and read by Jerry Grey of AIAA.

While it was evident that solar power satellites are to be taken seriously, no one suggested that a SPS might make a contribution to the energy crisis in less than 15 or 20 years, or that a "moral equivalent of war" approach might get an SPS into space a bit sooner.

It was evident, too, that other nations are not going to stand idly by and wait for the United States to get with it. The Soviet Union, the European Space Agency (the Ariane program), and the Japanese are getting into the act.



Book and Article Reviews

Article and book reviews by Conrad Schneider.

"Sky Farming." David Lempert, *Yale Scientific*, March 1978.

Summarizes space-grown crop yield predictions made for the 1975 NASA/Ames Summer Study's space colony design.

"The Artist and Space." James Dean, *Interdisciplinary Science Reviews*, September 1978.

The director of NASA's Art Program expounds on the program's philosophy, difficulties and rewards. Includes many illustrations of the program's artwork. Presents an insider's view of artist-engineer interactions as artists move in, around, and through the official channels of the NASA empire. Fascinating.

"Will Space Processing Get Into Orbit?" Richard S. Lewis, *New Scientist*, November, 1978.

Reviews a report by a National Research Council committee on materials processing in space. The report appears skeptical in the extreme, in spite of positive results from Skylab and Apollo-Soyuz experiments. No theoretical barriers are raised; the main faults cited are NASA's inadequate research methodology, "undue publicity," and ignoring problems that could prevent substantial benefits from space-based material processing from being practical and economical.

Space Art: A STARLOG Photoguidebook. STARLOG Magazine, 1978.

This book is an incredible collection of 192 large pages, jam-packed with colorful and striking space-related artwork. This treasure includes awesome planetary vistas, meticulously crafted renditions of space vehicles and space structures, enchanting "landscapes" of our solar system's planets and moons, and some fascinating artwork from the NASA fine arts program.

Announcements:

SPS Papers Needed

The 1980 Satellite Power Systems Program Review and Symposium has just issued an announcement and first call for papers for its April 22-25, 1980, Lincoln, Nebraska, conference. The Department of Energy and NASA, sponsors of the

meeting are soliciting technical papers in four topical areas:

1. *Systems Definition*
2. *Environmental Assessment*
3. *Societal Assessment*
4. *Comparative Assessment*

Those interested in submitting papers must submit three copies of a typed, single-spaced, half-page abstract of their papers for review. These must be received, with an Abstract Submittal form, by Symposium administrators by January 15, 1980. Direct inquiries to:

David L. Christensen
Johnson Environmental and
Energy Center
The University of Alabama
in Huntsville
P.O. Box 1247
Huntsville, Alabama 35807
Telephone: (205) 895-6257

Solar Power in France

An international Symposium on Solar Power Satellites will be held in Toulouse, France, June 25-27, 1980, at the Ecole Nationale Supérieure de l'Aéronautique et de l'Espace-Centre d'Etudes et de Recherches de Toulouse.

The symposium is a cooperative effort of Dr. Peter E. Glaser, President of the SUNSAT Energy Council, with the French Centre Nationale d'Etudes Spatiales and Centre d'Etudes et de Recherches de Toulouse.

Session topics will include SPS systems and technology, space transportation, economic considerations, environmental effects, societal assessments, insitutional arrangements and international cooperation. French and English simultaneous translation of the sessions will be provided.

Registration and accommodation information is available from

O.N.E.R.A.-C.E.R.T.
BP 4025
31055 Toulouse Cedex
France

18th Goddard Memorial Symposium

"Commercial Operations in Space 1980-2000" will be the theme of the 18th Goddard Memorial Symposium to be held at the Washington Hilton Hotel, Washington, D.C. March 27-28, 1980. The American Astronautical Society, sponsors of the event, are calling for papers, the abstracts of which must not exceed 600 words and must be received at the AAS Office, 6060 Duke Street, Alexandria, VA 22304 not later than January 1, 1980. Those interested in registration or information may use the same address or call (703) 751-

7523. The topics on the technical program include "Manufacturing in Space," "Earth Resources," "Communications," "Space Power Systems" (covering solar power satellites, dynamics and control of large solar platforms, etc.), "Commercial Launch Operations," "International Opportunities," and "Research Opportunities."

Inside the L-5 Society

Laconia Spacefair Unqualified Success

By way of an experiment, Boston L-5 reached out of the Boston area for the first time. In close cooperation with a group of active space enthusiasts from New Hampshire's Lakes Region, the Boston Chapter cosponsored a Spacefair at the Belknap Mill in Laconia, New Hampshire, October 1-6.

The alternate sponsors were a group of high technology supporters from central New Hampshire. Under the able hand of their organizer, Sherwood Frazier, a tool designer from Cambion in Pittsfield, NH, they put together a space show in celebration of the Tenth Anniversary of the Apollo 11 manned lunar landing. This show stressed the technological benefits realized from the US space program.

The program, which included 24 of Boston L-5's finest theme display boards proven in more than a dozen similar programs throughout eastern and central Massachusetts, took place in the first-floor conference area and the third-floor gallery of the Belknap Mill. The mill, a recently renovated wooldressing and textile facility, is one of New England's oldest free-standing industrial brick structures. The weeklong program included:

- Model rockets by the Estes Company
 - Films
 - NASA's traveling Aerospace Education Unit programs, conducted by Minot Parker, and supplied by NASA without charge for schools, colleges and civic groups.
 - Displays by Frazier and his associates
- The associates included: Sandy Frazier, Sam Shepard, Steve Wood, Todd Frazier, Edmund Meskys, Kevin Loiselle of Fitt's Model and Hobby Shop, Mike Bastraw, an illustrative photographer, and Larry La-Flam, a part-time graphics artist. The group:
- Set up display boards
 - Modularized pictures for logical theme flow

- Performed booth duty
- Generated handouts
- Assembled press kits and teacher resource guides
- Ran movies
- Conducted tours and talked space with those who were interested.

Handout materials included a reading list assembled by the Laconia Public Library and a whole raft of L-5 material. Frazier conducted interviews for the local media, ran tours and lectures for school groups and supervised the entire show.

The displays in the conference area on the first floor were built around an eight-foot model and display module of the Space Shuttle supplied by NASA for the occasion. Another highlight of the entire event was a three-by-four foot LANDSAT photograph, red-enhanced to show vegetation, of central New England from Boston's north shore to the Vermont-Canadian border. This was generously donated by the EROS Data Center of Sioux Falls, SD.

All in all, about 1500 people came to see the Spacefair in organized school groups. Another 750 people wandered in "to see what was going on." Many young people who had seen the show during the day as part of a school science class outing came back during the evening with their friends and family in tow.

We are proud to have been involved in such a splendid event. *Raphael Folch-Pi*

Brew From the Boston Teapot

To begin with, we would like to tell you a little about two new local chapters: MIT and Boston University. MIT L-5ers are busy trying to become a legitimate undergraduate organization. They're writing up their constitution and rounding up officers and hope to become recognized by January. Their main activity, however, is planning a program for January, MIT's independent activities period (IAP). They plan to show a series of films and sponsor several presentations on space industrialization. Also, in cooperation with NE L-5, they plan to host a panel discussion on the Moon Treaty issue.

At our recent meeting at Boston University we were happy to discover some enthusiastic students eager to form their own chapter, and in the next few months we hope to help launch them on their way! With our success at BU and MIT in forming college chapters, we look forward to starting L-5 Chapters in several other colleges.

Another important activity that involves some of our members is the Education

Committee. Their work in progress includes an impressive list of activities and goals. Their research group is now busy digging out information on many aspects of space development, including histories of US and USSR space programs, and detailed statistical information on SPS, space industry and space settlement. Once they've gathered this information, they will produce comprehensive 'packets' to use for position papers and to accompany our slide program. This information will also be put into a computer data bank, now being developed, so we can have easy access to whatever specific information we want. The education committee is also developing a slide program that our members can present at local schools or civic groups, and they are planning a speakers training program so that interested members can learn to give our slide show. The committee has several other projects on line, including a media-relations program and a speakers bureau.

The high point of our very full November and December calendar is that Friday, December 28, Boston and New England L-5 are having a Christmas Party!! Join us in an evening of holiday cheer (and punch) at Marcia's place! Party starts at 8 p.m. RSVP's with \$2.50/person are requested by Dec. 20 (any money left over after the party will be sent to National L-5 to support lobbying efforts). If you'd like to come to our party, please send your checks to Rosemary Shields, 78 Tahattawan Rd., Littleton, MA 01460. For more information call Rosemary at 617-486-4235 or Marcia at 617-327-9514, eves. Hope to see you there!

—Marcia Allen



Portland L-5ers Tom Billings, Patty Smith, Bryce Walden

Oregon Chapter Takes Off

A recent issue of the L-5 News listed several kinds of projects for local chapters, stressing the importance of making such activities interesting to members. The

recently formed Oregon L-5 chapter took this advice to heart and learned that a relatively small core group (10-15 people) can effectively start a chapter and carry out the kind of projects necessary for publicity and expansion of membership.

The chapter was formed two months ago in Portland. The major consideration (besides getting into space) was to gain credibility by always presenting a professional image. After drafting local by-laws, our first project was to publicize the group well enough to attract a larger number of capable, committed members. A display table at **Orycon**, a local science fiction convention with a projected attendance of 400, would be our first target.

This seemingly simple assignment began growing almost immediately. The engineer who will be heading our research committee supplied a computer as a hook to draw people to the display table, offering them a chance to play with it by typing in their names and addresses. A local member and businessperson obtained books for sale. We created membership packets, including a local letter of introduction. We also designed our traveling L-5 backdrop for use at the **Con** and for future speaking engagements.

After putting together such a professional display we decided we needed professional programming. Roger Arnold, Seattle L-5 Vice-president and recent author in **Analog**, graciously agreed to give a presentation based on his article. This stretched into two presentations by popular demand. We also did our first TV program on a local talk show whose hostess found the idea of space colonies intriguing and the L-5 slides great visuals.

The actual convention attendance was 600, out of which we collected a mailing list of over 200 interested persons, book and membership sales of \$200 and seven new active members. The follow-up for this publicity is to be a large educational meeting with an L-5 slide presentation by David Brandt-Erickson, former president of the Bay Area chapter, now an Oregon resident and member. We will also be involving people in our next projects which include an active research committee, a local newsletter and a speaker's bureau.

The ideas we used to publicize Oregon L-5 are easily adaptable to other new chapters attempting to widen their membership. Our most important discovery was how much can be accomplished by a small group, as long as you have some talented workaholic people who are seriously planning to make it into space.

Patty Smith
President, Oregon L-5
Portland, OR 97201

Letters

Concerning your appeal for funds to campaign against the proposed space laws, I agree that they are "evil" and should be eliminated.

However, these laws or others like them almost certainly *will be* enacted, and to some extent will be enforced by bureaucracies of the future.

This suggests that it would be a mistake to commit too much funding to the bottomless pit of largely unsuccessful political campaigning while a more useful response to the threat is available.

I propose that a trust fund be established to provide legal aid and other assistance to space pioneers who run afoul of legal entanglements.

Paul Shewan
San Jose, CA

You missed the point—under the Treaty the Space "Authority" would derive total authority in space from a one nation-one vote body. No legal structure has been envisioned, indeed an appeal process has been ruled unacceptable by many participants in the treaty making process. The lawyers will have a difficult time without courts! The Treaty is more akin to a "Constitution" of space than a law.—

HKH

Thank you for your recent letter (from L-5 President Carolyn Henson) concerning my efforts with respect to the draft Moon Treaty. I appreciate your support.

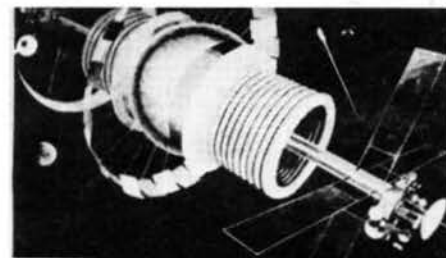
I believe that it is important that there be broader understanding of the implications of the draft treaty. Unfortunately, the Department of State chose not to consult meaningfully with the interested public and the affected industry. The Department should be criticized for this, but more importantly, a major effort should be made by those of us who are concerned about the draft treaty to make the public and the industry fully aware of what it involves. As always, constituent interest is crucial to Congressional action and, at this late stage in the process, only such action offers the hope that the Administration will not continue to pursue its present course.

I would think it appropriate for L-5 to continue contacting the affected industry and key members of Congress. For my own part, I will keep the pressure on the State Department and continue to urge my colleagues to confront this serious situation.

Representative John B. Breaux (D-LA)
Chairman,
Subcommittee on Fisheries
and Wildlife Conservation
and the Environment

It appears that we're going to have an "Apollo-type program" after all — ripping up Utah to squeeze out the oil. I say not one penny for this nutty fantasy...

Dick Fredericksen
White Plains, NY



L5 SOCIETY

1980

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Advertise L-5—Help The Moon Treaty Fund Raising!

Description: 1980 Wall Calendar featuring a picture of a Bernal Sphere Space Colony.

Cost: \$4.00 plus \$.50 postage and handling equals only \$4.50.

Ordering: Send check or money order made out to **L-5 Society Boston Chapter** to:

L-5 Society Boston Chapter
P.O. Box 162
Prudential Center
Boston, MA 02199

Fund Raising: Order 25 to 99 at a cost of \$3.00/calendar. Orders of 100 or more cost only \$2.50/calendar! Then have each member buy five calendars at \$4.00 each and resell them to friends or use them as gifts. Other non-profit organizations use this technique to raise thousands of dollars in less than a month.