

THE SPACE EXPLORER

THE NEWSLETTER OF THE ASSOCIATION OF SPACE EXPLORERS - USA • OCTOBER 1992

TO MARS TOGETHER: The Ayes Have It

Astronauts at ASE's 8th Congress in Washington DC in August called for expanded cooperation among nations to develop and execute a human mission to Mars. ASE members and invited experts agreed that placing an international Mars mission high on the human agenda will yield deeper intercultural cooperation, technical breakthroughs, educa-

tional motivation and financial benefits. While the outlays for such a mission would be high, the participants felt that the overall return would be substantial. Additionally, a shared investment by many nations could reduce the costs incurred by any one of them. The participants agreed that an international mission would be more politically and financially

acceptable to the people of the world than a 'go it alone' approach by individual nations.

At the opening ceremony, Father Leo O'Donovan, president of Georgetown University, (the site of the Congress), Washington Councilmember Charlene Drew Jarvis, and NASA Administrator Daniel Goldin welcomed the members to Washington. Father O'Donovan spoke of the Jesuit commitment to the quality education of young people, a goal shared with ASE. Councilmember Jarvis, the cousin of ASE member Fred Gregory, greeted members on behalf of the diverse and historic Washington community. In his address, Administrator Goldin drew lessons from history to inform a vision of the future in which humanity explores the heavens as a united species. He voiced a principled commitment to and delivered a compelling rationale for a human mission to Mars.

ASE invited Mike Griffin,

ASE CONGRESS HONORS ASIMOV, CHALLENGER CENTER

At its Congress award ceremony this year, ASE honored author Isaac Asimov and presented a special award to the Challenger Center for Space Science Education. Asimov, a committed advocate of human space exploration, wrote hundreds of fictional works in which he created entire worlds and civilizations. He also published many

syndicated articles which lucidly explained advanced scientific theories about our universe in layman's terms. Last year before his passing, ASE chose Asimov to receive this year's Planetary Award, and advised his wife Janet of the decision. She reported back that Asimov accepted the award with pleasure. After he died, Janet suggested that ASE invite Dr. Carl

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PRESIDENT'S REPORT by John Fabian

This edition of *The SpaceExplorer* is dedicated to those who made our Eighth Planetary Congress in Washington an outstanding success. This was the largest ASE Congress in our history, with substantial cooperation with the World Space Congress, The Planetary Society, and The Challenger Center for Space Science Education, as well as a large public education outreach program. These opportunities and the visit to West Virginia also severely challenged the organizers and staff. Their combined efforts resulted in smooth interfaces and transitions along with an exceptional technical program.

First, I acknowledge members of our Host Committee who gave so generously to support our efforts. They made everything possible and deserve our lasting gratitude. A list is provided on page 5, but I want to highlight the financial contributions of our own ASE members: Tom Stafford, John Fabian, Jon McBride, Sultan Al-Saud, Loren Acton, John-David Bartoe, Owen Garriott, Byron Lichtenberg, Don Peterson, Mike Collins, Charlie Duke, Jack Lousma, Jim Lovell, Gary Payton, Charlie Walker, and Don Williams. In addition; Acton, Al-Saud, Fabian, Walker, Stafford, Rick Hauck and Joe Allen made personal loans to ASE to provide the operating

capital to organize and initiate the fundraising program. Any organization with such committed members has a great future.

John-David Bartoe and his organizing committee of Hauck, Walker, McBride, Stafford, Fabian, Mike Lounge, Mary Cleave, Sam Durrance, Ron Parise, Donna Bartoe, Donna Fabian, and Susan Flowers Walker developed the fund raising strategy, developed all logistical support, provided gifts, coordinated donor recognition awards, recruited speakers, organized the public outreach program, designed the Congress Poster, structured the media program, and executed the cooperative programs with the World Space Congress, The Planetary Society, and the Challenger Center. One could ask no more!

Special thanks to Jon and Sharon McBride who planned, conducted and raised all of the necessary funds and direct support for the West Virginia visit - a super addition to our Congress and a lasting memory for our foreign members.

Many of our members contributed with technical presentations that are the heart and essence of an ASE Congress. These include Allen, Bartoe, Charlie Bolden, Dan Brandenstein, Pete Conrad, Bonnie Dunbar, Jake Garn, Hauck, Bryan O'Connor, Dick Richards, Stafford, and Williams.

They joined astronaut speakers from Russia, France, Belgium, Hungary, Poland, Italy, Holland, Germany, Switzerland, Japan, and Austria in presenting an outstanding program.

Finally, special thanks to our staff and volunteers who made sure that everything worked well and who reacted instinctively in the heat of battle. They ensured that the details were well thought out and executed them flawlessly. Ted Everts, Kristin Post, Cathy McIntyre, Joyce Hottle, and everyone else - super job. Thanks! □

The SPACEEXPLORER

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ASE MEMBERS DISCUSS COOPERATION AT WORLD SPACE CONGRESS

An international group of ASE members speaking at the World Space Congress asserted that past cooperation in manned space exploration has yielded many beneficial results and can serve as a model for joint efforts in the future. At an ASE/WSC session titled 'Human Space Flight: The Past and Future of International Cooperation', the astronauts described past forms of effective cross-cultural space collaboration. They proposed that the space agencies modify and expand these programs to take full advantage of available international human resources for a collective space effort.

After an introduction by session chairman Rick Hauck, 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. 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.

The session was one of several ASE has jointly held with IAF and COSPAR in the recent past. The sessions address issues of cooperation and human spaceflight operations, and draw upon the experience of ASE's diverse international membership. □

CIS DELEGATION'S ILL 86 TRANSPORTS HUMANITARIAN AID TO RUSSIA

In an exchange of 'fuel for aid', Russian astronauts transported medical supplies on their return flight to Moscow after the 8th Congress. In July, ASE-CIS advised ASE-USA that its Ill 86 would require a fuel donation for the return trip as well as a place to land and park for the week. ASE member Tom Stafford contacted the Air Force and secured an agreement for the Russian plane to land and park at Andrews Air Force Base in Maryland. ASE-USA president John Fabian confirmed with Ambassador Armitage's office at the State Department that it was dispersing Defense Department

funds for transportation of humanitarian aid to the former Soviet republics. Fabian then contacted the relief organization Operation Helping Hand to see if it could make available up to ten tons of aid. Operation Helping Hand agreed to provide the supplies, for distribution in Moscow and St. Petersburg, and Armitage's office released DOD funds to cover fuel costs for the flight. ASE-USA thanks the many individuals and organizations that helped facilitate this exchange, and is indebted to all of them for their rapid and generous response. □

ASE Members Open WSC Exhibits

At the request of the American Institute of Aeronautics and Astronautics, John Fabian, Franco Malerba (Italy) and Viktor Savinykh (Russia) officially opened the national and industry exhibits at the World Space Congress. They reminded the assembled audience of the importance of space flight, the future role of international cooperation, and the role of ASE in establishing strong links between the space flyers of many nations. The ribbon cutting ceremony was followed by a tour of the exhibits which illustrated the advances and aspirations of the many nations represented and the technologies of the international corporate aerospace community. □

ASE AND THE PLANETARY SOCIETY JOIN IN MARS DISCUSSION

In a first time partnership, ASE and The Planetary Society cohosted an evening of public lectures at the 8th Congress on the theme 'To Mars Together'. Planetary Society president Carl Sagan and ASE members Alexei Leonov, Igor Volk and Joe Allen made up the panel that addressed an audience of several hundred. Opening the gathering, Sagan touched on the variety of rationales for an international human mission to Mars. He suggested that achieving the political will for such a venture is possible only with a concerted effort by a committed core constituency, and then only if the mission is international in scope. Taking a different tack, Igor Volk listed the obstacles the

current adult generation has built that block a commitment to going to Mars. He then urged young people, "don't listen to your parents, do it anyway - go to Mars anyway!" Alexei Leonov outlined the successes of past U.S.-Soviet human space flight cooperation and noted with frustration the reluctance our current systems and leaders show at leading humanity in the most inspirational exploration in history - the exploration of Mars together. Speaking last, Joe Allen suggested that the new direction and orientation of world political forces dictate that a Mars mission must be international. He proposed that the space community design and build space infrastructure in time

periods that resonate with current political, academic and business cycles. At the close of the evening Sagan introduced the winners of The Planetary Society's H. Dudley Wright International Student Contest 'Together To Mars'. ASE-USA thanks The Planetary Society for its successful organization of the event. □

Astronauts Sample American Life in West Virginia

ASE members traveled to West Virginia midway through the 8th Congress for a change of venue and a break for recreational activities. The visit began with a scenic ride aboard the CSX Greenbrier Hotel train from Washington through the Allegheny and Shenandoah mountains to White Sulphur Springs. The group then shuttled to a barbecue for dinner and danced to the music of a local bluegrass band. The following day some members engaged in a range of recreational activities, while others reported on their space flight experiences at a Greenbrier conference of doctors of osteopathic medicine. That evening the local sponsors joined members at the hotel for an evening of dining and dancing to a big band. At their final meeting the following morning, members concluded organizational business and watched a government video about the complex constructed beneath the Greenbrier for use by the U.S. Congress in a nuclear war. ASE-USA thanks Jon McBride, CSX, the Greenbrier and the many local West Virginia sponsors for an outstanding visit to the country. □

ASE MEMBERS HELP BUILD 'MARSVILLE'

ASE and the Challenger Center brought astronauts and students together on the 8th Congress Community Day in a project simulating operations at a Martian settlement called 'Marsville'. The teams of junior high school age students began by erecting fan-inflated enclosed plastic habitats on a barren gymnasium floor. In another exercise the groups enacted simulations of a colony resupply operation during a Martian windstorm. Several ASE members observed closely, some offering words of advice and encouragement. A few of the bolder explorers got down on their hands and knees and applied duct tape, held up plastic sheeting and helped students meet the challenges posed by duststorms. Sticking to their tasks at hand with the concentration and discipline of professional engineers,

the students accepted the support and input of the participating astronauts as team players. The event proved to be a learning experience for both groups. ASE members had an opportunity to see students combine learning with team challenges, and the students benefitted from an infusion of real space experience. The astronauts not only helped the students accomplish their immediate tasks, their participation gave the students a living impression of what their own futures might hold. The event showed the educational value of guided interaction between students and their potential professional role models. ASE and the Challenger Center have expressed interest in future collaboration to expand these activities to the home countries of ASE's international members. □

PBS SPACE AGE SERIES TO AIR STARTING OCTOBER 12

Space Age, a six-part International Space Year documentary series, will air Monday nights this fall on PBS from October 12 through November 16. The opening episode discusses human Mars mission scenarios, drawing in part from the final report of ASE member Tom Stafford's Synthesis Group. Another installment, 'The Moon and Beyond', features interviews with Pete Conrad and Harrison Schmitt discussing the Apollo program and the trail it blazed for the future. A 'Mission to Planet Earth' episode incorporates the commentary of Rusty Schweickart and Jim Lovell as they recall looking back at Earth from space. The final show in the series, 'What's a Heaven For?', includes footage shot at the 7th ASE Congress in Berlin, with several ASE members reflecting on the meaning of human space exploration for humanity. Actor Patrick Stewart will narrate the series, which is a production of public station WQED in Pittsburgh. A schedule of the Space Age series' episodes appears below. □

Quest for Planet Mars

October 12th

Celestial Sentinels

October 19th

The Unexpected Universe

October 26th

The Moon and Beyond

November 2nd

Mission to Planet Earth

November 9th

What's a Heaven For?

November 16th

TRULY, HARTSFIELD REPRESENT ASE AT U.N. STAMP INAUGURAL

ASE members Dick Truly and Henry Hartsfield participated in a United Nations ceremony September 4 inaugurating a series of U.N. 'Mission to Planet Earth' stamps commemorating International Space Year. Mr. Nandasiri Jasentuliyana, director of the U.N. Office for Outer Space Affairs, invited the two astronauts to New York on behalf of the world body. Opening the ceremony, Mr. Jasentuliyana commented on how space has increased our ability to monitor and study the Earth. Hartsfield and Truly, both stamp collectors, reflected on how their personal experience of space has enhanced their appreciation of the Earth as a single place. They

agreed on the unique and educational role stamps play in chronicling human civilization, and supported 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.' The event was the latest in a series of occasional collaborations between ASE and the U.N. to advance public understanding of the increasing importance of space in human affairs. □

Asimov, Challenger Center

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Sagan to accept the award on Isaac's behalf. At the ceremony, Sagan, a longtime friend of the Asimovs, paid tribute to the writer's powerful and original contribution to our collective imagination of life in space. Asimov's name will permanently join those of past award winners on ASE's Crystal Helmet award. The list includes Jacques-Yves Cousteau, Gerard O'Neill, Oleg Gazenko, Thomas Paine, Boris Raushenbakh, Yash Pal, Hendrick van de Hulst and Hans Dietrich Genscher.

Also at the ceremony, ASE members for the first time bestowed an award upon an organization, the Challenger Center for Space Science Education. Founded by the families of the Challenger astronauts, the Center uses space themes to "create positive experi-

ences 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 Center pursues these goals through regional learning centers, a satellite educational network, teacher workshops, and student teamwork projects. Recognizing that it is the next generation that will explore the solar system, ASE supports programs which introduce young people to the skills and disciplines these missions will require. The Association honored the Challenger Center for its unparalleled contribution to the quality education of our next generation. The award, sculpted specially for the presentation by David Sugar and Carol Iselin, is a crystal pyramid depicting the Challenger launch. It now stands on public display at the Center's Virginia headquarters. □

To Mars Together

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NASA Associate Administrator for Exploration, Carl Sagan, astronomer and author, and Nandasiri Jasentuliyana, Director of the United Nations Office for Outer Space Affairs to address the Congress theme 'To Mars Together'. 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 then spelled out the myriad potential costs and benefits of an international human mission to Mars. He suggested that to convince people of the value of such a project, its advocates must articulate its many worthy rationales and commit to broad international involvement. Concluding the session, 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 a historic post-Cold War opportunity to combine resources and work together on this mission of unprecedented scope.

Joining the invited speakers on the panel were ASE members Tom Stafford, Valentina Tereshkova and Konstantin Feoktistov. 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 followed with an update on Russian Mars plans for 1996 and 1998 and appealed for significant international participation in both missions. Feoktistov suggested that the application of knowledge we gain about our world, our universe, and about living in space may be the most compelling argument for missions to Mars.

At a session devoted to updates on space program activities, members involved in recent missions reported on the results of their work. Sergei Krikalyov and Igor Volk spoke for the Russian side, showing a video of Krikalyov's extravehicular activities on his recent ten-month Mir mission and presenting a status of the Buran program. Astronaut chief Dan Brandenstein, Dick Richards, Bonnie Dunbar and John-David Bartoe provided an update 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 in the development of space station Freedom. Presenting for Europe, Wubbo Ockels outlined ESA plans for the Columbus space station. To conclude the session, a diverse set of international flyers reported on their recent respective guest missions aboard the U.S. Shuttle and Russian 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 a technical session 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 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 development of single stage-to-orbit technology. Europeans Ernst Messerschmid and Wubbo Ockels concluded the session with a comparison of the relative 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 economic commitment to space exploration. Alexei Leonov and Igor Volk outlined the challenges and opportunities facing the newly created Russian Space Agency. On the European side, Wubbo Ockels and Reinhard Furrer previewed a range of ESA programs planned for the next decade.

On the Congress Community Day, ASE members addressed several community audiences as

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TO MARS TOGETHER

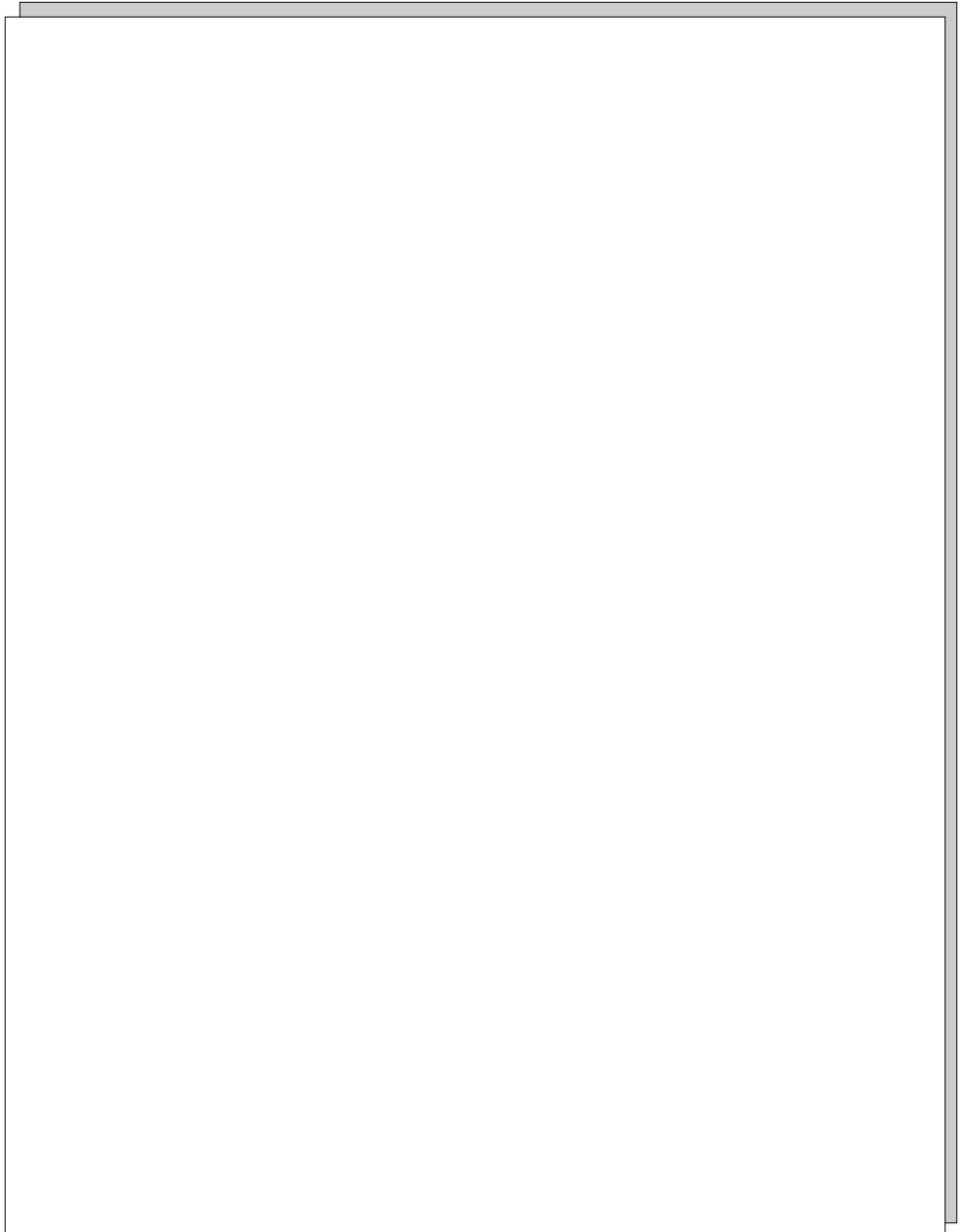
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well as three groups of incoming freshmen at Georgetown University. John-David Bartoe, Michel Tognini and Don Williams welcomed new arts and sciences, language and business students. Other members spoke to community audiences on topics ranging from space medicine, space stations and astronomy to space sciences and exploration, spacecraft design and space commerce. Throughout the day, several members joined students in Georgetown's McDonough Gymnasium to help construct a simulated Martian colony, a project organized by the Challenger Center for Space Science Education. Please see the related article on page 4.

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. □

REPORT ON INTERNATIONAL COOPERATION RECEIVES FAVORABLE REVIEWS

The SpaceExplorer is pleased to publish the following letter from NASA Acting Deputy Administrator Aaron Cohen in support of the paper issued by ASE and the Space Policy Institute of George Washington University titled International Cooperation in Space: New Opportunities, New Approaches.



ASE Members as of October 7, 1992

| | | | | |
|-----------------------|-------------------------|-------------------------|-------------------------|------------------------|
| <u>USA</u> | John Glenn | Paul Scully-Power * | Musa Manarov | <u>Germany</u> |
| Loren Acton * | Linda Godwin | Margaret Seddon | Andrian Nikolayev * | Klaus Dietrich Flade |
| James Adamson | Richard Gordon | Loren Shriver * | Valery Polyakov | Reinhard Furrer * |
| Thomas Akers | Ronald Grabe | Deke Slayton * | Leonid Popov * | Sigmund Jähn * |
| Buzz Aldrin | Frederick Gregory * | Sherwood Spring | Pavel Popovich | Ulf Merbold * |
| Joseph Allen * | Sidney Gutierrez | Bob Springer * | Yuri Romanenko * | Ernst Messerschmid * |
| Jerome Apt | Blaine Hammond | Tom Stafford * | Valery Rozhdestvensky | <u>Hungary</u> |
| James Bagian | Gregory Harbaugh | Robert Stewart | Nikolai Rukavishnikov * | Bertalan Farkas * |
| Ellen Baker | Terry Hart | Kathryn Sullivan * | Valery Ryumin * | <u>India</u> |
| Michael Baker | Henry Hartsfield | William Thornton | Viktor Savinykh * | Rakesh Sharma |
| John-David Bartoe * | Rick Hauck * | Kathryn Thornton | Svetlana Savitskaya * | <u>Italy</u> |
| Alan Bean | Steve Hawley | Pierre Thuot | Alexander Serebrov | Franco Malerba * |
| John Blaha * | Karl Henize * | Eugene Trinh | Vitaly Sevastyanov | <u>Japan</u> |
| Guion Bluford | Thomas Hennen | Richard Truly * | Vladimir Shatalov | Toyohiro Akiyama * |
| Karol Bobko * | Terence Henricks | Lodewijk van den Berg * | Georgi Shonin | <u>Kazakhstan</u> |
| Charlie Bolden * | Richard Hieb | James van Hoften | Vladimir Solovyov * | Tokhtar Aubakirov * |
| Vance Brand | Jeffrey Hoffman * | Lacy Veach | Anatoly Solovyov | <u>Mexico</u> |
| Daniel Brandenstein * | Millie Hughes-Fulford * | James Voss | Gennady Strekalov | Rodolfo Neri |
| Mark Brown | Tamara Jernigan | David Walker | Valentina Tereshkova * | <u>Mongolia</u> |
| Curtis Brown | Joseph Kerwin | Charles Walker * | Gherman Titov | Jugderdemidiyin |
| James Buchli | David Leestma | Taylor Wang * | Vladimir Titov | Gurragchaa |
| Robert Cabana | Byron Lichtenberg * | James Wetherbee | Alexander Viktorenko | <u>The Netherlands</u> |
| Kenneth Cameron | Don Lind * | Don Williams * | Igor Volk * | Wubbo Ockels * |
| Scott Carpenter * | Mike Lounge * | Alfred Worden | Alexander Volkov * | <u>Poland</u> |
| Gerald Carr * | Jack Lousma | <u>Russia</u> | Boris Yegorov * | Mirosław |
| John Casper | Jim Lovell * | Viktor Afanasyev | Alexei Yeliseyev | Hermaszewski * |
| Robert Cenker * | David Low | Vladimir Aksyonov | Vyacheslav Zudov * | <u>Romania</u> |
| Eugene Cernan | Shannon Lucid | Alexander Alexandrov * | <u>Afghanistan</u> | Dumitru-Dorin |
| Franklin Chang-Diaz | Jon McBride * | Anatoly Artsebarsky * | Abdul Mohmand | Prunariu * |
| Kevin Chilton | Bruce McCandless | Yuri Artyukhin * | <u>Austria</u> | <u>Saudi Arabia</u> |
| Mary Cleave * | Michael McCulley | Oleg Atkov | Franz Viehböck * | Sultan bin Al-Saud * |
| Michael Coats | Jim McDivitt * | Alexander Balandin | <u>Belgium</u> | <u>Switzerland</u> |
| Michael Collins | Donald McMonagle | Georgi Beregovoi | Dirk Frimout * | Claude Nicollier * |
| Pete Conrad * | Carl Meade | Anatoly Berezovoi | <u>Bulgaria</u> | <u>Syria</u> |
| Gordon Cooper | Bruce Melnick | Valery Bykovski | Alexander Alexandrov * | Mohammed Faris |
| Dick Covey | Ed Mitchell | Lev Dyomin | Georgi Ivanov * | <u>Vietnam</u> |
| John Creighton | Mike Mullane | Vladimir Dzhaniybekov | <u>Canada</u> | Pham Tuan |
| Frank Culbertson | Steven Nagel | Konstantin Feoktistov * | Roberta Bondar | |
| Walt Cunningham * | Bill Nelson * | Anatoly Filipchenko | Marc Garneau | |
| Jan Davis | George Nelson | Yuri Glazkov * | <u>Cuba</u> | |
| Brian Duffy | Bryan O'Connor * | Viktor Gorbatko | Arnaldo | |
| Charles Duke * | Stephen Oswald | Georgi Grechko * | Tamayo-Mendes | |
| Bonnie Dunbar * | Robert Overmyer | Alexander Ivanchenkov | <u>Czechoslovakia</u> | |
| Sam Durrance * | Ronald Parise * | Yevgeni Khrunov | Vladimir Remek * | |
| Tony England | Gary Payton * | Leonid Kizim | <u>England</u> | |
| Joe Engle | Donald Peterson | Pyotr Klimuk * | Helen Sharman * | |
| John Fabian * | Bill Pogue * | Vladimir Kovalyonok * | <u>France</u> | |
| Anna Fisher | William Readdy | Sergei Krikalyov * | Patrick Baudry * | |
| William Fisher | Kenneth Rightler | Valery Kubasov * | Jean-Loup Chretien * | |
| Gordon Fullerton | Dick Richards * | Alexander Laveikin | Michel Tognini * | |
| Drew Gaffney * | Sally Ride | Valentin Lebedev | | |
| Guy Gardner | Stuart Roosa * | Alexei Leonov * | | |
| Jake Garn * | Jerry Ross * | Vladimir Lyakhov | | |
| Owen Garriott * | Mario Runco | Oleg Makarov * | | |
| Charles Gemar | Walter Schirra | Yuri Malyshev | | |
| Edward Gibson * | Harrison Schmitt | Gennady Manakov | | |
| Robert Gibson | Russell Schweickart * | | | |

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| * participated in ASE 8th Planetary Congress |
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ASE World Representation

as of October 7, 1992

282 people have flown in space. Of these,

176 are American

73 are Russian

13 flew with the Americans

20 flew with the Russians.

Of these, 262 space flyers are living.

227 of these flyers are members of ASE. Of these,

137 are American

58 are Russian

12 flew with the Americans

20 flew with the Russians.

ASE membership, then includes

227 of 262 = 87% of the eligible humans

137 of 176 = 78% of the eligible Americans

58 of 73 = 79% of the eligible Russians

32 of 33 = 97% of the eligible remaining flyers.

ASE now has members in all of the 26 countries that have sent individuals into space.