

Each year the AIP makes its annual reports available to all members of the Institute.



AMERICAN INSTITUTE OF PHYSICS

1947

Annual Reports

• REPORT OF THE DIRECTOR

Physics Today

It is appropriate to borrow the title of the new "magazine for all physicists" to sum up certain aspects of the situation of physics today. Presumably the new magazine will continually do just that, and the title is well chosen.

The year 1947 has brought resumption of fundamental research on a large scale. The growing number of pages in the archive journals of physics testifies to that. The training of physicists has been resumed at an accelerated rate. A recent survey shows that the wartime deficit is being reduced more rapidly than had been thought possible. It is not clear that the training offered is as good as it used to be, but it is noteworthy that only the most able aspirants can now obtain admission to graduate schools. This is better than to have fine educational resources directed to weak candidates. There are as yet more jobs open to physicists than there are physicists to fill them but the situation is less unbalanced than it has been.

Free research proceeds in spite of international distrust and even though much financial support comes through military channels. Some very fundamental results of nuclear research have not entered the realm of general knowledge, but these are said to be relatively few in comparison with the results which are now freely disseminated. Unless public opinion takes a different turn—and turns politicians with it—we may be faced with security restrictions governing publication and employment in certain fields for a long time.

The coordinating organization of physicists for the advancement and dissemination of knowledge in their special field, namely the American Institute of Physics, completed in 1947 its reorganization and is now partly a federation of the Member Societies and partly an association of most professional physicists as individuals. The magazine for all members of the Institute and others interested in physics, *Physics Today*, is now taking definite form and will shortly present its first issue.

With a fine building from which to operate, an organization designed to knit members and activities closer together, and a medium for the exchange of information and ideas, physicists have in their Institute a mechanism to tackle the problems and opportunities of today and tomorrow. These are not few in number.

Problems and Opportunities

The progress which has been made in developing the Institute as a mechanism has been slow and the rate at which it can tackle new work will be limited because the staff is always preoccupied with currently operating the physics journals. The war brought many management problems, and now cost inflation has struck a staggering blow.

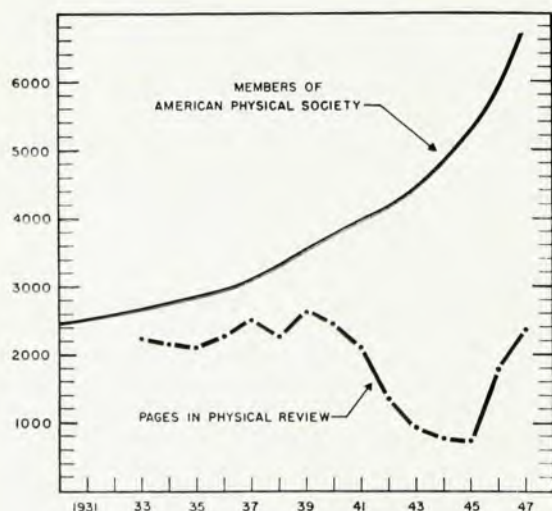
In 1947 alone increased costs for printing labor and paper stocks have raised our production bills by at least a third—on top of prior increases sustained since World War II ended. Until 1947 increased costs could

be absorbed because income from dues and subscriptions increased too and the number of pages to be published was far below normal. In 1947 the over-all publishing load, measured as pages in journals and programs, increased 18% over 1946 which in turn was 34% over 1945. This, in the face of so great an increase in costs, has suddenly confronted the Institute and Member Societies with more or less serious financial problems. The Institute's 1947 operations ran into the red.

Our first problem then is how to cut budgets, as we must in 1948, without losing the momentum we have gathered for better and expanded service to physics. Every effort, of course, will be made to increase advertising and subscription income. Increases in subscription price recently made for *The Review of Scientific Instruments* and *Journal of Applied Physics* barely meet the increased costs and do not provide for additional pages as was intended.

Financing Research Publication

The general problem of financing the publication of the results of research in physics is mild now compared with what is in prospect. A good measure of the obligation is to be found in *The Physical Review* because that journal has for years followed consistently a uniform policy of publishing everything acceptable, in a form as condensed as clarity permits. The number of pages in this journal from year to year is thus a true indication of publication requirements. A glance at the following figure will show that the annual flow of research reports is rapidly increasing, but that it is still far below any reasonable postwar estimate which takes account of the prewar rate, the rapid growth in American Physical Society membership, and the enormously increased rate of money expenditure for research.



Number of pages published in The Physical Review in comparison with the size of the American Physical Society

One can only conclude that the rapid growth in *The Physical Review* pages will continue for several years more. The editor estimates 3,000 pages for 1948. If 1947 was a close year financially for the American Physical Society, what will be the situation in 1950, even if costs climb no higher?

The other Member Societies and their journals face similar problems and it may be that the process of increasing dues and subscription prices will defeat its own purpose before it can be carried far enough to provide adequately augmented funds for the publication of research. Shall we then abandon our practice of publishing research results at a price permitting general dissemination to all interested persons? Shall we resort to the use of glorified digest journals accompanied by a system of microfilm distribution of fuller manuscripts on order? Perhaps, but this would be a retrogressive step and, in the end, probably no less costly to research workers and their institutions than the provision of enough funds to finance more pages in the journals as they now operate.

A more promising alternative is to develop a system under which an adequate part of all funds appropriated for research is devoted to the essential process and obligation of communicating the results throughout the research world. This obligation is well recognized and to those individuals and institutions who would otherwise be forced privately to print and circulate their results, the existence of cooperatively run journals of research is a great economy. Even if, through a per-page publication charge plan such as we operate in physics, they had to pay *all* costs up to the point where composed type lies ready on the bed of the printing press, they would still be spared the great cost of circulation. Furthermore, the assembly costs here referred to are lower per page in large, established journals than in independent brochures. The distribution of such journals, moreover, is wider and more effective than private circulation.

The per-page publication charge plan of the physics journals, which now passes on a small part of the actual assembly cost per page, is generally accepted by institutions of research in America with the notable exception of agencies of the government and some projects on contract with these agencies. Since much money for research currently comes originally from the government, these exceptions are most unfortunate.

It is held by many that nothing short of large lump subsidies from the government for scientific journals will meet their prospective needs. Perhaps a National Science Foundation will be established which could grant them. Such subsidies, however, would lend themselves to political pressure, would be totally vulnerable to changes in administrative procedures and personalities, and would invite bickering between journals and fields of science. It will be better for publication to be thought of in this connection as a small part of what a research grant is intended to pay for, the amount of payment to be proportioned to the number of pages required, and the journal of publication to be chosen by those who do the research.

Other Problems

It is only necessary to glance at the agenda of recent meetings of the Institute's Policy Committee to obtain a summary of many matters which are of concern to physicists. These range from the problem of raising high school standards in mathematics and physics to that of contributing to world organization for peace. They deal with vocational guidance, curricula, financial aid to students and research men, the over-all personal situation in physics, policies of government agencies affecting physics and possible services to biophysics and other borderline fields. Committees and officers continually study such problems and the Institute contributes to their solution insofar as it can. Members can be assured that they are not overlooked.

A special study has been made of systems for accrediting college physics departments. Government and industrial employers continually ask information about the quality of training provided. As employment opportunities for physicists increase, the risk also increases that degrees may not always represent the student achievement that they should. High standards of proficiency still prevail among physicists. They must be kept high. However, the Policy Committee feels that no system of accrediting departments has yet been developed which justifies its cost in money, time, and trouble. The Committee is now turning to the study and possible development of alternatives.

The Committee is also attempting to formulate a plan for the establishment of local sections of the Institute, primarily at colleges and universities and largely to aid the early development of professional esprit among student physicists. In other professions such local organizations have proved valuable. A way should be found to overcome financial barriers and to make such organizational adjustments as may be required to establish such sections.

The advancement of science is now officially a matter of national concern. In one form or another the federal government is certain to provide and administer funds for research, and in many ways set policies and create national attitudes vitally affecting science. The Policy Committee feels that the Institute should be ready in Washington to contribute information and advice needed by officers in charge of the development of government programs. It also feels that as far as possible such work should be done through the National Research Council because of its federal charter designating it as the non-Government agency to which the Government turns for advice in science. The Committee feels that the Institute should try to strengthen the Council's position as a co-operative agency of the various fields of science.

Advertising

In 1947 the modest yet effective efforts of the small advertising department staff secured twenty-nine additional pages of paid advertising which resulted in an increase in gross income of \$1,443 over 1946. Both gross income and net income exceeded the budgeted amounts. Net proceeds from advertising are disappointing, however, as compared with 1946 partly because of the increased

cost of printing the advertising pages and partly because an increase in our rates as of July 1, 1947 will become fully effective only on new contracts for 1948. It is encouraging that very few accounts, if any, have been turned away by the increase.

Placement

The growing importance of physics and the continued need of academic institutions and industry for qualified physicists is reflected in the experience of the Institute Placement Service. The number of employers (350) using the service was slightly more than last year, but there were twice the number of positions open (800). Slightly more than 450 registrants—about the same number as last year—sought positions through the Placement Service.

There is ample evidence that the Institute Placement Service is valued highly by its users. It is conducted as simply and informally as possible and no charge is made to employer or employed. Almost 1,000 interviews were arranged through Placement Service conducted at four meetings of the various Member Societies. This was in addition to the many contacts initiated and facilitated by mail and by inspection of the records at the Institute offices. The Placement Service sent to ninety academic employers alone over 900 qualification summaries selected on the basis of requests giving specific position-descriptions. About 200 summaries were sent to industrial employers.

A service of this kind is undoubtedly important and valuable in facilitating the full utilization and suitable placement of physicists. The Institute devotes considerable time and expense to this activity and should continue to do so to the extent that the limited funds available to it will permit. But if high costs of publication continue to be a heavy burden on the resources of the Institute, some way will have to be found to reduce the expense of conducting the Placement Service.

Institute Building

For some months in 1947, the Institute building was undergoing alterations to meet city safety requirements as to the fire stairway, and to arrange a corresponding exit to the street entirely on our own property and not subject to cancellation of an easement covering an adjoining passageway. Only by these steps could a permanent occupancy permit be obtained. The alterations were effected within the cost estimates and the desired permit has been issued. Two large rooms were also improved for office use and a general rearrangement of departments has been carried out, giving each much needed additional space and providing quarters for the editorial group of *Physics Today*.

The conference room and the Director's office were used in 1947 for twenty-one board and committee meetings, including such groups as the National Inventors Council, National Research Council Committee on the Solid State, Council of the Acoustical Society of America, and the Executive Committee of the American Association of Physics Teachers.

Respectfully submitted,

February 28, 1948

HENRY A. BARTON, Director

The report of the Director, printed above, makes little reference to organization or personalities in the AIP office. A significant event of 1947 was the appointment of Mr. Cleveland Norcross, formerly of the Office of Scientific Research and Development, to the new position of Assistant Director. His contribution to the efficient handling of the growing administrative burden of the Institute was considerable in 1947 and will be fully developed in 1948. He has thus far assumed supervision of the Editorial Department, the Advertising Department, the Placement Service, and a number of miscellaneous programs of current urgency.

These Annual Reports were originally presented on February 28, 1948 and describe operations in 1947. Now (April) it can be reported that the Institute's Advertising Department, headed by Miss Margaret Phillips, has achieved a notable increase in the first four months of 1948 both in pages sold and net income earned. Expanded emphasis is being given to the development of advertising, partly to maintain the progress made in *The Review of Scientific Instruments* and *Journal of Applied Physics*, and partly to realize fully the earning power of *Physics Today* in this respect. Mr. Norcross is devoting a large part of his time to this enterprise and to the development of non-member circulation for *Physics Today*.

The Institute's Subscription Department is headed by Mrs. Eileen Neuberger who has been an employee of the AIP longer than anyone except the Director. Her staff has grown from one to thirteen. Except for a minor set-back when the war cut off many foreign subscribers, the circulation of the physics journals has grown steadily. The extent of this growth is indicated in the following table:

Total Circulation: Members and Others

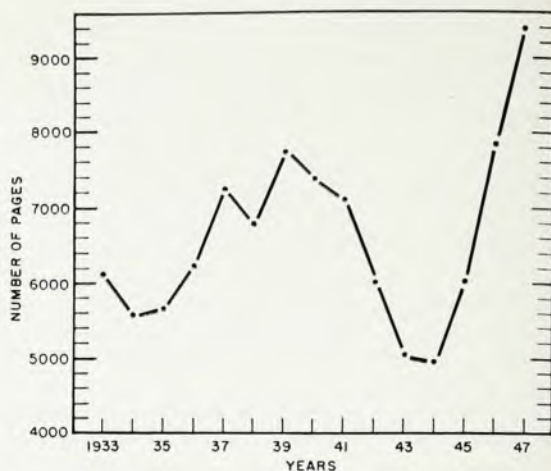
	1937	1942	1947
Physical Review	3,403	3,200	5,876
Reviews of Modern Physics	2,104	2,005	4,436
Journal of the Optical Society of America	1,266	1,897	3,238
Journal of the Acoustical Society of America	1,128	1,252	2,313
American Journal of Physics	1,127	1,405	2,794
Review of Scientific Instruments	3,412	3,336	5,461
Journal of Chemical Physics	812	948	1,845
Journal of Applied Physics	1,867	2,749	5,125

• REPORT OF THE PUBLICATION MANAGER

Although 1947 brought a lessening of some of the problems which had harassed the Editorial Department during and immediately following the war, there were still many difficulties to be overcome. It is a satisfaction to note, however, that most of these difficulties can be attributed to the growth of the Institute and to the increasing interest in its eight journals of physics research. The expansion in the number of pages published has been so rapid in the past year and a half that it has been difficult for the Editorial Department to keep up with it. A further handicap was the resignation, in June 1947, of Margaret Griffin Dunbar. Mrs. Dunbar had been with the Institute for fourteen years, first as Assistant Publication Manager and then as Publication Manager, and her experience and knowledge of Institute affairs have been sorely missed. It is the earnest endeavor of the present staff to maintain her high standards in the publications department.

Load

In 1947 the number of pages published in the eight journals increased 19% over the total for 1946. The total number of pages published was 9,390, as compared to 7,880 in 1946, the previous peak year. The prewar high was 7,780 in 1939. The following figure shows the total number of pages published since 1933:



Number of pages published in eight journals of physics research in 1933-1947

Schedules

Because of this greatly increased load, the journals fell further and further behind schedule. This was partly because the printer has not yet been able to obtain sufficient trained help and badly needed equipment to cope with his increased volume of work since the war. Therefore, after serious consideration by the editors and the Institute, and in consultation with the printer, it was decided to lengthen the schedules for each of the journals. This was done reluctantly, but it was felt that it would be better to attempt to have the journals out on the announced publication dates rather than to stay on the old schedule and have them consistently late. The former schedule called for approximately eight weeks of elapsed time between receipt of a manuscript in the Editorial Department and its appearance in a journal. This time has now been increased to approximately ten weeks. The schedule went into effect for the January 1948 issues, and it is therefore too early to determine how well the new schedule will work. It naturally will take two or three months to get it running smoothly, and some adjustments may prove necessary.

Personnel

The rapid turnover in personnel in the department proved to be our most serious problem in 1947. At the present time no one has been in the Department for more than a year, with the exception of the Publication Manager. As the volume of work increased, it became evident that more help would be needed, and one senior and one junior editorial assistant have been added. A full-time typist has also been added to the staff. Thus, the department now consists of two seniors, three juniors, and a typist, and it is hoped that this will be an adequate staff to handle the expected increase in volume of work in 1948.

Paper

The paper situation has eased somewhat. It seems fairly certain that there is enough to keep each journal going on its present stock.

Reprints

The reprint business is an ever-increasing one. The total number of reprint orders and publication charges handled in 1947 was 2,212, as compared to 1,340 in 1946. It is a satisfaction to report that during the last two or three months of 1947 the printer was able to cut down somewhat the time needed for the preparation of reprints. Orders are now completed about six or eight weeks after the issue is off the press.

Work for the Societies

In 1947 the Editorial Department prepared for the various Member Societies and Affiliated Societies of the Institute fourteen bulletins amounting to 304 pages, as follows:

- 6 bulletins for the American Physical Society
- 2 bulletins for the Optical Society of America
- 2 bulletins for the Acoustical Society of America
- 3 bulletins for the Society of Rheology
- 1 bulletin for the Electron Microscope Society of America

Outlook for 1948

Apparently there will be no lessening of the load in 1948. It looks as if we will publish approximately 10,800 pages in 1948 including advertising and cover pages, and the new journal. The number of issues will increase from eighty-eight to approximately ninety-nine, inasmuch as the American Journal of Physics will publish nine issues per year, beginning in 1948, rather than six as formerly, and the new journal, Physics Today, is to be published once a month. The Society of Rheology has ceased publication of its bulletin, but indications are that the other societies will publish the same number of bulletins in 1948 as they did during the past year.

Respectfully submitted,

RUTH F. BRYANS, Publication Manager

February 28, 1948

•REPORT OF THE ASSISTANT TREASURER

The report of the Assistant Treasurer for the year 1946 pointed out that increasing costs, particularly printing costs, would make it difficult to balance our budget for 1947. This prediction was borne out and for the first time since 1937 the Institute operated at a loss. The attached summary of operations shows that the regular operations of the Institute resulted in a loss of \$3,582.92, and that an additional sum of \$5,000.00 was appropriated from surplus for the purchase and installation of a mechanical addressing system, thus reducing our surplus at December 31, 1946 of \$91,494.76 to \$82,911.84, as shown in the attached Balance Sheet.

Although the actual deficit in operations for the year

1947 is not very large in amount, the trend shown is significant. While the gross income from advertising and subscriptions is steadily increasing, operating costs are rising at a higher rate. To point to just two examples, printing costs have increased approximately 65% and engraving costs 30% since 1945. While these are the two largest items of expense, other costs such as salaries, office expenses, etc., have also been subjected to substantial increases. In addition the number of pages published in the Institute journals has increased 50% in the past two years.

While the peak in price inflation may have been reached, it is doubtful whether any substantial reduction will be felt in the near future, particularly in the printing field, our largest item of expense. In view of this trend and the undesirability of reducing the services of the Institute drastically, it is probable that the operations for 1948 will show a further moderate loss. For the future, unless an expansion of income can be achieved, a further reduction of expenses will be necessary. In 1948, the expected launching of the new Institute journal, Physics Today, whose operations are not included in the regular budget, presents another financial problem. While the contributions received from industry thus far, to aid in the initial promotional expenses for the journal, have been generous, the original goal has not yet been reached. Unless the remainder is obtained the Institute may be forced to advance the additional necessary funds. This could reduce the working capital of the Institute to an unsatisfactorily low level.

With respect to the various tables of operations appended hereto, certain comments are in order. The income from journal subscriptions continued to rise and is indicated as follows:

	1946	1947	% Increase
Review of Scientific Instruments	\$19,242	\$21,674	12.6
Journal of Chemical Physics	16,054	18,308	14.0
Journal of Applied Physics	27,222	30,515	12.1

The net income from published articles increased approximately 50%, reflecting the higher publication charge and reprint prices effective May 1, 1947 and also the greater number of pages published in 1947. Net income from sale of back numbers decreased about 33-1/3% from 1946, due principally to a falling off in the demand from abroad.

The gross revenue from advertising increased in the amount of \$1,443, a 4% increase over 1946. However, higher printing costs nullified this increase and the net advertising revenue decreased \$2,957 from the previous year.

With respect to the reserve for building improvements which amounted to \$25,167.01 on December 31, 1946, it is well to point out that the various structural changes required by the City of New York have been completed and the cost was lower than had been anticipated. While all the contractor's invoices have not yet been received,

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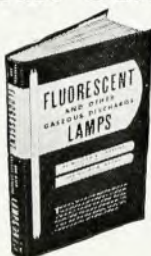
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it is estimated that the building reserve account will have a balance of \$10,000 after all bills have been paid. This amount will prove a welcome cushion in the event that any major repairs or renovations become necessary in the future.

Respectfully submitted,

T. VORBURGER, Assistant Treasurer

February 28, 1948

Table I—General Operations—1947

Income:			
Contributions from Founder Societies			\$13,697.04
Dues:			
Associates	\$9,448.00		
Associate and Sustaining Members	64.00	9,512.00	
Grant—Rockefeller Foundation		7,942.18	
Income—Investments		2,339.13	
Miscellaneous		958.88	
Total Income			\$34,449.23
Expenses:			
Salaries		\$17,011.80	
Travel Expense		3,051.76	
Office Expenses		2,196.57	
Building Operating Expense		1,100.00	
Publicity:			
Consultant's fee	3,000.00		
Office Salaries and Expense	1,341.86	4,341.86	
Accounting, Insurance, Legal		493.35	
Employees' Retirement Plan		1,814.97	
Miscellaneous		654.49	
Special Projects:			
Policy Committee			
Support of Office of Scientific Personnel	\$4,000.00		
Other Activities	3,942.18		
		7,942.18	
Placement Service:			
Regular Meetings	1,911.76	2,557.13	
		4,468.89	
Special Services—Societies	717.47	13,128.54	
Total Expense			\$43,793.34
Net Expense			— \$ 9,344.11

Table II

*Building Operating Expense and Cost of Furniture and Equipment
Year 1947*

Building Operating Expense:			
Wages		\$4,816.45	
Maintenance Services		423.00	
Heat and Electricity		3,063.33	
Supplies, Repairs and Water		435.83	
Insurance and Legal		511.24	
Easement		80.00	
		\$9,330.05	
Less: Charged to other Departments:			
General Operations	\$1,100.00		
Advertising Department	200.00		
Publications Department	2,000.00	3,300.00	
Net Operating Expense			\$6,030.05
Furniture and Equipment Purchased		2,018.90	
Repairs to equipment		53.16	
Total Expense			— \$8,102.11

Table III
Institute Journals and Advertising Department
Year 1947

	Review of Scientific Instruments	Journal of Chemical Physics	Journal of Applied Physics	Advertising
Income				
Subscriptions	\$21,674.45	\$18,308.22	\$30,515.56	
Other Income—Net	4,943.11	7,277.04	5,765.05	
Advertising Sales				\$37,051.06
	<u>\$26,617.56</u>	<u>\$25,585.26</u>	<u>\$36,280.61</u>	<u>\$37,051.06</u>
Expense of				
Publishing etc.	34,095.90	19,297.15	38,131.54	20,146.60
Net Income or Expense	<u>— \$ 7,478.34</u>	<u>\$ 6,288.11</u>	<u>— \$ 1,850.93</u>	<u>\$16,904.46</u>

Summary of Departments—Year 1947

	Net Income (i) Net Expense (e)
General Operations	\$ 9,344.11 (e)
Building Expense and Equipment	8,102.11 (e)
Institute Journals	3,041.16 (e)
Advertising Department	16,904.46 (i)
Net Operating Expense	<u>\$ 3,582.92 (e)</u>
Add: Appropriation for purchase of addressing equipment	5,000.00
	<u>— 8,582.92</u>
Surplus at January 1, 1947	91,494.76
Surplus at December 31, 1947	<u>\$82,911.84</u>

Table IV—Balance Sheet—December 31, 1947

Assets			
Current Assets			
Cash in Bank		\$91,267.28	
Petty Cash Funds		1,028.50	
Investments		99,763.21	
Dues from Societies:			
American Physical Society	\$1,154.52		
Optical Society of America	3,490.76		
American Association of Physics Teachers	1,385.45	6,030.73	
Sundry Debtors		16,346.66	\$214,436.38
Fixed Assets			
Land and Building	\$ 1.00		
Furniture and Fixtures	1.00		2.00
Deferred Charges		3,783.52	
		<u>\$218,221.90</u>	
Liabilities and Capital			
Current Liabilities			
Trade Accounts Payable		\$28,771.88	
Due to Societies:			
Acoustical Society of America	\$1,466.94		
Society of Rheology	176.62	1,643.56	
Sundry Credits to be refunded		2,399.04	\$ 32,814.48
Reserves			
Rockefeller Foundation Grant	\$ 687.01		
Building Repairs and Improvements	12,546.41		
Equipment	2,259.10		
Journal "Physics Today"	21,248.28	36,740.80	
Deferred Credits			
Subscriptions	\$60,824.28		
Associate Members' Dues	4,492.00		
Royalty on Book	438.50	65,754.78	
Surplus		82,911.84	
		<u>\$218,221.90</u>	

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