The AIP in 1966

During the past year the institute acquired a new director, three program heads and a Washington representative, says the recently completed annual report. It initiated new programs in information and education. The budget continued a 13% annual increase, and expanding publishing and service operations forced a move of some activities into quarters outside the institute-owned building.

by Bernard Hodes

APPOINTMENT OF a new director, initiation of several new programs and continuing expansion were characteristic of the American Institute of Physics in 1966. The annual report, just issued by Ralph A. Sawyer, who was acting director during most of 1966, also calls attention to the appointment of several persons to key positions in the organization. While most activities of the institute continued as they have been conducted in past years, a major reorganization occurred in information and documentation.

The year was markedly affected by the death of AIP director Van Zandt Williams in May. Following his election by the AIP governing board, H. William Koch on 28 Dec. became the new director. Other important personnel changes also occurred. Arthur Herschman, on leave from *The Physical Review*, and Miles Libbey of the Mitre Corp. assumed direction of new information programs. Arnold Strassenburg came from the University of Kansas to direct the Education and Manpower Division. R. Hobart Ellis Jr became editor of PHYSICS TODAY. AIP extended its activities to Washington, D. C., naming Dwight Gray, formerly of the Library of Congress, as the institute representative in the capitol.

Continuing a trend in which cash disbursements have grown at an average annual rate of about 13% over the last ten years, AIP disbursed more than $8.8 million in 1966. Total staff rose from 157 in 1965 to 175 in 1966. Two new programs grew out of the old documentation research project: one dealing with information analysis and retrieval and another with information planning. In education and manpower, Strassenburg launched new secondary-school and college-physics programs. Hugh Wolfe, head of publishing operations, laid plans for computer-based composition of AIP journals. The Public Relations Division, under Eugene Kone, began a joint program to furnish news packages to weekly newspapers. Meanwhile, as AIP activities continued to expand, advertising and editorial departments were moved to rented quarters outside the institute building, and an AIP property committee worked to try to satisfy space requirements that will approximately double in the next ten years.

During the year, the institute published more than 53 000 text pages and increased facilities for typesetting and printing. The Education and Manpower Division issued its new report on physics manpower; regional counselors continued to help high-school teachers and visiting scientists made over 250 visits to small-college departments. In addition AIP Student Sections increased to 273 and the placement service helped 1070 registrants. The Center for History and Philosophy of Physics received grants for a study of its own future activities and for conferences on the history of contemporary physics. The Public Relations Division manned press rooms at six society meetings and organized two seminars for science writers.

Service operations included some 42 000 member renewal bills, 18 000 nonmember renewal bills and more than 3.2 million mailing labels to cover 211 000 subscriptions. At the same time, AIP is endeavoring to bring its Corporate Associates into closer association with institute activities. During the year AIP surveyed the associates on a possible coöperative pre-college education project.

"These modest efforts at the present time," says Koch, "will enable us to develop an in-house competence

Corporate Associates

American Institute of Physics

The Corporate Associates of the American Institute of Physics are a group of corporations, institutions, and laboratories who believe it is valuable to them and to America to maintain a vigorous advance in the physical sciences. By their membership dues they aid the Institute significantly in carrying out its purpose: the advancement and diffusion of knowledge of the science of physics and its application to human welfare. The Institute is grateful for their assistance.

CORPORATE ASSOCIATES OF THE INSTITUTE

Academic Press Inc.
Addressograph Multigraph Corporation
Aerospace Corporation
Airborne Instruments Laboratory
Allegheny Ludlum Steel Corporation
Allen-Bradley Company
Allis-Chalmers Manufacturing Co.
American Cyanamid Company
American Gas Association
American Machine & Foundry Co.
American Oil Company
American Optical Company
American Science and Engineering Inc.
Ampex Corporation
Armco Steel Corporation
Armstrong Cork Company
Avco-Everett Research Laboratory
Avco Space Systems Division
Baird-Atomic, Inc.
Ball Brothers Research Corporation
Barnes Engineering Company
Battelle Memorial Institute
Bausch & Lomb Incorporated
Beckman Instruments, Inc.
Bell & Howell Research Center
Bell Telephone Laboratories, Inc.
Bendix Corporation
The Boeing Company
Bolt Beranek and Newman Inc.
Borg-Warner Corporation
The Budd Company
The Carborundum Company
The Carpenter Steel Company
Caterpillar Tractor Company
CBS Laboratories
Celanese Corporation of America
Chemstrand Research Center, Inc.
Chevron Research Company
Chrysler Corporation
Clevite Corporation
Collins Radio Company
Conductron Corporation
Continental Can Company, Inc.
Cornell Aeronautical Laboratory, Inc.
Corning Glass Works
The Detroit Edison Company
Douglas Aircraft Co., Inc.
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
Eastman Kodak Company
Electronic Associates, Inc.
Englehard Industries, Inc.
The Eppley Laboratory, Inc.
Esso Production Research Company
Fairchild Camera & Instrument Corp.
The Firestone Tire & Rubber Co.
Ford Motor Company
General Aniline & Film Corporation
Photo & Repro Division
General Dynamics Corporation
General Electric Company
General Motors Corporation
General Precision, Inc.
General Radio Company
General Telephone & Electronics
Laboratories, Inc.
The Gillette Company
The B. F. Goodrich Company
The Goodyear Tire & Rubber Co.
W. R. Grace & Co.
Grumman Aircraft Engineering Corp.
Gulf Research & Development Co.
Halliburton Co.
The Harshaw Chemical Company
Hercules Incorporated
Hewlett-Packard Company
Hughes Aircraft Co.
IIT Research Institute
Institute for Defense Analyses
International Business Machines Corp.
International Harvester Company
Itek Corporation
ITT Federal Laboratories
Jarrell-Ash Company
Joslyn Mfg. & Supply Co.
Kelsey-Hayes Company
Kennecott Cooper Corporation
Knowles Electronics, Inc.
Kollmorgen Corporation
Kollsman Instrument Corporation
Leeds & Northrup Company
Leesona Moos Laboratories
Libbey-Owens-Ford Glass Co.
Arthur D. Little, Inc.
Litton Industries, Inc.
Lockheed Aircraft Corporation
LTV Research Center
McDonnell Company
McGraw-Hill Book Company, Inc.
Marathon Oil Company
Martin Company
Minnesota Mining & Manufacturing Co.
Mobile Oil Company, Inc.
Monsanto Company
Motorola Semiconductor Products
Division
The National Cash Register Company
North American Aviation, Inc.—Science
Center
Norton Company
Olin Mathieson Chemical Corp.
Outboard Marine Corporation
Owens-Corning Fiberglas Corporation
Owens-Illinois, Inc.
Parke Mathematical Laboratories, Inc.
Pergamon Press, Inc.
The Perkin-Elmer Corp.
Philips Laboratories, Div. of
North American Philips Co., Inc.
Phillips Petroleum Company
Pilkington Brothers Limited
Pitney-Bowes, Inc.
Pittsburgh Corning Corp.
Pittsburgh Plate Glass Company
Glass Division
Plenum Publishing Corporation
Polaroid Corporation
Princeton Applied Research Corporation
The Procter & Gamble Company
Radio Corporation of America
The Rand Corporation
Republic Steel Corporation
Reynolds Metals Co.
Scientific American
Shell Development Company
Sperry Rand Corporation
Sprague Electric Company
A. E. Staley Manufacturing Co.
Sun Oil Company
Technical Operations, Inc.
Texaco, Inc.
Texas Instruments Incorporated
Tibbetts Industries, Inc.
TRW Systems
Union Carbide Corporation
Union Oil Company of California
United Aircraft Corporation
United Gas Corporation
United States Rubber Company
United States Steel Corp.
Universal Oil Products Company
The Upjohn Company
Varian Associates
Vitro Laboratories
Division of Vitro Corp. of America
The Warner & Swasey Co.
The Welch Scientific Company
Westinghouse Electric Corporation
Whirlpool Corporation
Xerox Corporation
Zenith Radio Corporation

The American Institute of Physics cordially invites interested corporations and institutions to make application for Corporate Associate membership and will welcome their inquiries addressed to the Secretary.

AMERICAN INSTITUTE OF PHYSICS *335 East 45 Street, New York, New York 10017*

and permit us to make the proper decisions in the coming years. By a small effort now, we can insure proper service to physics as the number of physicists and the quantity of physics literature continue to grow."

Information activities.

As the fastest growing operation of the institute, the information program represents the AIP effort to explore and develop an information system for physics. An advisory committee, organized in late December, of representatives of the member societies, will be asked to identify the information problems and interests of the societies and will be called on to evaluate AIP information activities. Since mid-1966 two phases of the project have been administered under the information analysis and retrieval program and the information planning program.

Analysis and retrieval. The first of these new programs, supported by the National Science Foundation, is studying elements for a physics information system. These elements include development of a comprehensive index system as well as experiments to test the performance of this index in retrieving physics information. With greatly increased staff, the projects will tie in with the publication-division program of computer-composition experiments.

During 1966, the project under Herschman progressed toward developing a unified journal index for all AIP journals. It is hoped that this indexing system will be adopted by *Physics Abstracts*. A detailed revision of the subject headings in *Physics Abstracts* was made by the publishers and this revision was put into machine-readable form by AIP. Listings by subject field were produced by computer, and physicists in the UK are reviewing in 1967 the headings by field of physics.

In addition, project scientists have been developing an index for physics suitable for a computer retrieval system. They have produced thesauri for use in computer retrieval experiments in chemical and plasma physics. Coöperating in the experiments are the APS Divisions of Plasma Physics and Chemical Physics.

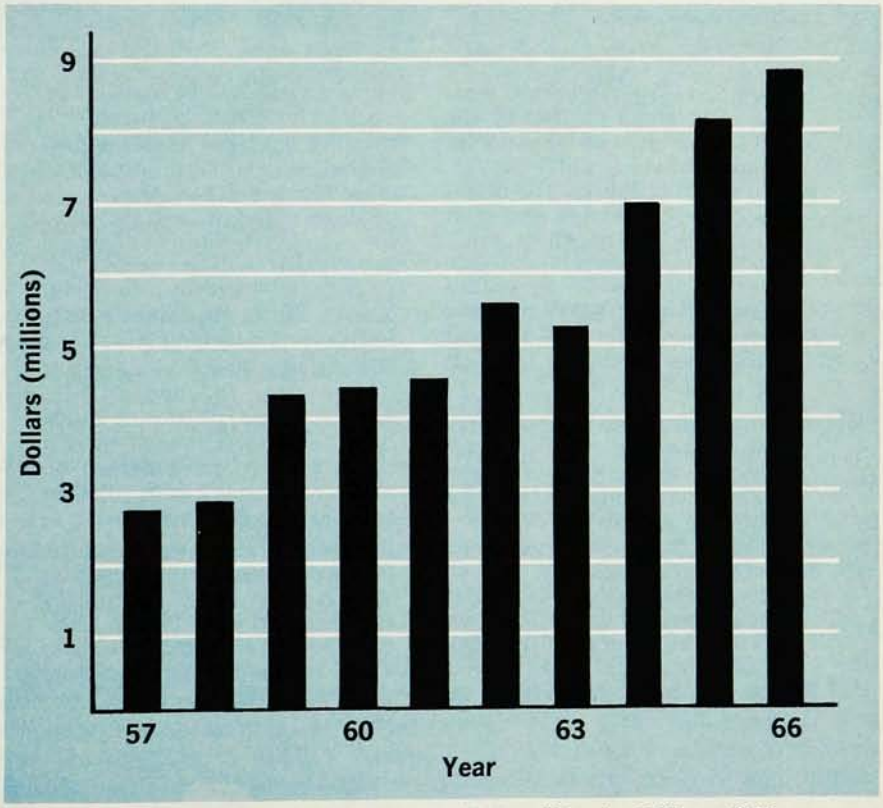
Compatibility with other information systems was the subject of joint experiments with Chemical Abstracts Service, Institute of Electrical and Electronics Engineers and *Nuclear Science Abstracts*. These experiments cover development and comparison of indexing vocabularies, testing of indexing and determining overlap of services. The project also used the Technical Information Program (TIP) of MIT to test the effectiveness of the TIP retrieval system. This test was conducted by compiling a laser bibliography that appears in the *Journal of the Optical Society of America*.

Current-awareness methods and requirements as well as users' comments on *Current Papers In Physics* were studied in both the US and UK. Finally, a study to evaluate the Universal Decimal Classification, an indexing language for a mechanized reference retrieval system (funded by NSF in 1965), was added to the information analysis program in October.

Information planning. The other new program, under Libbey, covers exchange of information before distribution in archival form and new patterns of initial distribution for published literature. Its five specific concerns are: information patterns of research physicists, current-awareness services, selective dissemination of information, information exchange in the invisible colleges and evolution of a system concept.

As its first project, the program, with AEC support, studied a proposal to set up a centralized preprint distribution system in theoretical high-energy physics. Based on two separate questionnaires distributed to high-energy theorists and preprint librarians, the study concluded that an experiment with centralized preprint distribution is clearly desirable, but that great caution must be exercised in its execution. Consequently a two-step experiment will be proposed that is designed to run for 18 months. The first step would provide a centralized preprint announcement service and directory of high-energy theorists. The second would add an experimental distribution system designed to introduce speed and efficiency into informal communication.

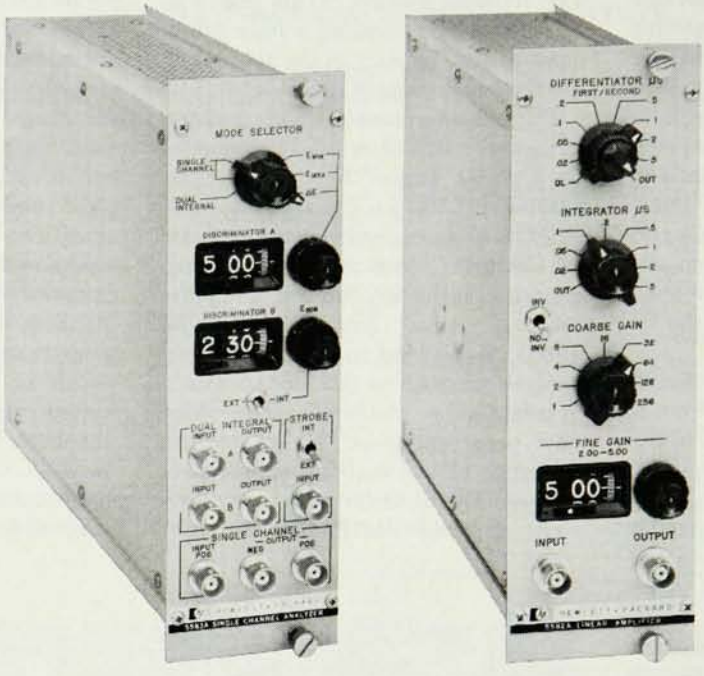
These proposals will now be studied



AIP CASH DISBURSEMENTS rose from $2.75 million in 1957 to $8.85 million in 1966, at an average annual growth rate of about 13%. —FIG. 1

First, the AEC set NIM standards.

Now HP is setting performance standards.



These first Hewlett-Packard modules meet standards set by the AEC Committee on Nuclear Instrument Modules (TID-20893). So do a lot of others. The difference is, HP modules also meet Hewlett-Packard standards: every new instrument must make a genuine contribution to the science of measurement. We've followed that philosophy for the 1500-plus instruments we already make. It goes for nuclear, too.

The 5583A Single Channel Analyzer is the most versatile ever made. There are two basic modes of operation: single channel for pulse height analysis; dual integral where the discriminators operate independently of each other. Outputs are available triggered from both the leading edge and the trailing edge of the input signal. Inputs and switches provide for use of internal or external gate and strobe signals, and even for external E_{min} sweep.

The 5582A Linear Amplifier provides maximum flexibility. It has delay line and RC shaping, single or double. Delay lines are plug-ins and are temperature compensated. It has both coarse and fine gain control, range 2 to 1280. Best of all, it's the lowest priced instrument of its kind.

For the time being, you can put the modules in anyone's bin. They're compatible with other NIM units. Soon, though, there'll be another HP contribution: a bin and power supply with superior cooling. This is only the start.

For information on Hewlett-Packard nuclear instrumentation, call your Hewlett-Packard field engineer. Or write to Jim Sheldon, Hewlett-Packard, Palo Alto, Calif. 94304. Europe: 54 Route des Acacias, Geneva.

Model 5583A
Single Channel Analyzer

Single channel and dual integral operation for maximum versatility
Input 50 mV to 10 V
200 nsec multiple pulse resolution
Internal, external strobed and/or gated operation
Price, $550

Model 5582A Linear Amplifier

Delay line and RC shaping, single or double for maximum flexibility
Plug-in delay lines, temperature compensated
Crossover walk $< \pm 0.5$ nsec
Rise time, typically 25 nsec
Integral linearity $< 0.3\%$
Noise $< 15\ \mu$V rms
Price, $550

HEWLETT hp PACKARD
An extra measure of quality

2563

NEW DIRECTORS

H. WILLIAM KOCH
Director of AIP

ARNOLD STRASSENBURG
Director of Education and Manpower

ARTHUR HERSCHMAN
Director of Information Retrieval

MILES LIBBEY
Director of Information Planning

by the new advisory committee on the AIP information program. If the committee endorses them, a limited information exchange may be initiated.

Publishing

A five-year trend of about 15% average annual growth rates continued in 1966 for total journal pages published by AIP (exclusive of translations). By the close of the year the institute had published 53 040 text pages and 2980 advertising pages in the 16 journals and three bulletins and programs of AIP and member societies, (exclusive of translations). (In 1965, totals for 14 journals and four bulletins and programs were 45 440 text and 2634 ad pages.) During the year, AIP became publisher of *Applied Spectroscopy* for its affiliated society, the Society for Applied Spectroscopy, and of *Applied Optics* for the Optical Society of America.

The translation program is also expanding. In 1966 AIP published translations of 21 750 pages in 11 Russian journals, (17 774 pages in 1965) including *Optics and Spectroscopy*, (which it publishes for OSA) and the entire volume 1 (1956 Russian original) of *Soviet Physics—Crystallography*. In addition the 1966 *Acta Physica Sinica* issues are being published as monthly cover-to-cover translations of the *Chinese Journal of Physics* (Peking). The annual report also noted interesting changes in the institute's nonarchival publication PHYSICS TODAY. Under its new editor, R. Hobart Ellis Jr, many physicists were consulted to find out the kind of magazine physicists want and need. Two new sections were added; Physics and Government, and Meetings, while the Letters department was expanded. During 1966 the magazine contained 1750 pages (811 text, 939 advertising) compared with 1515 in 1965 and 1438 in 1964. Its circulation is approaching 50 000.

Increasing size of AIP publishing activities has resulted in expansion of facilities available for conventional typesetting and printing. At the same time, the division under Wolfe has investigated new techniques, especially computer-based photocomposition for publication of journals and information processing. Late in the year AIP received an NSF grant that will permit pilot operation involving initial keyboarding of text, bibliographic and reference data, index terms and abstracts into Flexowriter tape. Following this process, a computer operation will generate tape for photocomposition and for auxiliary uses of the machine-readable record, including abstracting, index manipulation and information retrieval.

Because of the inability of AIP printers to keep up with the flood of scientific papers, lateness of journals was characteristic in 1966. Consequently, AIP has added several new sources in addition to Lancaster Press (the institute's prime printer). The total number of typesetting and printing concerns involved in the AIP operation in 1967 will be 12. Under new arrangements, one issue of the *Bulletin of the American Physical Society* was composed by typewriter and printed by offset in 1966, and this method will be used for most of the 1967 *Bulletin* issues. In addition, AIP began composition of the *Journal of Mathematical Physics* in Northern Ireland late in 1966. Printing will be done by offset from reproduction proofs, starting with the March 1967 issue.

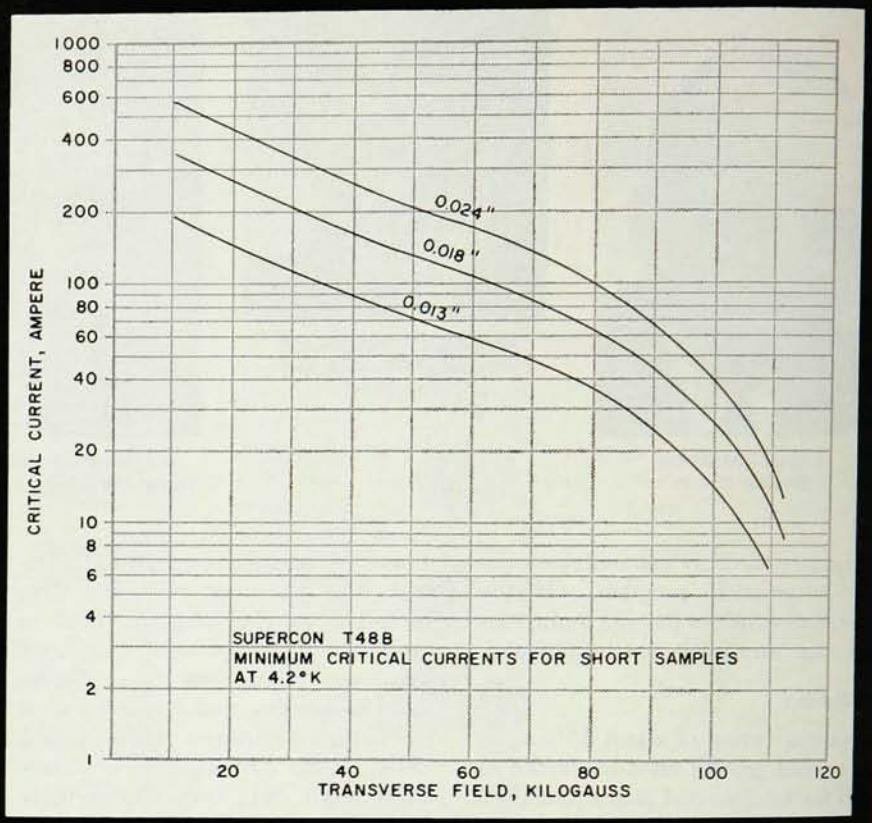
Education and manpower

Stemming the tide of decreasing physics enrollments was a major concern of the Education and Manpower Division during 1966. The percentage of undergraduate physics majors continued to decline and their absolute number is expected to decline for the first time in the near future. These facts were pointed out in *Physics Manpower 1966, Education and Employment Statistics*, issued by the manpower-statistics project. Accordingly Strassenburg, the new division head, has planned a new college physics program for 1967. The aim of this project will be to improve the quality as well as the vigor of undergraduate curricula. One method of achieving this goal will be to encourage mutual assistance among small, isolated departments.

To help increase the supply of qual-

THIS IS IT...SUPERCON T48B

- METALLURGICALLY BONDED COPPER JACKET
- HIGH GUARANTEED CURRENT CAPACITY
- CRITICAL FIELD ABOVE 120 KILOGAUSS
- HIGH CONDUCTIVITY COPPER
- EXCELLENT MECHANICAL STRENGTH
- CONVENIENT FLEXIBILITY
- STABILIZED CABLES
- INSULATED WIRES



New Supercon T48B is an excellent superconductor for fields up to 100 kilogauss.

It provides a combination of high current, stable performance, physical ruggedness and strength not previously achieved.

Supercon T48B is an improved version of the well-proven Supercon T48 (niobium 48% titanium) alloy introduced by the Supercon Division in 1965. While having an elemental composition very similar to Supercon T48, the new material carries higher short sample currents at all field levels.

Simultaneously, stability has been improved through the metallurgical application of a jacket of pure copper integrally bonded to the superconductive core. The high electrical and thermal conductivity and the excellent bonding of this jacket combine to produce the improved performance of the new material.

Supercon T48B provides the same 122 kilogauss critical field, 10.5°K critical temperature, high tensile strength, ruggedness, and flexibility of Supercon T48. Like all Supercon wire, T48B can be wound and rewound and can be cycled time and again between cryogenic and room temperature levels without damage or deterioration.

Supercon T48B wire is available in three standard sizes having diameters of .013″, .018″ and .024″ (.33mm, .46mm and .61mm) including the copper jacket. The wire can be supplied insulated with a tough coating of Formvar* polyvinyl formal resin noted for its dielectric strength. It can also be supplied stranded by itself or with copper wire into a variety of cable configurations wholly or partially stabilized to provide pre-determined current capacities of hundreds or thousands of amperes.

If you would like to have a copy of the Supercon T48B specification sheet, or if you would like information about any of the other Supercon products, please write or call.

*Trademark of Shawinigan Resins Corporation

SUPERCON DIVISION
NATIONAL RESEARCH CORPORATION
A SUBSIDIARY OF NORTON COMPANY
9 Erie Drive, Natick, Massachusetts • 01760

ified high-school physics teachers is the purpose of the new secondary-school program. This activity will focus on improving teacher competence through in-service and preservice education programs.

During 1966, the sustaining programs of the division were also active. AAPT-AIP Regional Counselors continued to assist high-school teachers. More than 160 visiting scientists made 261 visits to small college departments during the 1965–66 academic year. In addition, a pilot program of 19 consultants is providing opportunities for continuing relationships between colleges and advisors. AIP Student Sections, serving over 5000 students, added 19 new chapters in 1966 and now total 273. AIP also arranged special lectures for section members at three major society meetings and again operated a competition among section chapters for research grants contributed by the Bendix Corporation.

During the year, the National Register project processed 40 000 questionnaires on the education and employment of physicists. The AIP placement service served 1070 registrants. In addition, the division issued many publications, including several issues of *Educational Newsletter, International Newsletter,* as well as *Directory of Physics Faculties, 1966–67* and *Checklist of Books and Periodicals for an Undergraduate Physics Library.*

Table 1. Journal, Dues and Subscription Fullfillment Operations

Operations	*Income*	*Expenses*
For member societies, including services	$3 386 667	$3 386 667
For AIP and other archival publications	2 867 149	2 697 015
The Review of Scientific Instruments (excl. adv.)	204 964	171 247
The Journal of Chemical Physics	629 304	624 262
Journal of Applied Physics (excl. adv.)	418 253	412 192
The Physics of Fluids	182 508	188 947
Journal of Mathematical Physics	138 851	167 748
Applied Physics Letters	92 593	77 118
Soviet translation journals	727 650	581 475
Miscellaneous	7 384	8 384
Physics Abstracts handling	109 743	109 743
Advertising and exhibits (handling, printing costs)	355 899	355 899
Totals	$6 253 816	$6 083 682

* Includes only that part of income needed to balance expenses.

Table 2. Operations Supported by Grants

Operations	*Income*	*Expenses (Including overhead)*
Publishing		
Acta Physica Sinica translation	$ 34 180	$ 34 180
Physics Information Activities		
Dissemination of Information	59 301	59 301
Study of Elements of Physics Information System	46 757	46 757
Informal Communication Study for High Energy Physicists	19 277	19 277
Universal Decimal System	59 680	59 680
Nuclear Science/Physics Abstracts Study	1 998	1 998
Public Information		
Seminars for science writers and weekly news	12 345	12 345
Education and Manpower		
Visiting Scientists Program	51 992	51 992
Precollege Physics Program (grant portion)	10 000	10 000
Physics register	50 900	50 900
Manpower studies	22 971	22 971
Regional Counselor Program (grant portion)	6 500	6 500
Student Sections (grant portion)	2 500	2 500
Miscellaneous	404	404
Center for History and Philosophy of Physics		
Source materials for research in recent history	19 479	19 479
American Academy-AIP Conferences on Contemporary Physics	1 036	1 036
Long-Range Planning Study	7 218	7 218
Handling of member-society grants	19 684	19 684
Totals	$426 222	$426 222

History and philosophy

Established in 1965, the Center for History and Philosophy of Physics assists scholars who study social development of modern physics and its intellectual impact. By 1966 an expanded center made a proposal to the Ford Foundation, which granted funds for a long-range planning study. The study has called on the knowledge of historians, philosophers, sociologists and physicists in a series of meetings and individual consultations. The American Academy of Arts and Sciences made a second grant to the center for a joint project with the academy. Funds are being used to prepare for a series of exploratory conferences on the history of contemporary physics, the first of which will be on nuclear physics. Meanwhile, the center is continuing its program of evaluating and preserving physicists' personal papers as well as cataloging and microfilming major collections. The center's oral history archive also grew during the year, adding over 70 reels of tape and 2500 pages of transcripts. The annual report notes that research use of center materials increased steadily during 1966.

With the addition of "philosophy" to its name, the library is now the Niels Bohr Library for the History and Philosophy of Physics. More than 300 volumes were received as gifts during 1966 and 400 new books were purchased. A project of the library is to acquire microfilm of international physics journals of the 19th and early 20th centuries.

Public information

During 1966, AIP initiated a joint program of science news releases for edi-

A NEW DIMENSION IN HIGHER SENSITIVITY HAS BEEN ADDED TO THE VERSATILE EG&G SPECTRORADIOMETER SYSTEM

A new series of high sensitivity detector heads has been added to the EG&G Model 580/585 Spectroradiometer System. These new detector heads, which incorporate photomultiplier tubes, complement the existing line of vacuum diode detector heads by providing approximately four decades of additional system sensitivity.

The Model 585-66 Detector Head, which encompasses a spectral range from 200-750 mu, permits measurements of irradiant powers as low as 9×10^{-13} watts/cm^2-mu and irradiant energies as low as 9×10^{-13} joules/cm^2-mu at 450 mu.

The Model 585-66 Detector Head, encompassing a spectral range from 700-1200 mu, permits measurements of irradiant powers as low as 7.5×10^{-10} watts/cm^2-mu and irradiant energies as low as 7.5×10^{-10} joules/cm^2-mu at 800 mu.

The new detector heads are provided with a regulated power supply and an internal calibration feature to ensure a stable sensitivity. Utilizing standards traceable to NBS, a complete 580/585 Spectroradiometer System is calibrated to its sensitivity versus wavelength thereby permitting absolute irradiant measurements of both continuous and pulsed (as fast as 1 ns) light sources.

Energy and average power measurements are obtained directly from the multi-decade meter of the Indicator Unit or from an external recorder.

Provision is also made for output to an oscilloscope for pulsed sources.

Applications with the new high sensitivity detector head include measurements of phosphors, chemical reaction, electroluminescence, emissivity and reflectivity of surfaces, biochemical analysis, and other low level signals.

For more detailed information write EG&G, Inc., 161 Brookline Avenue, Boston, Massachusetts 02215, telephone: 617-267-9700 TWX: 617-262-9317

EG&G INC.

EG&G's model 580/585 Spectroradiometer System with new high sensitivity detector head.

tors of weekly newspapers, in coöperation with the American Association for the Advancement of Science, American Chemical Society and American Institute of Biological Sciences. The division also manned press rooms at six major society meetings and organized two seminars for science writers; on cosmology and atmospheric physics. Twelve news releases describing recent developments in physics as reported in AIP and member-society journals were issued by the AIP journal project. The division was also responsible for the internal publication, *Inside AIP*, and several hundred releases concerning visiting scientists and regional counselors. More than 85 000 booklets dealing with careers in physics and physics information were also distributed.

Service operations

AIP served its member societies during the year through its continuously growing efforts in subscription and accounting services, dues billing, management of meetings and special society mailings. Approximately 42 000 member renewal bills and 18 000 nonmember renewal notices were processed, and more than 3.2 million mailing labels produced. Total subscriptions in 1966 of AIP, member society and translation journals were 211 000 compared with 188 477 in 1965. Because of increased card-handling activity and need for more speed, AIP is converting its data processing operations to magnetic tape. Delivery of a UNIVAC 9300 computer is expected in late 1967.

Growth of fiscal operations over the last ten years is shown in figure 1. Cash disbursements have risen from $2.75 million in 1957 to $8.85 million in 1966, representing an average annual rate of growth of about 13%.

Finances

During 1966 the institute's total gross income was $7 432 576, and its total expenditures $7 367 271. Therefore net income was $65 305. In 1965 total expenditures were $6 607 562 or $759 709 less than in 1966. Income in 1965 was $6 780 515 or $652 061 less than in 1966. The 1965 net income was $172 953 or $107 648 more than the net income in 1966.

Journal, dues and subscription-fulfillment operations in 1966 are summarized in table 1. They account for 83% of the institute's total expenditures. Operations of the member societies are charged at cost and are therefore balanced by income. The costs of the AIP-owned archival journals are offset by income from subscriptions, back-number sales and page charges. In 1966 income exceeded expense in most cases with a considerable net realized on Soviet translation journals.

Table 2 summarizes operations supported by grants which come mainly from the National Science Foundation. Grants received by the institute in 1966 amounted to $426 222, a decrease of 4.2% from 1965.

Sources of income for the institute's general operations are given in table 3.

Table 3. Sources of Income for General Operations

Member-society contributions	$ 73 025
Corporate Associate dues (net)	113 942
Advertising and exhibits (net)	441 896
PHYSICS TODAY	31 130
Pamphlet sales, including placement-service book	16 043
Royalties	6 642
Investments	29 967
Student Sections dues (net)	3 470
Receipts for accounts of other organizations	25 461
Miscellaneous	10 962
Total	$752 538

Table 4. Expenses for General Operations

PHYSICS TODAY	$271 276
Physics Information Activities	
Administration	28 968
Study of elements of physics information system	4 428*
Public relations	104 273
Education and manpower	
Administration	75 214
Precollege Physics Program	10 308*
Regional Counselor Program	17 994*
Student Sections	29 492*
Placement service	20 692
Manpower activities	1 000
Center for History and Philosophy of Physics	68 744
Liaison and general administration	158 676
Pamphlets and AIP literature	40 841
Disbursements on behalf of other organizations	25 461
Total	$857 367

* Excluding expenses chargeable to grants.

Such operations include those supported by unrestricted income of the institute, which comes principally from the net from advertising, Corporate Associate dues and a tithe of member-society dues. This income supports the basic AIP divisions: public relations, education and manpower and the Center for History and Philosophy of Physics. It also covers general administrative, liaison and development activities. General operating expenses for the institute during the previous year are shown in table 4.

PHYSICS TODAY is included in the general operations because it is nonarchival. Its publication cost in 1966 was $271 276, and its income from advertising and subscriptions was $352 062. The magazine thus provided a net income of $80 786. □