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## Projects

[Editor's Note: As important as the details of organization discussed in Sections 2 and 3 are, they are merely the tools that let us get to the REAL business of local activists. Most of us join or start a chapter of the National Space Society so that we can work on the kind of projects covered in this section of the Handbook. Not all of this information will be of use to you right now, but please read through each of the projects. We have been able to draw upon a wealth of hard-won activist experience, and you are likely to find any number of hints which will be useful to you. Special thanks to CHRIS PETERSON, ROSEMARY SHIELDS and BILL RUDOW for providing much of the uncredited material in this Section.)

### **Community Space Survey**

Sooner or later it becomes obvious that as local space activists we face a totally overwhelming task in our efforts to effectively educate the public about the potential of space. There are simply too few of us, with too few resources and too little time to do all that MUST be done.

Fortunately, we are surrounded by resources that can be put to work to help us do our job. The trick is to FIND them!

To some extent all chapters are in a continual process of surveying their community. By turning this process into an organized project, you can operate far more efficiently and also bring other benefits to your chapter.

#### **publicize your survey**

The first step is to look up the addresses of all daily and weekly newspapers and send them a press release. (This can be part of a larger press packet to introduce your chapter and NSS to the local media--see the Publicity Section.) You can also send public service announcements (PSAs) to area radio and TV stations:

#### SAMPLE PSA

"WE'RE PROUD OF (YOUR AREA'S) SPACE CONNECTION! THE CHAPTER OF THE NATIONAL SPACE SOCIETY IS CONDUCTING A COMMUNITY SPACE SURVEY TO FIND OUT HOW OUR AREA BUSINESSES, EDUCATIONAL INSTITUTIONS AND INDIVIDUALS HAVE CONTRIBUTED TO PAST, AND PRESENT SPACE PROJECTS--AND HOW THEY WILL PARTICIPATE IN FUTURE PROGRAMS.

WE ARE ALSO INTERESTED IN PEOPLE WITH SPACE-RELATED HOBBIES, FROM ASTRONOMY AND MODEL ROCKETRY TO SATELLITE TRACKING AND STAMP COLLECTING. SURVEY FORMS ARE AVAILABLE AT [CHAPTER WEBSITE, PHONE #, AREA MERCHANTS]"

\_\_\_ NSS is the local chapter of the National Space Society, a non-profit, international organization that engages in a wide range of educational activities about the potential of space development. Our next meeting will be held on \_\_\_ at \_\_\_. FOR MORE INFORMATION CONTACT: Jane Smith, 555-1111.

These notices will also help to bring your group (whether new or "old") to the attention of the media and others in the community and establish your credibility. One problem chapters have is to be properly identified in people's minds. Sometimes we find ourselves referred to as "that science fiction/astronomy/rocket/etc. group." Promoting space development and space education are vague concepts to many people.

The press releases and PSAs also provide free advertising for your chapter and a method for prospective members and supporters to contact you.

It is very likely that a reporter will also contact you for more information. This may easily lead to a feature story about your chapter. Consult the publicity Section of this Handbook for methods of dealing with the media. Make sure that you have an information sheet and other items to send or give a reporter during an interview.

You probably are already aware of some individuals and businesses in your area with a space connection. Send them a copy of the press release with a letter asking for more information and suggestions of who else to contact.

### **contact file**

While waiting for replies, find out if a comprehensive list of local organizations is kept by your area library, Chamber of Commerce or a government agency. Go through the Yellow Pages of your phone book and start a Local Contact File. Even if you know your area well, you will find information that is new to you or that you had not thought of.

The government listings will yield contact information for the IRS and state sales tax, city hall, government officials, the Board of Education, libraries, recreation departments, teen and senior citizens' centers, League of Women Voters, the parks department and schools.

"Organizations," "Associations," "Clubs," "Fraternal Organizations," "Youth Organizations" and similar headings will help you find useful contacts such as: engineering organizations (AIAA); Scouts and other youth groups; YMCA and YWCA; the Civil Air Patrol; Mensa; women's, minority and environmental organizations, a variety of civic groups and possibly astronomy, model rocketry, science fiction, modelers, amateur radio, stamp and photography clubs.

Other listings to note are: museums, planetariums and observatories, aerospace and high tech. companies, computer stores and clubs, electronic supply stores, satellite equipment suppliers, book stores, hobby shops, art and architects' supply stores, printers, shopping malls, newspapers, radio and TV stations and Western Union. Find out if any of the contacts listed in the Resource Section of this Handbook are located in your area.

You will not use all this information now, but a thorough survey will continue to pay dividends as your group becomes more active, especially if you update the data regularly. (Make sure you DATE ALL ENTRIES!)

Your members can now follow up on this basic survey information. Be sure to let the Chamber of Commerce know about your chapter and call on them for information. Find out who is head of the programs and exhibits departments at your main library and get a list of the branches. Check out the science and engineering departments and student unions at colleges and universities. Are the headquarters of your aerospace and high tech. companies local or out-of-town? Get listings for their publicity departments.

As a rule, your mailings will get more attention if they are addressed to an individual instead of an organization, so start adding people's names to your listings whenever you can. Good contacts at schools are science teachers and the heads of science departments and programs for gifted students. Is there a district science teachers' organization or gifted program?

Follow up any leads you get: was an astronaut or someone connected with a space project born in your area, or did they attend school or work there? Was there a finalist in a Space Shuttle Student Involvement Project or an applicant for the Teacher in Space program? If you write to them you may get some useful information to pass on to a local reporter, or even be able to arrange a speaking engagement when they are next in your area.

**publish**

When you have accumulated interesting information about your area, consider turning it into a local space education tool and a fundraiser. Follow the lead of many civic groups and publish a booklet, "(Your area) and Space". While you want to emphasize local contributions to space projects, you can fill it out with short bits of background information. For example, if a local company built a component of the Mars Pathfinder, include a brief background on the goals and history of the program, its accomplishments, a drawing or diagram or even a cartoon.

If there is little space-related activity in your immediate area, include more surrounding territory. Several chapters can cooperate on a booklet about your state, province or country.

A second section can give information on local space-related organizations and institutions: your NSS chapter, astronomy and rocketry clubs, planetariums, observatories and space museums. A regional guide can include places within a day's drive and the nearest NASA center. You may want to add information about visiting the National Air and Space Museum and Space Shuttle launches.

A resource section for students, teachers and others should have a bibliography, ordering information for Government Printing Office NASA publications, NSS Headquarters' Space Educator publication, which lists resources for teachers, is available in hard copy or online at the NSS website.

You can sell ads to pay for printing the booklet--try aerospace contractors, computer and electronics stores, etc. Donate it to local schools and libraries and/or sell it as a fundraiser for "local space education projects". Be sure to send a copy to NSS Headquarters and the Chapters Coordinator! A valuable project for one or more members or a chapter would be to work on developing a format with artwork and general text to which each chapter can add its regional information. This is the method which churches and other organizations use for their fund-raising cookbooks.

**Booths**

This is an easy first outreach project for a chapter that will give your new members a way to get to know each other and encourage their future participation in chapter activities. You need:

**location**

Always get permission in advance. Ask if they have chairs, tables, display boards and electric outlets, if needed. Be prepared to send them an information sheet about your chapter, an NSS brochure, your newsletter, an *Ad Astra*, etc. along with a formal letter requesting permission. Find out when you can setup and take down your booth, who your contact person is and if you have permission to sell materials and memberships.

**exhibits**

Even a few colorful pictures on an exhibit board behind your table will attract people. For more elaborate displays you can include three dimensional items like models, colorful space books or a rear Projection slide show. include a prominent poster about your next meeting or event (see "Exhibits").

**personnel**

Try to schedule at least two people at all times. If you cannot adequately cover your booth at certain times, such as during weekdays, cut down on the hours or number of days. Pair new workers with more experienced ones. Assign a set-up and close-down person to the first and last time period of each day who will take care of the cash box and other valuables.

**handouts**

You must have something with your group's name, address and phone number, possibly including membership information and a brief description of our purpose. However, you do not want the site to be littered with paper that has your group's name on it, especially since you paid to have it printed. So, avoid giving handouts to young children or obviously uninterested people. Chapter newsletters, *Ad Astra*, a list of your upcoming events, and information sheets about specific space topics are all useful handouts. To avoid waste, do not give these away, but charge only a token amount--the "price" could be filling out and returning your survey. Handouts are better than an information sign-up sheet if you want to limit mailing expenses.

**questionnaire**

This is probably the best thing you can have at a booth. It draws people in, gets them thinking about space and adds to your contacts and membership. Be sure to include a place for their name, address and phone number. As always, clearly mark OVER on the bottom if it is printed on both sides. Date the questionnaires for your own reference.

**merchandise**

Try to carry items that reinforce your goal: space posters, NASA literature, T-shirts, buttons or books. Remember inexpensive items if there are likely to be many children present. Keep careful track of your cash flow, and tally your money and goods each night. If you are not allowed to make sales at the site, you could include a merchandise list in your handouts. In a mall you can contact a book store in advance. They may want to prominently display space books and magazines and may even donate copies for your exhibit (and later your library) if you tell people where they can get them.

**security**

Be sure to have a place to keep your materials overnight, if the booth will be up for several days. Keep items such as cameras, projectors, slides and films, extra cash (and purses) locked in an office, cabinet or car when they are not in use. Keep a close eye on the cash box, merchandise, models, sample literature, books and even your posters! If your booth is outdoors, bring paper weights or sheets of Plexiglass to keep papers from blowing away. Models will need special protection from the wind. A sun shade, umbrella or plastic drop-cloth may save your day.

**documentation**

Good close-up photos of your booth will be useful to evaluate its impact and to help planning future efforts. Get shots with lots of people for your chapter's Presentation Book (see Section 3).

**plan ahead**

Allow enough time to send for NSS brochures or copies of *Ad Astra*, to have handouts printed or to make posters. Your people also need time to arrange their schedules and transportation.

**Exhibits**

An exhibit may be unstaffed, or you can add a booth that is staffed all the time, only during high traffic hours or as your schedules permit. Every community has potential sites for a space exhibit; just take a careful look around. Office building lobbies, science museums, public and college libraries and schools all have room for temporary exhibits.

You can slant an exhibit for special locations: space art for an art museum or ocean surveys from space for an aquarium. Federal buildings, central post offices, city halls and state houses are useful for bringing the message of space utilization to the politicians and staffers who use them.

Shopping malls are ideal. They may provide free-standing display boards and tables, let you sell merchandise or they may even advertise your exhibit. Do not overcommit your chapter, but it is all right to do a small exhibit if the mall knows precisely what you have to offer.

### where?

While exhibits can be placed almost anywhere, most chapters have limited resources of manpower and money, demanding careful site selection. Before deciding where to place an exhibit, ask yourself:

1. How many people will see the exhibit?
2. Can you have a booth?
3. Can you sell material and/or memberships?
4. Does the site provide mounting space (walls or free standing peg boards)?
5. How much time is there to prepare for the exhibit?
6. How much material will be needed?
7. Can your workers get there without too much difficulty?

These are some of the questions which should be addressed in the feasibility study, which is discussed in Section 2. You should carefully consider chapter goals and resources in selecting sites in order to get maximum exposure at minimum cost. For example, you might decide to pass up a mall opportunity if sales are not permitted, or if display panels and tables must be rented.

### contacting sites

The first step is to make initial contact by telephone with either the superintendent, building manager or public relations department. A few site locations such as museums and libraries will have someone solely responsible for temporary exhibits. Once you reach the right person:

1. Introduce yourself and state that you are calling for the \_\_\_ Chapter of the National Space Society, "a non-profit international organization devoted to public education about space development".
2. State that your organization can provide an exhibit about the space program and future uses of space.
3. Describe the exhibit materials which will be available.
4. Mention whether your exhibit could coincide with the upcoming anniversary of an important space event or a space observance proclamation.
5. If your group has provided exhibits at other sites you can mention these.
6. DO NOT use the words "space settlements" or "extraterrestrial resources". Instead refer to space stations and large satellites, which sound more realistic to an uninformed public.

As a rule, the response will be a request for written information about the National Space Society and your exhibit. The decision to host an exhibit may rest with a committee, and your contact will need a tangible document to present to them. Follow points one through six in preparing your request.

A site often sets up a meeting to talk directly with chapter representatives and see examples of exhibit materials. This may be scheduled during the phone call or in response to your written proposal.

If you do not have a representative who is free during regular business hours, you may have to take time out of a working day. It may be possible to visit several potential sites in one day if that is the case.

Appearance is important at the meeting. Business attire such as suits and ties reinforces the impression that yours is a responsible, professional-caliber organization. This cannot be recommended strongly enough.

Your chapter's Presentation Book (See Section 3) will be of great value at this meeting. Good pictures of previous exhibits and other activities, along with request and thank-you letters establish your credibility. It may also provide incentive to your contact to make sure that his site also sends you formal letters to be included in the book.

If this is your first exhibit, the book can contain the letter from Headquarters officially recognizing your chapter, photos of a work session, an NSS brochure, etc. Explain that you will be placing letters about and photos of THIS exhibit in the book.

Usually, if a site agrees to host an exhibit, the exact dates and set up and tear down times will be negotiated at this meeting. Once the arrangements are agreed upon, it is a good idea to request a formal letter of commitment from the site to the chapter. Not only are such letters of great value in documenting exhibits, they also help to prevent misunderstanding at the time the exhibit is set up.

### **what will they provide?**

This varies drastically from site to site and can significantly affect your costs. One could rent a projector for you, set up pegboards in advance and be willing to repaint them. Another could require you to provide your own projector and a hammer to set up pegboards. Still another might not even provide display boards! Check the condition of the equipment provided. If repairs are necessary, find out if they will make them or, failing that, if they will pay the costs if you repair them. Some locations have picture molding on the walls from which material can be hung.

Make sure you know who will be available during setup to help if needed and what method you are permitted to use to set up; tacks, velcro, tape, etc.

### **security**

Some sites have good security and others don't. Find out. Are the premises patrolled at night as well as being locked? What are the insurance provisions? What about crowd control for valuable items? Are cases which lock provided for models and other enticing "liftables"? What about roped off areas? NASA requires good security arrangements for its models, so find out in advance.

### **special opportunities**

Some sites provide display space only, while others may have rich potential for a multi-faceted exhibit. For example:

- Can you tie in with a local or national event such as Space Week?
- Will libraries provide reading lists and advertising for your exhibit?
- Can you coordinate talks at a library or elsewhere during the exhibit?
- Will schools send groups of classes?
- Will stores in the mall or surrounding area carry a space theme during the exhibit?
- Can you share exhibit space and costs with related organizations?
- What about speakers?
- Can you show slides or videotapes? (Can you borrow video equipment from a store in the mall?)

**good public relations**

In addition to your site contact, you will interact with other people at the site such as guards, maintenance people and store owners. Remember that you ARE NSS to them, and your conduct will affect their attitude towards the Society and its message. Courtesy is the rule here--expressions of appreciation and friendliness. Also, be careful to understand and abide by the regulations of the site. You are a guest on their premises. Be prompt in keeping all appointments and be careful not to annoy by creating disturbances or blocking passages.

**setting up**

1. Verify site arrangements before you arrive to set up.
2. Have a master plan of the layout ready. Allow MORE time than you expect to need for setting up.
3. Decide in advance how your materials are to be fastened to the mounting surface.
4. Put a sign on each pegboard or in each case which identifies the National Space Society and your chapter address. Somewhere in the exhibit include a list of upcoming events or other information about your chapter.
5. Put handouts with your chapter name and address in a holder on the wall or at a booth.

**checklist**

Wire/large paperclips	Thumb tacks/pushpins	hammer
String/fishing line	Stapler & extra staples	Rubber bands
Scissors	Marking pens	Pens, Pencils & paper
Food & soft drinks	Rubber cement to reaffix peeling pictures	Masking, scotch & double-sided
tape	Extension cord & connectors	

For models:

Model repair Handbook	Thread/fishing line
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For exhibit tear down:

Cases for panels	Workbox	Boxes for models
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**documentation**

Take pictures of work sessions, booth activities and the exhibit itself. A notebook at your booth should be used to record information on who worked, for how much time and how many people were needed, problems that developed and how they were solved, contacts made, and especially funny, inspiring or memorable comments and events.

**follow-up**

Send thank-you notes to the site and individuals who were of help. These can include a report on the impact of your exhibit. Respond promptly to inquiries which result from your exhibit. This is one of the best ways of getting new members.

**final note**

Lest this sound too intimidating for a young chapter, one summer five members of Boston L5 created 40 exhibit panels and set up five separate displays in three weeks. They explain, however, that all



materials were on hand at the start and that none of them got much sleep during that period. While they don't recommend this method, it shows what can be done if you are determined.

### Library Exhibits

This is a modest exhibit project that calls for a small investment of money and effort. It can even be done by a lone NSS member who would like to educate the public about space development. You can involve those members who are "too busy" for major projects. Most people can make the time to schedule, set up and take down an exhibit at their local library.

If a call for volunteers goes unheeded, get a list of branch libraries and ask each member to visit one or two. It should take about fifteen minutes to measure the display cases, find out who is in charge of scheduling displays, what their procedures are and when the next unscheduled time period occurs. Keep this information on file.

Once you have a good idea of the display spaces available, you can plan your basic exhibit. It should have a general space development theme and start with the Space Shuttle to give a firm point of reference to the viewer. "Space Station-The Next Step" or "Putting Space to Work" or "Space and (Your Area)" are all themes that help the public realize the practicality and immediacy of space development.

Later you can add more specialized exhibits or those planned around a space event or anniversary. Libraries have been especially interested in exhibits about the accomplishments of the the Apollo program during July and "Space is a Woman's Place" during Shuttle missions with women astronauts.

Get extra mileage out of other chapter projects by including photos of them in a library exhibit or devoting an entire exhibit to them. For example, if you hold a students' space art contest or present awards for the best space exhibit at a Science Fair, these make interesting displays and in turn promote your group's activities.

Once you have a theme, you can construct your exhibit as explained later in this Handbook. More detailed printed material can be used than is practical in a mall exhibit since many people will take the time to read it or will see it several times.

Make sure that you include your chapter's name, address and membership information prominently, or the public will think it is a library display.

Library cases are usually locked, so you can safely include models, patches and collector's items. Try to put them at kids' eye level--they will pull their parents over to your display and probably have them explain everything!

See if the library will display space books during your exhibit, make up a list of the books, magazines and reference materials that they have or schedule a NASA film, a slide talk or children's program by one of your members. You may be able to leave handouts about your group at the main desk. Remember to restock these occasionally.

Once you have constructed one or more exhibits, you can keep them circulating with relatively little effort that can be shared by many members.

### Obtaining Display Materials

When chapters start to think about exhibits, they usually write to NASA centers and aerospace companies and ask for materials. While some high quality photos and art can be obtained for free this way, NASA in particular can only provide limited amounts. Visiting a center in person sometimes yields better results.

As our chapters become more numerous and more active, these multiple requests are likely to become less productive. One suggestion has been for NSS to obtain bulk amounts of materials from these sources, assemble them into an Exhibit Package and make this available to chapters for the cost of packaging and mailing. We could also include layout suggestions and other helpful information. While this package would be of great use to chapters, like many NSS projects it is in need of volunteers to gather and process the materials.

There are also less-obvious sources of exhibit materials. Magazine pictures, especially National Geographic Magazine, are of use. If you have slides, color photocopies can be made of them for about a dollar each.

Add variety to your display with a few eye-catching mission patches, buttons, medals, bumper stickers, postcards or other souvenir-type items. Space stamps are attractive, interesting and have been issued by many countries. Small, inexpensive flags can be used to make a colorful display by listing the first satellite of each country next to its flag. You can add some photos or models of satellites, a panel on the importance of satellites to our everyday lives, etc.

Many space images are available for downloading online, which can be printed out on color printers. See the NSS website (Mars Madness, S.P.A.C.E.) for image options.

Models are an ideal way to add three-dimensional interest to a display, although they need special care and security. Hobby shops may be willing to donate models in exchange for credit in your exhibit. Your members or others may have material that they will loan your chapter. NASA has some exhibits and models that can be borrowed. You must pay for return shipping and insurance and provide adequate security. Check with your regional NASA center or Educational Outreach center.

Try to give your displays a local slant by including the contributions made to space projects by area companies, educational institutions and individuals. Their logos and an area map can be used as graphics.

Always include information about NSS and your local chapter. This can be just an *Ad Astra* and your chapter address or a more elaborate display with good photos of past activities and a list of upcoming ones. Newsclippings about your group or a local space connection can be mounted and added to your exhibit.

Use your imagination and try to add color and interest to your displays. Visit other exhibits and notice advertising display techniques.

## Constructing Exhibits

### planning

Always allow enough time to produce your exhibit--then double the amount you think you will need to cover inevitable delays and the tendency to be optimistic in estimating time requirements! Even if you have only a few display items, take time to consider what you want to accomplish with them now and what use you may have for them in the future. Always try to leave room for growth in your plans.

Visit several kinds of potential exhibit sites and measure their display cases or exhibit areas. Look carefully at the display surfaces. Are they pegboards, cork or fabric covered board, bare walls, cases, easels or combinations of these? Is there picture molding on the walls from which materials can be hung?

### mounting

Unmounted pictures with typed captions may be sufficient. However, if you are planning a series of exhibits, your material should probably be mounted on some kind of panel.

Poster and matboard make good, inexpensive background material. "Foamcore" has a foam center with lightweight poster board laminated to both sides and is available in sheets up to 4' by 8'. It is light, is paintable and can be used to give a three dimensional effect; however, it costs a little more, can be difficult to cut and damages easily, so you may want to experiment with it first.

"Masonite" panels with aluminum hardware can make very elegant display backgrounds, but the initial cost is high and transportation is difficult due to the weight and bulk of the finished panels. The "Earthrise" or "Shuttle In Flight" wall murals may be mounted on plywood, particle board or foam core and framed with metal masonry strips (thin, angle iron, flashing type) for use as a background for booths and exhibits.

For large exhibits, groups often mount materials on 22"x48" matboard. This gives a professional, consistent look to the exhibit. However, these boards are heavy, not easy to transport and will probably not fit well in library display cases.

A modular system, where each picture is mounted separately with its caption or longer description, can be arranged to fit any shape and size case. It can be easily stored and transported in a box. However, this arrangement takes a great deal of time to set up.

A compromise is a "semi-modular" method. Smaller, light-weight poster board is used to make a title board and one with NSS and chapter information. Several items are mounted on each of the other boards, which can be various sizes and shapes. This exhibit still takes time and thought to put up, but you have flexibility to deal with a wide variety of situations.

Either a drymounting press or a good quality photo spray adhesive should be used to mount the items. White glue causes the pictures to wrinkle as they dry, and contact cement is not permanent. Always use photo spray adhesive in a well-ventilated area.

### titles & captions

This decision depends mostly on your available time and funds. Commercial rub-on lettering can be found in most office supply stores and can be very attractive. However, it gets quite expensive if you are producing a large exhibit, and it takes skill and time to do well.

Hand lettering is cheap if someone is able and willing to do a good job, but is potentially amateurish. Stenciling is difficult to read and relatively unattractive.

For large letters to use on a title board, major captions, etc. you can get a set of stencils and cut out letters from adhesive-backed paper. (Remember to place the stencil backwards if you trace on the back of the paper!)

This paper can be bought by the yard in art supply stores, is cheap and comes in bold colors, black, silver and gold. While trying to make small letters will drive you crazy, larger ones are not difficult. This is a good take-home project. Use an "Xacto" knife or razor blade to cut the centers from letters. You can also cut bold graphic designs, arrows and stripes from the same color paper to add excitement to your exhibit and tie it together. Try layering colors to make pictures or designs.

A quick, easy way to produce neat lettering in a variety of sizes and type styles is now available via almost any computer poster program.

For dimensional effects, styrofoam board (1/2" or 3/4") can be used to make 3-D letters and simple shapes from six inches to two feet high. They are fragile, but easy to make. Cut out with a coping saw and mount with mounting clay. Rough edges can be sanded. The particles have a lot of static cling, so choose a work area accordingly.

Check the backs of NASA photos. They often have information and drawings that can be photocopied, trimmed, mounted and used as captions.

### **work sessions**

Find a location with plenty of table and floor space where you can spread out, sort material and work on the panels. You will also need a well-ventilated area and protective floor covering for spraying materials to be mounted. (If the backs contain useful material, remember to photocopy them before mounting.)

### **layout**

Decide on an overall theme for the entire exhibit. Whether it is a small display or large and elaborate, make sure you know what you want fit to accomplish. You may then want to pick sub-themes for panels or groups of panels. The materials you already have will affect your choice. You CAN plan first and then gather material to fit the theme, but this will require a lot of lead time.

Lay out the boards with both the theme and artistic qualities in mind. Leave room for captions. In fact, well done, interesting captions compensate for limited material.

When planning layouts, have measurements of one or more of the locations where your panels may be displayed. This gives you a better idea of how you might arrange them into subgroups by themes.

You may want to put titles and captions on individual sheets of sturdy paper or thin stock instead of directly onto the boards. Not only are smaller sizes easier to work on, especially when applying small press-on letters, but they can be more easily centered, and errors do not ruin an entire board. These make good take-home projects, so meeting time can be spent on actually assembling the boards.

A paper cutter does a much neater job than scissors for trimming edges of pictures and cutting captions to size.

### **impact**

Don't be afraid to use color and graphics to make your exhibit attractive and interesting. While you don't want to give a science-fiction look to it, borrow the techniques that you see used in advertising every day. Visit professional exhibits and take notes.

**with experience**

For an elaborate exhibit, you could even create a program book to be given, sold or loaned to those who view your exhibit. Include the text of the captions along with a description of the panels. As always, make it clear that your chapter, and not the site, is responsible for the exhibits and include membership information. You can credit donors in the booklet as well.

**Models**

Models make an ideal complement to a mostly two-dimensional space development exhibit. They catch the attention of casual passersby and cause them to stop and take a closer look.

Commercially-available models of the advanced space systems which NSS is working to promote and models of past and existing space vehicles help put space technology into perspective. You may find only Space Shuttle models in your local stores. Check with members or a local modelers' club to see if you can borrow older models. Some companies are releasing "historical" editions (sometimes at high prices).

Models of science fiction vehicles are more widely available. They can sometimes be used to point out future possibilities. It is important not to tie the exhibit too strongly to science-fiction themes, however, and to point out the limitations to many of these concepts.

An experienced model builder could make models of systems such as mass drivers, solar power satellites, solar sails, space habitats and laser-powered vehicles which are not commercially available. The creative use of components from commercial aircraft and space-vehicle Handbooks (along with other materials) can result in impressive original models. Many large hobby stores carry cardboard tubes and balsa sheets and blocks for use by model builders. In addition, large graphic supply stores generally stock materials used by architects to construct models of buildings.

Before attempting to create original models, however, beginners should first assemble commercially available plastic model Handbooks, then the more difficult cardboard and wood Handbooks before attempting original model work. Skill at model building can be developed only through practice. (However, one member made a good Space Operations Center from wooden dowels and a plastic Shuttle Handbook, though she had no previous model building experience!)

Of course, the ultimate attraction would be a moving model, perhaps a Space Shuttle with opening cargo bay doors or a Remote Manipulator Arm launching and retrieving a payload, or even a Shuttle or Orbital Transfer Vehicle docking at a space station. If any of you clever people build one, please share your know-how with all of us in the next edition of this Handbook! DCL5-NSS in the Washington, DC area has a working model Mars rover and simulated Mars surface with video transmission to the remote control center. Both kids and adults love being at the controls exploring Mars.

**security**

Attractive models of sleek space vehicles are an irresistible temptation for youngsters (and some adults). Consequently, closed display cases are essential if models are to be left unattended within reach of curious hands. If a site lacks such display cases, you have four choices:

1. Leave your models at home.
2. Keep constant watch over the exhibit.
3. Suspend the models from the ceiling or place out of reach of eager hands.
4. Find or build your own cases.

The last alternative is expensive, but worthwhile if you can afford it. Plexiglass makes a good case. Perhaps you can obtain a case that was used for another purpose and modify it. If you can get at least one case, you can have a model at each exhibit.

To display unprotected models at a booth, place them on a raised platform behind your table where they can be seen but not touched. They WILL be handled if in reach and possibly damaged. You don't want to have to keep telling people not to touch and "Do Not Touch" signs will NOT work!

### transportation

Models are fragile! The greatest damage usually occurs during transportation and storage. Models have shattered when they were dropped on a sidewalk, bumped against a door frame or when boxes of books were placed on top of a flimsy model box!

Every model should be transported in a rigid and totally closed container from the time it leaves the builder to the time it arrives at the site location. Fill spaces with loose packing material.

If the model is to be a part of a continued exhibit program, it should be built for this purpose. Glue down moving parts which are easily damaged. You may want to fasten lead fishing weights inside a model so it will be less easily knocked or blown over, or securely mount it on a sturdy display stand. If possible, build large models in two or three sections which can be separately packaged. If an original model of a large space system is being built, plan the packing and transportation from the beginning of the project. (If you do build an original model, document it well with photos taken as it is built and keep a supplies list, so that others can see how you made it.)

### model repair kit

Even with careful packing and transportation, models sometimes are damaged. You should keep a model repair Handbook at the exhibit that contains:

Glues for plastic, wood and paper  
"Xacto" knife  
Sandpaper of different grades

Brushes  
Turpentine

Paints of the colors of the models  
Paper towels

### exhibit care

Your panels, posters and models are an important asset. As your chapter grows there will be many opportunities to use them, so they must be maintained in good condition. Before you plan your exhibits, think about where they will be stored. If you have no place to keep large panels where they will stay clean, dry and safe, don't make them! Instead, plan a display to be packed in one or more smaller boxes that CAN be stored.

You must also know what materials you already have when you are planning a new exhibit. Number your boards and take a picture of each. Put the photos in your Presentation Book to use at planning sessions as well as at site interviews. To handle the panels as little as possible, store them in numerical order in boxes. Ask at art and framing stores for extra large narrow boxes for storage.

## Speakers

You may be surprised at how easy arranging for guest speakers can be. Of course, your location is a factor--are you near any universities or aerospace-related companies? If not, don't give up. There's probably someone around who can give a talk on New Space Program topics.

**caution**

In looking for speakers, don't settle for just anyone who can lecture on a "space topic". Talks on UFOS, extraterrestrial intelligence or science fiction don't further the cause of space development and settlement. (In fact, they may even hurt it, if they lead to NSS's name being associated with the "fringe".) Even a talk on a scientific space topic may have little value without a positive connection with space development and settlement.

Inviting outside speakers can be a risk. While speakers with a well-known name or impressive scientific credentials can attract an audience (and the media) and add credibility to your group's programs and goals, they may perform poorly. If they are difficult to understand, too long-winded or dull, it will reflect unfavorably on your chapter. Remember that you do not have to depend exclusively on outside speakers. It will be worthwhile to find or train reliable speakers from your membership. More about that later.

Try to find out if your speaker can communicate with the audience you anticipate. He or she may be an expert on solar power satellites, but if the talk is too advanced technically, your audience may get lost. Tell speakers if they will be speaking to a general audience.

**finding speakers**

How do you find speakers? Use information from your Community Space Survey and watch newspapers to find out about individuals, companies and schools with a "space connection". Ask around. If your members don't know potential speakers, they may know someone else who does. If all else fails, contact nearby chapters, your Regional Organizer or Headquarters; they may know someone in your area to contact.

One good name may be all you need to get started. He or she may be able to suggest others who will in turn make new suggestions. Soon you will have a file of potential speakers.

Don't be shy--call them! Don't let someone's fame scare you off; famous people are often very friendly and polite. If you would like to check things out before committing your group, explain that you are a new chapter (or are considering a new project such as a lecture series) and that you are gathering information about potential speakers.

**before calling**

1. Get correct spelling and pronunciation of names.
2. Try to find out whether the person is a good public speaker and what space development topic he or she is familiar with.
3. If possible, find out if he or she is pro-NSS or even an NSS member.
4. Seek out women and minority speakers to give a wider range of support to our topics.
5. Find out what facilities and services will be available for a speaker, including the size of the room or auditorium, audio-visual equipment and publicity.
6. Keep track of who recommended him or her, so you can say "Prof. Smith of XXX University suggested that I contact you..." unless the professor asked you not to mention him!
7. Keep a careful list with information on each contact. Guard against poor communication within your group that can lead to more than one member calling the same person.

**on the phone**

1. Make your initial calls far in advance - over six months for famous speakers, six weeks for most others.
2. If you speak with a secretary, get his/her name and use it. They can be very helpful if you treat them properly.

3. Identify yourself and your group (a local chapter of the National Space Society, a non-profit citizen's group for space development).
4. Mention who recommended them if it will help.
5. If you are calling about a specific event, explain its purpose, date, place, audience-type and admission charge (if any).
6. Stress that "no commitment is necessary now" if none is needed.
7. If no date has been set, ask if they prefer a certain date or time.
8. Suggest topics.
9. Find out whether they feel comfortable presenting/speaking. If not, they might consider a debate, panel discussion, demonstration or just answering questions.
10. Make sure that they understand the size and level of knowledge of the expected audience.
11. Find out what they will need: slide, overhead, VCR, laser pointer, projector, tape recorder, blackboard, microphone, etc.
12. Ask if they or their company have materials to use: pictures, slides, charts, anything you need.
13. If appropriate, ask if they are comfortable with newspaper, radio or TV coverage.
14. Keep notes on whether they sound friendly towards NSS and interested in speaking. Be polite, but avoid speakers who are reluctant or hostile.
15. If they are willing to speak, ask them to provide the title of their presentation so you can be specific in your publicity.
16. Ask if you can list them in your files for future reference. Get phone numbers and addresses.
17. Ask for their suggestions for other speakers.
18. Thank them sincerely for their time, and say that you will get back to them. Don't expect them to call you.
19. Find out from the secretary or public relations department, if possible, or else from the speaker: is there an honorarium (\$) required? A disclaimer? These are usually NOT required. Can you get a biography sheet? If not, at least get the correct title of the person's job.

### final arrangements

Never commit a speaker to anything without permission! Once the program is arranged, call the speaker back. Give all the details: when, where, directions, where to park, time limit on their talk. Send a follow-up letter with this information, and call one or two days before the meeting to repeat the details.

If you must cancel or postpone the presentation, express appreciation for the speaker's willingness to participate and arrange a future appearance.

### during the event

1. Have someone meet the speaker at the door with a name tag and NSS literature (if you didn't send some earlier) and gather information for the introduction.
2. Introduce the speaker properly (see Section 2 for details).

### afterwards

Several days later, write a letter of thanks to your speaker telling how glad you were to have him speak and how successful your meeting was (which it was, if enough publicity was done beforehand).

Include something like: "I hope that sometime in the future we may again have the pleasure of your doing a program for the Your City NSS chapter, perhaps on XXX topic." If an out-of-town speaker received good press coverage, you may want to include a clipping.



**lecture series**

If you plan to have several speakers over a period of time, you may want to arrange them into a coordinated series. If properly done and publicized, this can give you more media attention and a steady audience. Use the basic rule of "same time, same place", if possible.

The series can extend over a long period, for example, the second Sunday of every month, or over a very short one, once a week or even once per day during Space Week. Consider investing in flyers or posters for media, libraries, etc. listing the schedule. You can include some of your own speakers or alternate programs with speakers and NASA films.

**your most reliable speaker**

Your local schools, churches, civic groups and clubs are always looking for speakers. As an NSS member, you can probably fill the bill.

Are you nervous in front of an audience? See the section on slide programs in this Section for advice on an easy way to get started. Attend lectures by professionals, especially those at NSS conferences, and take notes. How do they capture and hold the audience's interest--or lose it? How do they avoid technical jargon and express complicated ideas in understandable terms?

Use some of their tricks of the trade to develop a five-minute introduction to NSS. Rewrite it until you feel it can be understood by a general audience, without "talking down" to them. DO NOT try to cover everything you know about space development!

Then use the old reliable method of practicing in front of a mirror. You can also use a tape recorder, or even get a friend with a video camera to tape your presentation. This will help you to spot nervous habits or excessive use of "ahs," "ums" and "you knows" that distract your listeners. Find a style that works well for you, but don't hesitate to adapt it to different audiences. What works well at the podium of a professional conference will seem cold and boring at a school assembly.

You can break up straight lecturing with a few slides, a video clip or transparencies on an overhead projector, a demonstration (perhaps using a volunteer from the audience) or an explanation using a model or large poster.

When speaking to the general public, try a relatively informal, friendly approach. Never read your speech! (At most, take a card with a few notes on it.) Share your enthusiasm with the audience, smile, make eye contact. Take your cues from them; if they fidget and yawn, it's time to pick up the pace. Try to speak without a microphone, so you can move around, especially during a question period. Hand and arm gestures can help, if they are natural and relaxed and not overdone.

Next try your lecture on some friends in your living room. Pick people who will give you honest and helpful comments. Move on to Scout troops and grade school classes, and before you know it, you'll be regaling the Rotary Club and appearing on your local TV show!

Developing public presence is only part of the job. You must be knowledgeable, accurate, able to present complex ideas in a clear, straight-forward and entertaining manner. In dealing with questions, be willing to admit that you don't know the answer. Treat your critics with respect, even if they don't respond in kind. If someone asks an embarrassingly stupid question, you can smile and say that "a lot of people ask that, but it's really..." or "That's a good question. I'm glad you asked that because..." and then give the facts. In this way you include the questioners in your efforts to help everyone understand this interesting subject, instead of closing them out.

**speaking engagements**

How do you get invited to speak? To get started lecturing to schools and Scout troops, begin with your children, neighbors', co-workers' or friends' children--they'll introduce you to teachers and group leaders. If you are a church-goer, your minister can introduce you to the people who schedule entertainment at church-sponsored pot luck dinners, couples' clubs, etc. The Chamber of Commerce will give you a list of the names and addresses of local civic groups. Almost everyone you know and everything you do can provide contacts. Frequently, speaking to one group will open the door to others. Soon you will be getting calls from people who have heard that your presentation is different, interesting and informative.

Your local radio and television stations and newspapers are the "big time". If you can manage a major public event that you feel will be a success, you may be able to attract a newspaper reporter or camera crew. See the Public Relations Section to learn about effective media techniques.

**one approach to speaking**

by Eric Drexler

There is only one way to become a good NSS speaker: practice! You'll find that you will be much less nervous if you show slides throughout your talk, since all eyes will be on the screen, not on you. The slide sequence will also help you remember what topics to cover and in what order.

To promote our goals, a good talk on space development should do several things. First, since many people still feel that something was wrong with the old space program, we should explain where that program came from, and why they are right to have felt as they did. After all, they wonder, if it was so great, why did it die out? People understand when they are told that the original space program grew out of the missile competition and American embarrassment over Sputnik, followed by an all-out, expensive effort to scale up the missiles to get an American into space. Emphasize that we bypassed building a reusable Shuttle and space station, believed by many experts to be important steps to making space development practical.

Then, of course, point out that the benefits of this wasteful stunt were still large, repaying the investment many times over with new technologies and useful satellites. This sets the stage for discussing the real space program, the one we are building right now.

At this point, discuss the Shuttle as a way of getting into space more cheaply, pointing out that it is still only a half-reusable space ship. Then move on to how the space station project will make using resources already in space even more rewarding.

First, discuss the standard lunar resource scenario, with its orbit-to-orbit shuttles, lunar landers, lunar base, lunar observatory, mass driver, lunar power plant, mass catcher, space smelter and processing facility. Point out that this may be attractive if demand for space resources is large (perhaps in the solar power satellite (SPS) range). Point out the usefulness of lunar oxygen as a fuel and the ease with which it can be refined.

Then discuss the new possibilities opened by lightsails. A sail fabrication facility small enough to be put up with only a few Shuttle launches could produce sails able to fetch bags of dirt or metal from Earth-crossing asteroids at low cost. Explain that since the mass is low, and no people need initially be sent beyond Earth orbit, this is a low-cost way of crossing the threshold to space mining, in a way that can be smoothly expanded to large-scale operations.

Also discuss human exploration of Mars and the benefits to be gained by such a mission. Discuss the possibilities and ramifications that exist for international cooperation. Mention that Mars contains all of the raw materials needed to support the eventual creation of self-sufficient human settlements. Point out inevitable spin-offs that such a mission would create, and mention the idea of "terraforming" the planet to make it more earth-like in the distant future.

People generally sit up when they hear that asteroidal steel contains such strategic metals as nickel and cobalt, as well as over \$1000 worth of platinum group metals per ton. Concerns about the distance of the asteroids and the difficulty of space mining tend to evaporate when one points out that asteroidal rocks have been falling from the sky since the beginning of history.

Close by explaining how space development will mean jobs in space leading to space settlements, and pointing out that the audience can help decide how soon we break the illusion of impending limits to growth.

Thank the audience, and open the floor to questions and discussion. Repeat each question clearly before answering it. Take each question seriously and don't be afraid to admit you don't know the answer to a tough one. When you are asked a good question, explain briefly why it is good. You can save face for the asker of a ridiculous one if you can say, "A lot of people are confused by this, but it is really...."

Then accept your well-earned applause, knowing that you have made a real contribution to the NSS cause!

### **speakers bureau**

Once your chapter has several members who are experienced speakers, you can advertise them via a chapter speakers bureau. List each speaker, the title of the presentation, include slides and/or video, times and days they are available (i.e., during school hours), and a short biography.

State clearly those who require an honorarium and the amount. An experienced, well-informed and entertaining speaker should consider charging a small fee. After all, people tend to have less regard for the things they get for free. Your speaking engagements cost YOU free time, transportation or child-care expenses, and you paid for the slides, film, etc. that you use. Or, you could request a small payment to your chapter from everyone who schedules a speaker, to offset your printing and mailing expenses and "to support local space education projects".

Send this information sheet to schools, PTAs, community organizations and contacts you have made who are likely to spread the word.

### **Slide Program**

By far the easiest program format for an inexperienced speaker is a slide show. All you have to do is introduce yourself at the front of the room (or have someone else do it) and then safely retreat behind the projector and turn out the lights. No one will be watching your speaking technique as you describe the slides; your space pictures will be far too interesting. The slides also cue you as to what comes next in your presentation and are sure to inspire enough questions from the audience to fill out the rest of the program.

A single member can thus run a program alone with little trouble. Of course, if you have help, someone can run the projector and you can stand at the side of the screen to narrate. (For a large room, a microphone and pointer are useful.)

A library of slide programs on different topics for audiences of different ages and technical levels will provide "instant programming" for public meetings, classes and talks to school and community groups.

### **obtaining slides**

Information on slides sold by NSS Headquarters and other sources can be found in *Ad Astra* or at the NSS chapters section of the website.

If a member has a good camera and a tripod, you can make slides from NASA material, books and magazines. NASA materials are not copyrighted, although they cannot be used for commercials, etc, without permission. Depending on the source of other original material you use, it is probably legal to use these homemade slides for your own non-profit, educational purposes. However, it is absolutely vital that you keep a record of the source of each of your slides before you forget.

By using a close-up lens or an inexpensive set of extenders, you can get usable slides from very small pictures. Those you take from black and white pictures in particular will probably not be of very high quality, but even these can be useful, especially for members-only meetings or classes on less well-illustrated topics.

You will probably need pictures of various terrestrial scenes that you can take yourself. Don't forget local photos of your activities, especially those with large groups and kids in them.

Title slides add a good look to your presentation. They can be made professionally or you can have them output from a computer program (same with overheads).

Be very careful of using words on slides. Make sure you use large letters that can be read from the back of big rooms. Slides with only words should have the text fill the entire frame and be as uncluttered as possible--six lines at the most. To be safe, make words and markings bolder and darker than you think is necessary. Remember that the audience will be reading the slide instead of listening to your narration, so either give them time to do so or read the text as part of the narration.

### **writing a program**

At first you may own only a few slides that you keep in a slide tray, so that setting up a program can be a simple matter of loading the tray into a projector. However, as your collection grows, you will probably want to have more elaborate programs.

Your program can be as short as one minute for continuous showing at a booth, be designed as a five or ten minute introduction about NSS to accompany a speaker or film, or be the focal point of a program. Even in the later case it is dangerous to have it more than twenty minutes in length, people get too restless and you may lose some of your audience. There are two basic ways to write a program:

1. You can line up all your slides on a viewing tray and move them around until you have a satisfactory arrangement and then write your script.
2. Or you can write the script and then locate slides that fit the narration.

Both of these methods have drawbacks. With #1 you will end up skipping topics that you want to cover, because there are no appropriate slides. More seriously, with #2 you are likely to have a hard time locating some of the slides you need to illustrate the script.

A compromise is usually called for. You can pick a basic theme and general outline for your program, then fill it in as much as you can with slides already in your collection or materials that you can readily make into slides. Repeat this process until you have as few gaps as possible. Make sure that there is a reasonable chance of filling those gaps with new slides before the program is needed.

If you have more than a few sentences of narration per slide, either edit down or add another slide. An audience will tolerate an occasional long section, especially early in the program, but no one wants to look at the same slide for a minute or more, no matter how beautiful it is! (We're talking about slide programs, not lectures.)

Towards the end you might want to pep things up with two or three one-sentence-long slides. However, don't pass too quickly over a very detailed picture or one with more than a couple words on it or your audience will feel cheated.

Be sure to put a slide crediting your group for the slide show right after the title slide. Not only do people ignore credits at the end of a program, but they are likely to get up and leave if you don't get the lights on right after the last slide and start the question or discussion period.

### **narration**

For a simple show you may follow a few notes on a card or use the slides to cue you. If you plan to read from a script, bring a pen light in case the room is very dark.

If you want to insure a consistent presentation by all your speakers no matter what their level of experience, have a more professional program or just save your voice, you can tape the narration. You can produce a usable tape on any kind of tape recorder. A high quality recorder is desirable, but only necessary when the tape will be played on a good sound system during a program.

Listen to TV and radio commercials and professional speakers, take notes and then experiment with your tape. You can try using two narrators, perhaps a male and female, and alternate sections of the script. You may want to add music or sound effects (like a Shuttle blastoff), or perhaps a brief excerpt of President Kennedy's "Man on the Moon" speech or President Reagan's space station authorization. You could start or end a program with several members reading appropriate quotes, comments by visitors to a chapter booth or by children. Allow enough time to do a good job, especially on a first attempt!

### **children's programs**

A taped narration does not work well with kids. You have to wait occasionally when they laugh, "ooh-and-ahh" or just get noisy or restless. Some part of the taped narration is sure to get lost. You are also unable to slant the narration specially to the group.

### **storing slides**

When you only have one program you can store it right in the slide tray and it will be ready to use anytime. However, if you use the slides for different activities, you will soon tire of searching through trays for them.

Plastic pages with pockets for slides can be kept in a notebook and quickly scanned, although it is somewhat awkward to remove and replace a large number of slides. If you can afford it, you may decide to duplicate the slides for your most frequently used program so it is already in a tray when needed.

### **slide file**

Number your slides according to their position in a slide program if that is the only way they will be used. Otherwise give them numbers in sequence or a letter for a category (Space Shuttle, space station, habitats, science fiction, history, etc.) followed by a sequential number.

With either method, make a list of the slides and their file numbers. You may also want to have a file card for each slide listing its source, whether it is color or black and white, and any description that appeared with it. The later can-be used to help write slide programs.

### **checklist**

Slide projector	Spare bulb	Compatible slide tray
VCR	Extension cord	Screen
Microphone	Slides	Script
Tape	Tape recorder	Pointer

**cooperation**

Call the NSS Headquarters for information on the "Opening the Space Frontier" slide show available for \$25.00.

**Video**

Video tapes are another resource that your chapter can use, especially if it has free access to video equipment. Generally you cannot have as large an audience as for films, unless you have multiple monitors, a large video screen or special projector. But video tapes can be put together and new narrations can be added to suit your needs in ways that films can not be. A video monitor at an exhibit or booth is a great attraction.

If your exhibit is in a shopping mall, ask if a store will provide free video equipment (plus a prominent sign, "Video Courtesy Of: \_." They will usually even set up the unit for you. Check if it will be covered by the store or mall's insurance, unless your chapter has coverage. [Editor's note: NSS has insurance for chapter exhibits. Check with NSS headquarters for more information.]

College chapters may have members who are taking media courses and can make tapes of your meetings or creatively produce programs from both new and existing film and video footage, slides, etc.

Members who plan to purchase video units might want to consider which types are owned by other members and what is the format of the tapes available to your chapter. Not only can members share tapes, but the tapes that you plan to use for programs and classes can be more conveniently previewed at home.

Once you accumulate space-related footage, you can copy it onto a new tape in any order to fit your script. (NASA material is not copyrighted, but it cannot be used for commercial purposes without permission.)

When copying remember that the quality of the picture deteriorates noticeably with each copy. The sharper the original tape, the better your copy will be. Video recorders of different formats can be connected for copying, but you will need connecting cables with adapters to fit the input and output ports of each machine. Once your video is assembled, you can add a voice-over, music, launch sounds, etc.

Because videotapes can be damaged, you should make copies to use for your programs to protect your master tapes. NASA has videos available for purchase. Call the NASA Center for Space Information at 301-286-0309.

**Other Resources**

Visit the NSS website <http://www.nss.org> to review "The Space Educator" (click on "knowledge") an NSS reference guide to educational material.

**Youth Organizations**

Although the following sections deal with the Young Astronaut and Scouting programs, there are other youth organizations that you can work with in your area. Information about them would be a welcome addition to this Handbook. All give us the chance to work with young people and give a positive image to NSS at the same time.

### young astronauts

The Young Astronaut Program is a national education program for pre-school, elementary, middle and junior high school students designed to promote educational excellence in science, technology and math. more than 31,000 Young astronaut Chapters have been formed with chapters in every state and 42 foreign countries.

The Young Astronaut program is structured to meet the needs of both individual students and school or community-based groups. Its multi-media presentations include written materials and a televised distance learning cable program. Each component uses a learning-by doing approach, with fun easy-to-understand activities. Individual levels include: Preschool. For children ages 3-5, all inclusive package for \$44.90; Young Astronaut Club: Trainee (grades K-3), Pilot (4-6), and Commander (7-9). Club membership is \$15.95.

Young Astronaut Chapter - 30 students led by a volunteer adult in which students work cooperatively in exploring space-related topics. The \$40 annual membership fee covers all chapter members and entitles members to participate in contests, conferences, and other Young Astronaut activities.

Young Astronaut Television Program: "Space School" is an interactive television course for grades 4-6 available to schools across the country. The 45-minute "class" airs every Tuesday and Thursday during the school year. The fee for this course is \$1250 per site and includes a complete teacher Handbook and curriculum manual.

For more information , contact the YOUNG ASTRONAUT PROGRAM, Young Astronaut Council, 1308 19th Street N.W., Washington, DC 20036. 202-682-1984, Fax: 202-775-1773.

### cub scouts & brownies

The comments under Elementary Space Education in the Education Section relate to these groups as well. If you give presentations to them, arrange to talk to the entire group instead of a single den, unless you want to practice on a small group. Also look into special events like Scout-o-ramas where you can have booths and demonstrations for hundreds of Scouts (and their parents).

### girl scouts

One of our greatest challenges is convincing girls and women that space is of interest to them and that they have a place on the space frontier. The Intermediate Girl Scout's (4th-7th grades) Aerospace badge is not hard to earn, but leaders tend to pass over it because they assume they do not know enough about the topic. You can work directly with the girls, but it is far more efficient to run a workshop for the leaders. They will be more likely to offer the badge from then on, so your influence will be on-going. Be sure to include information about how women participate in present and future space programs and, of course, give them NSS literature and invite them to your next activity!

The girls must make and fly a model glider and do five of the following:

- hear a talk by an aerospace expert (you)
- see a launch or a film or visit a planetarium, etc.
- look through a telescope at the night sky
- make and fly a Handbooke
- put on an airshow or Handbooke flying contest
- create their own character who uses flight in her job
- make an aerospace mobile

- show someone the constellations
- collect five aerospace stamps or design one
- choose ten things to send an alien civilization

Contact a local troop or Girl Scout Headquarters for complete information.

### **boy scouts**

Boy Scouts can earn both a Space Exploration and an Astronomy Merit Badge. The only requirement for the Space Exploration which may be a problem is building and launching a model rocket. Again, you may want to educate leaders instead of acting as an advisor to individual boys. Individual members may want to volunteer to be added to the list of merit badge advisors which troop leaders or individual Scouts can contact. Try to encourage members who are not working on other chapter projects to do this.

You can hold a rocketry workshop for the Scouts and/or their leaders, devote a program to the topics needed for the rest of the requirements or make up resource sheets to guide the boys to the information they will need.

### **explorers**

This is the young adult branch of the Boy Scouts, but it is open to both girls and boys who are at least 14 or in 9th grade and less than 21. There are general interest, "High Adventure Posts," and others that specialize in a specific hobby or career field.

Your chapter can sponsor a space Explorer Post if you have an adult who is willing to act as the Advisor and spend considerable time on the project and four others to serve as Assistant Advisors and Post Committee members. You must also provide a safe place for the post to meet. Uniforms are not required and post activities are determined by the Explorers with guidance from the Advisors.

Contact your district Boy Scout Office for more information. They may have someone in charge of Exploring who can help you get started. They may also conduct a Career and Hobby Interest Survey in area schools (ask if they can include a category about space exploration and careers) that can provide a list of students to invite to your Open House meeting.

Should your chapter start a separate organization for teens instead of doing it within NSS? Only if your chapter's youth activities can benefit substantially from the program's status within your community and the Scout resources and expertise that you will have access to. Your Explorers will be able to participate in regional and national events and hold fund raisers for low-cost trips to Shuttle launches or Washington's Air and Space Museum.

Of course, you will invite the parents of your Explorers to become active members of your chapter!



### Science Fairs

by Richard Mason

High School and Junior High School Science Fairs are almost always places where students who enjoy learning more about the actual world and who revel in attempting to solve real-world problems may present their work for evaluation by recognized scientists. As a Science Fair Director, I know that my fellow directors are always seeking to gain more prizes of value for the entrants to win. Except for the few hardy souls who truly do march to their own drummers, the great majority of us respond most strongly to recognition and reward. If we would have more workers in the fields of space exploration and exploitation, then we must see to it that such people earn status from their work. This is particularly true with young people.

To this end I contribute, in our Twin Tier Regional Science and Engineering Fair, a membership in the National Space Society to the student whose work offers the greatest contribution toward getting humans into space. Knowing that such a prize is available in itself increases the number of students working in this area. Naturally, while only one student will be awarded the membership, all will be eligible to win other awards. While local, school-wide Science Fairs may be found in many places, probably the most prestigious are the Regional Science and Engineering Fairs, which operate under the aegis of Science Service.

To find out whom to contact to obtain permission to include a space-oriented award in a Science Fair, check with the teachers in the Science Department of your local high school. If no help can be found there, then send a self-addressed, stamped envelope to Science Service, 1719 N. Street NW, Washington, D.C. 20036, asking where the Regional Fair nearest you might be. (Note: There are around 270 in the United States alone, plus about 25 in other countries.)

If there is no Regional Fair nearby, then you have a magnificent opportunity. Since greater awareness and appreciation of science and technology in general is vital to the future of humanity, to say nothing about getting us "out there", why not have your NSS chapter become the sponsor of a Regional Science and Engineering Fair? If your local schools are not involved in an available Regional Fair, you might consider setting up a special award for whatever teacher might take on the job of leading the students in his/her school into taking part.

Incidentally, one needn't be limited to only one prize. Why not award an NSS membership to the best space-directed entry in each of the four high school classes: freshman, sophomore, junior and senior?

Since many NSSers are professional scientists, engineers and technicians, you would be helping your local Science Fair (as well as giving the National Space Society greater visibility) if you volunteered to act as judges of student projects as well as determining the NSS awards.

### Special Events

A special event can be one-time opportunity or a regular annual activity. It usually demands more work and planning than your regular programs and warrants greater publicity.

#### hitch-hiking

The special event does not have to be initiated, financed or run by your chapter. Often it is smarter to participate in someone else's event, especially if it is established and well-attended. Just make sure that the public and the media realize that your chapter is responsible for its presentations, or they may give credit to another group.

You can hitch-hike on air shows, science fairs, Scout events, Astronomy Day programs, technology and computer shows, science fiction conventions, stamp and art shows, and even county fairs. Use your imagination. Remember to use your Presentation Book (Section 3) when you contact the event's organizer.

### **spaceweek**

Many NSS chapters have special events during this week that marks the anniversary of the first lunar landing on July 20, 1969. Members of your chapter may organize or serve on your area's Spaceweek committee.

This committee does not sponsor events itself, but it encourages, coordinates, publicizes and sometimes funds local events. NSS Headquarters chooses a theme for each year's events and typically holds its annual Race for Space in Washington, DC during this week.

### **young astronaut day**

September 30 has been proclaimed Young Astronaut Day. Your chapter may have a special event or program, especially if you want to encourage the formation of new YA chapters at the beginning of the school year.

### **spacefairs**

If your chapter finds that an indoor event is not practical during July in your area, if it is a school group (or hopes to encourage student attendance) or wants to hold a second major event during the year, you might consider having a Spacefair in October. Schools often teach units on exploration and discovery near Columbus Day, and space development can be neatly related to these studies. Other appropriate times are anniversaries of important space events, such as the April 12 anniversary of both the first person in space and the first Space Shuttle launch.

By choosing your date carefully, you can take advantage of the same-time-same-place rule by making it an annual event. Even when planning your first event keep in mind the possibility that you or someone else may decide to have "The Second Annual\_\_\_\_" next year. Choose a date when:

1. The participants will be able to spend enough time on preparations
2. There are no major conflicting events (check with your area Chamber of Commerce and the location where your event will be held)
3. The audience you hope to attract is not overloaded, as they may be during exam weeks, major holidays and family times like Mothers Day. (The first week of school might be ideal on campus, but bad for grade and high school students and teachers.)

SpaceFairs usually borrow heavily from the successful formula of science fiction conventions: exhibits, information and merchandise booths with a continuous program of videos, speakers and demonstrations. It usually takes place in one location, except for activities requiring special facilities, such as an observatory or planetarium.

Your chapter will probably want to organize and maintain control over the entire event. That does not mean that your members must do all the work! Invite local astronomy clubs to bring telescopes and photos, stamp clubs to put on an exhibit of space stamps, an amateur radio club to demonstrate satellite tracking, a company which sells satellite receiving antennas to set one up for a demonstration and the TV weather man to explain his use of weather satellites. Local companies that have contributed to past or present space projects can bring an exhibit and/or provide a speaker. Find out if anyone at a local college is working on space-related research.

You can ask student or professional artists to exhibit works with a space development theme or sponsor an art contest. If your chapter gives a prize for the best space-related exhibit at a science fair, show off the winner and her exhibit.

The key is to involve local groups that do not have a strong enough space connection to sponsor an activity during Spaceweek, but can make a positive contribution to a Spacefair with a little guidance.

### space holiday

If your chapter plans a public program early in December, you can use a holiday theme and advertise it as a family event. You may have serious, professional speakers all year round, but this is a good time to have a little fun.

Decorate a tree with Space Shuttles and satellites and cut-out stars with the names of space pioneers. Underneath, "Gifts from the Space Program": wrapped packages labeled with names and pictures of spin-offs from space technology and some of the items themselves. The tree can be used at a December program and/or displayed at a library, school, museum or store.

Have a program aimed at kids, perhaps a slide show "ride" on the Space Shuttle or "visit" to a space station. You can help a school or Scout group put on a play, puppet show or series of sHandbooks for parents or the public about a Christmas at a space habitat.

You can rewrite some of the non-religious holiday songs with space lyrics. If no one plays the piano or guitar, you might program a home computer to accompany the singing. Have (or sell) space punch and star cookies. Children can be blindfolded and try to break open a candy-filled, Space Shuttle-shaped piñata suspended from the ceiling. You might hold a party for your members after the program.

Reporters tire of the usual holiday events, they may find yours interesting enough to give special coverage. Take care to avoid science fiction and keep your level of space education high. Remember that the captive audience of parents provides a rare chance to educate them a little, too. You can offer a special family membership in your chapter.

If you are not brave enough to use these "cosmic carols" in public, try them out at your members' party. Credit for most of the following lyrics goes to DEBBY FASSEL:

#### *TWELVE DAYS OF CHRISTMAS*

On the twelfth L5 Christmas  
 We'd surely like to see:  
 12 billion stars  
 11 space cities  
 10 launches weekly  
 9 gorgeous planets  
 8 asteroid mines  
 7 space factories  
 6 lunar landings  
 5 solar sails  
 4 Space Shuttles  
 3 mass drivers  
 2 Bernal spheres  
 And a permanent home in space!

(Editor's Note: Space Shuttles will hopefully soon belong on 5, rearrange these words to your satisfaction, you can have drawings of each item on poster board to hold up for each number.)

*WE WISH YOU ANOTHER SHUTTLE*

We wish you another Shuttle, we wish you another Shuttle,  
 We wish you another Shuttle, and a future in space.  
 Good tidings we bring, to you and your kin.  
 We wish you another Shuttle, and a future in space.

*SPACE COLONY (To "Oh Tannenbaum")*

Space colony, space colony, your orbit is unchanging.  
 Space colony, space colony, your orbit is unchanging.  
 Your farms are green, with crops we grow,  
 with never drought or freeze or snow.  
 Space colony, space colony, your orbit is unchanging.

Space colony, space colony, you fill our eyes with splendor.  
 Space colony, space colony, you fill our eyes with splendor.  
 Your mirrors bright reflect the sun,  
 to make good things for everyone.  
 Space colony, space colony, you fill our eyes with splendor.

*MAKE IT SNOW! MAKE IT SNOW!*

Oh, the vacuum outside is frightful,  
 but L5 is so delightful.  
 The weather controls are "Go,"  
 make it snow, make it snow, make it snow!

It doesn't show signs of stopping,  
 and we grew some corn for popping.  
 The sun is turned way down low,  
 make it snow, make it snow, make it snow!

When we finally say goodnight,  
 how I'd hate to go out in a storm,  
 but it's scheduled to stop by ten,  
 so all the way home I'll be warm.

Outsiders may think its funny,  
 that we make our days all sunny,  
 but just for a change, you know,  
 we make it snow, make it snow, make it snow!

**Chapter Library****contents**

Every chapter accumulates things that can become the start of a chapter library: NSS Headquarters sends information and *Ad Astra*, members bring articles from newspapers or magazines to meetings, others send away for NASA reports or bring them back from vacations, someone tapes a panel discussion at a convention and another gathers information about a specific topic for a class. All this is a valuable chapter resource. Where does it usually end up? Often it is scattered in various members' homes or stored away in someone's basement and no one is sure who-has-what-where!

**uses**

A library is not a lot of work and benefits your chapter in many ways:

1. It is a concrete and attractive benefit to offer new members
2. It contributes to the continuing education of all members
3. It is a great help when developing a space education project
4. Its mere existence will encourage members to collect, organize and share information on specific topics.

**ownership**

As soon as you start to survey this material make SURE you know who owns every item. Members will usually give small things to the library. They may donate more valuable material as well, especially if your chapter has non-profit organization status, making it a tax-deductible donation. (Decide who in your group has the authority to determine fair market value for the donation.)

Sometimes a member will loan items like books or issues of a magazine to the library, but they want to retain ownership. Ask if the loan is for a specific length of time or maybe as long as she is a member or until he moves out of the area. What if the item is damaged, e.g. a tape breaks?

It is wise to label EVERYTHING! You can write or stamp on it "Property of \_\_\_\_" and/or use your chapter seal (see Section 2). Add a date and "Donated by \_\_\_\_" where appropriate.

**where?**

A few chapters (mostly on campus) have a permanent meeting room where a library can be kept. Others may meet regularly or be an official affiliate of a museum, planetarium or other institution. Find out if there is a locked cabinet available where your library can be kept. If not, could they let you use a bit of floor space if your chapter provided the cabinet? (There may even be room for other chapter material, such as a work box, that will contribute to smoother chapter operation.)

If you can not find any permanent location, you may still want to organize the material in one or more file boxes and have a "floating library". A member volunteers to take custody of the library and bring it to the next meeting. Everyone can browse through its contents during the meeting and then another member takes it home. Special items may be circulated through the membership via "routing slips" as discussed in the Section.

**reading rooms**

There is seldom time during meetings to really use the library. In addition to regular meetings, members can volunteer to staff a reading room. (Try to get your less active members to volunteer!) They decide when they will be at the meeting room to unlock the library and oversee its use. They choose a day and time that is convenient for them and get to use the library at the same time. The schedule can be arranged far in advance and published in your newsletter.

The "Reading" Room can be used for other activities. Members can bring tape recorders (preferably with ear phones) to listen to tapes and a slide projector to view a collection of slides and slide programs. If the equipment is available, you may even keep video tapes in your library.

While you want to make sure that the volunteer is responsible and will keep a close eye on the material, the library should be relatively simple to operate. If you decide to lend items to members, it becomes more complicated.

**catalog**

For small collections a simple list will do. You can keep items together by topics or simply give each a number in sequence. A card file will add considerable work, especially if you cross-reference, but will greatly increase the usefulness of the library. If a member has a computer and data management program, make a file for the chapter library. Then the catalog can be kept current with minimum effort. While you couldn't do searches in the Reading Room without a computer, you could keep catalog print-outs with the collection.

**adding material**

If a member or committee takes charge of the library, they will probably want to add to it once it is organized. You may be lucky enough to have money in your budget for subscriptions or other acquisitions. Otherwise, you can ask members to loan or donate items, to clip articles of interest, to write a report on a subject or assemble a file on an important issue.

One easy project is a file on your chapter's history, including newsletters and other records. An informal chapter scrapbook can be kept, too. This is just for members, as opposed to your formal Presentation Book. It will be of great use to new members and help them feel a part of your group.

**Special-interest Subgroups**

In the course of your chapter's activities you will probably run into people with a special interest in education, model rocketry, model building, video, computers, astronomy and amateur radio, who are also interested in space. You may want to encourage them to form a section within your chapter devoted to their interest, especially if they are already thinking of forming an organization. You may be able to attract them with the fact that they will not have to bother with their own newsletter, dues and finances or non-profit status application. Your chapter may already be affiliated with a local institution or have established working relationships with schools and youth groups and your members will provide a source of interested people for their events and projects. Society-level conferences and services may also be beneficial to them.

They will, in turn, provide you with more activities and new resource people. This can be especially useful if you only have a few, overextended activists. By serving as a coordinating umbrella organization, you can develop a diverse educational program. Just make sure that the group maintains an NSS focus.

**Technical Projects**

While NSS was not organized to engage in space development research, many of our members are professionals in engineering and other technical and scientific fields. We even have chapters which are based at aerospace corporations. Understandably, individual members and chapters have become involved in technical projects through Society contacts. Those of you who are interested in such activity may want to organize a committee within NSS to identify suitable projects (perhaps in cooperation with Space Studies Institute) and help locate other interested, qualified members. (Contact Headquarters, the Chapters Coordinator or your Regional Organizer.)

**The Arts**

Likewise, some of our members are talented artists, musicians and writers. The arts have a powerful influence on the average person's perception of reality, but all too frequently, space is badly misrepresented. Even those of us who merely enjoy the arts can help to spot misleading and false concepts, educate artists about NSS concepts and give positive feedback to those who contribute a realistic portrayal of the space frontier. NSS can also serve as a networking tool for artists who are interested in cooperative activities with members working on education projects, videotape or exhibit production and other endeavors to advance our goals. (Contact Headquarters, the Chapters Coordinator or your Regional Organizer.)