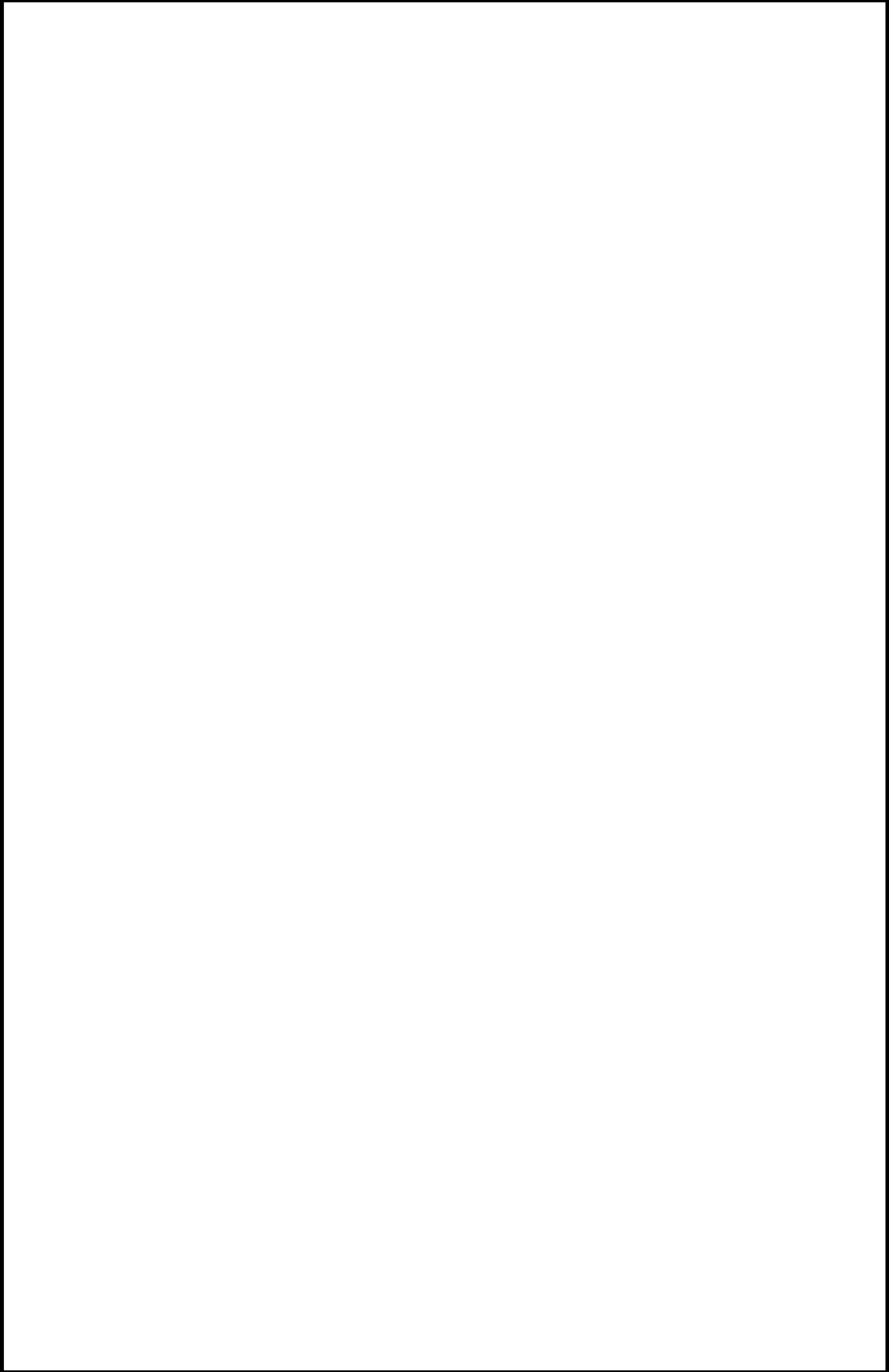


Association of Space Explorers-USA



**Annual Report
1992**

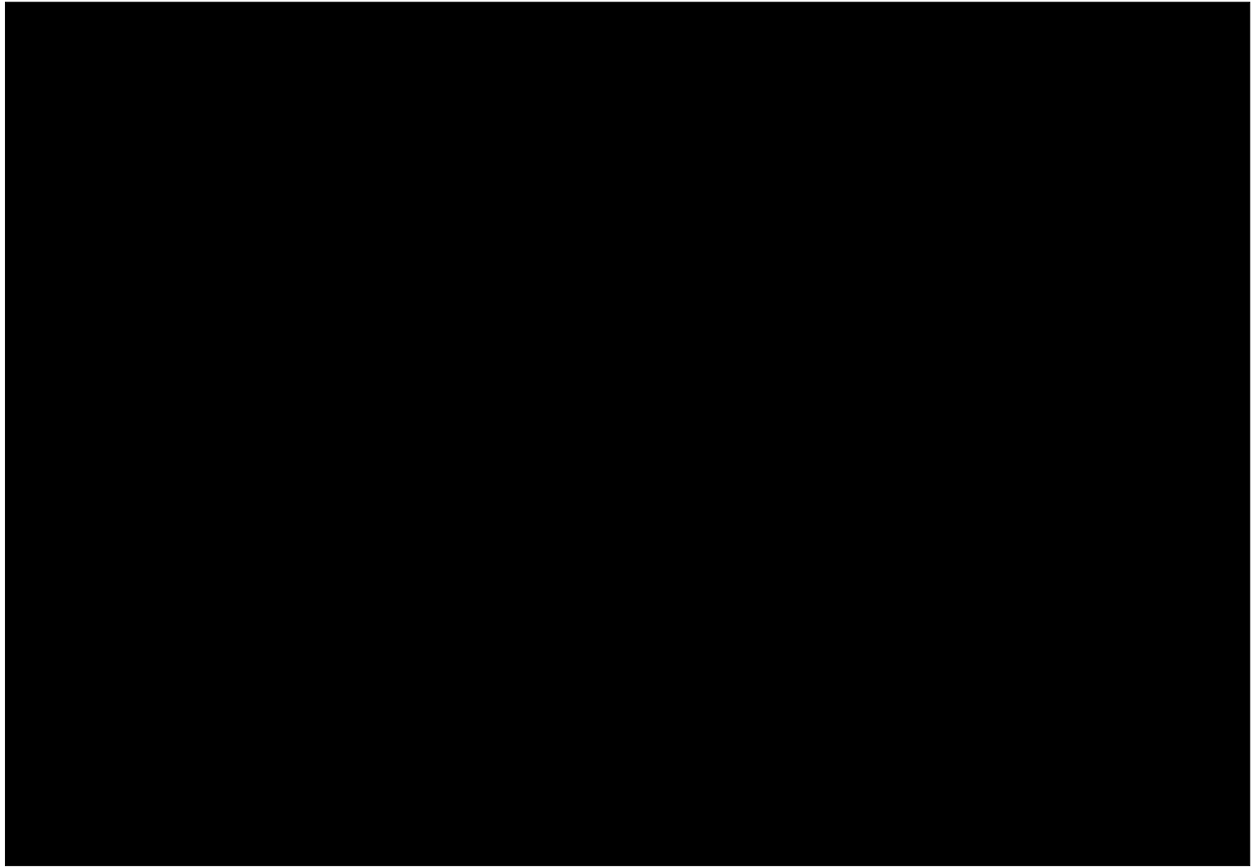
On the cover is a reproduction of the poster designed to commemorate the 8th Planetary Congress of the Association of Space Explorers held in Washington DC in August, 1992. Over seventy-five astronauts from eighteen countries signed 243 of the posters to create a special collectors' edition. The central image of the poster features a point perspective composite photograph of the planet Mars produced by the U.S. Geological Survey. Surrounding Mars are the flags of the twenty-five Earth nations whose citizens had flown in space at the time of the Congress. The image symbolizes the conviction of ASE members that a journey to Mars should be a broadly human effort that draws upon the strengths of all nations. The poster has two headings, one in English and one in Russian, the official languages of ASE. Around the periphery are translations of "Association of Space Explorers" in the native languages of all individuals who have flown in space. Clockwise, from upper left with English at the top, they include Vietnamese, Hindi, Bulgarian, Italian, Afghani, German, Polish, Japanese, Romanian, Dutch, Czech, Hungarian, Mongolian, Spanish, Arabic and French. The background is taken from NASA archive photo 83 HC 213, which has been used for each annual Congress commemorative poster since ASE's founding.

Signed, numbered commemorative posters from past ASE Congresses are available to individuals and organizations who contribute to the Association. Reprinted versions are also available. Inquiries are welcome at the ASE-USA office in San Francisco, California at (415) 931-0585.

Association of Space Explorers-USA

**Annual Report
1992**

**Association of Space Explorers-USA
35 White Street
San Francisco, CA 94109**



ASE members assemble for a group photograph in front of Gaston Hall at Georgetown University during the 8th Planetary Congress in Washington DC in August, 1992.

(Front row, left to right) Alexander Alexandrov, Russia; Georgi Ivanov, Bulgaria; Yuri Glazkov, Russia; Alexei Leonov, Russia; Vladimir Kovalyonok, Russia; Boris Yegeerov, Russia; Vyacheslav Zudov, Russia; Reinhard Furrer, Germany; Patrick Baudry, France; Ulf Merbold, Germany. *(Second row, left to right)* Franz Viehböck, Austria; Walt Cunningham, USA; Pyotr Klimuk, Russia; Rick Hauck, USA; Valentina Tereshkova, Russia; Jon McBride, USA; Franco Malerba, Italy; Dirk Frimout, Belgium; Georgi Grechko, Russia; Bertalan Farkas, Hungary; Sigmund Jähn, Germany; Dumitru Prunariu, Romania; Vladimir Solovyov, Russia. *(Third row, left to right)* Dick Richards, USA; Anatoly Artsebarsky, Russia; Bob Cenker, USA; Don Lind, USA; Fred Gregory, USA; Rusty Schweickart, USA; Karl Henize, USA; Ernst Messerschmid, Germany; Igor Volk, Russia; Viktor Savinykh, Russia. *(Fourth row, left to right)* Sam Durrance, USA; Karol Bobko, USA; Jeff Hoffman, USA; Wubbo Ockels, The Netherlands; Mirosław Hermaszewski, Poland; Byron Lichtenberg, USA; Loren Acton, USA; Stu Roosa, USA; Owen Garriott, USA; Vladimir Remek, Czechoslovakia; John Fabian, USA; John-David Bartoe, USA. *(Fifth row, left to right)* Joe Allen, USA; Claude Nicollier, Switzerland; Michel Tognini, France; Ron Parise, USA; Valery Ryumin, Russia; Deke Slayton, USA; Andrian Nikolayev, Russia; Scott Carpenter, USA; Valery Kubasov, Russia; Tom Stafford, USA; Nikolai Rukavishnikov, Russia; Yuri Romanenko, Russia; Alexander Alexandrov, Bulgaria; Gary Payton, USA. *(Back row, left to right)* Oleg Makarov, Russia; Sultan Al-Saud, Saudi Arabia; Tokhtar Aubakirov, Kazakhstan; Svetlana Savitskaya, Russia; Taylor Wang, USA; Leonid Popov, Russia; Yuri Artyukhin, Russia; Ed Gibson, USA; Paul Scully-Power, USA; Konstantin Feoktistov, Russia; Sergei Krikalyov, Russia; Alexander Volkov, Russia; Bob Springer, USA; Pete Conrad, USA; Jerry Carr, USA; Jim McDivitt, USA; Bill Pogue, USA; Jim Lovell, USA; Charlie Walker, USA. *Not pictured:* Toyohiro Akiyama, Japan; John Blaha, USA; Charles Bolden, USA; Dan Brandenstein, USA; Jean-Loup Chretien, France; Mary Cleave, USA; Charlie Duke, USA; Bonnie Dunbar, USA; Drew Gaffney, USA; Jake Garn, USA; Millie Hughes-Fulford, USA; Mike Lounge, USA; Bill Nelson, USA; Bryan O'Connor, USA; Jerry Ross, USA; Helen Sharman, England; Loren Shriver, USA; Kathy Sullivan, USA; Dick Truly, USA.

The Association of Space Explorers (ASE) is an independent, nonprofit, international professional organization of individuals who have flown in space. Established in 1985, ASE's mission is to 'provide a forum for professional dialogue among individuals who have flown in space, promote space science and exploration for the benefit of all, enhance education, foster environmental awareness and encourage international cooperation.' With active participation by over 230 members from twenty-six nations, ASE has conducted or sponsored successful programs in each of these mission areas.

A PROFESSIONAL FORUM

'To promote the exchange of spaceflight experiences and technical information concerning space operations, science, development, testing and training.'

ASE's primary forum for professional exchange is the Annual Planetary Congress, where members meet to discuss developments in astronautics, review existing ASE programs, and plan future Association activities. The week-long event generates communication on issues of common interest to the international space community, government agencies and the public. ASE's 8th Congress, which took place in Washington DC and West Virginia in August, was the Association's largest undertaking ever. The Congress renews ASE's vitality as an organization and its members' commitment to ASE goals.

SPACE SCIENCE AND EXPLORATION

'To promote the exploration of space to enrich human life, bring nations together, advance science and technology, and stimulate intellectual curiosity and the expansion of knowledge.'

ASE programs support human space exploration by providing opportunities for communication among space professionals at the international level across a range of disciplines. Often jointly produced with other professional space organizations, these programs expand and invigorate international dialogue on such issues as space safety, rescue and human performance. ASE itself is the only organization that sponsors international discussions among astronauts on space flight operations.

EDUCATION

'To share knowledge gained from our experience emphasizing the significance and benefits of space science and exploration. To promote scholastic excellence by supporting educators and motivating students.'

Seeking to inform and inspire the human community as it makes choices for its future, ASE creates opportunities for its members to share their knowledge and experience with the public, its youth, the international space community and national governments. In 1992, ASE continued its program of member public appearances, and teamed up with other organizations on several joint programs to broaden communication on issues close to the hearts of its members.

ENVIRONMENTAL AWARENESS

'To promote understanding of our home planet and the limits of its natural resources, and encourage the use of space platforms in characterizing and monitoring earth's resources.'

ASE provides media venues and public fora for its members to communicate their unique perspective of Earth to help stimulate our sense of responsibility for the well-being of the environment. ASE supports the increased allocation of space satellite and crew operations to monitor and measure humanity's impact on the environment and to expand the knowledge necessary to resolve the ecological challenges we face.

INTERNATIONAL COOPERATION

'To encourage international human spaceflight and other cooperative space endeavors, promote technical exchanges, advocate operational compatibility, and contribute to related programs in other professional organizations.'

Space exploration requires a diverse array of human, financial, information, technological and capital resources. International investment of these resources, and the cooperative management of their utilization, reduce the burden any one nation bears and ensure broad and equitable distribution of the resulting benefits. ASE programs have fostered a growing network of personal and professional relationships which contribute to both the spirit and practice of international cooperation.

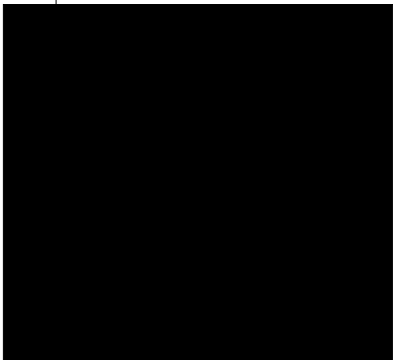
* * *

Space organizations and supporters around the world celebrated 1992 as the International Space Year. As the world's geopolitical realignment progressed during the year, nations and space agencies signed new space agreements and undertook expanded joint space activities. ASE programs contributed to this process of emerging collaboration, which has resulted in two Russian astronauts currently training for an upcoming shuttle mission at the Johnson Space Center in Houston. Working with its partners in both government and the private sector, ASE will continue to advocate and build an exciting and symbiotic relationship between the frontier environment of space and all life on Earth.

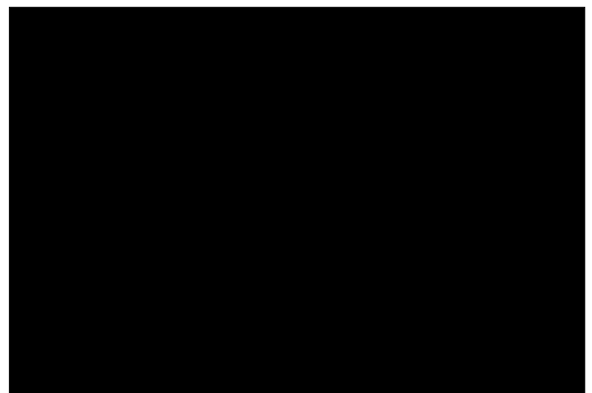
For the eighth consecutive year, astronauts from around the world assembled at their premier annual professional forum, the Planetary Congress of the Association of Space Explorers. In August of 1992, ninety-nine astronauts from eighteen countries travelled to the United States to participate in the 8th ASE Congress, the largest and most diverse gathering of space flyers in history. ASE-USA hosted the event, which took place at Georgetown University in Washington DC and at The Greenbrier in White Sulphur Springs, West Virginia. An organizing committee headed by ASE-USA board member John-David Bartoe planned and executed the Washington portion, and West Virginia member Jon McBride orchestrated activities at The Greenbrier. To enable the Congress to take place, an international host committee of individuals and organizations (see appendix IV) generously contributed financial support and a wide array of in-kind services. The Congress agenda included a session devoted to the Congress theme "To Mars Together", an update on space agency programs, two technical sessions, joint programs with other space organizations, a community day, a general business session, and cultural and social outings.

At the opening ceremony, Georgetown University president Father Leo O'Donovan, Washington Councilmember Charlene Drew Jarvis, and NASA Administrator Daniel Goldin warmly welcomed the participants to the University and to the City of Washington. Administrator Goldin set the tone for the conference, asserting that exploration is wired "right into our DNA." He outlined a vision of the future in which humanity explores the heavens as a united species, and delivered a compelling rationale for a human mission to Mars. (Copies of his remarks are available from ASE.)

To address the members at the "To Mars Together" Congress theme session which followed, ASE called upon the services of Mike Griffin, NASA Associate Administrator for Exploration, Carl Sagan, astronomer and author, and Nandasiri Jasentuliyana, Director of the United Nations Office for Outer Space Affairs. Dr. Griffin opened with a presentation of NASA's latest plans for a return to the moon as a prelude to a human Mars mission. He held open several possibilities for international cooperation in the venture. Dr. Sagan spelled out the myriad potential costs and benefits of an international human mission to Mars. He suggested that to convince people of



NASA Administrator Daniel Goldin addresses members at the opening ceremony of the 8th Congress.



From left, Gemini and Apollo veterans Pete Conrad, Jim Lovell, Jim McDivitt and Tom Stafford reunite at the 8th ASE Congress.

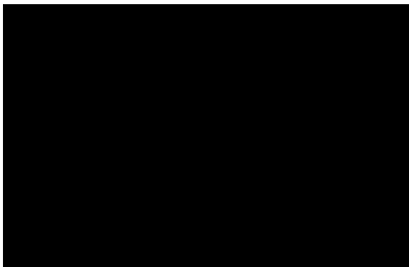
the value of such a project, its advocates must articulate its many worthy rationales and commit to broad international involvement. Mr. Jasentuliyana outlined many of the technical, political, economic and social challenges posed by a human mission to Mars. He noted that past transnational cooperation in space exploration has prepared us for an historic post-Cold War opportunity to combine resources and work together on this mission of unprecedented scope.

To round out the session, ASE members Tom Stafford, Valentina Tereshkova and Konstantin Feoktistov joined the invited speakers on the panel. Stafford called upon spacefaring nations jointly to use the space technologies they have separately developed to avoid "reinventing the wheel" on the way to Mars. Tereshkova updated the members on Russian Mars plans for 1996 and 1998, appealing for international participation on both missions. Feoktistov suggested that the application of the knowledge we gain about our world, our universe, and about living in space may be the most compelling argument for missions to Mars.

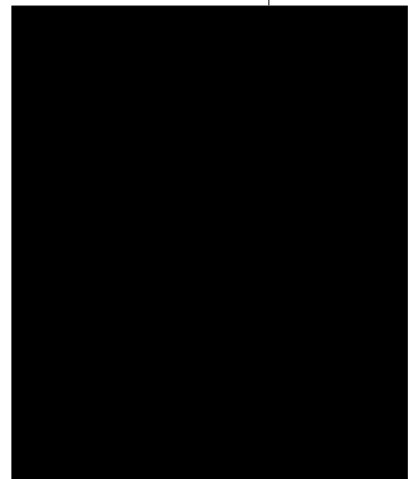
At the session devoted to updates on space program activities, members involved in recent missions re-

ported on the results of their work. Sergei Krikalyov and Igor Volk described Russia's activities, showing video footage from Krikalyov's space walks during his recent ten-month Mir mission and giving an update on the Buran program. Astronaut chief Dan Brandenstein, Dick Richards, Bonnie Dunbar and John-David Bartoe reported on U.S. program activities. Their presentations included a review of the past year of shuttle flights, a report on the results of the STS 50 U.S. Microgravity Laboratory mission, and plans for international participation on Space Station Freedom. Presenting for Europe, Wubbo Ockels outlined the European Space Agency's (ESA) plans for the Columbus space station. Concluding the session, a diverse set of international flyers reported on their recent guest missions aboard a U.S. shuttle or Russia's Mir station. The group included Dirk Frimout of Belgium, Franco Malerba of Italy, Claude Nicollier of Switzerland, Toyohiro Akiyama of Japan, Franz Viehböck of Austria and Michel Tognini of France.

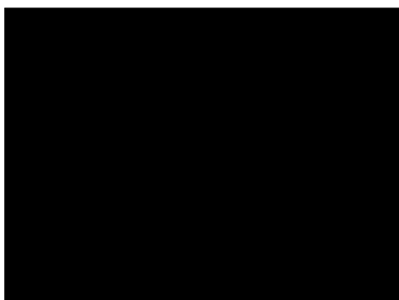
At the first of two Congress technical sessions which followed, members discussed several ideas and initiatives now under consideration and development by various sectors of the international space community. Bryan O'Connor and Valery Ryumin shared some of



Bonnie Dunbar and Dick Richards report on their U.S. Microgravity Lab shuttle mission at the 8th Congress space program update session.



Dr. Carl Sagan addresses ASE members at the Congress theme session on the topic "To Mars Together".



NASA Astronaut Office chief Dan Brandenstein briefs members on developments in the United States space program for the preceding year. At left are session participants Wubbo Ockels and John Fabian.

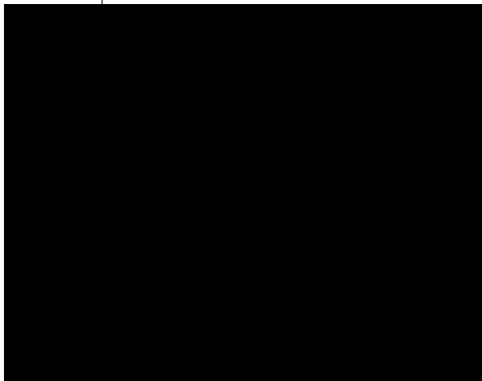
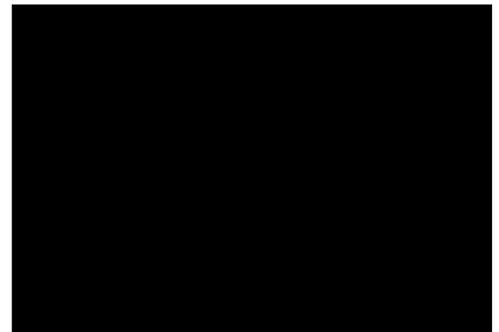
the results of their joint work on the possible adaptation of Soyuz as a crew rescue vehicle for Freedom. Pete Conrad followed with a report on McDonnell Douglas's continuing development of single stage-to-orbit-technology. Europeans Ernst Messerschmid and Wubbo Ockels concluded with a comparison of the advantages of winged vs. unwinged spacecraft. A second technical session focused on the futures of the space agencies. In discussing the U.S. program, Senator Jake Garn made an impassioned plea for a reinvigorated national political and financial commitment to space exploration. Alexei Leonov and Igor Volk outlined the challenges and opportunities facing the newly created Russian Space Agency. For the European side, Wubbo Ockels and Reinhard Furrer previewed a range of ESA programs planned for the next decade.

On the Congress community day, an annual activity devoted to educational interaction with the general public, members addressed several community audiences as well as three groups of incoming freshmen at Georgetown University. John-David Bartoe, Michel Tognini and Don Williams welcomed new arts and sciences, language and business students. Other members spoke to public audiences on topics ranging from space medicine, space stations and astronomy to space sciences and exploration, spacecraft design and space commerce. Throughout the

day, several members joined younger students in a Georgetown gymnasium to help construct a simulated Martian colony, a project organized by the Challenger Center for Space Science Education. (Related article, page 10.)

At its annual Congress award ceremony, ASE honored author Isaac Asimov and presented a special award to the Challenger Center for Space Science Education. Asimov, a prolific science fiction writer and author of syndicated scientific articles, was a committed advocate of human space exploration. ASE chose Asimov to receive the Planetary Award before his passing, and at his wife's recommendation Dr. Carl Sagan accepted the award on his behalf. Sagan, with Mrs. Asimov on hand, paid tribute to the writer's powerful and original contribution to our collective imagination of life in space. ASE presented a special award, its first to an organization, to Challenger Center, for its unparalleled contribution to the quality education of the next generation. Founded by the families of the Challenger astronauts, the Center uses space themes to create positive experiences that raise students' expectation of success, foster long term interest in science, math and technology, and motivate them to pursue studies in these areas. The award, a crystal pyramid depicting the Challenger launch sculpted by David Sugar and Carol Iselin, stands on public display at the Center's Virginia headquarters.

Claude Nicollier, left and Franco Malerba report on their tethered satellite mission aboard the space shuttle.



Sergei Krikalyov participates in a Congress technical session.

Midway through the 8th Congress the members travelled by train to The Greenbrier in West Virginia for a change of venue. Several members reported on their space flight experiences at a Greenbrier osteopathic conference, while others took time out for recreational activities. By night the delegations dined and danced to the music of local bands. Social and cultural activities in Washington included a boatride on the Potomac, a viewing of the IMAX film "The Dream is Alive" followed by a reception at the National Air and Space Museum, and a dinner sponsored by Purdue University. Spouses and companions enjoyed a tour of the White House, shopping expeditions, and visits to the homes of local astronauts.

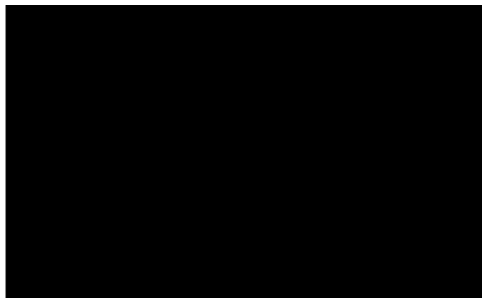
Among business matters accomplished at the Congress, members elected Ulf Merbold of Germany and reelected Bertalan Farkas of Hungary to the ASE international executive committee. Members also approved a charter amendment enabling international astronauts to join ASE between Congresses. Finally, the delegates passed a resolution authorizing ASE-USA to explore possible observer status for ASE with the United Nations Committee on the Peaceful Uses of Outer Space.

In a general statement released at the Congress (see appendix II), the members called for expanded cooperation among nations to develop and execute a human mission to Mars. ASE participants and invited experts agreed that placing an international Mars mission high on the human agenda will lead to deeper intercultural cooperation, technical breakthroughs, educational motivation and financial benefits. The high costs of investing in a Mars mission would result in a substantial economic, scientific and technological return, the statement suggests. If many cooperating nations share this investment, the impact on individual nations will decrease. Such a course would likely make the venture more politically palatable than inherently expensive unilateral efforts.

In a humanitarian footnote, after the Congress the Russian delegation's charter jet carried a relief shipment of medical supplies back to Moscow. Local groups subsequently distributed the aid to clinics and hospitals in both Moscow and St. Petersburg. The relief organization Operation Helping Hand, the U.S. State Department and the U.S. Air Force all contributed resources to the effort, which enabled the Russian aircraft to be serviced and fueled for the flight home.



Janet Asimov shares her thoughts with ASE members at the 8th Congress Awards Banquet after Carl Sagan's tribute to her late husband Isaac, posthumously honored by the Association with its Annual Planetary Award.



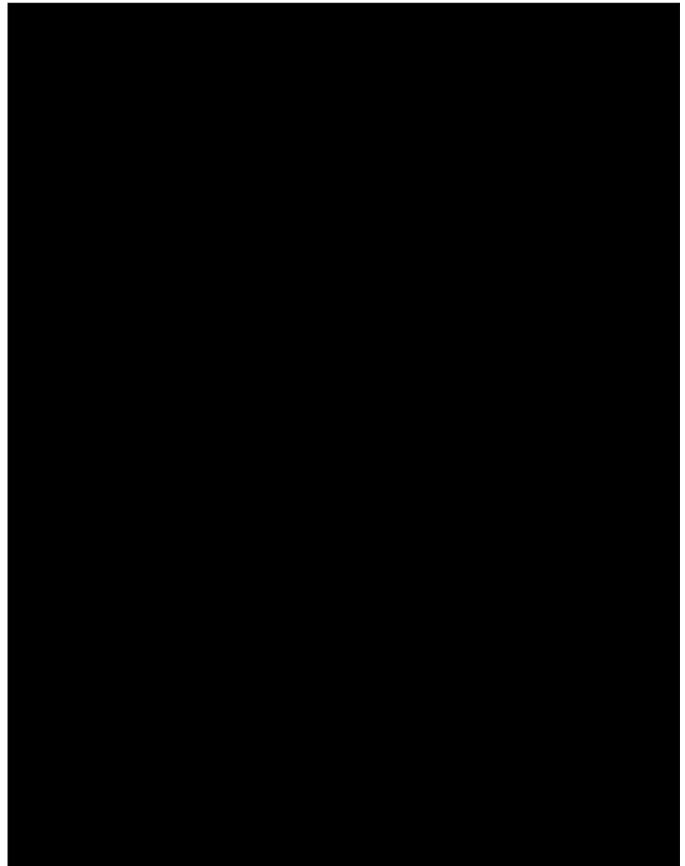
Boris Yegorov, right and Byron Lichtenberg address a public audience on the subject of space medicine on the Congress community day.

U.S. SPACE FOUNDATION SYMPOSIUM

At the U.S. Space Foundation's annual symposium in Colorado Springs in March, Rick Hauck chaired a panel on Manned Space Flight comprised of ASE members Dick Covey, Jean-Loup Chretien, and Musa Manarov. Introducing the session, Hauck presented a summary of ASE goals and activities. Covey then reported on the changing role of the space shuttle, recent and upcoming shuttle flights, and international participation in the shuttle program. Chretien followed with an account of his experiences on two Soviet space flights, showing a video of his life and work aboard the Mir station. He suggested that international cooperation on human planetary missions will serve as

the greatest symbol of our civilization's success. Manarov concluded the presentations with video footage from his missions and called for expanded concrete international cooperation in space. The panel members responded to questions from the audience of over 1,000 that ranged from "the relative reliability of the shuttle and Soyuz launch abort systems" to "how long humans can remain in space at high productivity levels." The U.S. Space Foundation is a premier annual gathering of space professionals, and the Hauck panel marked ASE's debut at the event.

*Musa Manarov
addresses the
audience at ASE's
first session at the
annual U.S. Space
Foundation
Symposium in
Colorado Springs.*



CONFERENCE ON LEGAL ASPECTS OF MANNED SPACE FLIGHT

In May, four ASE members met at the University of Cologne in Germany to share their expertise at a conference titled "Manned Space Flight: Legal Aspects in Light of Scientific and Technical Developments". The University's Institute of Air and Space Law organized the forum, with the support of the German Space Agency and the German Aerospace Research Establishment. The conference focus was a 1988 draft Convention on Manned Space Flight currently under consideration by the United Nations Legal Subcommittee on the Peaceful Uses of Outer Space. Conference participants re-examined the Convention in light of recent technical developments, and recommended a

series of updates for the document. ASE members Ulf Merbold and Jean-Loup Chretien participated in a panel discussion titled "The Astronauts' View: Experiences and Demands." Both suggested that from their perspective there are currently no pressing new legal issues or challenges that astronauts face. Ernst Messerschmid and Sam Durrance presented papers at a session titled "Research in Space." Durrance discussed astrophysics and earth observation, and Messerschmid spoke on the subject of studying materials, processes and life in space. The two agreed that the many diverse agreements and contracts between individuals, organizations and governments should be covered by international conventions. Conference organizers welcomed the astronauts' remarks as a valuable contribution to the continuing work on the Convention draft.

MEMBER APPEARANCES

In January, ASE members Oleg Makarov, Musa Manarov, Valentin Lebedev, Jean-Loup Chretien and Charlie Walker travelled to Japan to participate in a conference on regional development issues and education. Titled "Space Year 1992 Celebration and Regional Renaissance - The Boso Peninsula as a Space Station", the conference took place in the vicinity of Narita airport outside Tokyo. The group addressed the theme "Aerospace Port and its Environments Seen From Space" and made subsequent presentations on the theme "Space, Communication, and Education." The members also participated in a meeting on the technical and philosophical aspects of space flight, at which they responded to the queries of scientists and engineers from several Japanese universities and government organizations.

In February, ASE member Dick Gordon spoke on behalf of the Association of Space Explorers at the First International Congress of Electromechanical Engineering in Mexico City. Gordon, the opening day keynote speaker, reported on the past, present and future of space exploration and spoke about his own personal experiences aboard Gemini 11 and Apollo 12. Gordon's audience received his address warmly, and posed many questions ranging from future missions to UFO

sightings. The Asociación de Ingenieros Universitarios Mecánicos Electricistas organized the conference to strengthen international bonds among engineers and to advance the mechanical and electrical engineering professions.

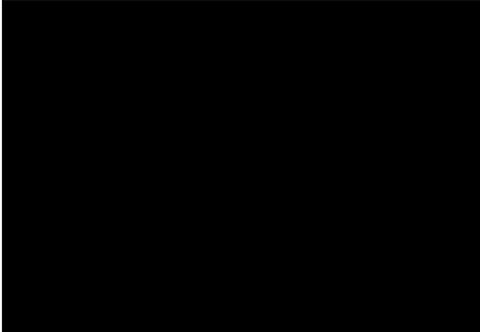
In March, Rick Hauck and Oleg Makarov made a joint appearance at Kent State University. Each presented slides and discourse on their respective (U.S. and Russian) space programs, which led to a spirited question and answer session. The audience of students, faculty, family members and local residents visibly appreciated the strong message of international cooperation and respect that Hauck and Makarov conveyed.

COOPERATIVE PROGRAMS

At the 8th ASE Congress in Washington in August, ASE and Challenger Center for Space Science Education brought together astronauts and junior high school students to simulate the construction and supply of a human Martian settlement called 'Marsville'. Student teams first erected enclosed plastic habitats in a Georgetown University gymnasium, then effected a resupply operation during a Martian duststorm. Several ASE members provided advice and encouragement, some offering hands-on assistance. The students



Oleg Makarov, left and Charlie Walker greet students while making appearances on behalf of ASE in Japan.



Monica Barrera, president of the Electromechanical University Engineers Association of Mexico, thanks ASE member Dick Gordon, left, for his remarks at the First International Congress of Electromechanical Engineering in Mexico City.

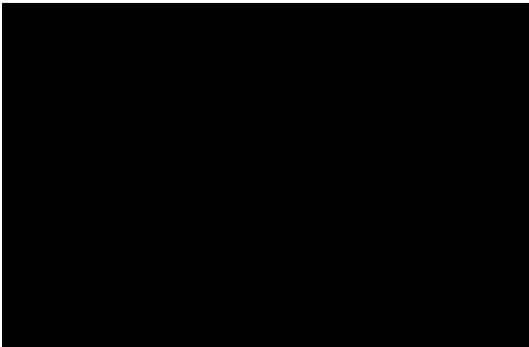
learned from the guided team challenge process, benefitted from an infusion of real space experience, and in the faces of the astronauts may have glimpsed their own professional futures. ASE and Challenger Center plan to discuss further educational collaboration and the expansion of some of the Center's activities to the home countries of ASE's international members.

In another collaborative effort at the 8th Congress, ASE and the Pasadena-based Planetary Society cohosted an evening of public lectures on the Congress theme "To Mars Together." Planetary Society president Carl Sagan and ASE members Alexei Leonov, Igor Volk and Joe Allen addressed an audience of several hundred. Opening the gathering, Sagan enumerated the rationales for a human mission to Mars, suggesting that only a concerted effort by a committed core constituency can muster the political will for such a venture, and then only if the mission is international in scope. Volk listed the obstacles the current adult generation has erected to block a commitment to explore Mars, urging young people not to follow their parents example, but to go to Mars in spite of them. Leonov recounted the successes of past international cooperation and decried the reluctance of contemporary policy makers to set their sights on Mars, humanity's most exciting destination. Allen suggested that the new correlation of world political

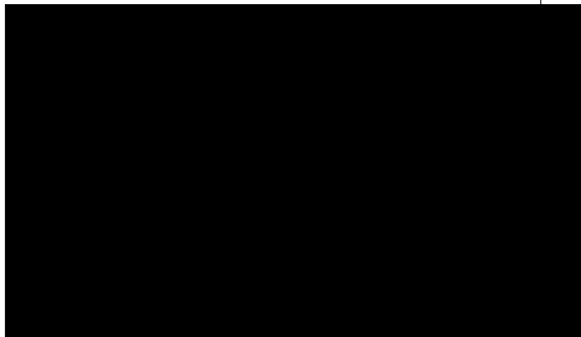
forces means that a Mars mission must be international, and proposed that the space community design and build our space infrastructure in tempo with political, academic and business cycles.

SPACE STATION VIDEO

Six ASE members donated their time and energy in 1992 to the production of a NASA video on Space Station Freedom. The 30-minute video, titled "Hey, What's Space Station Freedom?", is designed for use in elementary schools and tells the story of how Freedom is to be built and used. Charlie Walker stars as himself and explains the layout of Freedom to a group of fascinated children. John Bartoe provides narration to a rapid-fire animation sequence showing how Freedom is assembled on orbit. John Fabian, Rick Hauck, Mike Lounge, Sam Durrance and Ron Parise provide voices for cartoon astronauts in a dream sequence which takes the children to Freedom to work as crew members. The video was produced by TADCORPS in Washington, DC, as ASE members learned first-hand the number of person hours required to produce just a few minutes of final footage. The video has been shown on the Sci-Fi Channel and has been made available free to teachers through NASA's regional teacher resource centers. (Copies of the video are available directly from John Bartoe, Code MG, NASA Headquarters, Washington, D.C., 20546.)



Helen Sharman shares her expertise with a group of students constructing a simulated Martian settlement called 'Marsville' on community day at the 8th ASE Congress.



ASE member Charlie Walker and Manfred "Dutch" von Ehrenfried of the TADCORPS company pose for a photo opportunity with other participants in the making of the video "Hey, What's Space Station Freedom?"

EARTH PLEDGE

In support of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June, ASE-USA provided each of its members a copy of the conference support document known as the "Earth Pledge." The Pledge is a printed statement that an individual signs and keeps as an expression of his/her personal commitment to helping create an environmentally sustainable world. Distributed prior to the conference by organizers and boosters worldwide, the Pledge served as a mechanism to increase awareness of

and support for UNCED, also known as the 'Earth Summit.' Those who signed the Pledge kept it as a reminder of their commitment, while Pledge distributors reported back to their national UNCED committees on the numbers of people signing it. At the Rio proceedings, conference leaders announced the total number of signers worldwide as a measure of support for the delegates' efforts. In the future, organizers hope that the Pledge will broaden and deepen public involvement in the implementation of the Earth Summit resolutions. The text of the Pledge appears below.

Earth Pledge

Recognizing that people's actions towards nature and each other are a growing source of damage to the environment and resources needed to meet human needs and to ensure survival and development,

I pledge to act to the best of my ability to help make the Earth a secure and hospitable home for present and future generations.

ASE members Henry Hartsfield, left, and Dick Truly flank Mr. Nandasiri Jasentuliyana, Director of the United Nations Office for Outer Space Affairs, at a ceremony marking the first day of issue of the U.N.'s Mission to Planet Earth stamp series.

UNITED NATIONS STAMP INAUGURATION

As part of its ongoing partnership with the United Nations, ASE arranged for its members Richard Truly and Henry Hartsfield to participate in a U.N. ceremony in September inaugurating a series of U.N. 'Mission to Planet Earth' stamps. The U.N. issued the stamps to commemorate the International Space Year (ISY). Opening the ceremony, Mr. Nandasiri Jasentuliyana, director of the U.N. Office for Outer Space Affairs, described the ways in which space has expanded our ability to monitor and study the Earth. Hartsfield and Truly, both stamp collectors, reflected on how their personal experience of space has en-

hanced their appreciation of the Earth as a single place. They agreed on the unique and educational role stamps play in chronicling human civilization, and expressed their support of the issuance of space stamps to commemorate milestones in space exploration. The ceremony concluded with U.N. International School students reading excerpts from winning submissions in a U.N./ISY international essay contest on 'My Vision of Outer Space and the Promise It Holds for My Country and Mankind.' Two U.N. bodies, the U.N. Postal Administration and the Office for Outer Space Affairs, sponsored the event together with the World Federation of United Nations Associations.

ASTRONAUTS TOUR RUSSIAN SPACE FACILITIES

In March, ASE-USA President John Fabian and members Don McMonagle and David Low travelled to Russia and Kazakhstan for a six day tour of those nations' space facilities. At the invitation of ASE-Russia and with the support of ASE-USA and NASA, the group visited the Cosmonaut Training Center at Star City, the Flight Control Center at Kaliningrad, and the cosmodrome at Baikonur. At the cosmodrome the delegation observed the Soyuz TM-14 launch of ASE member Alexander Viktorenko, fellow Russian Alexander Kaleri and Klaus-Dietrich Flade of Germany. The three also took an extensive tour of launch facilities, launch vehicle and satellite preparation areas and the "cosmonaut hotel." The tour was the first exposure American astronauts had to the post-USSR Russian space program, and provided an interesting insight into the challenges of coordinating a space program among the newly independent states. The journey allowed NASA astronauts to more closely acquaint themselves with Russian space hardware and operations, as well as with trends in the former Soviet Union affecting international space exploration. This increasing familiarization was particularly timely in light of stepped up Russian-American cooperation in human space exploration, including crew exchanges.

INTERNATIONAL COOPERATION POLICY DISCUSSIONS AND PAPER

Throughout the year, ASE and George Washington University's Space Policy Institute continued their joint sponsorship of a series of invitational policy discussions on the challenges and opportunities of international space cooperation in a transformed world political environment. The 1992 speakers included Kenneth Pederson, former NASA Associate Administrator for External Affairs, George van Reeth, former European Space Agency Director of Administration, Mark Albrecht, Executive Secretary of the U.S. National Space Council, Yuri Koptev, Director General of the Russian Space Agency, and Dan Fink, a member of the U.S. Vice President's Space Policy Advisory Board. Each addressed the question of international cooperation in space from his personal and professional perspective, providing the participants with a diverse array of opinion on the subject. The discussions provide a not-for-attribution environment where leaders in the space community may freely float their ideas and absorb those of their peers.

Drawing from the first several meetings, ASE and the Space Policy Institute issued a paper titled "International Cooperation in Space: New Opportunities, New Approaches." The paper calls for the establishment of a high level policy forum among spacefaring nations to set the goals of cooperative efforts, and suggests that enhanced international cooperation at both the government and industrial levels will help the U.S. achieve its

own space goals. A new set of realities dictates a cooperative approach, the paper asserts. These include the disappearance of any Soviet military and geopolitical threat to U.S. interests, reassessments of U.S. space goals and programs in light of new geopolitical and domestic budgetary realities, similar reassessments in other countries, and a resurgence of competitive pressures on U.S. international policy in light of current economic conditions and trade relationships.

With no primary competitor and with increasing capabilities among its traditional junior partners, the U.S. should define its leadership in terms of the quality and performance of its space capabilities, the paper suggests. The U.S. should move away from an insistence on control over all 'critical path' project elements and toward "selective interdependence over time" as a way of conducting business. Space planners, the paper says, should study the model of private sector 'strategic alliances' to achieve an acceptable distribution of the benefits of cooperation over time and across a range of collaborative enterprises. Once a joint forum of spacefaring nations sets common goals, government and industry should jointly develop a strategic approach to cooperation that facilitates international private sector collaboration in developing and operating the space systems that governments agree are necessary.

The paper calls upon the National Space Council to articulate, develop and execute a new national policy that affirms cooperation as a central element of U.S. policy. The Council should list and prioritize goals to be achieved through cooperation, lay down criteria for evaluating proposals for cooperative activities, and assign roles and responsibilities to the agencies doing the work. Other nations have begun to restructure their space programs. Hence, if we are to advance our own space goals on solid financial footing, early initiatives on cooperation become necessary, the paper concludes, not just discretionary. (Copies of the ASE/Space Policy Institute paper are available from ASE.)

ASE/WORLD SPACE CONGRESS SESSION

In August/September of 1992, the two major international organizations of space professionals, the Committee on Space Research and the International Astronautical Federation, held a joint convention in Washington DC. Dubbed the World Space Congress, the event was the premier professional gathering of the International Space Year. ASE organized and sponsored a session at the meeting titled "Human Space Flight: The Past and Future of International Cooperation". The participating ASE members suggested that

past cooperation in manned space exploration has yielded many beneficial results, and can serve as a model for joint efforts in the future.

Session chairman Rick Hauck introduced the speakers, each of whom drew from his own experience in cross-cultural collaboration in space. Charles Bolden outlined U.S. hopes and plans for international involvement in the Space Exploration Initiative (SEI). Speaking for the Russians, Alexei Leonov and Oleg Makarov described the successes of the Apollo-Soyuz Test Project and presented an overview of past and present Russian-led international space activities. They reviewed the successes of the Soviet Intercosmos program since its beginnings in the 1970's and evaluated its possible use as a model for future cooperation. As Europeans who flew with the Russians, Bertalan Farkas, Mirosław Hermaszewski and Jean-Loup Chretien recounted the benefits of cooperation in Earth observation, astrophysics, life and materials sciences and extravehicular operations. European payload specialists Ulf Merbold and Wubbo Ockels

discussed the results of experiments performed during the U.S./European Spacelab program. Concluding the program, Ernst Messerschmid previewed the new technologies that further solar system exploration will require, and called for expanded international cooperation in their development.

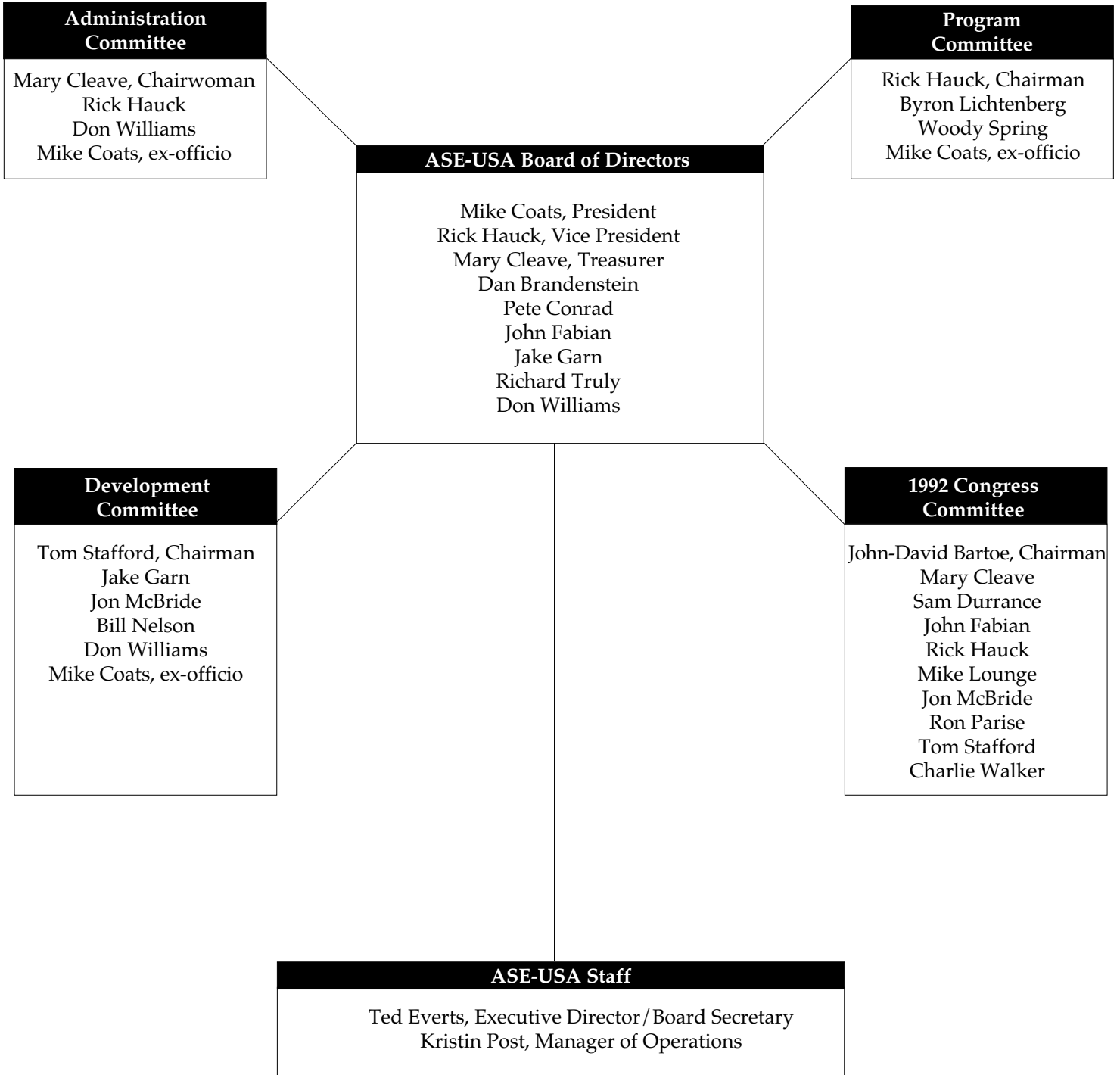
AIAA WORKSHOP

In December, ASE members John Fabian and Jean-Loup Chretien participated in an American Institute of Aeronautics and Astronautics workshop on international cooperation in future space activities. The workshop included some sixty recognized authorities on space science, engineering and policy from over twenty nations. Fabian served as co-chair of the Space Exploration Panel with Jacques Collet of the European Space Agency. Chretien was a member of the panel. Fabian and Chretien each presented his ideas of ways to forge closer international cooperation in a newly emerging world order.

The visiting U.S. astronaut delegation took this snapshot of Klaus Dietrich Flade, left, and Alexander Viktorenko leaving the Baikonur Cosmodrome's crew quarters en route to their Soyuz TM-14 launch to the Mir station.

While visiting the Cosmonaut Training Center in Star City outside Moscow, Don McMonagle sits in as Michel Tognini (partially hidden) simulates a rendezvous in the Mir orbital station simulator.

Shown below are the board of directors, committees, and staff of the Association of Space Explorers-USA at the end of 1992. The 1992 Congress Committee disbanded after successfully organizing the 8th ASE Planetary Congress in August.



**GENERAL STATEMENT BY THE
ASSOCIATION OF SPACE EXPLORERS
8th Planetary Congress
Washington, DC**

To Mars Together

For centuries, humanity has looked up at the heavens and seen a bright point of red light in the night sky. As we have more closely examined this shining body we now know as the planet Mars, we have learned that it is the closest and most similar planetary body to our Earth. Human curiosity, the urge to explore and discover, has since moved us to study the red planet both from afar as well as with robotic vehicles. And like explorers throughout the ages, we are drawn to this distant land because of what we can learn, how we might benefit, the challenges to be overcome, and because 'it is there.' Of all human endeavors, a mission to Mars promises to be the most challenging ever undertaken. These challenges will not only be scientific, technical, and economic, but intercultural, educational, and moral.

Humanity's thirty-five years of spaceflight experience, combined with current state-of-the-art technologies, make a program of landing humans on Mars largely achievable today. To ease the journey, however, laying a technological foundation is paramount. In addressing the reliability and safety required for a Mars mission, we will find that the transition from a maximum two week emergency return capability, typical of past space missions, to one of two years, will be a step into a new dimension. Also, we will require advanced propulsion systems and concepts such as aerobraking devices. If we are to make the mission successful, it is essential that society allocate the necessary budgetary resources to the development of these technologies.

Seen as an investment, a mission to Mars would inevitably prove to be a rewarding economic venture. Many studies have shown that the return on investment associated with space exploration is high - perhaps five to ten times the initial outlay. Much of this return can be measured directly - achievements in computers, medicine and communication, to mention a few. However, some of the greatest returns may be less measurable: the educational challenges presented to our youth, the employment of an enthusiastic and talented workforce, the thousands of lives saved by the forecasting capabilities of weather satellites. These are the outcomes which underscore the wisdom of investing time and resources into space exploration, and now, into a mission to Mars.

One benefit of a successful Mars mission will be the spin-offs in the area of safety control for technologically complex operations over long time periods at reasonable cost. However, even well controlled risk does not mean that we can and even should try to exclude risk totally. The mission to Mars is analogous to the exploration and settlement of the New World, as expressed by the oft-used phrase, 'pioneering the space frontier.' Risk and sacrifice are inherent features of such endeavors. Today, with all our capabilities in storing and using knowledge bases and performing large computer calculations and simulations, there is a danger that we are becoming averse to risk. We may ask for perfection as a goal, but it cannot be a reality. If we accept only success, we will stop taking chances, and our accomplishments will diminish. In this imperfect world, astronauts have the responsibility of identifying and assessing the hazardous pathways, since we have shown our willingness to accept the high risk of spaceflight.

However, these risks, and the costs and benefits of taking them, are best shared internationally, and by both the private and public sectors. The Mars mission will require the skill of many institutions, in particular those industries which finally have to build the hardware and software. Industry will be a significant source of ideas, equipment and services, as has been the case in all Earth-orbital programs and in the Apollo program to the Moon. Industry works in association with academia, and designs and constructs for governments and for commercial users. The benefits of industry involvement extends to both the accomplishment of large scale international exploration of Mars, as well as to the smaller scale economic utilization of the skills and technologies developed.

Likewise, a mission of such scale will only be successful through close cooperation between and among nations. A journey to Mars is an opportunity for international cooperative programs greater than any previously undertaken. However, divisive and destructive global problems must be resolved. Governments must move towards an understanding of how we can learn to live in harmony with each other and with our environment. As American President Gerald Ford said in 1974, "Docking in space and constructing a complex space structure

in orbit is possible if it is preceded by docking thousands and thousands of specialists from many countries on Earth.”

Indeed, a mission to Mars will not follow the old model of nations performing great feats to demonstrate national technological prowess. For the Mars endeavor, technology will not be the chief factor defining national relationships, nor will it even be our greatest challenge. Rather than a competition between nations to get there first, the mission to Mars will be an international endeavor, a program with a delegation of Earth’s inhabitants on a journey to explore its nearest planetary neighbor.

A Mars program will create unprecedented international interdependence, stimulate the exchange of knowledge and technologies, and provide an opportunity for sharing the results of space activities by many nations, rather than restricting them to the few spacefaring nations. An international Mars mission will confront us with differences in how our partners work. We will need to respect these differences, and to use them synergistically rather than allow them to draw us apart. The leading space nations must actively involve smaller and developing countries and provide them with opportunities to participate in the work and share in the benefits. These countries in turn will serve as a bonding force in a network of interdependent relationships, helping keep all nations working together. When organized in a true international manner, a mission to Mars stands to benefit all nations and peoples.

In point of fact, however, it is the next generation who will perform this mission and serve on its crew. Our generation, and in particular the Association of Space Explorers, has the responsibility of passing on its knowledge and experience in training the next generation to use the technologies we have developed. We must also prepare young prospective crew members to speak international languages and to cope with long isolation in small groups. These crew skills will allow international cooperation to flourish in an atmosphere of trust and stability, which in turn will benefit an entire new generation on Earth.

Our species’ experience on our home planet over the millennia serves as both an important lesson for and inspiring model of how we interact with our environment. A Mars mission provides humankind with the opportunity to demonstrate some of those special capabilities which have made us so successful on our home planet, i.e., working with our natural world and its resources, learning from them, and channeling them to improve the quality of life. These strengths can also be successfully applied on Mars—humanity can survive, grow and find new opportunities working with the Mars environment. At the same time, we must heed the ethical and moral principals which serve as standards by which to judge our individual and collective behavior. Today we witness the terrible environmental destruction of many parts of our Earth. We also see the great damage that our species inflicts upon itself, from personal substance abuse to the radioactive altering of our very genetic code. The great achievements of science may soon turn against us and our planet unless we redirect the trends of self-destruction. A Mars mission will be most successful when we can be sure that the technical preparation for this expedition will be of benefit to ourselves and to our environment.

The challenges posed by a human mission to Mars are numerous and great. The mission challenges us as individuals, as groups and as a species. It challenges our minds, bodies and spirit. But, if we are bold enough to draw from each other’s strengths and learn from our weaknesses, we will meet the challenges. For these reasons, the Association of Space Explorers recommends a global effort to send human emissaries of Earth To Mars Together.

Adopted and signed this 25th day of August, 1992

The following individuals had joined the Association of Space Explorers and performed or begun their respective space missions as of December 31, 1992.

* Loren Acton, USA STS 51-F	Alan Bean, USA Apollo 12, Skylab 3	Eugene Cernan, USA Gemini 9, Apollo 10, Apollo 17
James Adamson, USA STS 28, STS 43	Georgi Beregovoi, Russia Soyuz 3	Franklin Chang-Diaz, USA STS 61-C, STS 46
Viktor Afanasyev, Russia Soyuz TM-11	Anatoly Berezovoi, Russia Soyuz T-5	Kevin Chilton, USA STS 49
Thomas Akers, USA STS 41, STS 49	* John Blaha, USA STS 29, STS 33, STS 43	* Jean-Loup Chretien, France Soyuz T-6, Soyuz TM-7
* Toyohiro Akiyama, Japan Soyuz TM-11	Guion Bluford, USA STS 8, STS 61-A, STS 39, STS 53	* Mary Cleave, USA STS 61-B, STS 30
Vladimir Aksyonov, Russia Soyuz 22, Soyuz T-2	* Karol Bobko, USA STS 6, STS 51-D, STS 51-J	Michael Clifford, USA STS 53
* Sultan Al-Saud, Saudi Arabia STS 51-G	* Charles Bolden, USA STS 61-C, STS 31, STS 45	Michael Coats, USA STS 41-D, STS 29, STS 39
Buzz Aldrin, USA Gemini 12, Apollo 11	Roberta Bondar, Canada STS 42	Michael Collins, USA Gemini 10, Apollo 11
* Alexander Alexandrov, Russia Soyuz T-9, Soyuz TM-3	Kenneth Bowersox, USA STS 50	* Charles Conrad, USA Gemini 5, Gemini 11, Apollo 12, Skylab 2
* Alexander Alexandrov, Bulgaria Soyuz TM-5	Vance Brand, USA ASTP, STS 5, STS 41-B, STS 35	Gordon Cooper, USA Mercury 9, Gemini 5
* Joseph Allen, USA STS 5, STS 51-A	* Daniel Brandenstein, USA STS 8, STS 51-G, STS 32, STS 49	Richard Covey, USA STS 51-I, STS 26, STS 38
Jerome Apt, USA STS 37, STS 47	Curtis Brown Jr., USA STS 47	John Creighton, USA STS 51-G, STS 36, STS 48
Anatoly Artsebarsky, Russia Soyuz TM-12	Mark Brown, USA STS 28, STS 48	Frank Culbertson USA STS 38
Yuri Artyukhin, Russia Soyuz 14	James Buchli, USA STS 51-C, STS 61-A, STS 29, STS 48	* Walter Cunningham, USA Apollo 7
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Ellen Baker, USA STS 34, STS 50	* Scott Carpenter, USA Mercury 7	* Bonnie Dunbar, USA STS 61-A, STS 32, STS 50
Michael Baker, USA STS 43, STS 52	* Gerald Carr, USA Skylab 4	* Samuel Durrance, USA STS 35
Alexander Balandin, Russia Soyuz TM-9	Manley Carter, USA † STS 33	Lev Dyomin, Russia Soyuz 15
* John-David Bartoe, USA STS 51-F	John Casper, USA STS 36	Vladimir Dzhanibekov, Russia Soyuz 27, Soyuz 39, Soyuz T-6, Soyuz T-12, Soyuz T-13
* Patrick Baudry, France STS 51-G	* Robert Cenker, USA STS 61-C	

Donn Eisele, USA † Apollo 7	Charles Gemar, USA STS 38, STS 48	* Karl Henize, USA STS 51-F
Anthony England, USA STS 51-F	Robert Gibson, USA STS 41-B, STS 61-C, STS 27, STS 47	Thomas Hennen, USA STS 44
Joe Engle, USA STS-2, STS 51-I	* Edward Gibson, USA Skylab 4	Terence Henricks, USA STS 44
Ronald Evans, USA † Apollo 17	* Yuri Glazkov, Russia Soyuz 24	* Miroslaw Hermaszewski, Poland Soyuz 30
* John Fabian, USA STS-7, STS 51-G	John Glenn, USA Mercury 6	Richard Hieb, USA STS 39, STS 49
Mohammed Faris, Syria Soyuz TM-3	Linda Godwin, USA STS 37	* Jeffrey Hoffman, USA STS 51-D, STS 35, STS 46
* Bertalan Farkas, Hungary Soyuz 36	Viktor Gorbalko, Russia Soyuz 7, Soyuz 24, Soyuz 37	* Millie Hughes-Fulford, USA STS 40
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Anna Fisher, USA STS 51-I	* Georgi Grechko, Russia Soyuz 17, Soyuz 26, Soyuz T-14	* Georgi Ivanov, Bulgaria Soyuz 33
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* Owen Garriott, USA Skylab 3, STS 9		

* Valery Kubasov, Russia Soyuz 6, ASTP, Soyuz 36	Bruce McCandless, USA STS 41-B, STS 31	Stephen Oswald, USA STS 42
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Valentin Lebedev, Russia Soyuz 13, Soyuz T-5	* James McDivitt, USA Gemini 4, Apollo 9	* Ronald Parise, USA STS 35
David Leestma, USA STS 41-G, STS 45	Donald McMonagle, USA STS 39	* Gary Payton, USA STS 51-C
* Alexei Leonov, Russia Voskhod 2, ASTP	Carl Meade, USA STS 38, STS 50	Donald Peterson, USA STS 6
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* John Michael Lounge, USA STS 51-I, STS 26, STS 35	* Ernst Messerschmid, Germany STS 61-A	* Leonid Popov, Russia Soyuz 35, Soyuz 40, Soyuz T-7
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* Viktor Savinykh, Russia Soyuz T-4, Soyuz T-13	* Thomas Stafford, USA Gemini 6, Gemini 9, Apollo 10, ASTP	Alexander Viktorenko, Russia Soyuz TM-3, Soyuz TM-8, Soyuz TM-14
* Svetlana Savitskaya, Russia Soyuz T-7, Soyuz T-12	Robert Stewart, USA STS 41-B, STS 51-J	* Igor Volk, Russia Soyuz T-12
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* Helen Sharman, England Soyuz TM-12	Vladimir Titov, Russia Soyuz T-8, Soyuz TM-4	Alfred Worden, USA Apollo 15
Vladimir Shatalov, Russia Soyuz 4, Soyuz 8, Soyuz 10	* Michel Tognini, France Soyuz TM-15	* Boris Yegorov, Russia Voskhod 1
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* Loren Shriver, USA STS 51-C, STS 31, STS 46	* Richard Truly, USA STS 2, STS 8	* Vyacheslav Zudov, Russia Soyuz 23
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