

The AIP in 1976



Publishing news dominates the Institute's Annual Report, with emphasis on steps taken toward computer-based photocomposition and plans for a new copyright policy.

In forty-five years of operation the American Institute of Physics has achieved a preeminent position in the scientific publishing business. The statistics tell the story: AIP publishes almost 90% of the research articles published in physics journals in the United States (about 16 000 articles in 1976), and has become the world's largest publisher of primary journals in any one science (about 97 000 pages in 1976). Developments related to AIP publishing activities are accordingly emphasized in this report of Institute activities in 1976. But AIP is more than just a journal publisher; it seeks to serve the Member Societies—and the entire physics and astronomy communities—in many other ways too. This report therefore surveys also the contributions to this goal made by the public-relations division, the Center for History of Physics, manpower statistics and placement divisions, and the Society of Physics Students.

The dominating position of publishing among AIP activities is best illustrated by a comparison of the outlays involved. Publication expense and items related to it (subscription fulfillment, reprints, back numbers, microfilm, advertising, marketing, royalties, etc.) amounted in 1976 to \$10 500 000, including publishing done for the Member Societies. Total expenditure for all AIP operations in the same period came to about \$16 100 000. Thus we see that efficient operation of the Institute demands that AIP management and its Governing Board keep abreast of publishing technologies, of automated information-handling systems, of laws

affecting publishing operations—in short, of all procedures that could affect wide dissemination of physics and astronomy research results at reasonable prices.

This report will show that two decisions taken by AIP in 1976 will have a strong, favorable influence on its publishing program. The decision to purchase computerized typesetting equipment recognizes that computer-based photocomposition is now expected to lead to even more economical production of journal pages than the typewriter composition currently used for most AIP journals. The equipment on order at the end of the year should allow the Institute to continue to avoid inflationary increases in labor-intensive operations. The other action taken by AIP to strengthen its publishing program was the decision to buy a building and 11.6 acres of land at Woodbury, Long Island. This acquisition will become AIP's center for journal production and related operations such as subscription fulfillment and data processing. With the future goal of a staff of about 150 in the headquarters building in Manhattan and 200 at Woodbury, the Institute will gradually consolidate its operations in these two locations instead of the present four.

The new US copyright law—enacted in the fall of 1976 and scheduled to take effect 1 January 1978—was another area of activity for AIP in 1976. In that year, with the help of a distinguished copyright attorney, the Institute worked toward developing a copyright policy, interpreting and conforming to the new law. In the case of scientific journals, copyrights will need to be transferred in writing by authors, in whom the new law vests copyrights, to the publishers, so that publishers can achieve the widest possible dissemination of articles published. At the same time, the Institute recognizes

that authors may wish to retain certain privileges for themselves. Procedures need to be established that will recognize the rights of authors and publishers, while providing users with the mechanisms that will permit ready access to journal information.

Other developments in these publishing-related areas—including such matters as subscription fulfillment, dues billing and collection, and data processing with a new computer system—are reported in the following pages. Reports on the non-publishing activities of AIP appear also; notable in 1976 were the expanding role of the public-relations division, which is shortly to include promotion of physics news via radio, the impressive publications written and edited by staff of the Center for History of Physics to mark the nation's bicentennial, the increasing size and utility of the *Directory of Physics and Astronomy Staff Members* assembled by the manpower-statistics division, and the continued vigor of the Society of Physics Students.

As always, the one thread running through the report of AIP activities in 1976 is emphasis on service to the physics and astronomy community through the Member Societies—a membership that now numbers nine with the welcome addition of the American Vacuum Society (an Affiliate since 1963) as a full Member Society.

Publishing

The major news of the year from the publications division was the initiation of plans for conversion to complete, in-house, computer-controlled photocomposition. Meanwhile during 1976 production of the 46 journals and other publications proceeded smoothly with particular attention to high quality and rapid scheduling.

Primary journals. Only about 20% of the composition for the 97 000 pages published in 1976 was computer controlled, and that was done under outside contract. The remaining 80% was set by typewriter, about half in-house and the other half under contract. Typesetting of the mathematical material that abounds in physics journals is a slow, laborious process on typewriters. The switch to computers is expected to bring substantial savings—if page charges are not actually reduced they should at least be stabilized.

The first step toward complete computerization was the conversion, in 1976, of index production and composition programs to run either on the Institute's new Univac 90/30 computer or on the Datapoint minicomputers in the publications division. This change had already effected cost reductions by the end of the year.

The next stage will begin with the arrival early in 1977 of a Videcomp phototypesetter. This machine was selected during 1976 after discussions with AIP's

typesetting consultant, John Seybold and Associates, and the Institute's Publishing Policy Committee. It has the speed and capacity to handle all AIP's composition needs, both present and those in the foreseeable future. The third step will be the acquisition of additional software for composing mathematical material and of a "front-end" system of editing terminals to feed and drive the Videcomp.

Among other developments during 1976 in primary-journal publications were:

- Agreement for AIP to publish, starting in 1977, *Applied Physics Letters* "in cooperation with The American Physical Society and the Optical Society of America," and *The Physics of Fluids* "in cooperation with The American Physical Society." In each case the cooperation will be in the form of assistance in selection of Boards of Editors.

- Decision on the addition to *Journal of Applied Physics* of a section titled *Reviews of Applied Physics*, jointly edited by G. J. Perlow and L. Guttman.

- Participation by AIP in meetings of the

ICSU Abstracting Board Physics Working Group and its Classification Subcommittee, with the result that the international ICSU/AB physics classification scheme and AIP's 1977 edition of PACS will be identical. Both schemes are now expected to remain stable for some years.

- Increase in the output of the Long Island Editorial Center (at Stony Brook) as it began typewriter composition of all *Physical Review B* pages. The Center produced 30 000 journal pages of composition and edited 12 500 of those pages in 1976.

- Initiation of the *Physics Auxiliary Publications Service* with the first deposit in June 1976. This service is a depository of material supplementary to papers appearing in the journals but not included in the published version.

Other publications. As a part of primary-journal production, AIP generates a computerized data base of titles and abstracts, used to typeset the "heads" of journal articles. Secondary uses of this data base are journal indexes, *Current*

New in 1976



Strides toward
computerized typesetting

Focus on Long Island
Production Center

US Copyright Law

UNIVAC 90/30 computer



PR by radio

Bicentennial publications

Government laboratories
listed in Directory

Career publications

AVS elected
full member society

Physics Index and *Physical Review Abstracts*. Monthly accumulations of the data base constitute SPIN, AIP's tape index service.

Other indexes being compiled during 1976 were a 30-year cumulative index for *The Astronomical Journal*, a five-year cumulative index for *The Journal of the Acoustical Society of America*, and a six-year cumulative index for *Physical Review* and *Physical Review Letters*.

The AIP *Conference Proceedings* series remained active in 1976 with the publication of volumes 27 through 35.

PHYSICS TODAY's monthly print order reached 70 000 copies in 1976. Three special issues were published during the year, and among other items of particular interest were the position statements on science and technology issues, supplied by the two major presidential candidates in response to a letter from William A. Fowler (president of The American Physical Society), and published in the October issue.

Marketing and advertising. Subscriptions to *Current Physics Index* and the four new Soviet translation journals, and sales of *Conference Proceedings* and the archival microfilm programs, showed substantial gains as a result of marketing efforts during 1976. Promotion of all AIP publications and those of the (British) Institute of Physics included the attendance of marketing-division staff with samples of the products at several professional and trade shows.

Exhibits and shows were also the concern of the advertising division, which sold space at, and managed, two traditional scientific-instrument exhibits for Member Societies and, for the first time, the CLEOS Show held in conjunction with the Joint Meeting of the Optical Society of America and the Institute of Electrical and Electronic Engineers in May. The division handled advertising space sales for eight publications, with a volume of 1186 pages in 1976—about 8% below the 1975 figure.

Fiscal Branch

The event with greatest impact on almost all fiscal-branch activities was the delivery in July of the new Univac 90/30 disc-oriented computer configuration. This system will eventually replace the existing Univac 9300, which has only half the speed and one-third the memory size. Installation of the new system in the basement of AIP's headquarters building required considerable structural alterations, and the two computers are currently running side-by-side.

Data processing. While Univac engineers set up and calibrated the new system, work started on conversion programs for both fiscal and publishing activities. Conversion was not yet complete by the end of the year. The part of the accounting activity that was already computerized on the Univac 9300—the gen-



H. William Koch and Philip M. Morse, respectively director of the American Institute of Physics and chairman of the Governing Board, in the director's office at AIP's headquarters in New York.

eral-ledger system—was 90% converted and tested by the end of the year. Subscription-fulfillment operations were about 75% converted and tested. Despite the incomplete conversion, printing of the fall renewal billing for Member Societies ran successfully on the new system. Final conversion is expected by April 1977, at which time complete, simultaneous operation of all fiscal-branch computer activities is expected on both computers. Parallel use of the 9300 will not stop until the whole conversion is completed and operations are functioning properly.

Subscription fulfillment. Smooth operation without serious problems is reported for subscription-fulfillment services in 1976. The magnitude of this activity is shown by the statistics:

- ▶ Total billing of dues and member subscription renewals on behalf of nine societies (including twelve divisions), amounting to about \$2 000 000.
- ▶ Approximately 61 000 member renewal bills (covering about 60 000 memberships) processed.
- ▶ Non-member renewal notices mailed to around 21 000 subscribers (90 000

subscriptions), amounting to more than \$7 800 000.

▶ About 23 000 orders for back numbers (approximately 75 000 copies) processed.

One area still causes concern: subscription complaints from non-members. This problem occurs with agency orders that are apparently not sent in properly or not paid. AIP is seeking to overcome these difficulties by having the larger agencies put their orders on tape to go directly into the Institute's computer. Contact has been made with three agencies toward this end.

Fiscal operations and accounting. As a result of recommendations by the Fiscal Policy Committee, the Executive Committee took action, effective 31 December 1975, to classify Institute operating funds into two categories, "unrestricted" and "restricted," the latter set aside for specific reserves. Assets in the AIP Investment Advisory Account are "restricted," and two new reserves, Equipment Reserve and General Reserve, join the existing Building Reserve and Publications Reserve.



DataPlan Six

Laboratory Computer Systems

DataPlan Six is a new concept in laboratory computer systems that recognizes the variety of needs and problems encountered in on-line accumulation and spontaneous interpretation and display of research data. DataPlan Six Systems combine microcomputer technology with on-line data acquisition capabilities, and complex experimental parameter and display functions. They offer a modern solution to laboratory data acquisition, analysis, and processing requirements.

6620

The most sophisticated member of the Data Plan Six family is the ND6620 System, the first multi-job and multi-task acquisition and processing system. It features the extended program and data storage capability of a hard surface cartridge disk, powerful MIDAS disk operating software, comprehensive radionuclide identification application software, FORTRAN IV compiler, BASIC interpreter, MACRO assembler and text editor.

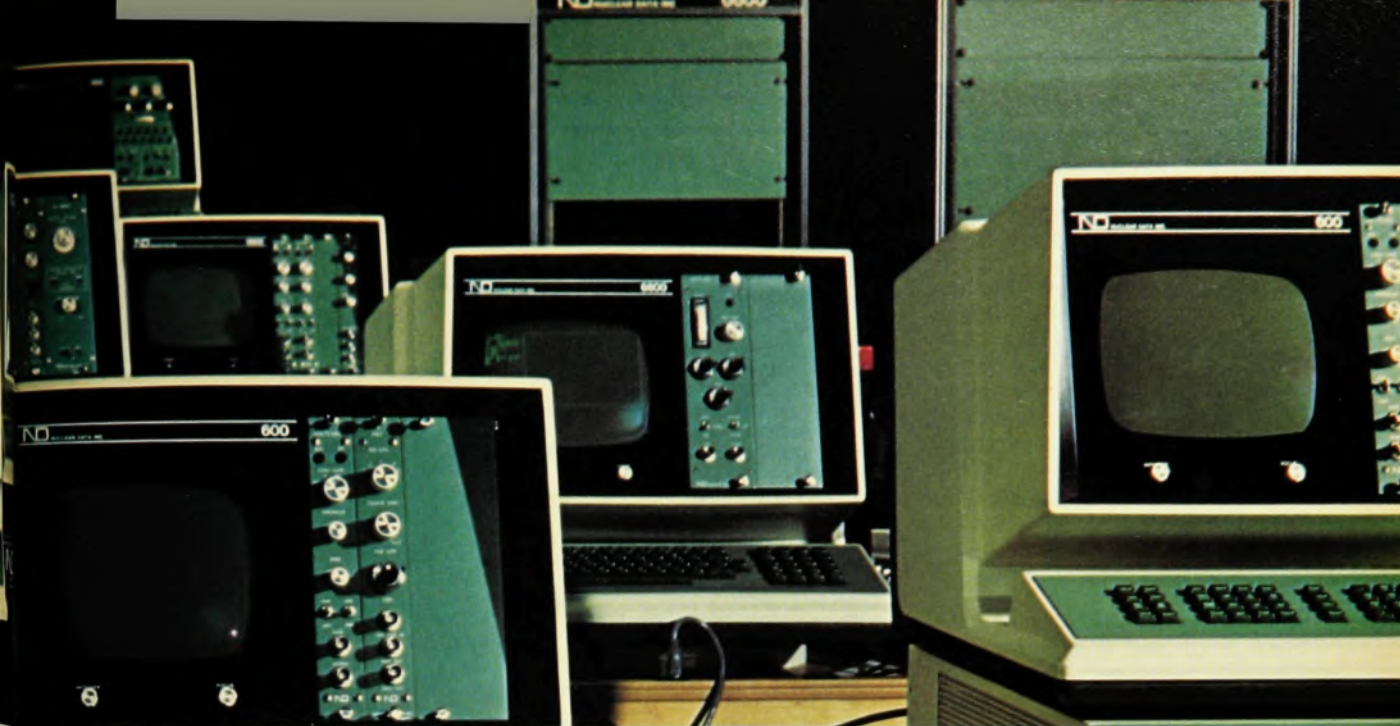
All ND6600 Systems offer the powerful data throughput capabilities of distributed processing combined with the exclusive synchronous COMBUS. LSI-11 microcomputers and intelligent microprocessors simultaneously perform system functions. Each system expands to 224 kilobytes of memory and up to three display and acquisition subsystems — each supporting up to 8 ADC's and each controlled by a central or remote terminal.

6610

The ND6610 System offers the convenience and economy of a dual floppy disk coupled with the powerful MIDAS disk operating software for complete data acquisition, display and peak processing. Comprehensive capabilities include automatic peak search/fit with multiplet resolution for fast, accurate and efficient computation of all spectral peaks, energy calibration for on-line computation of peak energies and data smoothing.

6603

The ND6603 is a firmware operated, turnkey system which features data display and acquisition from multiple independent ADC's while simultaneously performing data manipulation and input/output operations. It also serves as a remote data collection system linked to a larger system. The ND6603 System expands to the full disk operating ND6610 or ND6620 System by simply adding hardware and software modules. Its basic system components become part of any future ND6600 System. Thus, the initial investment in an ND6603 is the first step toward a full disk operating ND6600 System.



660

The ND660 is a fully programmable, disk-based foreground/background MCA system. Standard components include the ND600 Terminal and Electronics Enclosure, LSI-11 microcomputer, 56-kilobyte solid state memory, 512-kilobyte dual floppy disk, DEC RT-11 F/B DOS software, and choice of LA-36 DEC Writer, TI-743 Silent Writer or ASR33 Teletype. RT-11 runs the powerful ND600 analyzer functions in foreground while concurrently and independently running sophisticated ND6600 FORTRAN application programs in background. Standard DEC FORTRAN compiler and BASIC interpreter also run in background.

600

The ND600 is a fully firmware-controlled microcomputer based, multichannel analyzer system. It combines the computational power of an LSI-11 microcomputer with the convenience of terminal operation. The result is an extremely powerful, easy to use multichannel data analysis system. All functions are performed under firmware control and all are instantly available with the push of a button.

ND600 expands to 8K of data storage memory and a wide variety of firmware and input/output options; or to the fully programmable ND660 Foreground/Background Disk Operating System.

60

The ND60 is the newest member of the Data Plan Six family of microprocessor based MCA's. It offers a price performance ratio superior to any other MCA in the economy category. Through microprocessor power, the ND60 offers features and capabilities previously available only on larger MCA systems. Standard built-in features include a preamplifier/amplifier, 50 MHz ADC, PHA/MCS acquisition, 2048 channel memory, 8 x 10 cm CRT, alphanumeric display, serial input/output and X-Y plotter output.

DataPlan Six Systems extend the scientist's ability to apply computer analysis, display and processing functions to the expanding needs of modern research programs.

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6000 Frankfurt Main
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0611/529952 Telex: 4-14696

In looking ahead to 1977, AIP management plans a re-design of financial statements to make data more meaningful to society officers. In addition, since lateness of the 1975 audit was unacceptable to AIP management, it has set a schedule to ensure an early Institute audit covering calendar year 1976.

Accounting services include the Publication Charge and Reprint Section (which processed about 12 300 orders covering 21 journals in 1976) and the Accounting Section (which disbursed about 17 100 checks totaling around \$17 800 000). Accounts were maintained for nine societies, 58 publications, 56 AIP organizational units, 12 grants and contracts and 19 special projects.

General Activities

Those operations of AIP grouped under "General Activities" include the vital areas of public relations, history of physics, manpower (statistics and placement) and the Society of Physics Students.

Public relations. A completely new program for AIP, for which the groundwork was laid in 1975, will be the promotion of public understanding of physics by radio. The public-relations division expects to reach, in this way, a wide audience not ordinarily exposed to science in general and physics in particular. During the year the division produced prototypes of spot audio features relating to developments in physics, and in 1977 it will begin weekly distribution of such reports on discs. Plans are to send the recordings, each containing twenty 2½-minute features, to about 100 radio stations throughout the country.

Among the activities of the public-relations division at the April 1976 meeting of The American Physical Society in Washington was a very popular briefing on elementary-particle physics for science reporters. This briefing, sponsored by APS, attracted some 40 reporters in addition to the four journalists who made up a panel along with four physicists. Also at the time of the meeting, Senator Edward Kennedy spoke at the annual AIP-National Association of Science Writers Luncheon.

Regular programs of the division continued in 1976. Newsrooms were staffed at three Member Society meetings, and lay-language versions of newsworthy papers were prepared and distributed at these three and at four other meetings. These lay-language versions have become so popular that the division has adopted a proposal to send them to heads of physics departments to pass on to their students. The department heads will also receive copies of the press releases on significant developments in physics that the public-relations division continues to send to newspapers across the country.

The division distributed 7500 copies of the latest edition of its annual summary

American Institute of Physics, Incorporated

Balance Sheet

ASSETS

Operating Fund

Unrestricted Funds:			
Cash in banks and on hand		\$ 82 357	
Fixed time deposits	\$5 975 801		
Less: Restricted funds included therein	1 675 580	4 300 221	
Due from member societies:			
Acoustical Society of America	\$ 16 188		
American Association of Physicists in Medicine	18 538		
American Crystallographic Association	12 386		
Optical Society of America	21 601		
Society of Rheology	5 559	74 272	
Sundry debtors		1 016 690	
Inventory of publications		20 292	
Inventory of paper and office supplies		41 266	
Deposits		5 100	
Deferred charges:			
Composition costs applicable to 1977	\$ 152 980		
Printing costs applicable to 1977	1 263		
Computer installation expense	116 047		
Leasehold improvements	12 876		
Prepaid insurance	11 617		
Prepaid postage	18 422		
Amounts due from publications and societies applicable to 1977	4 617		
Other deferred charges	72 559	390 381	
Amounts due for funds expended for special projects for the account of others		22 999	
Due from special purpose funds		5 169	\$5 958 747
Restricted Funds:			
Friends of the Center for the History of Physics Fund:			
Cash	\$ 30 918		
Less: Due to unrestricted funds	3 919	\$ 26 999	
Investment Advisory Account:			
Investments-at cost (Market value \$673 861)	\$ 604 645		
Cash	9 853		
Accrued interest receivable	1 879		
	\$ 616 377		
Less: Fee due Bankers Trust Company	1 236	615 141	
Fixed time deposits included in unrestricted funds		1 679 499	2 321 639 \$8 280 386

Special Purpose Funds

Karl Taylor Compton Fund:			
Cash	\$ 1 208		
Investments—mutual fund	9 438	\$ 10 646	
John T. Tate Memorial Fund:			
Cash	\$ 687		
Investments—mutual fund	20 020	20 707	
Albert A. Michelson Memorial Fund—cash		1 682	
Meggers Coin Collection—Appraised value	\$ 49 943		
Less: Expense of coin collection (Due to operating fund)	5 169	44 774	
Meggers Memorial Fund—cash		3 964	
Center for History of Physics Endowment Fund:			
Cash		23 236	
Sigma Pi Sigma Trust Fund:			
Cash	\$ 5 995		
Investments	19 967		
Accrued interest receivable	22	25 984	130 993

Property and Equipment Fund

Land		\$ 266 535	
Building	\$1 429 098		
Less: Accumulated depreciation thereon	872 506	556 592	
Furniture and Equipment	\$ 475 632		
Less: Accumulated depreciation thereon	347 134	128 498	951 625
			\$9 363 004

LIABILITIES

Operating Fund

Unrestricted Funds:			
Trade accounts payable		\$1 583 054	
Commissions payable		20 342	
Payroll taxes payable		42 814	
Advertising rebates payable		882	
Sundry creditors		113 679	
Due to member societies:			
American Association of Physics Teachers	\$ 4 639		
American Astronomical Society	8 979		
The American Physical Society	185 845		
American Vacuum Society	19 227	218 690	
Due to The Institute of Physics		106 440	
Deferred Credits:			
Subscriptions received applicable to issues of journals to be published subsequent to December 31, 1976	\$3 253 282		
Dues—Corporate—Year 1977	51 754		
Dues—Society of Physics Students—1977	20 543		
Sundry receipts—re 1977 activities	173 902		
Other deferred credits	1 218	3 500 699	
Amounts received for special projects for the account of others (net after expenditures thereon)		102 179	
Accumulated income		269 968	
			\$5 958 747
Restricted Funds:			
Friends of the Center for the History of Physics Fund	\$ 26 999		
Building reserve	\$ 872 506		
Equipment reserve	872 134		
Publications reserve	300 000		
General reserve	250 000	2 294 640	
			2 321 639
			\$8 280 386

Special Purpose Funds

Karl Taylor Compton Fund	\$ 10 646		
John T. Tate Memorial Fund	20 707		
Albert A. Michelson Memorial Fund	1 682		
Meggers Fund	44 774		
Meggers Memorial Fund	3 964		
Center for History of Physics Endowment Fund	23 236		
Sigma Pi Sigma Trust Fund	25 984	130 993	

Property and Equipment Fund

Mortgage payable, 5% due November 1, 1977, amortization quarterly	\$ 25 296		
Property and equipment capital	926 329		
			951 625
Audited by Conroy, Smith & Company, Certified Public Accountants			\$9 363 004

of physics news, published in November, to science writers, members of Congress, SPS chapter advisers and physics-department chairmen.

Two outstanding science writers won the annual AIP-US Steel Foundation Science Writing Awards in Physics and Astronomy. Fred Golden, Associate Editor of *Time* magazine, received the journalist's award for his article "Forecast: Earthquake," and Jeremy Bernstein of Stevens Institute of Technology won the scientist's award for his two-part article on I. I. Rabi in *The New Yorker*.

History of Physics. The year 1976 saw substantial expansion in the historical-preservation work of AIP's Center for History of Physics. Support by outside funding from several sources enabled the appointment of new personnel as research associates.

With two new grants, the Center was able to begin new projects in 1976. A grant from the National Science Foundation funded a project to document the history of modern astrophysics and cosmology; studies of priorities have already started. And with a grant from the Sloan Foundation the Center is consolidating and extending its regular oral-history interviewing program, giving particular attention to the rise of American physics from the 1920's through the 1940's.

The Center cooperated with the Office for History of Science and Technology of the University of California at Berkeley on an inventory of documents of 20th-century physical science. This project, supported by a grant to the University from the National Endowment for the Humanities, will eventually produce a unified index to all the important modern physics manuscript collections that can be identified in any country. The Center will focus on American institutions. Another matter the Center studied in 1976 was ways to save the historical records of the large postwar laboratories (government contract and industrial). This work has stimulated widespread attention among scientists and archivists.

The Friends of the Center for History of Physics launched their endowment drive with a well-attended reception at the Niels Bohr Library in 1976. By the end of the year, donations marked for endowment, ranging up to \$10 000 apiece, had been received from more than 50 individuals and six foundations and corporations. The endowment drive, chaired by E. R. Piore, continues. This is in addition to regular Friends' donations, which continue to be a substantial extension to AIP's basic funding for current expenses.

Staff of the Center prepared *Selected Papers of Great American Physicists for The American Physical Society* as a Bicentennial commemorative volume. Other efforts related to the Bicentennial resulted in publications in *PHYSICS TODAY*, *Applied Optics* and *Nature*.

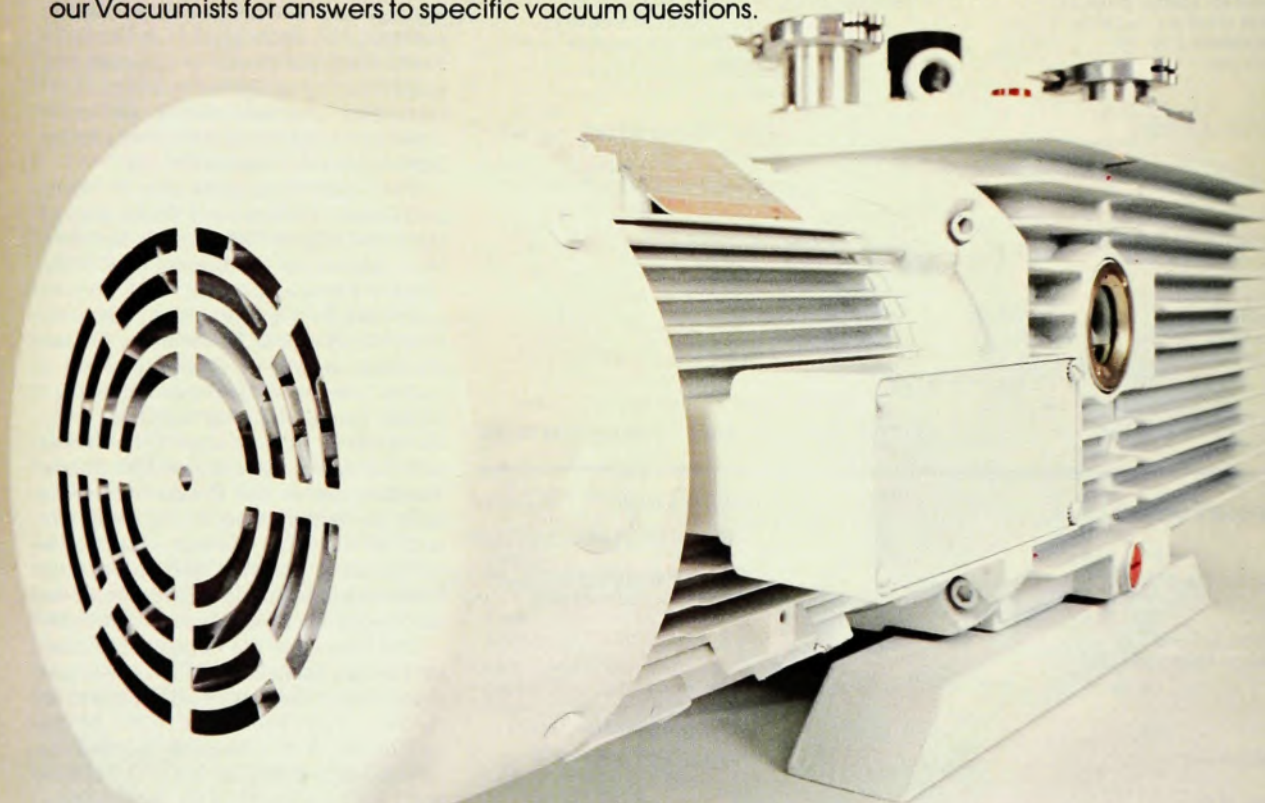
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Summary Statement of Operations—Year Ended 31 December 1976
Including Activities Carried on for Member Organizations

Income	Total	American Institute of Physics	For Account of Member Societies
Subscriptions	\$ 7 077 586	\$4 812 236	\$2 265 350
Back Subscriptions	220 020	206 635	13 385
Contributions for the Dissemination of Research Information	3 585 348	1 357 308	2 228 040
Article Charges	74 067	74 067	—
Abstract Charges	41 452	—	41 452
Reprint Sales	223 507	86 257	137 250
Back Number and Microfilm Sales	453 861	252 113	201 748
Advertising Sales	789 518	652 986	136 532
Contributions from Member Societies	64 800	64 800	—
Corporate Associates Dues	93 250	93 250	—
Income from Investments	287 936	287 936	—
Income from Special Projects, Administrative Fees, Royalties, etc.	1 717 651	1 717 651	—
Miscellaneous Income	126 188	126 188	—
Other Receipts for Accounts of Member Societies	2 286 292	—	2 286 292
Total Income	<u>\$17 041 476</u>	<u>\$9 731 427</u>	<u>\$7 310 049</u>
Expense			
Prerun Publication Expense	\$ 5 513 732	\$3 595 129	\$1 918 603
Runoff Publication Expense	2 075 095	975 934	1 099 161
Distribution Expense of Publications	1 549 379	895 106	654 273
Expense re Dissemination of Research Information	354 976	140 772	214 204
Reprint Expense	138 384	55 125	83 259
Back Number and Microfilm Expense	213 053	87 671	125 382
Advertising Expense	430 055	359 351	70 704
Royalties Paid	232 906	216 343	16 563
Charges to Publications and Societies below Actual Costs	47 805	47 805	—
Corporate Associates Expense	22 560	22 560	—
Administrative and Organizational Services	852 716	852 716	—
Special Projects	1 520 824	1 520 824	—
Other Disbursements for Accounts of Member Societies	694 370	—	694 370
Total Expense	<u>\$13 645 855</u>	<u>\$8 769 336</u>	<u>\$4 876 519</u>
Net Charge to Societies to Balance Accounts	2 433 530	—	2 433 530
	<u>\$16 079 385</u>	<u>\$8 769 336</u>	<u>\$7 310 049</u>
Net Income Transferred to Accumulated Income	<u>\$ 962 091</u>	<u>\$ 962 091</u>	
Transferred from Accumulated Income:			
Building Reserve	\$ 40 289	\$ 40 289	
Equipment Reserve	561 428	561 428	
Publications Reserve	150 000	150 000	
General Reserve	200 000	200 000	
	<u>\$ 951 717</u>	<u>\$ 951 717</u>	
Net Increment to Accumulated Income	<u>\$ 10 374</u>	<u>\$ 10 374</u>	

Meanwhile all regular activities of the Center were maintained. Two more historical cassette packages (on superconductivity and optical pulsars) joined those prepared earlier, and an independent review panel recommended that some of these experimental cassettes should be marketed. Cataloging of materials for a *Guide to Historical Resources for Public Understanding of Physics and Astronomy* was completed; work started in 1976 toward computerized data storage and publication. The Center's collections of books, documents, tape recordings, photographs and other materials continued to grow, and, as always, its staff provided advice or indirect aid to projects designed to preserve documentation of industrial physics laboratories, the Manhattan Project, emigré scientists and other subjects.

Manpower statistics. To keep abreast of the physics and astronomy manpower situation, the division continued its sta-

tistical surveys and undertook some special studies in 1976. Three reports on students and graduates for the academic year 1974-75, based on statistical surveys, were published in the Manpower Series in 1976: "Enrollments and Degrees," the "Graduate Student Survey" and the "Survey of Bachelor's Degree Recipients." These reports showed a continuing decrease in the number of physics degrees granted. Reports on the graduating classes of 1976 will be available early in 1977, in a continuing effort to make manpower data more timely. Preliminary analysis reveals that 1976 graduates are receiving more job offers than 1975 graduates did at the same stage.

At the request of several department chairmen concerned about their anticipated heavy declines in enrollment, a special study projecting the first-year graduate enrollment at physics PhD-granting institutions was conducted in May 1976. It showed little change in ex-

pected enrollments from the previous year, but did indicate some geographic redistribution. Later regular studies in the fall tended to confirm these projections, with the New England and the South Atlantic states showing some decline, while the Mountain and Southwestern states showed some increases in enrollments.

In May 1976 the division began a series of employment follow-up studies with the support of The American Physical Society. These studies are aimed at examining the employment paths, attitudes and expectations of mobile physicists. The first study of mobile junior faculty from selected universities was conducted in the fall of 1976, particularly concentrating on what happened to individuals who did not receive tenure at their institutions. Other studies will be dealing with industrial physicists, with postdocs and with physicists who have recently left academic employment. The studies will be com-



Univac 90/30 computer, delivered to AIP's headquarters in July 1976. By the end of the year 90% of the accounting activity previously handled

by the Univac 9300 was converted to run on the new computer, and the subscription-fulfillment operations were about 75% converted and tested.

pleted by summer 1977.

The *Directory of Physics and Astronomy Staff Members* continued to expand. In addition to faculty at universities and colleges, the 1976-77 edition included 4000 staff members at 39 US Federally Funded Research and Development Center installations and 3000 staff members at 27 Government laboratories. This was the second year for inclusion of FFR&D staff and the first year for the inclusion of the staff of Government laboratories. The Directory lists a total of 22 000 staff.

Membership directories were prepared and edited for the American Astronomical Society and the American Association of Physicists in Medicine in cooperation with the publications division.

Manpower placement. In ongoing activities, the Placement Center held at the January 1976 APS-AAPT meeting in New York showed a doubling of both registrants and employers present, as compared with those at the Anaheim meeting in 1975. Activity at the April APS meeting showed little change from 1975.

The level of activity of the AIP Employment Referral Service, which conducts searches of registrants for employers, continues to be fairly low.

Nevertheless, there are signs of increased activity in placement generally. AIP's *Summary of Open Positions*, aimed at bringing opportunities for employment to the attention of job seekers, was issued

with increasing frequency—now at least once a month. Copies are sent to designated Employment Information Officers in colleges, universities and national laboratories, as well as to the registrants with the Placement Service. A survey of over 200 institutions listed in the *Summary* was conducted in 1976. Somewhat over 100 responses showed that half of these had in some way filled their open positions through AIP interaction.

Society of Physics Students. Membership of SPS increased by over 17% in the spring of 1976 to a record high: 6100 members. The expected drop in the fall reduced the number to 5800, but still left a net 12% membership increase for the year. Chapters of SPS can now be found on 460 campuses in the US and Canada. The Society held twelve regional meetings during 1976.

Alumni of Sigma Pi Sigma, the honor society component of SPS, continued to give strong financial support to both the general program and the Sigma Pi Sigma Trust Fund; contributions came from nearly 5000 alumni. The SPS-Bendix Awards (for activities to popularize physics) continued to support chapter projects and, thereby, promote interest in physics.

Career information. Among the publications issued to provide information in physics and astronomy was 1976-77 *Graduate Programs in Physics, Astronomy and Related Fields*, the first in what

is expected to be a series of annual publications. Containing information on almost 200 graduate departments, the book was distributed free to all North American departments offering at least a bachelor's degree in physics or astronomy. Also prepared in 1976 (for publication early in 1977) was the brochure *Planning for Graduate Work in Physics*; it will help students decide which graduate school to attend, what to do in preparation for graduate school, and will, to some extent, tell them what to expect when they get there.

Administration and Special Activities

The Institute welcomed the ninth society to its list of Member Societies in 1976 with the election to full member status of the American Vacuum Society. AVS had been an Affiliated Society since 1963.

As a result of other actions by the Societies, two constitutional amendments were approved. One of them now makes AIP's Secretary an *ex officio* member of the AIP Governing Board and of its Executive Committee. The second relates to classes of membership in AIP. This amendment raises from 400 to 800 the minimum number of individual members required for an organization to become a Member Society or Associate Member Society of AIP, and also eliminates representation on the AIP Governing Board by any Associate Member Society. A

third amendment, submitted to the Member Societies, would have eliminated specific mention in the constitution of the sum "one dollar per member" as the annual dues to the Institute from Member Societies. By early 1977 it was clear that such an amendment would fail.

All committee appointments in 1976 were made on the basis of recommendations of a nominating committee of the Governing Board. Advisory and policy committees now report directly to the Board. Various committees have been mentioned throughout this report, and many of the programs reflect their recommendations.

A number of changes in the internal structure of AIP occurred in 1976 as a result of Governing Board actions. The manpower division became two divisions, manpower statistics and manpower placement. Beverly Fearn Porter was named Director of the former; a director of manpower placement was still being sought at year's end.

The education division at Stony Brook was discontinued at mid-year. Its information pool is being continued by the American Association of Physics Teachers. The Society of Physics Students, formerly the principal component of the education division, continues to be administered by Dion W. J. Shea, former Director of the education division.

The present size of the AIP staff remains approximately 355. Of these, 275 are in three locations in New York City and 80 at Stony Brook, Long Island. Changes in location are, of course, anticipated for many employees with the purchase of the building at Woodbury, and staff in the Personnel Office will assist in the transition. As part of on-going activity, that office is in the process of preparing new job descriptions, updating AIP salary structure and continuing follow-up interviews of all new employees who have completed three months of service.

Building plans. The AIP *ad hoc* Committee on Building Plans, chaired by H. R. Crane, recommended to the Governing Board that the Institute acquire a building and site at Woodbury, Long Island, while maintaining AIP's headquarters in Manhattan. The Board gave its approval, and AIP expects to take title to the Woodbury property in 1977. An architectural firm has been engaged to recommend the kind of alterations that will be needed to adapt the building for AIP needs.

Several new locations were considered for the headquarters building, as part of a broader range of planning in which the Board explored the concept of a Center for Physics housed in Manhattan. Such a Center would encompass projects related to the public understanding of physics, in addition to serving as executive offices for AIP and some of the Member Societies. A summer study by Alex Harvey of Queens College resulted in a



On the way to complete, in-house, computer-controlled photocomposition. Datapoint mini-computers (as seen in this photograph) provide input to AIP's Videocomp phototypesetter, delivered early in 1977. On order are software programs for mathematical composition and a system of editing terminals that will eventually replace the Datapoints and provide greatly increased flexibility.

report on the concept, which was accepted with thanks by the Board in October. Current AIP plans, however, are to remain in the existing building on East 45th Street, at least for the time being, upgrading it to the extent necessary and feasible to accommodate staff brought into the building from leased Manhattan space as those leases expire and as other staff members move to Long Island.

Corporate Associate activities. A new Corporate Associates Advisory Committee, under the chairmanship of Frank E. Jamerson, of the General Motors Corporation, met twice in 1976. Its efforts included planning the annual AIP Corporate Associates meeting—a meeting that provides one means of improving and fostering communication between industrial and academic physicists. The meeting was held 8–9 November at the Research Laboratories of the General Motors Corporation in Warren, Michigan, with the theme "Physics in Industry." Comments on this meeting (the first to be held at an industrial site) were highly favorable and included endorsement of the concept of holding the meeting in a variety of settings.

Assembly of Society Officers. The 1976 Assembly was held in New York City on 8 October, with Arthur Schawlow (OSA) as Chairman and W. W. Havens, Jr (APS) as Secretary. One part of the meeting was devoted to briefings on AIP member-related activities; the second part dealt with problems related to society

meetings. The Assembly recommended that AIP take the lead in the pooling of information on techniques in the handling of meetings and make it available to all Member Societies.

Awards. An AIP award not already mentioned in earlier sections of this report is the Dannie Heineman Prize for Mathematical Physics, which was given in cooperation with The American Physical Society. The 1976 winner was Stephen W. Hawking, and he received his award at the joint APS–AAPT meeting in February. The Heineman Foundation advised AIP that it intends, starting in 1977, to increase the amount of this award from \$2500 to \$5000.

Finances

The Institute ended the year 1976 with a net income of \$962 091; details can be seen in the accompanying Summary Statement of Operations.

Total income, including activities carried on for member organizations amounted to \$17 041 476, while total expenses amounted to \$16 079 385. The publishing operations accounted for the bulk of income and expense. A major portion of the net income for the year resulted from an increase in publishing income, which was not accompanied by a commensurate increase in expense.

The total assets of the Institute amounted to \$9 363 004, as reflected on the accompanying Balance Sheet. □