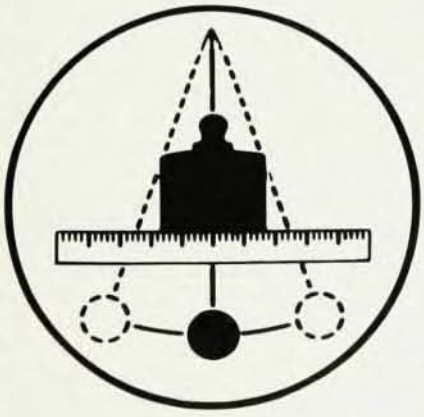
The AIP in 1982

The Institute prepared to react to the crisis in physics education while its publishing operations had another successful year.

In 1982 it became clear that the US is facing a crisis in elementary and secondary science education: The general public is recognizably becoming more and more scientifically illiterate. Fortunately, as a result of efforts over the past several years, AIP is in a position to help the physics community react to this crisis. Physicists and astronomers have expanded their concerns for science education from concentrating on the college and graduate levels to include secondary schools as well. This Annual Report reviews how these expanded concerns have affected AIP and outlines how AIP is planning to respond to them.

One striking demonstration of the need for expanding our concerns is implicit in the diagram on page 46, generated by AIP's Manpower Statistics Division, which shows the number of first-year graduate students plotted as a function of time. It should be noted that even though the decline in the total number following the 1970 peak finally bottomed out in 1980, the US component is still going down. Only the growing number of foreign students is helping to raise the total above the 1980 minimum. And while the number of college graduates majoring in physics remains stable, there are reports that two- and four-year colleges have difficulties in hiring competent physicists because they cannot compete with salaries offered for industrial positions. If we are to maintain the quality of our physics education for all our students, we must examine these matters carefully.

In 1979 AIP established long-range planning procedures. The techniques of the successful function-planning efforts of the past few years can now be applied to studying physics education and to the role AIP can play. Consequently, a Task Force on Educational



Services began the development of a five-year plan and is working to complete it to present to the Governing Board in 1983. The major investments that AIP has made in building and computer facilities have made possible the application of the latest computerized methods in scientific journal publishing. And last year's substantial increase in journal subscription prices has not resulted in a great loss in the number of subscribers. Instead, it produced a sizeable net income that has made a good start toward restoring the health of our financial reserves, which had been completely depleted. Hence, in spite of heavy investments in facilities in 1980, we are becoming better prepared financially to cope with publishing and education emergencies such as the physics-education crisis.

Another indication that AIP intends to improve its ability to cope with changing trends is a proposal from the committee to revise AIP's Constitution and By-Laws, chaired by H. Richard Crane, to delete the specification in the Constitution of the amount of the payment by Member Societies to AIP, now one dollar per member per year. This change will make it easier to increase contributions from Societies so as to finance expanded educational services at AIP to respond to the crisis in education.

One such expansion already implemented in 1982 was the increased space in PHYSICS TODAY magazine devoted to events in Washington. This increase complements the efforts of The American Physical Society in reporting on Congressional and other news of interest to physicists; a newly established Washington office is the base for these APS efforts.

Another expansion is implied by the Governing Board's assignment to AIP staff activities devoted to an eighth function entitled "Information Services." This function will be added to the previous seven functions into which this Annual Report is organized.

As one examines the AIP activities in 1982, described in terms of its functional units, one should keep in mind that the input to achieve those results

Submitted by the director and accepted by the Governing Board of the American Institute of Physics as its annual report to the Member Societies of AIP, 12 March 1983.

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came from the combined efforts of an enthusiastic and competent staff guided by policies established by the Governing Board. Our gratitude to them all for their contributions in making 1982 another successful year at AIP.

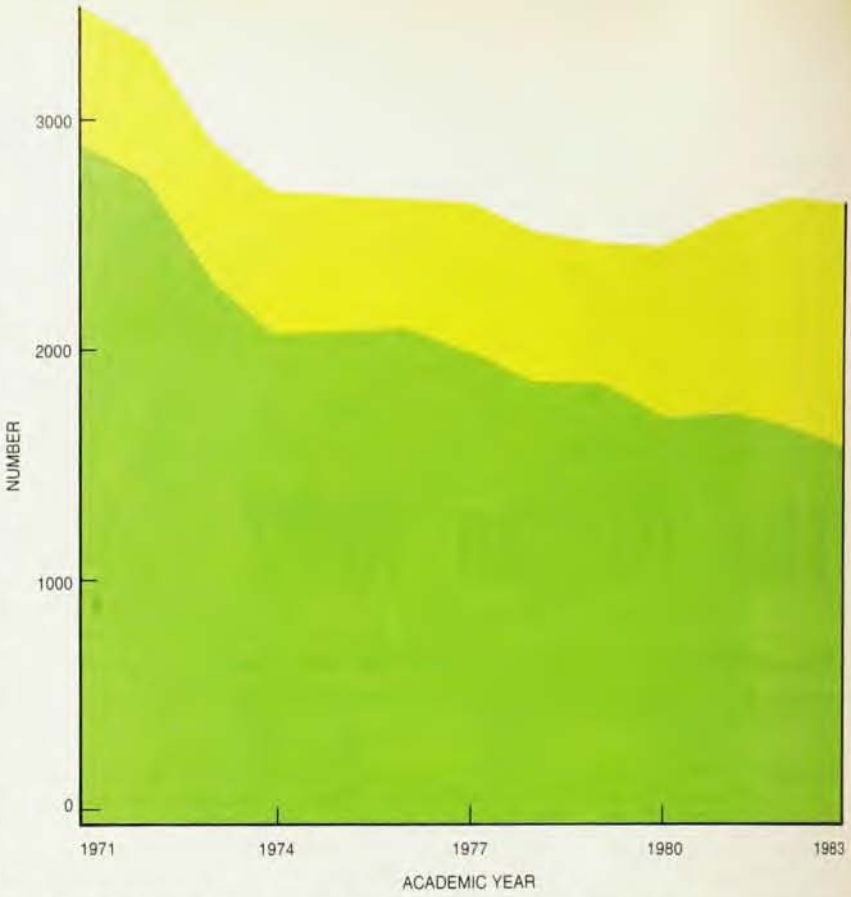
Publication Production Services

In 1982, AIP's entire publishing operation underwent reorganization. Publishing activities were divided into two branches. One is responsible for all of The American Physical Society's publication activities; it is organized into a production and composition division. The remaining technical publications are the responsibility of the other branch, which is divided into three separate divisions for production, composition, and educational services.

Production I Division carried out editorial and production work on 6 AIP-owned journals; 13 journals and other publications for five AIP Member Societies; 19 Russian translation journals; *The Journal of Physical and Chemical Reference Data*, published by the American Chemical Society and AIP for the National Bureau of Standards; and *Chinese Physics*; a selective translation journal drawn from 13 Chinese publications and published under an ongoing NSF grant. The Division also conducted data processing activities associated with AIP's secondary information services and was responsible for several special publishing projects on behalf of the Institute and its Member Societies.

Composition I Division. All ATEX keyboarding was transferred to a new "Release 3" System from Release 2, which was idled temporarily. The new system accommodates 16 terminals instead of the previous 12, substantially increasing AIP's keyboarding capacity. In the course of the year, the following journals were added to the ATEX workload from 1982: *The Journal of the Acoustical Society, The Physics of Fluids, JETP Letters, JETP*, and *Review of Scientific Instruments*. At year's end, ATEX was producing at an annual rate of 39 000 journal pages. In late 1982, AIP ordered a Release 4 upgrade to modify its idle Release 2 ATEX System; delivery of the equipment is scheduled for early 1983.

Production II Division. The long-range plan of having all *Physical Review* pages produced at the AIP Woodbury facility was achieved. However, "Brief Reports," "Comments," "Rapid Communications" and "Errata" will continue to be produced at the APS editorial facility in Ridge, N.Y. Increased productivity and greatly improved interaction between production and composition resulted in minimizing lost time during photocomposition conversion. All sections of *Physical Review* were produced on schedule by the end of 1982. The Division was also responsible for producing the new APS booklet *Physics in Your Future*, a career guide for students of junior-high-school age.



First year graduate students in US schools. Data from AIP's Manpower Statistics Division shows that the number of foreign students (light color) is increasing while the number of US citizens in first-year graduate programs (dark color) continues to decrease.

Composition II Division. Increased productivity and efficiency in all sections, particularly keyboarding, enabled the Division to handle additional journal pages, manuals, and pamphlets with a reduced work force. By the end of 1982, 35 000 pages were produced on the UNIX photocomposition system.

The conversion of *Physical Review* to UNIX photocomposition was completed by the end of 1981; 1982 was devoted to fine-tuning software and implementing the system with additional programs. One of the most important new programs was the one written to obtain UNIX output for *Physical Review Abstracts*.

The Illustrations and Photocomposition Sections of the Production II Division added a Kodak Versamat 17 processor to speed film development from four to twelve feet per minute. New quality-control methods were developed to better handle typeset output and camera production of halftones and line shots. The Section also produced eye-catching, photographic covers used on the general meetings issues of the *Bulletin of The American Physical Society*.

Journals, news and reports

The Publishing Policy Committee proposed, and the Executive Committee approved, a further 25% increase in subscription rates effective in 1983.

The delay imposed on those papers in *The Journal of Chemical Physics* whose authors cannot honor publication charges remained steady at nine months throughout the year. Delays for nonhonored *Journal of Mathematical Physics* papers increased slightly from 10 to 11 months. Publication in 1983 of an additional 1000 nonhonored pages in *The Journal of Chemical Physics* and 750 pages in the *Journal of Mathematical Physics* was authorized to reduce the delay in both of these publications to three months. J. Willard Stout, long-time editor of *The Journal of Chemical Physics*, retired at the end of 1982. He was replaced by John Light as Editor, and Donald Levy as Associate Editor, both from the University of Chicago.

Special projects. The proceedings of the Sixth International Symposium on Temperature held in Washington, DC, in March 1982, Volume 5 of *Tempera-*

ture: Its Measurement and Control in Science and Industry were published by AIP in the Fall of 1982. AIP cosponsored the Symposium with the Instrument Society of America and the National Bureau of Standards. AIP also published a large number of miscellaneous publications, such as short courses, monographs, standards, programs and membership directories for Member Societies and for AIP.

Secondary services. AIP's information-retrieval products continued to be assembled by computer techniques shared with journal production. Thus, the same data base produced article heads, journal indexes and tables of contents as well as products for information retrieval, such as *Current Physics Index* and the SPIN tapes. The Department of Energy's *Energy Research Abstracts* and the European *Physics Briefs* contain input from this same data base. Back files of the SPIN tapes are now being maintained on the Datapoint system.

In 1982, the series of five-year indexes for AIP-owned journals, begun in 1981, continued with the publication of a cumulative index for *Applied Physics Letters*; at year's end, a companion volume for the *Journal of Applied Physics* was in preparation. Plans were made for producing AIP and APS journals on microfiche in 1983. They will be delivered by first-class mail or overseas by air mail at the same price as subscriptions for printed journals in the United States, which will increase the speed of delivery and lower the cost of foreign subscribers, as well as saving storage space.

PHYSICS TODAY published two special issues during the year: *Liquid Crystals* (May) and *New Instruments for Astronomy* (November). In other issues, articles of unusual interest included "The Physicist as Entrepreneur" by Michael Jacobs, "The Physics of Glass" by James C. Phillips, "Maria Goeppert-Mayer" by Robert G. Sachs, "My Work with Millikan on the Oil-Drop Experiment" by Harvey Fletcher, "Phillip Morrison—a Profile" by Anne Eisenberg, and "How I Created the Theory of Relativity" by Albert Einstein (translated by Yoshimasa A. Ono).

In 1982, the fraction of news pages in PHYSICS TODAY devoted to news related to activities in Washington, D.C., increased from previous years. 1983 plans include a further increase in pages of Washington news and the publication of four special issues; the first of these, in March 1983, dealt with education about nuclear war. The number of copies printed monthly remained at 78 000 in 1982.

Distribution and Marketing

The efforts in subscription fulfillment, marketing services, single-article sales, advertising and exhibits are aimed at making Member Society and AIP journals as well as technical information about physics and astronomy readily available.

Subscription Fulfillment activities covered dues billing for nine member societies with a combined membership in excess of 62 000. Journal subscription billing and collection covered in excess of 254 000 subscriptions for 63 publications. The 1982–83 fiscal year and 1982 calendar year renewal billing for the Institute and Member Societies generated about 62 000 invoices covering dues and about 179 000 member subscriptions totalling $3.8 million. The nonmember billing covered about 23 000 subscribers and generated invoices for 75 000 subscriptions totalling $18.2 million. Single copy, back number, microfilm and conference proceedings sales required the processing of some 25 000 orders covering approximately 80 000 copies with a sales value of close to $1 million.

Marketing Services planned and produced catalogs, brochures, and advertisements for the journals and other publications of the Institute and its Member Societies. Exhibits were staffed at the January APS/AAPT meeting, the Pittsburgh Analytical Conference, the March APS meeting, the Temperature Symposium, the Special Libraries Association meeting and the American Library Association meeting. Specialized meetings received a selection of books and journals.

The AIP Fiftieth Anniversary *Physics Vade Mecum*, a handbook of tables and formulas, continues to be in demand by physicists; the conference proceedings series also sold well, despite a cut in library budgets for books. Following the recommendation outlined in AIP's Publishing Development Plan, a committee was established to advise the Institute on setting up a book publishing program.

As a fund-raiser for the Society of Physics Students, some T-shirts with physics sayings and formulas were designed and sold starting in late 1982.

Advertising and exhibits. During 1982, some 1451 pages of advertising appeared in the six publications handled by AIP's Advertising Division, down almost 5% from the 1981 figure. In general, advertising in most publications exceeded budget. However, advertising in PHYSICS TODAY, without the benefit of the special 1981 anniversary issue, and with the effects of a sluggish economy, was off some 7% from the 1981 figure.

The Division organized, sold space at, and supervised the Physics Show (APS-AAPT Joint Meeting), the APS (March) Show, two ASA Shows, the AVS Show and the Plasma/Fusion Show (APS Division of Plasma Physics). The AVS Show, managed on behalf of the American Vacuum Society continued to grow and in 1982 totaled some 195 booths.

Fiscal accounting

New automated systems and revisions to existing systems made it possible to issue a General Ledger on a quarterly basis so that managers could compare actual expenses incurred with the annual budget. Societies were provided with sales analyses on a current basis. Also, credit and collection efforts have significantly reduced outstanding receivables.

Data Processing. AIP plans to transfer much of its fiscal computing to a Data General MV8000, which has sufficient growth potential to satisfy the needs of the subscription fulfillment system, a computerized accounting system, and other programs such as miscellaneous list processing. A contract was awarded to AZTECH Corporation to deliver to AIP a "turn-key" subscription-fulfillment system to run on the MV8000. The Conceptual Design for the system was approved by AIP in late 1982. The system is expected to be operational by late summer of 1983.

Off-the-shelf accounting software packages for the General Ledger and Accounts Payable, specifically designed for the Data General MV8000,

Subscription Fulfillment billing statistics for 1983

	Number of invoices	Number of subscriptions	Value of billing*
Members billed			
Spring	32 000	28 000	$ 2 300 000
Fall	30 000	31 000	1 500 000
On Membership (included in dues)	—	12 000	—
Non-Members billed			
Agency	12 000	44 000	$13 000 000
Direct	4 000	31 000	5 200 000
Total	78 000	254 000	$22 000 000

*includes dues

are currently being evaluated. These packages all include an electronic spread sheet feature and can incorporate AIP's standard cost system.

Tax matters. In 1982 Mayor Koch announced a softened policy concerning exemption from real-estate taxes for nonprofit organizations in New York City. Recognizing the difficulties faced by these groups "particularly in a time of economic recession and reductions in Federal aid," the Koch administration has retreated from the City's program of actively questioning their exemption. City officials said that no new groups are expected to be stripped of their exemptions until completion of a panel report. The New York City Tax Commission had denied AIP's 1980 application for real property tax exemption. We paid these taxes by FY 1980–81 and FY 1981–82, "under protest," and the matter is under litigation. AIP's hearing has been postponed pending receipt of the panel report.

Information collection and analysis

The Institute provides an important resource for the physics and astronomy community by collecting and analyzing educational and historical information. This information will become even more useful as the community reponds to the problems in science education we have mentioned.

Trends in education and employment. AIP continued to collect and analyze data on the production and employment of manpower in physics and related science and engineering fields. New physics degree holders in 1980–81 included 927 PhDs, 1387 masters and 4513 bachelors. Preliminary figures for the 1981–82 classes indicate only slightly over 900 new PhDs, but a small increase in new bachelor's degree holders. The high proportion of foreign graduate students noted in the past few years continued to increase and now amounts to nearly 40% of the first year graduate students at PhD-granting departments.

The third in a series of society membership profiles, published in Fall of 1982, indicated that, despite the tightening economic situation, the previous year had been a relatively positive one for most members of the nine AIP Member Societies. Salaries had kept pace with inflation, and the unemployment rate remained low at 1%.

Data on the serious state of secondary-school science education continued to be monitored in close cooperation with the AIP Committee on Public Policy and the Special AAPT Committee on the Crisis in Science and Engineering Education. Special analysis of high-school seniors on the tape "High School and Beyond" from the National Center for Education Statistics was begun in 1982. In 1983, these data will be combined with follow-up data collected by NCES on these seniors two years after graduation. A picture of the background and future of the relatively small number of students exposed to physics at the high-school level should begin to emerge. In cooperation with the National Science Teachers' Association, plans were made in 1982 for detailed analysis of the shortage of secondary-school teachers in physics, mathematics and other sciences.

An ad-hoc committee is evaluating the prospects of obtaining one of the new, powerful, high-performance but low-cost dedicated mini/microcomputers for use in data analysis.

History of physics. The Center for

Science tv reports. The photos show crews filming material for shows on uses of physics in tracing pollution from waste disposal (at left) and in forensic science, in this case fingerprint analysis (above).

History of Physics is increasingly acting as a central node in an expanding network of groups that work to preserve and make known the history of modern science. These groups include the new historical divisions of the American Physical Society and the American Astronomical Society as well as other institutions devoted to the history of information processing, electrical engineering, and, most recently, the Center for History of Chemistry, founded by the American Chemical Society.

The Center is beginning to put its International Catalog of Sources for History of Physics and Astronomy in machine-readable form, and it would obviously be best if such data bases could be exchanged among history centers, to help all scholars and educators find the source materials they need. In December 1982 a meeting was held at AIP to begin work on joint projects.

Before materials can be used they must be preserved. Center staff completed their final reports on a project to help the Department of Energy save its historical records; of particularly wide interest is a prototype *Handbook for Secretaries*, which laboratories and other scientific institutions can modify for their own use. The simple practices described in the *Handbook* will ensure that the most important historical records are preserved, and will at the same time help streamline current administrative practices.

The International Project in the History of Solid State Physics entered its second full year. The American team, organized by the AIP Center, has already held over 100 hours of interviews with pioneers of the field, has written several hundred draft pages on the history and has accumulated much information on the location of manuscript source materials. All this work has been done in close collaboration with teams and individuals in Britain, France, Germany, Japan and elsewhere.

The newest project involving the AIP Center is a Laser History Project, sponsored in cooperation with several other institutions. This project also aims to conduct "oral-history" interviews, to preserve and catalog archival material and to produce a readable historical volume, planned for 1985, to commemorate the 25th anniversary of the first operating lasers.

Meanwhile, work continued on research, supported by NSF and administered by the AIP Center, on the biography of Henry Norris Russell and on the history of public attitudes to nuclear energy. Archival studies also continued, such as a privately funded biographical survey on senior nuclear physicists, sent to everyone we could locate who was active in the field since 1950 or earlier.

The Friends of the Center for History of Physics under the leadership of Chairman Fred Seitz achieved a notable success: It met the "challenge" issued by the National Endowment for the Humanities by raising over $150 000 in new funds over three years to match the $50 000 grant offered by NEH. The Center's Endowment Fund now approaches a quarter of a million dollars. Income from the Fund will be highly useful in supporting various efforts to preserve and make known the history of modern physics and astronomy and their relation to society.

Public dissemination

Over the years, AIP has made an effort through its Public Information Division to reach outside of the physics community, to gather and disseminate reliable information about physics and its progress.

Television and radio. AIP produces "Science TV Report," a series of short science news reports for commercial tv stations around the country to be incorporated into their news programs. In 1982, the number of stations airing these reports rose from 60 to 75 (including 14 out of the top 20 stations). Reports were also placed on several children's science programs produced by Westinghouse-owned stations. The last series released in 1982, "The Environment," included stories about noise pollution, indoor and outdoor air pollution, locating buried wastes, and the CO_2 greenhouse effect on world climate. The release of this series marked the end of NSF funding of the AIP tv project ($160 000 for 1982). As alternative and more permanent funding methods are being explored, AIP has taken it upon itself to fund these tv projects at a reduced level.

In its quest for long-range funding, AIP is considering joining with other scientific and engineering organizations. Because AIP's "Science TV Report" already reaches millions of scientifically uninitiated local news viewers, other organizations may welcome a joint project as a means for disseminating information on their own disciplines to the public. During the time of

American Institute of Physics Incorporated
Balance sheets

Assets

	31 December	
Current assets	**1982**	**1981**
Cash and short-term cash equivalents and short-term investments, at cost	$10 947 077	$ 9 310 993
Accounts receivable, net of allowance for doubtful accounts of $70 000	1 421 678	1 309 200
Due from Member Societies	206 453	75 233
Other current assets	824 389	636 855
Total current assets	13 399 597	11 332 281
Property, plant and equipment, at cost, less accumulated depreciation of $2 845 678 and $2 534 054	6 316 928	6 440 332
Long-term investments, at cost	531 722	480 987
Other assets	58 893	58 243
Total assets	$20 307 140	$18 311 843

Liabilities and fund balances

Current liabilities		
Trade accounts payable and accrued expenses	$ 1 964 174	$ 2 215 249
Due to Member Societies	591 223	1 160 842
Current maturities of long-term debt	29 677	29 719
Other current liabilities	748 988	802 457
Total current liabilities	3 334 062	4 208 267
Deferred subscription income	8 051 475	7 019 536
Long-term debt	2 087 837	2 120 104
Total liabilities	13 473 374	13 347 907
Fund balances		
Net equity in property, plant and equipment	4 199 414	4 290 509
General fund	2 050 281	150 227
Restricted funds	584 071	523 200
Total fund balances	6 833 766	4 963 936
Total liabilities and fund balances	$20 307 140	$18 311 843

American Institute of Physics Incorporated
Statements of revenue and expense

	Year ended 31 December	
	1982	1981
Revenue		
Publishing operations		
Subscriptions	$ 7 557 614	$ 6 083 964
Voluntary page/article charges	2 120 253	1 995 820
Advertising sales	1 325 328	1 410 122
Back number and microfilm sales	700 893	572 104
Other	580 185	443 989
	12 284 273	10 505 999
General operations		
Grant and contract activities	368 922	443 470
Educational activities	348 765	317 656
Member Society and Corporate Associates dues	261 348	218 379
	979 035	979 505
Other operations		
Investment income (net of $44 576 paid to Societies in 1982)	805 285	628 393
Special projects	135 158	25 760
Other	345 894	322 984
	1 286 337	977 137
Total revenue	14 549 645	12 462 641
Expense		
Publishing operations	9 998 415	9 777 010
General operations	1 807 367	1 724 658
General and administrative	657 262	452 800
Other	277 642	229 513
Total expense	12 740 686	12 183 981
Excess (deficiency) of revenue over expense before the cumulative effect of a change in accounting policy	$ 1 808 959	$ 278 660
Cumulative effect on prior years of a change in accounting for compensated absences	—	(97 323)
Excess (deficiency) of revenue over expense	$ 1 808 959	$ 181 337

concern over the deterioration of public scientific awareness and education, a tv program that places science news on a par with local news, sports and weather can serve a useful education function. So far, we have received encouraging signals from several science and engineering organizations, currently considering joining forces with AIP. The ultimate goal of such a science and engineering consortium would be a continuously-funded science and engineering news service to tv stations. Support for such a science-news series could come from corporate or foundation sources.

"Science Report" is a radio program produced by AIP, acquainting the general public with the interests and activities of physical scientists by means of brief interviews about science topics. The program reaches well over 1½ million persons a week on some 400 public radio stations. The topics include the acoustics of whistling, jet noise, mirages and manganese nodules under the ocean. In the last year, over 30 commercial stations have added "Science Report" to their daily broadcasting schedule.

Newsrooms and special releases. Newsrooms, which include press conferences on exciting developments, were operated at two Member Society meetings in 1982. Five meetings were publicized *in absentia* by distributing to science writers lay-language versions of significant and newsworthy papers. At various times during the year AIP's Public Information Division alerted the media to significant physics developments through news releases, for example, reporting on the possible discovery of a magnetic monopole. The Division also conducted seminars for science writers on condensed-matter physics and on cosmology. At these seminars, leading scientists reviewed the status of topics in their particular fields, and reported on the latest research developments.

Physics News in 1982 is the fifteenth in a series of annual booklets designed to call attention to interesting and newsworthy developments in physics and its related fields. It is designed for and used by science journalists as well as college students and teachers, and it includes discussions of magnetic monopoles, ocean tomography, supermassive stars, the inflationary universe, food tasting with lasers, magnetic superconductors, nerve impulses, and chaos.

Science-writing awards. The AIP–United States Steel Foundation Science-Writing Awards in Physics and Astronomy for 1982 went to journalist Marcia Bartusiak for her article, "The Ultimate Timepiece," which appeared in *Discover* magazine. Physicist Heinz R. Pagels of Rockefeller University also won an award for his book, *The Cosmic Code: Quantum Physics as the Language of Nature*. The Foundation has renewed these awards for 1983. This will mark the seventeenth year for this joint awards program.

Educational publications. AIP's Education Division produced two major publications this year, the 1982–83 *Directory of Physics & Astronomy Staff Members* and the 1982–83 *Graduate Programs in Physics, Astronomy and Related Fields*. The Directory lists 30 000 faculty and staff members from 3000 academic institutions, federally funded research and development centers, government laboratories, and industrial and not-for-profit laboratories. The next edition will be the 1984–85 edition to be published in the Fall of 1984; for this edition the Division will study methods to improve the usefulness of the Directory and to reduce its cost.

The booklet, *Physics: A Career for You?*, continues to be very popular with about 70 000 copies distributed since the original printing in 1977. Because the stock of booklets was exhausted during the summer, it had to be reprinted. Orders for *Physics Goes Public*, the Public Information Division's guide to science PR, continued to come in from laboratories, schools, and industry.

Liaison activities

The Institute maintains close ties with its Member Societies, its Corporate Associates and individual physicists, including those who are members of the Society of Physics Students. In addition, the Institute interacts with government and many outside organizations with common interests.

With Member Societies. The Assembly of Society Officers, held in March, dealt with topics relating to science education, federal science policies and advanced technologies in publishing.

In cooperation with the American Physical Society, the Dannie Heineman Prize for Mathematical Physics was awarded in January to Professor John C. Ward of MacQuarie University, Australia, at the APS-AAPT Annual Joint Meeting.

The winner of the Dannie Heineman

Prize for Astrophysics, awarded in June in cooperation with the American Astronomical Society, was Professor P. J. E. Peebles of Princeton University.

With Corporate Members. The 1982 membership of the AIP Corporate Associates Program remained constant at 120. A major change in policy for membership was approved by the AIP Executive Committee effective 1 January 1983: All members in dues categories of $500 or more can now receive a single subscription to any of nine AIP publications at member rates. The schedule of dues for Corporate Associates membership remains unchanged for 1983.

The 25th meeting of AIP's Corporate Associates was, in many ways, our most successful one—if success can be measured by the capacity crowd and the interest in the meeting theme: industrial, academic and Federal cooperation for improving US science and technology. Hosted by Sandia National Laboratories in Albuquerque, New Mexico, over 200 people from industry, academia and government met, attended program sessions and informally exchanged ideas on matters of mutual interest. Much of the attention of the participants focused on the crisis in science education. AAPT president John Layman, in a talk on the crisis in physics teaching and potential limitations on future research, expressed his concern that "there are virtually no science teachers in the pipeline, especially in physics and mathematics." He also noted that the present administration has wiped out the NSF programs in science and education by completely decommissioning the Science Education Directorate and forming a new group called the Office of Scientific and Engineering Personnel and Education. (The size of this group is 17 instead of the previous 60 or more.) He also stressed the need for scientific societies to inform AAPT's "Crisis in Physics Teaching" Committee of successful industry-supported activities carried out on behalf of teachers and students.

With students. In 1982, membership in the Society of Physics Students (SPS) rose 6% to almost 6800 members. SPS chapters were located on 507 college campuses in the United States and Canada, with 336 of those chapters also active in Sigma Pi Sigma, the physics honor society. Student involvement with Society meetings was increased through student programs organized by the Society of Physics Students at 14

AIP services: at top, a placement center in operation at an APS meeting in 1982; at center, a listing of job openings displayed at the same meeting; below, sorting subscription fulfillment correspondence.

1982–1983 Directory of Physics and Astronomy Staff Members

When it's names and numbers you need, turn to this excellent source of information. It will provide you with a listing of over 30,000 individuals and 3,000 institutions located in the United States, Canada and Mexico and Central America.

Statistics for specific physics and astronomy programs are contained in five appendices:

Appendix I
- Number of Institutions by Type of Highest Physics Program Offered and Number of Physics Faculty by Rank
- Number of Institutions by Type of Highest Astronomy Program Offered and Number of Astronomy Faculty by Rank

Appendix II
Institutions by Highest Physics Program and Total Number of Physics Faculty
- United States
- Canada
- Mexico
- Central America

Appendix III
Institutions by Highest Astronomy Program and Total Number of Astronomy Faculty
- United States
- Canada
- Mexico
- Central America

Appendix IV
Number of U.S. Institutions by State, Type of Institution & Source of Support

Appendix V
- U.S. Institutions Which Granted the Largest Number of Physics Doctorates in 1978–79
- U.S. Institutions Which Granted the Largest Number of Physics Baccalaureates in 1978–79
- U.S. Institutions Which Granted the Largest Number of Astronomy Doctorates in 1978–79
- U.S. Institutions Which Granted the Largest Number of Astronomy Baccalaureates in 1978–79

This in-depth information makes the Directory a must for your bookshelf. $60.00 prepaid.

To order your new 1982–83 Directory of Physics and Astronomy Staff Members write to:
American Institute of Physics, Department N/M, 335 East 45 Street, New York, NY 10017.

ISBN 0-88318-296-3 $8\frac{1}{4}'' \times 11\frac{1}{4}''$ 375 pages

of the national and sectional meetings of APS, OSA, AAPT and AVS.

The first volume of the new *Journal of Undergraduate Research in Physics* was published in 1982. The journal intends to encourage the publication of the results of research performed by undergraduates as well as to provide a forum for undergraduate concerns. Over 300 subscriptions were received before the first issue was published. Start-up costs were defrayed by a grant from AIP, but a strong marketing effort was mounted to increase the number of subscriptions and make the journal self-sufficient. It was published by Guilford College for SPS and AIP.

The tenth edition of SPS's *Speakers, Tours and Films* book provided SPS chapters and others responsible for planning physics programs about 1200 up-to-date listings of sources in the United States and Canada.

SPS-Bendix Awards were made to six SPS chapters to support research projects. Marsh W. White Awards went to seven SPS chapters to support programs to promote interest in physics among students and the general public.

With government and outside organizations. PHYSICS TODAY continues to be sent to all members of Congress, and AIP staff continue to be active in many joint professional organizations, such as the Council of Engineering and Science Society Executives, the International Union of Pure and Applied Physics and the American National Standards Institute.

With employers. AIP's Manpower Placement Division operated placement centers at the APS-AAPT Annual Joint Meeting in San Francisco and the APS Spring Meeting in Washington, DC. At these centers, the ratio of jobs to applicants dropped from the 1981 average of two jobs per applicant to approximately two applicants per job. A placement center was also held at the annual meeting of the Division of Plasma Physics of APS in November 1982 in New Orleans. The nature of the job market was reflected by the Division's busy placement center at the January 1983 Joint APS–AAPT Meeting in New York. There were 308 registrants for a total of only 180 positions available from 113 institutions (including two high-school positions). There were 95 representatives actively conducting interviews.

About 800 applicants registered with the Division's Employment Referral Service, which was completely computerized by the end of 1982.

The Division has been working with senior-high schools to help reduce the shortage of qualified science and mathematics teachers. To help find ways to assist physically handicapped scientists or engineers with their careers, the placement division continues to gather information to be shared with the Project on the Handicapped in Science of the American Association for the Advancement of Science.

General administration

AIP's fourth annual Long-Range Function Plan Report was presented to the Executive Committee at its September meeting and to the Governing Board for approval. Parts of the 1982 plan that received special attention included:

- Publishing Development Plan: an in-depth examination of the present status of AIP's total publishing program and plans for reaching future goals.
- Computer Modernization Development Plan: an explanation of the Executive Committee's June 1982 approval of AZTECH Corporation as vendor to design and implement the new Subscription Fulfillment computerized system for AIP.
- Personnel Administration Development Plan: a summary of areas in AIP's administration and personnel policies that are constantly monitored in comparison to policies of other similar organizations. The plan includes details in areas of management and supervision, employee relations, salaries and benefits, as well as company policy and procedures.

At its meeting in October 1982, AIP's Governing Board approved an eighth function that broadens AIP's "job description." We now have been formally assigned the job of "production and distribution of information services that are cost-effective and of high quality." Because scientists in industry are heavy users of computerized information services, and since a large fraction of physics and astronomy publications originate in academic institutions, development of an improved coupling between industry and academe is implicit in this assignment to AIP staff.

In 1982, AIP began work on developing a five-year Function Plan for Educational Services, which includes all non-publishing activities of AIP. The Function Plan will permit AIP to identify the needs of the physics community, both internal and external, and perform the long-range planning necessary to meet those needs. The task force that is to draw up this plan is chaired by AIP Education Division Manager Dion W. J. Shea and comprises AIP staff closely connected with Educational Services as well as four advisors from the physics community. The task force will analyze such "external forces" as the new NAS physics survey, the crisis in science education, technology in society, funding of scientific research, influx of foreigners as US graduate students, and manpower questions in academe and future funding for AIP.

Personnel. In addition to formulating a Personnel Administration Development Plan, AIP's Personnel Division evaluated existing employee benefits. The Division also recommended and implemented improvements such as prescription-drug, dental and vision-care plans, and expanded the tuition-refund program.

Success of new programs to improve employee interest in AIP was indicated by the decrease in employee turnover from 40% in 1981 to 24% in 1982. At the end of 1982, AIP had 415 full and part-time employees, 300 located at Woodbury and 115 at AIP's New York headquarters.

Notable personnel changes in 1982 included the addition to the staff of Robert P. Andersen, Publishing II Branch Manager, who joined AIP staff following the sudden death of Mitchell V. Koch; Gogo Lewis who had previously managed the Composition II Section, was officially named Composition II Division Manager; Bruce Foreman, former Manager Publications I Data Processing was appointed Manager of the new Production I Division in the Publishing I Branch; and John T. Scott, former Publishing I Division Manager, was named Publishing I Branch Manager.

Buildings and grounds. New photo galleries for Nobel Laureates and recent Presidents of Member Societies were installed on the third floor of AIP's New York headquarters. New equipment was ordered for the Printing and Duplicating section at Woodbury. Major items included two new offset presses, an electrostatic platemaker and a 22-bin collator capable of producing finished 88-page booklets.

Constitutional changes. AIP's Committee on the Constitution chaired by H. Richard Crane continued to analyze such topics as the breakdown of Member Society dues for general activities, education, and so forth; general services to Member Societies; the stability of AIP's support of educational and general services; and the mechanics of change in wording of the constitution.

Finances

The significant increase in 1982 assets shown in the table on page 49 results from increased subscription income.

Our total revenue for 1982 amounted to $14 549 645 while our total expense amounted to $12 740 686, resulting in a net revenue of $1 808 959. The large increase in net revenue came primarily from our publishing operations and investments. Significant increases were made in nonmember subscription prices to replenish our depleted liquid reserves. An improved cash management plan increased our investment income. □