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ABSTRACT

Historically in the United States, few people with disabilities have enrolled in science-related courses or entered scientific careers in part because high schools and colleges have not offered accessible training to this population. This document is the teaching and resource guide that accompanies a 40-minute video program in career development for junior high, high school, and adult students and their teachers and counselors. The program features female and male scientists of various ethnic backgrounds, disabilities, and lifestyles as role models. Varied science careers are represented: science teacher, computer programmer, psychiatrist, physicist, medical technologist, systems engineer, and chemistry professor. The goals of the program are to encourage students with physical or sensory impairments to consider careers in mathematics and science; and to encourage teachers, parents, and counselors to support disabled people in their efforts to achieve successful careers in these areas. Included in this guide are descriptions of the materials, a program summary, discussion questions to follow the program, a career interest checklist for students, and career summaries for each of the highlighted areas. Lists of resources for obtaining information and support concerning careers in these areas are attached. (CW)

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SCIENCEABLED

Good Minds at Work

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Front cover photos courtesy of the American Association for the Advancement of Science Project in Science, Technology, and Disability

A resource guide for
the ***Science Abled*** video program

Good Minds at Work

A 40-minute video program in career development
for junior high, high school, and adult students

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"You have been watching a group of outstanding scientists at work in such diverse fields as computer programming, biochemical research and the teaching of science. You have heard testimony about how good they are at what they do. But the people you have just seen are the tip of the iceberg. They represent thousands of other productive disabled Americans. But millions of others who are also challenged by physical and sensory impairment are unemployed.

Our handicapped scientists and science students need an environment in which they can thrive and contribute. It is up to us to make certain science labs can be adapted, work stations are made accessible, and routines modified. It requires creativity, novel solutions, and a commitment of the challenge. Together we can ensure the economic and scientific future of our society. Let's do it and do it now."

Senator Bob Dole, Kansas, 1986

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Photo courtesy of the American Association for the Advancement of Science Project in Science, Technology, and Disability

A hearing-impaired scientist communicates with her co-workers. Disabled scientists can work effectively with co-workers, particularly when work assignments are designed to correspond with the special abilities of each individual—disabled or nondisabled.

Introduction to the *Science Abled* Series

Overview and Purpose

The ***Science Abled*** series consists of two video programs and two accompanying resource manuals. The first program,"Good Minds at Work," is addressed to students and their counselors, parents, and teachers. The program features female and male scientists of various ethnic backgrounds, disabilities, and lifestyles as role models. A variety of science careers are represented: science teacher, computer programmer, psychiatrist, physicist, medical technologist, systems engineer, and chemistry professor.

The second program, "Return on Equity," is intended primarily for potential employers. This program presents the opinions of supervisors, coworkers, and other employers on the experience of working with disabled scientists. The program also addresses many general concerns employers frequently have about hiring disabled people.

"Return on Equity" and its accompanying resource guide are also available from AIT.

The goals of the ***Science Abled*** series are to

- encourage students with physical or sensory impairments to consider careers in science or technology
- encourage teachers, parents, and employers to support disabled people in their efforts to achieve successful careers in these areas

Historically in the United States, few people with disabilities have enrolled in science-related courses or entered scientific careers, in part because high schools and colleges have not offered accessible, hands-on science training. This lack of student aspiration and educational opportunity harms both the country and its disabled citizens.

According to a recent survey, two-thirds of all disabled Americans between the ages of 16 and 64 are not working (International Center for the Disabled and Louis Harris and Associates 1986).

Why do physical disabilities and low employment rates seem to be related? Research has indicated a number of barriers that prevent disabled people from realizing their career potential.

1. Early influences can discourage disabled individuals from accepting goals that require competitive training (Weinberg 1982).
2. Teachers and counselors do not provide enough helpful feedback to disabled students (Chandler 1981).
3. Classroom planning and activities are insufficient (Damborg 1981).
4. The general life environment often discourages such expectations (Pati and Adkins 1981).

If we hope to increase the potential of disabled people to accomplish professional work in the sciences, we must confront these and other barriers. The developers of the ***Science Abled*** series tried carefully to address a variety of specific barriers, including the double barriers facing disabled women. The series was designed to help compensate for the paucity of disabled role models in science and for the lack of classroom, counseling, and inservice materials.

With the passing of federal laws in the 1970s, such as the Education for All Handicapped Children's Act (PL 94-142) and the Rehabilitation Act, more students with physical or sensory limitations are being graduated from high schools and colleges. The impact of these laws is significant, because the association between higher education and the employment of disabled people is great.

The 1986 International Center for the Disabled survey concludes that "about four times as many working disabled people have a four-year college education as those who don't work." Those who do work are more satisfied with life and much less likely to say that their disabilities have prevented them from reaching their full potential. Ideally, through counseling that stresses academic opportunities, the education of disabled people focuses on career preparation.

Due to the increasing need for scientifically trained graduates, educators must address certain issues. In spite of expanded educational

opportunities, few students with disabilities are receiving the academic training that would enable them to enter the nation's scientific work force. This project is designed to help increase the number of students with disabilities who choose science as a course of study and a career. As Betty Vetter, Director of the Commission on Professionals in Science and Technology has said, "With fewer people eligible for training at the college level, the need to utilize the best minds in science and technology is obvious. We won't have the best unless we utilize *all* of the available talent pool."

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Introduction to 'Good Minds at Work'

Materials

The ***Science Abled*** video program, "Good Minds at Work," consists of the following segments.

Part 1: Work and Accommodations

Part 2: Preparation for a Career in Science and Technology

Each segment is approximately 20 minutes in length.

Using the Materials

The two segments of "Good Minds at Work" can be shown separately or together as one 40-minute video.

The program and this resource guide can be used in a variety of settings, such as

- individual career counseling in schools or colleges, in an independent living center, or in a vocational rehabilitation agency
- part of the classroom curriculum on prevocational and vocational education in junior and senior high schools
- workshops and training sessions for parents, teachers, counselors, community leaders, and university and community college personnel—these workshops might be given by schools, public agencies, chambers of commerce, individual corporations, or businesses
- local cable stations
- career fairs

Before the Program

Note: You may choose to ask students to complete the "Career Interest" checklist on page 10 before the program and to conduct a discussion about their responses afterward. The checklist could also be used as a follow-up activity for another day.

Program Summary

The narrator opens the program by talking about the many exciting and challenging careers in science and technology that are possible for bright young people with disabilities. She introduces seven disabled scientists, who, acting as role models, discuss many aspects of their careers and lives.

In part 1 of the program, "Work and Accommodations," the scientists are shown performing various duties at work and at home with their families. They talk candidly about the influences in their lives—teachers, parents, and others who encouraged them to pursue a career in science and those who discouraged them. They describe their jobs and share which aspects they find most challenging and rewarding. Dealing with skeptical or discouraging employers and colleagues is also discussed by several of these scientists; others mention the acceptance and encouragement they feel from their co-workers.

The program shows that many of the accommodations and adaptations that employers have made to enable these scientists to perform their jobs comfortably and efficiently are minor and inexpensive. One employer provided a small lap-top computer, so that the disabled employee could take notes in meetings. Another employer removed a rest room wall to provide access for a wheelchair.

In part 2 of the program, "Preparation for a Career in Science and Technology," the narrator suggests that preparation for a science career should begin in high school or sooner. She stresses the importance of support from counselors, parents, and teachers. Many of the featured scientists discuss their educations and training—particularly how they succeeded in challenging courses, or met the physical demands of attending classes and labs.

Students interested in science careers are encouraged to take as many mathematics and science courses as possible, to find role models who can give advice and support, and to take advantage of support services that exist on campuses and in communities. Several disabled students, some in high school and some in college-level science courses, discuss their educations and plans for the future.

Biographies of the Scientists

The following scientists appear in "Good Minds at Work." Their biographies are arranged in order of their appearance in the program.

Lorraine Poor works as a medical technologist in California. She works on the afternoon shift at the medical laboratory, so that she can spend mornings with her baby daughter. She and her husband share child care and housekeeping responsibilities. Lorraine uses a wheelchair because of post-polio paralysis of her legs. Because she has scoliosis (a curvature of the spine), she practices weight lifting at a local college to strengthen her upper body. Lorraine enjoys scuba diving, hiking with the Sierra Club, and skiing.

Jeff Peters manages a six-person team of systems engineers. "It took me 32 years to be able to afford a van, a family, and Geoffrey Beene suits," Jeff says. He has cerebral palsy, which affects his arms and, to a greater extent, his legs. He uses an Amigo wheelchair, which functions somewhat like an electric scooter. Jeff's special interests are skydiving, playing chess blindfolded, playing with his kids, barbecuing, and fishing. He wants to be the first disabled scientist on the space shuttle.

Anne Swanson was born with osteogenesis imperfecta or "brittle bones." She is 43 inches tall and walks with a cane. Anne has had many operations to correct and stabilize this condition. A university professor once told her that girls didn't belong in a chemistry class; now she is a chemistry professor. Through her practice of what she calls "creative disobedience," Anne has proven the experts wrong throughout her life. When she was

an infant, the doctors told her parents that she would be mentally retarded and would never be able to attend school, yet she earned a Ph.D. in biochemistry. Common stereotypes suggested that she would never experience romance, sex. or marriage, yet she has been happily married for 17 years. In her leisure time, Anne enjoys playing the piano. She has traveled all over the United States and Europe.

David Hartman is a psychiatrist. He is married and has three young children. David describes himself as persistent. His persistence, along with this sense of humor, helped him when he tried to get into medical school. He has written an autobiography, *White Coat, White Cane*, from which the television movie "Journey from Darkness" was made. David has been blind since the age of eight, when he underwent a series of eye operations. He has always loved sports. He was a wrestler in high school and enjoys swimming. He recently broke his foot playing baseball with his kids.

Jeff Himmelstein teaches biology and environmental education in a New Jersey high school. He also conducts student tours of the Yucatán jungle in Mexico. His classroom is filled with cages of small animals, snakes, and spiders. He became deaf from unknown causes in the first few years of his life. He uses a hearing aid, which is attached to an amplifier that he wears under his shirt, and reads lips. In large groups he must use an oral interpreter. He is married and has two teenaged children, both of whom attend the high school in which he teaches.

Martha Burks is an associate programmer at a university computing center in Ohio. She describes her athetoid cerebral palsy in this way: "Every action on my part causes an unpredictable reaction that I can or cannot control, depending on how relaxed I am. I cannot speak normally, but I can make myself understood." Martha's best friend, Helen Jones, encouraged her to become more independent. Helen, who is also disabled, runs her own business. Martha is currently on the board of directors of Total Living Concepts, Inc., an independent living agency for disabled people. For relaxation, Martha goes to plays and shows, listens to records, and reads voluminously.

June Rooks works as a physicist for a naval weapons center in California. Because of her post-polio paralysis, June wears leg braces and uses metal canes with sleeves for her arms, carrying her weight mainly on her arms and shoulders and swinging her legs between her canes. June, who grew up in Mississippi, was not able to attend school until she was 10 years old because they were not accessible to disabled children at that time. During her college years, June decided to run for campus queen. She came in second runner-up, traveled with the football team, and participated in the homecoming parade.

After the Program

Discussion Questions

1. Jeff Peters said it is important to take risks. What does this mean? Have you taken any risks in the last month? In the last year? How did it turn out?

2. Jeff Peters also said that he makes mistakes. Were you surprised that he said this? How do you think he feels when he makes a mistake?

3. How did Anne Swanson take control of the interview situation she described in the program? What does "taking control" mean? Have you ever been in a similar situation? What did you do?

4. What did Jeff Himmelstein say is behind all scientific advances?

5. What did June Rooks mean when she said that her background in physics has trained her to think?

6. What did Jeff Himmelstein mean when he said, "I know that I am disabled, but I won't allow my students, or anyone else, to make me handicapped"?

7. Martha's father adapted her wheelchair so that the control box would fit under her desk. Have you ever had your wheelchair adapted? How? Who did the work? Martha hired a personal care attendant. Would you know how to do this? Have you ever designed your own adaptations? What did you do?

8. Lorraine Poor is married and has a small child. Does this surprise you? Why?

9. Are you responsible for any chores around your house? What are they?

10. How did David Hartman's sister affect his development? Do you and your brothers and sisters share things, help one another, fight, or argue?

11. What is your favorite course? Why? What course is the most difficult for you? Why are mathematics and science courses important for all students? What other courses are important for students in junior high and high school?

12. Have you ever received a bad grade? How did you feel about it? What did you do? Are any of the students in the program taking difficult courses? How do they deal with them?

13. Why are extracurricular and volunteer activities important? What extracurricular activities do you participate in? What do you gain from them?

14. What is a mentor? What can a mentor do for you? Has anyone ever acted as your mentor? Where might you find a mentor?

15. Are you planning to go to college? Where? What do you want to study? Are there places to turn for support in college, if you need it?

16. How did Jeff Himmelstein, David Hartman, and June Rooks deal with discouragement? Have you ever experienced discouragement? What happened?

17. Anne Swanson said that women who are disabled and want to become scientists face "double barriers." What did she mean by this? Do you agree? What can they do about it?

18. Have you ever examined your own prejudices about people? Have you ever prejudged the capabilities of another person, only to find out that you were wrong?

19. How do you think these scientists feel about themselves? Why?

20. Are you considering a career in science or technology? What field in particular do you prefer? Why? How will you prepare for this career?

Supplementary Activities

1. Invite local scientists and technologists, especially those with disabilities, to speak to the class about their educations and careers.

2. Invite members of your local independent living center to discuss independent living, adaptations, and accommodations, and other topics of interest to the students.

3. Suggest that students interested in science and technological careers form a club. Explore the possibility of affiliating the club with a national group (see "Science Organizations," pages 34–35). A local scientist might serve as the leader. If science clubs already exist in your school district or community, make sure they are accessible to all of your students.)

4. Organize field trips to local laboratories and research facilities. Check in advance for accessibility.

5. Maintain a bulletin board of current information on science and technology. Post a list of current television programs on various science topics.

6. Send for the career information resources listed in this guide ("Career Information in the Sciences," pages 28–33). Rent or purchase media material on science and technology to inform students about career options.

7. Encourage students and parents to participate in acquiring career information. Have them write for free career materials.

8. Investigate extracurricular opportunities in science: summer programs, science fairs, industry-based special projects for students, and other programs appropriate for your students.

9. Utilize such programs as Science Activities for the Visually Impaired (SAVI) and Science Enrichment for Learners with Physical Handicaps (SELPH) to plan science activities and projects that are interesting and accessible to disabled students. (For more information on these and other programs, see "Additional Resources," pages 36–39.)

10. Invite program advisors and students from your local college or university to speak about educational preparation for college entrance, academic options, support services, and financial aid.

11. Keep parents informed of science activities. Invite them to special events and meetings when appropriate. Develop career planning sessions for parents using the ***Science Abled*** series and resource guides.

An Introduction for Teachers, Counselors, and Workshop Leaders

It is important to stress that most students do not make career choices in high school, and those who do often modify their choices as they mature. However, high school is an appropriate time to consider career possibilities. High school students should be encouraged to consider a range of appropriate vocational possibilities rather than to make final career decisions.

"Good Minds at Work" seeks to convince students to keep their options open by building a solid academic background in high school. Many students with disabilities may require more than the usual four years to complete the high school curriculum suggested below. Flexibility in programming based on individual needs and strengths and "realistically high" expectations are crucial to their success.

High school students should be encouraged to focus on a mathematics and science curriculum in the context of a well-rounded education. Computer literacy is also strongly encouraged. The following curriculum is recommended.

mathematics:	four years
science:	four years
English:	four years, including oral and written communications
foreign language:	one to two years

The program also seeks to persuade disabled students that careers in science and technology can be rewarding, exciting, and attainable. The featured role models deliver this message effectively. Encouraging students to consider college education is a secondary goal. The "Science Career Summaries" on pages 11–14 inform students about the types of post-secondary education needed and the kinds of jobs available in several scientific and technological fields.

As an incentive, students should be informed of the financial worth of a college education. A college graduate earns about $8,000 dollars a year more than a high school graduate. The more education students attain, the more money they will probably earn. In addition, college graduates entering scientific and technological fields can earn up to twice the beginning salaries of graduates with degrees in the humanities or social sciences. Students should also understand the strongly positive effect that having a job can have on the quality of their lives—not just in terms of money earned, but in terms of "life satisfaction" and "reaching their full abilities as a person." (International Center for the Disabled and Louis Harris and Associates 1986)

Most career counselors suggest that students consider the employment outlook when they choose a career. What will be the fastest growing fields in the next 10 to 20 years? The Bureau of Labor Statistics reports that jobs for scientists, computer programmers and analysts, engineers, health technologists, physicians' helpers, registered nurses, and electronic technicians will increase in the coming decades.

Students should understand that forecasting—whether for the stock market, the World Series, or the job market—has never been an accurate science, and completely accurate predictions of vocational demand are impossible to attain. World politics, economic conditions, population demographics, and new technologies are all variables that influence the employment outlook. According to current estimates, 60 percent of the jobs people will hold in 10 years do not exist today. Because a particular job or specific financial rewards cannot be guaranteed, students' career choices should also depend upon other anticipated rewards such as intellectual excitement, the fulfillment of a desire to help others, or a chance to participate in scientific discoveries.

It is clear that employment opportunities in general will continue to open up for disabled people due to the continuing elimination of physical and attitudinal barriers.

Individuals trained in science and technology are needed in administrative, policy-making, and practitioner roles in many scientific fields. According to the Commission on Professionals in Science and Technology (1984), "A bachelor's degree in science or engineering continues to be an

excellent stepping stone to careers in medicine, law, business, and other occupations."

Some of the best career information available is listed under "Career Information in the Sciences," on pages 28–33 of this resource guide. Information about financial aid for college students is listed under "Information Sources for Disability Concerns," on pages 25–27 of this guide. Encourage students to take advantage of these resources.

Young adults and college students in need of accessible housing and transportation should contact their local vocational rehabilitation agency for the nearest independent living center.

References

Commission on Professionals in Science and Technology. 1984. *Opportunities in Science and Engineering*. Washington, DC.

International Center for the Disabled and Louis Harris and Associates. March 1986. *The ICD Survey of Disabled Americans: Bringing Disabled Americans into the Mainstream*. New York.

Career Interest: A Checklist for Students

Goal: This checklist is designed to help you assess your interest in science and technology. There are no right or wrong answers. Your answers should help you become more aware of your own interests. Discuss the results with a family member, friend, counselor, or teacher.

Directions: Think about each question and answer each one by checking either **Yes**, **No**, or **Not Sure**.

	Yes	No	Not Sure
1. Do you like to play games of strategy (chess, hearts, backgammon) or solve puzzles?	_____	_____	_____
2. Do you enjoy the challenge of a new task?	_____	_____	_____
3. Do you like to watch science shows on television?	_____	_____	_____
4. Would you like to visit a scientist at work?	_____	_____	_____
5. Have you ever had a science-related hobby?	_____	_____	_____
6. Do you sometimes question what you read or hear?	_____	_____	_____
7. Do you like trying to figure out how things work?	_____	_____	_____
8. Have you ever come up with ideas for new ways to do things, or new uses for common objects?	_____	_____	_____
9. Have you ever tried to repair a broken machine or appliance?	_____	_____	_____
10. When a problem is difficult to solve, do you like to keep at it until you've found the answer?	_____	_____	_____
11. Are you good at solving problems?	_____	_____	_____
12. Are you able to work on your own, with little guidance from others?	_____	_____	_____
13. Do you enjoy watching and studying the habits of fish, birds, or other animals?	_____	_____	_____
14. Do you enjoy working with computers?	_____	_____	_____

Computer Science

by Marilyn Edwards Leese

Academic Preparation

Students interested in computer science can choose from a variety of degrees and programs. Community colleges and business colleges offer two-year associate degrees in fields such as data processing, computer repair, and computer programming.

A Bachelor of Science (B.S.) requires four years of college, including courses in mathematics, natural and social sciences, English, and foreign language. In addition, a student will take a number of computer science courses, such as computer languages, artificial intelligence, computer graphics. digital computer engineering, data base systems, logic, statistics, and learning theory.

Undergraduates interested in this area can also choose to enter a program that relates computers to another discipline. A student may choose to elect two majors, for example: one in computer science and the other in the sciences or humanities. Business majors can study commercial applications of data processing. Engineering majors might concentrate on computer engineering, specializing in hardware design or nuclear medicine.

Career Options

Professionals in computer science can choose from a number of career options. They can work as programmers or systems analysts, or accept increased responsibility in management positions. They can become computer sales representatives, teachers of computer skills, researchers of new designs for computer systems, or consultants for computer installations.

Many private industries—manufacturing and wholesaling companies, data processing services, telecommunications networks, banks, and insurance companies—employ computer professionals. In government, computer scientists play a role in key functions such as research, planning, and administration. Computer scientists also work as teachers and researchers in universities.

Because of its flexibility, a degree in computer science can allow graduates to enter many fields. Financial analysts, economists, statisticians, actuaries, urban planners, and engineers all use computer skills. As computers become increasingly important in a number of areas, the need for the computer scientist's skills will become even more broad-ranging.

Science Career Summary

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by Marilyn Edwards Leese

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Science Career Summary

Physics

by Marilyn Edwards Leese

Academic Preparation

Students interested in physics may choose from several degrees, though many physics-related occupations require advanced university training.

A Bachelor of Science (B.S.) requires four years of college, including courses in mathematics, natural and social sciences, English, and foreign language. Physics majors are expected to take courses in various branches of physics: mechanics, electricity and magnetism, thermodynamics, modern physics (atomic, nuclear, solid state), and electronics. Courses in mathematics are required, and courses in chemistry and biology are strongly recommended.

Undergraduate students can often benefit from summer programs sponsored by government or private industry laboratories. Moreover, universities themselves often hire students during the summer to work on special research projects under the supervision of a faculty member.

The Master of Science (M.S.) degree requires two to three years of study, including advanced courses, research within an area of interest, and preparation of a thesis.

The Doctor of Philosophy (Ph.D.) requires four to six years of work beyond the bachelor's degree, including courses, research, and a written dissertation based on independent research. Professors and independent researchers generally must possess this degree.

Career Options

Physicists conduct research, provide consultation, and supervise or teach in laboratories, universities, hospitals, private industries, or government agencies. The following list represents some of the branches of physics and examples of its applications.

Acoustical physics is the study of sound and its transmission, including shock and vibration, underwater sound, and speech. The design of symphonic auditoriums and the development of the stereo tape deck and the medical ultrasound scanner are all accomplishments of acoustical physicists.

Atomic and **molecular physics** is the study of the interaction of the electrons and nucleus in the atom and of the formation of molecules from atoms. Work in this area provides assistance in the manufacture of chemicals and pharmaceuticals and enables identification of unknown materials.

Biophysics is the use of the ideas and methods of physics and chemistry to study and explain the structure and processes of living organisms. Biophysical investigations focus on understanding DNA, the effects of X-ray and nuclear particles on cells and tissues, and the conduct of nerve impulses.

Electronics is the study, design, and application of devices with operations dependent upon the characteristics and behavior of electrons. Television, radar systems, and telephones are all electronic inventions.

Electromagnetism is the study of electrical and magnetic phenomenon. Physicists working in this area have aided in the development of huge generators that provide electricity for heating, lighting, and air-conditioning.

Geophysics is the study of the earth through the use of principles and practices of physics. Geophysicists are involved with petroleum production and the dynamics of earthquakes.

Medical physics is the application of physics principles and techniques to the problems of medicine. Developments in this area include the use of X-rays, radioisotopes, and scanning in diagnostic procedures.

Nuclear physics is the study of the interactions and properties of the atomic nucleus. Nuclear physicists have developed uses for nuclear

energy as well as radiation therapy for cancer patients.

Optical physics is the study of light. Optical physcists have developed surgical lasers, fusion power, and holography.

Plasma physics is the study of the behavior and use of high temperature ionized gas. Plasma physicists are working toward the development of controlled thermonuclear energy.

Solid state physics is the study of the crystallographic, electronic, and magnetic properties of solids—primarily of crystalline solids. These physicists have applied their results to produce the transistor, integrated circuits, and computer memories.

Space and **planetary physics** is the study of nuclear particles, atoms, molecules, meteorites, and radiation that pass through the region between the planets. This study aids in weather forecasting and in the functioning of satellites.

Thermodynamics is the study of the various forms of energy (including heat) and the process of transferring energy from one form to another.

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Optical physics is the study of light. Optical physcists have developed surgical lasers, fusion power, and holography.

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Solid state physics is the study of the crystallographic, electronic, and magnetic properties of solids—primarily of crystalline solids. These physicists have applied their results to produce the transistor, integrated circuits, and computer memories.

Space and planetary physics is the study of nuclear particles, atoms, molecules, meteorites, and radiation that pass through the region between the planets. This study aids in weather forecasting and in the functioning of satellites.

Thermodynamics is the study of the various forms of energy (including heat) and the process of transferring energy from one form to another.

Science Career Summary

Biomedical Fields

by Kathleen Hannon

Academic Preparation

Students interested in biomedical fields may choose from many degrees and programs, though many biomedical occupations require advanced university training.

Community and junior colleges offer many one- or two-year allied health programs. These programs combine classroom and laboratory study with clinical practice. Graduates receive certificates or associate degrees, which enable them to secure positions as medical technicians, nurses, and dental assistants.

The Bachelor of Science (B.S.) requires four years of training, including courses in mathematics, natural and social sciences, English, and foreign language. Students interested in positions as biomedical technologists often complete a specialized four-year training program, which requires extensive laboratory work. Students should consider majoring in one basic science such as biology, chemistry, physics, statistics, or engineering.

Undergraduate students can often benefit from summer programs sponsored by government or private industry laboratories. Universities may also hire students during the summer to work on research projects under the supervision of a faculty member.

The Master of Science degree (M.S.) requires two to three years of study, including advanced courses, research, and preparation of a thesis.

The Doctor of Philosophy (Ph.D.) requires four to six years of work beyond the bachelor's degree, including courses, research, and a written dissertation based upon independent research. University professors and independent researchers must possess the Ph.D.

The Doctor of Medicine (M.D.) requires a four-year program of medical education beyond the bachelor's degree, followed by several years of clinical training (residency or internship).

Career Options

Biomedicine is rapidly expanding beyond medicine, dentistry, and veterinary medicine to include a diverse range of employment opportunities.

Practitioners diagnose, treat, and prevent illness and disease. The specialties include radiology, public health, nursing, podiatry, and optometry.

Specialized biomedical scientists conduct research to develop equipment, materials, and techniques to assist physicians in treating disease and promoting health. Biomedical engineers, microbiologists, geneticists, pathologists, industrial hygienists, pharmacologists, and physiologists are among the field's many professionals.

Technologists, who assist with laboratory and research techniques and operate and monitor biomedical equipment, work in areas such as laboratory medicine, radiation therapy, environmental health, nuclear medicine, and cardiology.

Technicians, who assist highly skilled practitioners and professionals, include surgical technicians, electrocardiograph (EKG) technicians, electroencephalogram (EEG) technicians, and medical laboratory technicians.

Biomedical scientists and technicians may choose to work in

- hospitals, clinics, medical centers, health maintenance organizations, and private practice
- federal, state, and local departments, commissions, and health regulatory agencies
- independent research and development organizations—basic and applied research with private corporations and nonprofit foundations
- industrial laboratories doing production and quality control, technical writing, and professional representative positions
- colleges, universities, and medical schools doing research and teaching

Career Preparation

An Introduction for Teachers, Counselors, and Workshop Leaders

"The ideal goal of vocational adjustment is participation in an occupation in which the physical disability does not constitute a handicap. This...is an ideal; it cannot always be achieved. Some severely disabled people may not be able to compete on an equal basis with the nondisabled, or find an occupation in which their disabilities are not a handicap. The objective in these cases is to utilize as much of the potential of the individual as possible in the most suitable occupation which can be found." (Foster, Szoke, et al., 1979)

Disabled adults, like other adults, should strive to function relatively independently (in reality, interdependently) to fulfill their needs and interests. To progress toward this goal, young people with disabilities need the support of influential others: counselors, parents, teachers, and other adults who might be a positive force in their lives.

An understanding and supportive influential other asks questions, listens carefully, helps with setting goals and making choices, provides information and opportunities for skill development, encourages independence, and often acts as an advocate. Influential others should pay attention to the results of these actions. They can provide support by promoting self-esteem, by understanding specific needs, and by providing appropriate educational, prevocational, and vocational opportunities.

The effectiveness of an influential other depends on the amount of understanding, trust, respect, and caring that is communicated to, and felt by, the young person. The young person with a disability must be seen as an individual with values, goals, strengths, and needs.

Influential others need to ask questions and listen carefully for answers and feelings that underlie the responses. Typical questions might be: How do you feel about _____ ? Why do you think you're heading in this direction? At what point do you think you will be ready to try _____ ?

It is important to separate giving advice to young people from making decisions for them. The influential other might say, "I understand why you are heading in this direction, but why don't you get some more information from a different source?" Listening carefully enables young people to express their ideas and to clarify their own values and goals before making career decisions.

Asking yourself questions is part of being a good model and supportive influential other: What does independence mean to me? Am I being overprotective? What are "realistically high" academic expectations? Do I know how to cope with failure? Am I really listening?

How to Use the Career Preparation Materials

This section of the resource guide contains two checklists: "Helping Students Prepare for Careers," for authority figures such as teachers, parents, and counselors; and "Career Decisions," for students. This section also contains the discussion guide, "Preparing for a Career," for students to consider and discuss with each other and with influential others.

Students can complete their checklist and go through the discussion guide after they see "Good Minds at Work," or independently of the program, or as a part of a curriculum on career preparation. Adults can complete their checklist in a group setting such as a parent meeting or teacher inservice, or at home.

As with all the checklists in this resource guide, each person should have a copy to complete, discuss, and keep for reference. The teacher, counselor, or leader should guide students' use of both the checklist and the discussion guide. The leader should prepare thoroughly and allow adequate time for each activity.

References

Foster, J., C. Szoke, et al. 1979. *Guidance Counseling and Support Services for High School Students with Physical Disabilities: Visual, Hearing, Orthopedic, Neuromuscular, Epilepsy, Chronic Health Conditions.* Cambridge, MA: Technical Education Research Centers, Inc.

Helping Students Prepare for Careers: A Checklist for Parents, Teachers, and Counselors

Goal: This checklist is designed to help you support and guide students with handicaps so they can prepare for a career. It identifies three activities and poses several questions related to each activity.

Directions: Answer each item by checking **Yes**, **No**, or **Not Sure**. Think about examples from your experience that might be related to each item. Circle items you feel should be stressed with your student(s).

Activity I: Promote self-esteem.

	Yes	No	Not Sure
1. Do you act as a model and guide by			
a. emphasizing students' strengths?	_____	_____	_____
b. helping students cope with failure?	_____	_____	_____
c. expecting students to show responsibility at home or school?	_____	_____	_____
d. promoting good physical health, weight control, etc.?	_____	_____	_____
e. encouraging students to look their best?	_____	_____	_____
2. Do you ask questions and really listen to the answers?	_____	_____	_____
3. Do you set both short- and long-term goals and monitor progress by			
a. making sure that students are active participants in decision making?	_____	_____	_____
b. giving students opportunities to exercise choice?	_____	_____	_____
c. discussing with students their progress toward goals?	_____	_____	_____

Activity II: Understand the needs of adolescents and young adults.

1. Do you act as a model and friend by			
a. understanding their need for physical and emotional independence?	_____	_____	_____
b. questioning your own protectionism?	_____	_____	_____

	Yes	No	Not Sure
c. allowing them to choose their own role models?	_____	_____	_____
d. allowing for changing roles in the family?	_____	_____	_____
e. balancing controls against freedom to explore?	_____	_____	_____
2. Do you set both short- and long-term goals and monitor progress by			
a. helping students focus on their future adult status?	_____	_____	_____
b. comparing students' status or progress with their previously stated goals?	_____	_____	_____
c. readjusting their goals or activities as necessary?	_____	_____	_____
3. Do you encourage social development and emotional growth by			
a. providing opportunities for social interaction with handicapped and nonhandicapped peers?	_____	_____	_____
b. providing opportunities for students to be away from home overnight, at camp, on trips with the class?	_____	_____	_____
c. providing opportunities within the family for students to develop as individuals?	_____	_____	_____
d. encouraging independence?	_____	_____	_____
e. allowing students to take risks, make mistakes, and experience trial-and-error learning?	_____	_____	_____
4. Do you act as an advocate by			
a. arranging for accessible transportation to social and recreational events?	_____	_____	_____
b. organizing or arranging accessible recreational programs?	_____	_____	_____

Activity III: Provide educational, prevocational, and vocational opportunities.

1. Do you act as a model and guide by			
a. encouraging students to take all necessary preparatory courses, particularly mathematics, science, and computer science?	_____	_____	_____

	Yes	No	Not Sure
b. having "realistically high" academic expectations of students?	_____	_____	_____
c. encouraging them to develop hobbies and special interests?	_____	_____	_____
d. giving students responsibilities for household tasks, baby-sitting, school responsibilities, or tutoring?	_____	_____	_____
e. encouraging participation in school-related extracurricular activities?	_____	_____	_____
f. providing opportunities for artistic and recreational activities?	_____	_____	_____
2. Do you set goals and monitor progress by			
a. giving students opportunities to exercise choice?	_____	_____	_____
b. discussing their progress toward goals?	_____	_____	_____
c. readjusting goals as necessary?	_____	_____	_____
3. Do you provide information and/or opportunities for skill development by			
a. encouraging students to find part-time jobs, volunteer, or participate in civic activities?	_____	_____	_____
b. providing information on career opportunities?	_____	_____	_____
c. providing information on academic prerequisites for college entrance and on specific careers?	_____	_____	_____
d. providing training in socialization skills and assertiveness?	_____	_____	_____
e. providing current information on assistive devices, financial aid, and civil rights?	_____	_____	_____
f. helping students find mentors and role models in scientific and technological careers?	_____	_____	_____
4. Do you act as an advocate by			
a. ensuring that science and mathematics courses are included in disabled students' curricula?	_____	_____	_____
b. ensuring that all educational, prevocational, and vocational programs that your school district offers are accessible to students with disabilities?	_____	_____	_____
c. meeting with other adults to build group support?	_____	_____	_____

Career Decisions: A Checklist for Students

Goal: This checklist is designed to help you know how ready you are to decide about a career. There are no right or wrong answers. The answers should help you become more aware of your interests. Discuss the results with a family member, friend, counselor, or teacher.

Directions: Think about each question. Answer by checking either **Yes**, **No**, or **Not Sure**. A "Yes" answer indicates readiness to make career decisions. "No" or "Not Sure" answers indicate issues that need more thought, training, or experience.

Personal Characteristics

	Yes	No	Not Sure
1. Have you and a counselor or teacher discussed your strengths, values, interests, or needs and goals?	_____	_____	_____
2. Have you decided to work hard to achieve your goals?	_____	_____	_____
3. Do you feel you can cope with the pressure of college or a job?	_____	_____	_____
4. Do you feel comfortable with nondisabled people?	_____	_____	_____
5. Have you ever been responsible for helping at home?	_____	_____	_____
6. Have you ever had part-time jobs, done volunteer work, or joined after-school activities?	_____	_____	_____

Functional Living Skills

1. Do you have a way to share your ideas with others?	_____	_____	_____
2. Using whatever method is necessary, can you write or type information so that others can read and understand it?	_____	_____	_____
3. Have you tried to take the major responsibility for caring for your personal needs?	_____	_____	_____
4. Are you aware of special aids and accommodations that will help you to succeed in school? Examples include note-taking assistance, a reduced course load, modified test-taking procedures, interpreters, and typewriters.	_____	_____	_____
5. Are you aware of any specialized transportation you might need?	_____	_____	_____
6. Do you know how to locate any support services and assistance that you might need?	_____	_____	_____

Academic Skills

	Yes	No	Not Sure
1. Do you have a high school diploma or the equivalent?	_____	_____	_____
2. Is your academic record satisfactory for college admission? Examples of colleges include universities, community colleges, junior colleges, and technical schools.	_____	_____	_____
3. Do you know the admissions requirements of the community college, university, or vocational/technical program in which you are interested?	_____	_____	_____
4. Have you taken the necessary tests for college admission?	_____	_____	_____
5. Are you learning to manage your time?	_____	_____	_____
6. Are you learning good work habits?	_____	_____	_____
7. Can you tell someone what you're planning to study and why? Example: "I am studying _____ in order to _____."	_____	_____	_____
8. Do you have the reading and communication skills necessary for college?	_____	_____	_____

Growth and Management Skills

1. Do you do things to make your daily life easier?	_____	_____	_____
2. Do you know ways to pace yourself physically and conserve your energy?	_____	_____	_____
3. Have you experimented with various aids to see which are best for you?	_____	_____	_____
4. Have you tried to create your own aids?	_____	_____	_____
5. Do you look for ways to increase your mobility?	_____	_____	_____
6. Do you try to extend your ability to communicate?	_____	_____	_____
7. Are you trying to learn ways to be a better problem-solver?	_____	_____	_____
8. Are you accepting your disability as only one aspect of your life?	_____	_____	_____
9. Do you express your emotions, including feelings of frustration and anger as well as happiness and enjoyment?	_____	_____	_____
10. Are you attempting to get support and friendship from nondisabled as well as other disabled people?	_____	_____	_____

Support and Assistance

	Yes	No	Not Sure
1. Have you identified other resources or people to talk to such as			
a. high school guidance counselors?	_____	_____	_____
b. state vocational rehabilitation agencies?	_____	_____	_____
c. reference librarians for books and guides to careers?	_____	_____	_____
d. career counselors at community colleges or vocational/technical centers?	_____	_____	_____
e. family and friends?			
f. teachers, psychologists, social workers, occupational or physical therapists?	_____	_____	_____
g. independent living centers?	_____	_____	_____
h. organizations and agencies: United Cerebral Palsy Association, National Foundation for the Blind, Alexander Graham Bell Association for the Deaf, or others?	_____	_____	_____
i. the list of resources in this guide?	_____	_____	_____
2. Have these people or organizations helped you by			
a. providing more information on which to base your objectives and goals?	_____	_____	_____
b. assessing and evaluating your strengths, needs, interests, and skills?	_____	_____	_____
c. matching your abilities and interests to possible career opportunities?	_____	_____	_____
d. assisting you in deciding on a course of study or training to prepare you for your career choices?	_____	_____	_____
e. giving you a chance to meet disabled people in the community?	_____	_____	_____
f. matching your abilities and interests to possible schools?	_____	_____	_____
g. giving you a chance to meet someone already working in your field?	_____	_____	_____

Preparing for a Career: A Discussion Guide for Students

Goal: This discussion guide is designed to help you prepare for a career. It identifies five steps toward that goal and lists questions or suggestions regarding each one. Answers to the questions can be written and/or discussed. Many of the questions refer to long-term goals you can only begin to work toward. Discussing the answers will help you become more aware of how ready you are to prepare for a career.

Directions: Review the steps and discuss the answers to each question with a teacher, counselor, or parent to understand how you can prepare for a career.

Step I: Think about who you really are.

a. What are my strengths?
b. What do I value about myself, or what is special about me?
c. What are my special interests or hobbies?
d. Do I belong to any organizations or groups?
e. What areas do I need to improve?
f. What are my goals in the next year? In the more distant future?
g. What do I really like to do to have fun?

Step II: Identify ways that you take responsibility for your physical well-being.

a. Do I try to eat nutritiously?
b. Do I try to get regular exercise?
c. Do I try to maintain an appropriate weight?
d. Do I keep myself looking attractive?
e. Do I avoid the use of drugs and alcohol?
f. What are the easiest ways to get things done for myself considering my particular disability?
g. What types of aids and modifications do I need in school or at home for mobility, communication, or self-care?

Step III: Identify ways in which you try to take responsibility for your mental health.

a. Can I make decisions and plans for myself?
b. Am I open to new experiences?
c. Do I try to create a balance between doing things that I know I can do successfully and things that require risk taking?
d. Do I know how to handle stress most of the time?
e. Have I developed a sense of humor?
f. Do I let people know how capable I am?
g. Do I share my feelings, opinions, and ideas?
h. Do I ask for help if it is needed?
i. Do I say "no," when I need to?

Step IV: Identify ways in which you take responsibility for relationships with others.

a. Do I act positively by encouraging others and being polite?
b. Do I have positive expectations of others, thereby influencing others to act positively?
c. Do I really listen to what others say and ask questions if I don't understand?
d. Do I try to understand the feelings of others?
e. Do I do my part and share the work load?
f. Am I decisive when I accept or reject help?
g. Do I take the initiative in suggesting ways in which I can be included in social activities through accommodation and modification?
h. Do I remind myself that it is not necessary to be liked by everyone?

Step V: Identify strategies that help you handle problems on the job.

To get and keep a job, you may need to cope with discouragement, stereotyping, and other negative situations. There are many ways to handle negative situations. Read the situation below and discuss the 12 possible ways you could handle it. Identify the strategies you feel most, and least, comfortable using. Afterward, identify other negative situations and ways you might handle them.

Situation: You are applying for a job. Another applicant says, "What are you doing here? Someone like you can't do this kind of job." The following are possible ways to manage the situation.

1. **Minimize the impact on yourself.** Say to yourself, "There's always someone in the crowd like this. I won't let him or her shake my confidence."
2. **Maximize your own worth.** Say to the person or to yourself, "I've trained for this job—I know I can do it."
3. **Use humor.** Try comic relief to lessen the tension: "You mean they don't hire people with blue eyes here?"
4. **Use sarcasm.** You might say, "You are right. Because I have a handicap, I shouldn't work. I should let you work, and I'll live off welfare."
5. **Take control.** "I'm well-trained for this kind of work," you might say. "What experience do you have?"
6. **Dispel a myth.** Tell the person: "It's just a myth that people with my kind of disability can't do this type of job."
7. **Give information.** Tell the person: "The law says that all qualified applicants must be considered for this job."
8. **Try to understand.** Ask the person, "What makes you say that? Have you ever known someone like me?"
9. **Tell the person how you feel.** You might say, "I feel really frustrated when people who don't know me think they know what I can or can't do."
10. **Ignore the person.** Just turn away and don't answer.
11. **Give the person a cold stare.** Stare at the person, but don't answer.
12. **Say something negative.** You might say "What a rude thing to say."

Step VI: Identify strategies to help you handle problems and disappointments.

a. Identify people you can count on to support you when disappointments occur.

b. Identify and try to solve problems by talking about them with other people.

c. Remember that, even if you cannot solve some problems now, you may be able to work them out at a later date.

d. Remember: "Not all people with disabilities will be able to make it on their own. Those of us who can't should not feel guilty or devalued." (Hale 1979)

References

Hale, G., ed. 1979. *The Source Book for the Disabled.* New York: Paddington Press. (Grosset and Dunlap, distributors).

Information Sources on Disability Concerns

The following organizations can provide extensive resources, services, and information concerning disability topics such as education, employment, independent living, and self-care. Call or write these organizations directly.

ABLEDATA System
Adaptive Equipment Center
Newington Children's Hospital
181 E. Cedar St.
Newington, CT 06111
800/344-5405

Source for information on commercially available rehabilitation aids and equipment.

American Association for the Advancement of Science
Project on Science, Technology and Disability
1333 H St., N.W.
Washington, DC 20005
202/326-6400, or 202/362-6667 (Voice and TDD)

American Association for Counseling and Development
5999 Stevenson Ave.
Alexandria, VA 22034
703/823-9800

American Foundation for the Blind (AFB)
15 W. 16th St.
New York, NY 10011
212/620-2000

Association of Handicapped Student Service Programs in Postsecondary Education (AHSSPPE)
P.O. Box 21191
Columbus, OH 43221
614/488-4972

Source of information and services available at colleges throughout the country.

Commission for the Blind
(your state Department of Labor)

Developmental Disabilities Program
(your state Department of Mental Health)

EDC/WEEA Publishing Center
55 Chapel St.
Newton, MA 02160
800/225-3088, or 617/969-7100
(Education Development Center/Women's Educational Equity Act)

Provides grants to develop programs and materials that promote educational equality for girls and women. Offers information on curriculum materials, career development, and staff development.

Foundation for Science and the Handicapped
236 Grand St.
Morgantown, WV 26505
304/293-5201

A network of disabled scientists that advises government, industry, and education on accessibility and support.

Gallaudet College
800 Florida Ave.
Washington, DC 20002
202/651-5000 (Voice and TDD)

A liberal arts college for the deaf. Includes a model elementary and secondary school. Also, a source of information for deaf persons, parents, employers and educators.

G.T.E. Education Services, Inc./Special Net
2021 K St., N.W. Suite 215
Washington, DC 20006
202/835-7300

A computer-based information network on varied topics for special educators.

HEATH Resource Center
One Dupont Circle, Suite 800
Washington, DC 20036
202/939-9320 (Voice and TDD); 800/544-3284 (outside the District of Columbia)

HEATH (Higher Education and Adult Training for People who are Handicapped) is a national clearinghouse on postsecondary education for disabled people.

Independent Living Research Utilization Project
The Institute for Rehabilitation and Research
1333 Moursund Ave.
Houston, TX 77030
713/797-1440, Ext. 504

Job Accommodation Network
President's Committee on Employment of the Handicapped
P.O. Box 468
Morgantown, WV 26505
800/JAN-PCEH (TTY and TTD)

Mainstream
1030 15th St., N.W., Suite 1010
Washington, DC 20005
202/898-1400
Employment-related services, technical assistance, job referral services

National Alliance of Business
1015 15th St., N.W.
Washington, DC 20005
202/457-0040

Information for employers on varied topics such as accessibility and tax incentives.

National Council on Independent Living
C/O Access Living
815 W. Van Buren, Suite 525
Chicago, IL 60607
312/226-5900

An organization of independent living centers. Provides information and referral services.

National Easter Seal Society
2023 W. Ogden Ave.
Chicago, IL 60612
312/243-8400
312/243-8880 (TDD)

Provides information on accessibility, aids, recreation, attitudes, independent living, rehabilitation.

National Federation of the Blind
1800 Johnson St.
Baltimore, MD 21230
301/659-9314

National Information Center for Handicapped Children and Youth
P.O. Box 1492
Washington DC 20013
703/522-3332

Provides information to parents and teachers on a variety of personal concerns and state and national issues.

National Library for the Blind and Physically Handicapped
Library of Congress
1291 Taylor St., N.W.
Washington, DC 20542
202/287-5100

National Organization on Disability
910 16th St., N.W., Suite 600
Washington, DC 20006
202/293-5960; 202/293-5968 (TDD)

A network of 1700 community organizations across the country. Helps groups and individuals on topics such as education, recreation, employment, accessibility, and accident and disease prevention.

National Rehabilitation Information Center
8455 Colesville Rd., Suite 935
Silver Spring, MD 20910
301/588-9284, or 800/345-2742

National Technical Institute for the Deaf
Rochester Institute of Technology
One Lomb Memorial Dr.
P.O. Box 9887
Rochester, NY 14623
716/475-6400

Provides technical training to deaf and severely hearing impaired students. Trains interpreters, employers, and educators. Provides information, materials, and services related to employment.

Paralyzed Veterans of America
801 18th St., N.W.
Washington, DC 20006
202/872-1300

An information and advocacy agency for persons with all types of disabilities. Publications and information for employers and families on topics such as workplace accommodations and accessibility.

President's Committee on Employment of People with Disabilities
1111 20th St., N.W., Suite 636
Washington, DC 20036
202/653-5044

Provides accessibility information, workplace accommodation networks of employers.

Recording for the Blind
20 Roszel Rd.
Princeton, NJ 08540
609/452-0606

Records and lends educational books to blind and visually impaired individuals.

Rehabilitation International
22 E. 21st St.
New York, NY 10010
212/420-1500

Provides a link between the rehabilitation communities in the United States and other countries. Provides information on travel for disabled persons and audiovisual materials on disabled people and the rehabilitation process.

Services to Crippled Children
(your state Department of Public Health)

Sister Kenny Institute
Division of Abbott-Northwestern Hospital
800 E. 28th St. at Chicago Ave.
Minneapolis, MN 55407
612/863-4457

Provides a continuum of rehabilitation services, research, education information, and audiovisual materials for health professionals, patients and their families.

Social Security Administration
6401 Security Blvd.
Baltimore, MD 21235
301/594-7700; 800/325-0778 (TDD)

Information on disability insurance, benefits, and payments; programs and eligibility. Publishes over 100 booklets and research reports.

Stout Vocational Rehabilitation Institute
Materials Development Center
School of Education and Human Services
University of Wisconsin-Stout
Menomonie, WI 54751
715/232-2195

Rehabilitation services and information for employers and prospective employers.

United Cerebral Palsy Associations
66 E. 34th St.
New York, NY 10016
212/481-6300

United States Department of Housing and Urban Development
Office of the Special Advisor for Disability Issues
Suite 10140, 451 Seventh St., S.W.
Washington, DC 20410-0001
202/426-6030

Vocational Rehabilitation Services
(your state Department of Education)

Career Information in the Sciences

Compiled by
the Office of Opportunities in Science
American Association for the Advancement of Science (1986)

Sources of information about occupations and training requirements in the biological, physical, social, mathematical, and engineering sciences are listed alphabetically by field. Unless a price is noted, single copies of the booklets are free. Some publishers offer a discount for bulk orders.

Acoustics

"Acoustics and You" (21 pages)
Acoustical Society of America
500 Sunnyside Blvd.
Woodbury, NY 11797
516/349-7800

Aerospace

"Careers in Aerospace Within Your Lifetime" (14 pages)
Student Programs
American Institute of Aeronautics and Astronautics
370 L'Enfant Promenade, S.W.
Washington, DC 20024
202/646-7400

Anthropology

"On Becoming an Anthropologist" (11 pages)
American Association of Physical Anthropologists
Department of Anthropology
C/O Dr. A. Theodore Steegman, Jr.
SUNY Buffalo
479 Spaulding Quad, Bldg. 4
Buffalo, NY 14261
716/636-2240

Astronomy

"A Career in Astronomy" (23 pages; 25¢)
American Astronomical Society
C/O Dr. Peter Boyce
2000 Florida Ave., N.W. #300
Washington, DC 20009
202/328-2010

Biological Sciences

"Dieticians: The Professional in Nutritional Care" (15 pages)
The American Dietetic Association
208 LaSalle St., Suite 1100
Chicago, IL 60604
312/899-0040

"Careers in Animal Biology" (21 pages)
American Society of Zoologists
Box 2739
California Lutheran College
Thousand Oaks, CA 91360

"Microbiology in Your Future" (third edition) (32 pages; 25¢)
American Society for Microbiology
1913 I St., N.W.
Washington, DC 20006
202/833-9680

"Your Career in Ecology" (6 pages)
Ecological Society of America
Center for Environmental Studies
Arizona State University
Tempe, AZ 85287
602/965-3000

"Career Opportunities in Ornithology" (8 pages)
Division of Birds, E-607
National Museum of Natural History
Smithsonian Institution
Washington, DC 20560
202/357-1300

Botany

"Plant Pathology: A Scientific Career for You" (16 pages)
American Phytopathological Society
3340 Pilot Knob Rd.
St. Paul, MN 55121
612/454-7250

"Careers in Botany" (19 pages; 25¢)
School of Bio-Sciences
University of Kentucky
Lexington, KY 40506-0225
606/257-4711

Chemistry

American Chemical Society
1155 16th St., N.W.
Washington, DC 20036
202/872-4600

"Careers in Chemistry: Questions and Answers" (6 pages)

"Futures Through Chemistry: Charting a Course" (16 pages)

"A Career as a Chemical Technician" (6 pages)

"Internships for Chemistry's Chemical Engineering Students" (26 pages)

Earth Sciences

Career Information (packet) (64 pages)
American Geological Institute
4220 King St.
Alexandria, VA 22302
703/379-2480

"Women Exploring the Earth" (8 pages)
Society for Exploration Geophysicists
P.O. Box 702740
Tulsa, OK 74170
918/493-3516

"Future Employment Opportunities in the Geological Sciences" (20 pages)
The Geological Society of America
P.O. Box 9140
Boulder, CO 80301
303/447-2020

"Geology-Science and Profession" (32 pages)
American Geological Institute
4220 King St.
Alexandria, VA 22302
703/379-2480

"Careers in Geology" (10 pages)
American Geological Institute
4220 King St.
Alexandria, VA 22302
703/379-2480

"Careers in Exploration Geophysics" (16 pages; 50¢)
Society for Exploration Geophysicists
P.O. Box 702740
Tulsa, OK 74170
918/493-3516

"Your Career in Archeology" (30 pages; $1.50)
Society for American Archeology
1511 K St., N.W., Suite 716
Washington, DC 20005
202/638-6079

"Careers in Geography" (47 pages; $1.00)
Association of American Geographers
1710 16th St., N.W.
Washington, DC 20009
202/234-1450

"Your Career in Ecology" (6 pages)
Ecological Society of America
Center for Environmental Studies
Arizona State University
Tempe, AZ 85287
602/965-3000

"Career Opportunities in Ornithology" (8 pages)
Division of Birds, E-607
National Museum of Natural History
Smithsonian Institution
Washington, DC 20560
202/357-1300

Energy

"Energy Careers for Minorities and Women" (16 pages)
The National Urban Coalition
1120 G St., N.W., Suite 900
Washington, DC 20005
202/628-2990

Engineering

"Careers in Chemical Engineering" (40 pages; $5.95)
National Textbook Company
4255 W. Touhy Ave.
Lincolnwood, IL 60646
312/679-5500

"Careers for Engineers in the Minerals Industry" (13 pages)
Society of Mining Engineers of AIME
P.O. Box 625005
Littleton, CO 80162
303/973-9550

"Solving Problems: Engineers At Work" (5 pages)
American Telephone and Telegraph Company
Room 3355C3
295 N. Maple Ave.
Basking Ridge, NJ 07920
201/221-2000

"Making It Engineering" (11 pages; 35¢)
American Association of Engineering Societies
415 Second St., N.E.
Washington, DC 20002
202/546-2237

"Engineering—A World of Possibility" (19 pages)
Committee on Minorities in Engineering
National Research Council
2101 Constitution Ave., N.W.
Washington, DC 20418
202/334-2000

"A World for Women in Engineering"
American Telephone and Telegraph Company
Room 3355C3
295 N. Maple Ave.
Basking Ridge, NJ 07920
201/221-2000

"Careers in Petroleum Engineering" (16 pages)
Society of Petroleum Engineers
P.O. Box 833836
Richardson, TX 75083
214/669-3377

"Planning a Career in Metallurgical Engineering, Metallurgy, and Materials Science"
Metallurgical Society of AIME
410 Commonwealth Dr.
Warrendale, PA 15086
412/776-1535

"A Career for the Future" (14 pages; 40¢)
American Society of Mechanical Engineers
United Engineering Center
345 East 47th St.
New York, NY 10017
212/705-7722

"The Engineering Team" (16 pages; 30¢)
American Association of Engineering Societies
415 Second St., N.E.
Washington, DC 20002
202/546-2237

"Engineering: Creating a Better World" (20 pages; 50¢)
American Association of Engineering Societies
415 Second St., N.E.
Washington, DC 20002
202/546-2237

"Industrial Engineering, The Humanized Profession" (14 pages)
Institute of Industrial Engineers
25 Technology Park/Atlanta
Norcross, GA 30092
404/449-0460

"Engineering—A Goal for Women" (6 pages)
American Association of Engineering Societies
415 Second St., N.E.
Washington, DC 20002
202/546-2237

"Make Your Career Choice...Engineering" (19 pages; 75¢)
American Association of Engineering Societies
415 Second St., N.E.
Washington, DC 20002
202/546-2237

"Spaceship Earth: An Instruction Book Didn't Come With It. A Career in Metallurgy, Metallurgical Engineering and Materials Science" (8 pages)
The Metallurgical Society of AIME
410 Commonwealth Dr.
Warrendale, PA 15086
412/776-1535

"WOMENGINEER" (16 pages; 75¢)
American Association of Engineering Societies
415 Second St., N.E.
Washington, DC 20002
202/546-2237

"Take It from Us...You Can Be An Engineer" (20 pages)
General Electric Company
Educational Communications Program
W1D2
Fairfield, CT 06431
203/373-2211

"Why Ceramic Engineering?" (8 pages; 20¢)
American Ceramic Society
757 Brooksedge Plaza Dr.
Westerville, OH 43081
614/890-4700

"Is Civil Engineering for You?" (14 pages)
American Society of Civil Engineers
345 E. 47th St.
New York, NY 10017
212/705-7496

"Minorities in Engineering" (14 pages; 50¢)
National Action Council for Minorities in Engineering
3 W. 35th St.
New York, NY 10001
212/279-2626

"Careers in Electrical/ Electronics Engineering" (14 pages)
The Institute of Electrical andElectronic Engineering
345 E. 47th St.
New York, NY 10017
212/705-7900

Health Sciences

"Pathology as a Career in Science" (16 pages)
Intersociety Commission on Pathology Information
4733 Bethesda Ave., Suite 735
Bethesda, MD 20814
301/656-2944

"Dentistry: Is It for You?" (20 pages)
Council on Dental Education
American Dental Association
211 East Chicago Ave.
Chicago, IL 60611
312/440-2500

"Podiatric Medicine—The Challenges and Rewards of an Established Profession" (8 pages)
American Association of Colleges of Podiatric Medicine
6110 Executive Blvd.
Suite 204
Rockville, MD 20852
301/984-9350

"Career in Physiology" (24 pages)
American Physiological Society
9650 Rockville Pike
Bethesda, MD 20814
301/530-7164

Information Sciences

"Careers in Technical Writing" (8 pages)
Society of Technical Communication
815 15th St., N.W., Suite 506
Washington, DC 20005

"Careers in Health Sciences Librarianship" (7 pages)
Medical Library Association
919 North Michigan Ave., Suite 3208
Chicago, IL 60611
312/266-2456

"Challenging Careers in Information" (18 pages)
American Society for Information Sciences
1424 16th St., N.W., Suite 404
Washington, DC 20036
202/462-1000

"A Guide to Careers in Science Writing" (10 pages)
National Association of Science Writers
P.O. Box 294
Greenlawn, NY 11740
516/757-5664

"What's It Like to Work With Computers?" (28 pages)
General Electric Company
Educational Communications Program
W1D2
Fairfield, CT 06431
203/373-2211

Mathematical Sciences

"Mathematics at Work in Society: Opening Careers" (32 pages)
Mathematical Association of America
1529 18th St., N.W.
Washington, DC 20036
202/387-5200

"Profiles in Applied Mathematics" (10 pages; 30¢)
Society for Industrial and Applied Mathematics
1400 Architects Building
117 South 17th St.
Philadelphia, PA 19103
215/564-2929

"Careers in Mathematics" (7 pages)
Mathematical Association of America
1529 18th St., N.W.
Washington, DC 20036
202/387-5200

"Careers in Operations Research" (17 pages)
Operations Research Society of America
Education Committee
Mount Royal and Guilford Ave.
Baltimore, MD 21202
301/528-4146

Pharmaceutical Sciences

"This Is the Profession of Pharmacology" (20 pages)
American Society for Pharmacy and Experimental Therapeutics
9650 Rockville Pike
Bethesda, MD 20814
301/530-7060

"Shall I Study Pharmacy?" (32 pages)
American Association of Colleges of Pharmacy
1426 Prince St.
Alexandria, VA 22314
703/739-2330

Psychology

"Careers in Psychology" (28 pages)
American Psychological Association
1200 17th Street, N.W.
Washington, DC 20036
202/955-7600

Social Sciences

"Careers in Demography" (16 pages)
Population Association of America
1429 Duke St.
Alexandria, VA 22314
703/684-1221

"Careers in Sociology" (19 pages)
The American Sociological Association
1722 N St., N.W.
Washington, DC 20036
202/833-3410

Technology

"What's It Like to Be a Technician?" (14 pages)
General Electric Company
Educational Communications Program
W1D2
Fairfield, CT 06431
203/373-2211

Multidisciplinary

"I'm Madly in Love With Electricity" (37 pages; $2.00)
Lawrence Hall of Science
Attention: Careers
University of California
Berkeley, CA 94720
415/642-1823

"Careers Not traditional" (34 pages)
American Chemical Society
Department of Educational Activities
1155 16th St., N.W.
Washington, DC 20036
202/872-4600

"Making Choices Today That Count Tomorrow" (8 pages)
Office of Admissions
Montana Hall
Montana State University
Bozeman, MT 59717
406/994-2452

"Choices, Decisions, Actions" (10 pages)
Standard Oil Company (Indiana)
Corporate Social Policy Department
P.O. Box 0910-A
Chicago, IL 50580
312/856-6111

"Petroleum Engineering—Career Choice for the Future" (16 pages)
Society for Petroleum Engineers
P.O. Box 833836
Richardson, TX 75083
214/669-3377

Other Fields

"Careers in Quality Sciences" (10 pages)
American Society for Quality Control
310 W. Wisconsin Ave.
Milwaukee, WI 53203
414/272-8575

"Science Education for You?" (20 pages)
National Science Teachers Association
1742 Connecticut Ave., N.W.
Washington, DC 20009
202/328-5800

"Speech-Language Pathology and Audiology Career Information" (6 pages)
American Speech and Hearing Association
Publication Sales
10801 Rockville Pike
Rockville, MD 20852
301/897-5700

Science Organizations

The following is a list of organizations that can provide a wide variety of information, services and/or publications. Write or call to find out how they can help with your individual needs. Ask if there is a director or special committee to deal with disability concerns, women's issues, or minority affairs. Many publish newsletters or brochures and present special seminars and programs.

Agricultural Science

Agricultural Research Service
U.S. Department of Agriculture
Independence Ave. and 14th St., S W.
Washington, DC 20250
202/447-8732

Astronomy

American Astronomical Society
2000 Florida Ave., N.W., Suite 300
Washington, DC 20009
202/328-2010

Chemistry

American Chemical Society
Women Chemists' Committee
1155 16th St., N.W.
Washington, DC 20036
202/872-4600

Computer Science

American Federation of Information Processing Societies
1899 Preston White Dr.
Reston, VA 22091
703/620-8900

Dentistry

American Dental Association
211 East Chicago Ave.
Chicago, IL 60611
312/440-2500

Earth Sciences

American Geological Institute
Women Geoscientists Committee
4220 King St.
Alexandria, VA 22302
703/379-2480

American Meteorological Society
45 Beacon St.
Boston, MA 02108
617/227-2425

National Oceanic and Atmospheric Administration
6001 Executive Blvd.
Rockville, MD 20852
301/443-8374

Engineering

American Institute of Industrial Engineers, Inc.
25 Technology Park/Atlanta
Norcross, GA 30092
404/449-0460

American Nuclear Society
555 North Kensington Ave.
La Grange Park, IL 60525
312/352-6611

Biomedical Engineering Society
P.O. Box 2399
Culver City, CA 90231
213/206-6443

National Society of Professional Engineers
2029 K St., N.W.
Washington, DC 20006
202/684-2800

Society of Women Engineers
345 E. 47th St.
New York, NY 10017
212/705-7853

General Science

American Association for the Advancement of Science
Office of Opportunities in Science
1776 Massachusetts Ave., S.W.
Washington, DC 20036
202/326-6680

Association for Women in Science
2401 Virginia Ave., N.W., Suite 303
Washington, DC 20037
202/833-1998

National Science Teachers Association
1742 Connecticut Ave., N.W.
Washington, DC 20009
202/328-5800

Mathematics

American Mathematical Society
Committee on Women in Mathematics
Department of Mathematics
Wellesley College
Wellesley, MA 02181
617/235-0320

National Council of Teachers of Mathematics
1906 Association Dr.
Reston, VA 22091
703/620-9840

Medicine and Life Sciences

American Medical Association
535 N. Dearborn St.
Chicago, IL 60610
312/645-5000

American Society for Medical Technology
2021 L St., N.W., Suite 400
Washington, DC 20036
202/785-3311

Physics

American Association of Physics Teachers
5112 Berwyn Rd., Suite 101
College Park, MD 20740
301/345-4200

American Physical Society
Commission on the Status of Women in Physics
335 E. 45th St.
New York, NY 10017
212/682-7341

Additional Resources

The following list includes a variety of resources including catalogs, brochures, books, and periodicals organized under a series of alphabetized topics. For other specialized materials and further resources, see "Information Sources on Disability Concerns," pages 25–27.

Accessibility, Aids, and Appliances

Consumer Care Products, Inc. *Consumer Care Products, Inc.* (catalog) Available from CCP, Inc., 6405 Paradise Lane, Sheboygan Falls, WI 53085; 414/467-2393.

Paralyzed Veterans of America. *Access Information Bulletins*: "Wheel Chair Bathrooms," "Workplace Accommodations," and "Ramps, Stairs and Floor Treatments." Washington, DC: Paralyzed Veterans of America.

Sears, Roebuck, and Co., *Home Health Care.* (catalog) Available from Sears, Roebuck, and Co., Sears Tower, Chicago, IL 60684; 312/875-2500.

Awareness and Theory

Blatt, J., A. Brightman, and M. Sullivan. *Feeling Free.* Reading, MA: Addison-Wesley, 1979.

Bowe, F. *Handicapping America: Barriers to Disabled People.* New York: Harper and Row, 1978.

Browne, S., D. Connors, and S. Sterns. *With the Power of Each Breath: A Disabled Women's Anthology.* Pittsburgh: Cleis Press, 1985.

Cohen, S. *Special People.* Englewood Cliffs, NJ: Prentice-Hall, 1977.

DeLoach, C. and B. G. Greer. *Adjustment to Severe Physical Disability: A Metamorphosis.* New York: McGraw-Hill Book Company, 1981.

Duffy, Y. *All Things Are Possible.* Ann Arbor, MI: A. J. Garvin and Associates, 1981.

International Center for the Disabled and Louis Harris and Associates. *The ICD Survey of Disabled Americans: Bringing Disabled Americans into the Mainstream.* New York: International Center for the Disabled, 1980.

Kushner, H. *When Bad Things Happen to Good People.* New York: Schocken Books, 1981.

National Easter Seal Society. A collection of rehabilitation literature on a variety of topics. Available from N.E.S.S., 2023 W. Ogden Ave., Chicago, IL 60612; 312/243-8400, or 312/243-8880 (TDD).

United Cerebral Palsy Association and Associates. *Programming for Adolescents with Cerebral Palsy and Related Disabilities.* New York: United Cerebral Palsy Association, Inc., and Catherine Lyle Murray Foundation, 1983.

U.S. Government Printing Office. *Directory of National Information Sources on Handicapping Conditions and Related Services.* Publication No. E-82-22007, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Vash, C. L. *The Psychology of Disability.* New York: Springer Publishers, 1981.

Wolfensberger, W. *The Principle of Normalization in Human Services.* Toronto: National Institute on Mental Retardation, 1972.

Wright, B. *Physical Disability: A Psychological Approach* (2nd. ed.). New York: Harper and Row, 1983.

Career Counseling

Bolles, R. N. *What Color Is Your Parachute?* Berkeley, CA: Ten Speed Press, 1985.

College Placement Council. *The CPC Annual 1988–89: The Career Planning and Placement Guide for College Graduates.* Bethlehem, PA: College Placement Council.

Commission on Professionals in Science and Technology. *Opportunities in Science and*

Engineering. Washington, DC: Commission on Professionals in Science and Technology,1984.

Foster, J., C. Szoke, et al. *Guidance Counseling and Support Services for High School Students with Physical Disabilities: Visual, Hearing, Orthopedic, Neuromuscular, Epilepsy, Chronic Health Conditions*. Cambridge, MA: Technical Education Research Centers, Inc. 1979.

Girls' Club of Santa Barbara. *Choices: A Teen Woman's Journal for Self-Awareness and Personal Planning*. El Toro, CA: Girls' Club of Santa Barbara, Inc.,1984.

Hopke, W. E., ed. *Encyclopedia of Careers and Vocational Guidance*. (6th ed.) (2 vols.) Chicago, IL: J.G. Ferguson Publishing Co., 1984.

Lobodinski, J., D. McFadden, and A. Markowica. *Marketing Your Abilities—A Guide for the Disabled Job Seeker*. Washington, DC: Mainstream, 1984.

Stern, V., and M. Redden. *Scientific and Engineering Societies: Resources for Career Planning*. Washington, DC: American Association for the Advancement of Science, 1980.

University of California. *Careers in Science: A Guide for the Counselors, Teachers, and Parents of Students with Disabilities*. Irvine, CA: University of California, Irvine, 1981.

U.S. Government Printing Office. *Occupational Outlook Handbook*. (1986–1987 ed.) Washington, DC: U.S. Government Printing Office. (029-001-02863-6)

Disability Issues in Science

American Association for the Advancement of Science. *Resource Directory of Scientists and Engineers with Disabilities*. 2nd ed.). Washington, DC: A.A.A.S., 1987.

American Association for the Advancement of Science. *Within Reach: Out of School Science Opportunities for Youth*. Washington, DC: A.A.A.S., 1982.

American Chemical Society. *Teaching Chemistry to Physically Handicapped Students*. Washington, DC: The American Chemical Society Committee on the Handicapped, 1981.

Center for Multisensory Learning. *Science Enrichment for Learners with Physical Handicaps*. Berkeley, CA: Lawrence Hall of Science, University of California, 1978.

_____ . *Science Activities for the Visually Impaired*,. Berkeley, CA: Lawrence Hall of Science, University of California, 1976.

_____ . *Center for Multisensory Learning (CML) Newsletter*. Berkeley, CA: Lawrence Hall of Science, University of California. Periodical.

Heath Resource Center. *Access to the Science and Engineering Laboratory and Classroom*. Washington, DC: Heath Resource Center, 1986.

Smith, L.M. *A College Student with a Disability: A Faculty Handbook*. Washington, DC: Superintendent of Documents, U.S. Government Printing Office, 1980.

Stearner, Phyllis S. *Able Scientists—Disabled Persons: Biographical Sketches Illustrating Careers in the Sciences for Able Disabled Students*. Clarendon Hills, IL: Foundation for Science and the Handicapped, Inc., 1984.

U.S. Department of Commerce. *Science for the Physically Handicapped in Higher Education*. Washington, DC: U.S. Department of Commerce, National Oceanic and Atmosphere Administration, 1979.

University of California *Careers in Science: A Guide for the Counselors, Teachers and Parents of Students with Disabilities*. Irvine, CA: University of California, Irvine, 1981.

Employment

American Foundation for the Blind. *Visually Impaired Professional Personnel*. New York: American Foundation for the Blind, 1984.

Bowe, F. *Employment Trends: 1984 and Beyond: Where the Jobs Will Be*. Hot Springs, AR: Arkansas Rehabilitation Research and Training Center, 1986.

Bowe, F., and J. Rochlin. *The Business-Rehabilitation Partnership*. Hot Springs, AR: Arkansas Rehabilitation Research and Training Center, 1986.

Greenwood, R , ed. *Designing Jobs for Handicapped Workers: Conference Proceedings*. Hot Springs, AR: Arkansas Rehabilitation Research and Training Center, 1985.

Heath Resource Center. *Tax Incentives and Tax Benefits for the Employers of Disabled Persons*. Washington, DC: Heath Resource Center, 1987.

Occupational Outlook Quarterly. Washington D.C.: U.S. Department of Labor, Bureau of Labor Statistics. Quarterly.

The President's Commission on Employment of Disabled People and the Dole Foundation. *Disabled Americans at Work*. Washington, DC, 1985.

Rochester Institute of Technology. *Tips You Can Use When Communicating with Deaf Employees*. Rochester, NY, 1985.

Terzian, A., and M. E. Saari. *Deafness: A Guide for Employers and Employment Counselors*. Trenton, NJ: New Jersey Department of Labor, 1985.

Parents

Board, M. A., J. Cole, et al. *Independent Living with Attendant Care: A Message to Parents of Handicapped Youth*. Houston. The Institute for Rehabilitation and Research, 1980.

Dinkmeyer, D., and G. McKay. *Systematic Training for Effective Parenting*. Circle Pines, MN: American Guidance Services, 1976.

Greenbaum, J., and G. Markel. *Parents Are to Be Seen and Heard*. Ann Arbor, MI: Greenbaum and Markel Associates, 1985

Self-help

Board, M. A., J. Cole, L. Frieden, and J. Sperry. *Independent Living with Attendant Care: A Guide for the Person with a Disability*. Houston: The Institute for Rehabilitation and Research, 1980.

Gordon, S. *Living Fully: A Guide for Young People with a Handicap, Their Parents, Their Teachers and Professionals*. New York: John Day Company, 1975. (c/o Harper and Row)

Hale, G., ed. *The Source Book for the Disabled*. New York: Paddington Press, 1979 (Grosset & Dunlap, distributors).

The President's Committee on Employment of People with Disabilities. *Worklife: A Publication on Employment and People with Disabilities*. Washington, DC. Quarterly.

University of California. *Making the Transition: College and Disabled Students*. Irvine, CA: Disabled Students Services, University of California, Irvine, 1985.

Women in Science

Agency for Instructional Technology. ***Women In Science***. (eight-part video series with resource guide) Bloomington, IN: Agency for Instructional Technology and the University of Michigan, 1988.

American Association for the Advancement of Science. *Bibliography on Women in Science, Engineering, and Mathematics*. Available from the American Association for the Advancement of Science, 1776 Massachusetts Ave. N.W., Washington, DC 20036.

American College Testing Program. *Women in Science and Technology: Careers for Today and Tomorrow*. Available from American College Testing Program Publications, P.O. Box 168, Iowa City, IA 52240.

Center for Sex Equity in Schools. *Women, Math, and Science: A Resource Manual*. 1982. Available from the Center for Sex Equity in Schools, 1046 School of Education, University of Michigan, Ann Arbor, MI 48109.

EQUALS. *An Annotated Bibliography to Assist Elementary and Secondary School Teachers in Sex-Fair Counseling and Instruction*. Available from EQUALS, Lawrence Hall of Science, University of California, Berkeley, CA 94720.

Ehrhart, Julie Kuhn, and Bernice R. Sandler *Looking for More than a Few Good Women in Traditionally Male Fields*. Project on the Status and Education of Women, 1987. Available from the Association of American Colleges,1818 R. St. N.W., Washington, DC 20009; 202/387-1300.

Emberlin, Diane. *Contributions of Women: Science*. Minneapolis: Dillon Press, 1977.

Gornick, Vivian. *Women in Science: Portraits from a World in Transition.* New York: Simon and Schuster, 1988.

Guidance Associates, Inc. *Challenging Careers: New Opportunities for Women.* Catalyst. Filmstrip and guide available from Guidance Associates, Inc., Communications Park, Box 300, White Plains, NY 10602.

Humphreys, S., ed. *Women and Minorities in Science: Strategies for Increasing Participation.* Boulder, CO: Westview Press, 1982.

Modern Talking Pictures. *Science: Women's Work.* Film available from Modern Talking Pictures Service, 5000 Park St. North, St. Petersburg, FL 33709.

National Council of Teachers of Mathematics. *Equity in Mathematics Project Resource List.* Available from the National Council of Teachers of Mathematics, 1906 Association Dr., Reston, VA 22091.

National Women's History Project. Numerous resources for curriculum and project ideas. Contact National Women's History Project, Box 3716, Santa Rosa, CA 95402; 707/526-5974.

Osen, Lynn. *Women in Mathematics.* Cambridge: MIT Press, 1974.

Research Triangle Institute. *Exploring Careers in Science and Engineering.* Slides, audiocassette, posters, activity guide. Available from Iris Weiss, Research Triangle Institute, P.O. Box 12194, Research Triangle Park, NC 27709.

Smith, W., and K. Stroup. *Science Career Exploration for Women.* Available from the National Science Teachers Association, 1742 Connecticut Ave., N.W., Washington, DC 20009.

Thomas, John W. *Making Changes: A Futures-Oriented Course in Inventive Problem Solving.* Available from ETC Publications, Palm Springs, CA 92263.

Tobias, Sheila. *Overcoming Math Anxiety.* Boston: Houghton Mifflin, 1978.

University of Kansas. *COMETS: Career-Oriented Modules to Explore Topics in Science.* Twenty-four modules including biographical sketches of women in science careers and accompanying language arts activities for junior high school-age students. Available from the Department of Curriculum and Instruction, University of Kansas, 205 Bailey Hall, Lawrence, KA 60045. ERIC: 226-984-1983.

Awaken your students to opportunities in science with...

Women in Science

For junior and senior high school students and adults

This series of eight 30- to 40-minute video programs encourages women to pursue careers in the sciences. More than 40 women role models—professionals and students—discuss their work, career decisions, training, how they finance their education, and how they balance their personal and professional lives. A comprehensive resource guide includes specific information on career outlook, salaries, training, and more.

Endorsed by

American Association of Women Dentists
American Chemical Society
Association for Women Geoscientists
Association for Women in Science
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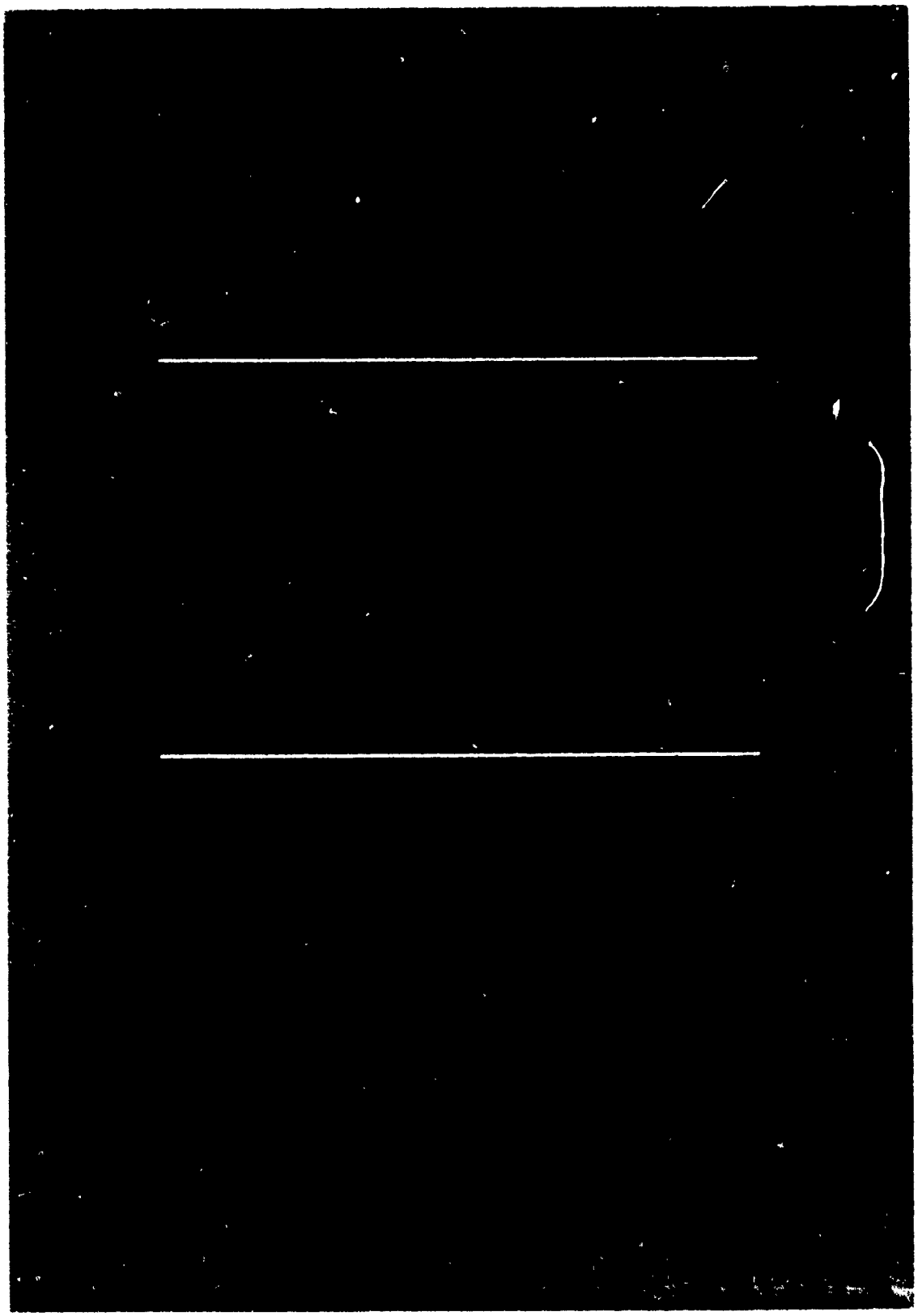
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