

THE NEW ORGANIZATION OF PHYSICS STUDENTS

The former student organizations merged to form the Society of Physics Students this year. Its leaders hope to expand the most successful programs and start new ones.

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"DON'T TRUST anyone over 30!" This slogan—so disheartening to the elderly but sincere teacher—indicates that youth has at last realized what older generations have long known: The hope of the future lies with young idealists who have not yet found it expedient to accommodate. Although it is important to encourage youthful enthusiasms that lead to social improvements, it is also essential that the energies of our students be channeled toward constructive activities that serve as preparation for useful and responsible roles in society.

It is most important, therefore, that physicists provide suitable student organizations that promote early student involvement in research, education and the other affairs of the physics profession. But physicists are versatile, and so it is not very surprising that no one of the older student organizations served the needs of all students. Inevitably, then, several separate groups were formed, each with somewhat different goals and operating procedures. Prominent among these were Sigma Pi Sigma and the Student Section of the American Institute of Physics.

The physics profession is unique in many respects. One of these is the unusual degree of leadership and service centralized in a single agency, the AIP. This organization has long functioned as a focal point through which physicists communicate with one another and as a council where problems facing physics are discussed. By effi-

cient management, services are provided that are sought by groups of individuals and institutions with a wide variety of needs.

Leaders of the student groups found the AIP offered services and leadership they could not provide as individual organizations. Merger under AIP sponsorship had been talked about for 18 years; serious discussions began three years ago. Last April, during an American Physical Society meeting in Washington, the Articles of Agreement were formally signed.

What is the history of the parent organizations and the merger? What is the new Society of Physics Students as it exists today and what does the future hold?

HISTORY OF SIGMA PI SIGMA

The physics honor society, Sigma Pi Sigma, began as part of a widespread movement to promote interaction among outstanding scholars within a college discipline. The older Phi Beta Kappa had decided about 1875 to limit its membership to the liberal arts. In the early 1900's a number of individual science departments organized their own societies to honor high academic achievement. Physics joined this group on 11 Dec. 1921 with the establishment of a local honor society called Sigma Pi Sigma at Davidson College in North Carolina.

After a short time the leadership decided that the society should expand into a national organization. A

second chapter was installed at Duke University in 1925 and a third chapter at The Pennsylvania State University in 1926. These three chapters accepted leadership in developing the society and organized the first national convention at Davidson College in 1928; by then five chapters existed. This first convention elected Marsh W. White as national secretary, a title later changed to executive secretary. He continued in this position until his election as president last December.

175 chapters installed

The growth of the number of chapters and membership of Sigma Pi Sigma is shown in figure 1. About 175 chapters have been installed though not all of them were active in April 1968 when Sigma Pi Sigma became part of the Society of Physics Students. At the end of the last academic year, Sigma Pi Sigma had received into its membership about 30 000 persons. About 3000 were listed as active members in the chapters, with the remainder classified as alumni members.

In 1936 Sigma Pi Sigma became an associated society, and in 1956 an affiliated society, of Section B (Physics) of the American Association for the Advancement of Science. The society was made a member of the Association of College Honor Societies in 1945. This association is the coordinating organization for the recognized collegiate honor societies that are generally regarded as having suitably high standards. In 1951 Sigma Pi Sigma

was elected an affiliated society of AIP.

In 1934, after a short period of existence under the name "fraternity," Sigma Pi Sigma changed this designation to "society" to indicate more clearly the nature of the organization. At this same time all elements of secrecy were removed from the operations of the society, in keeping with the spirit of the honor-society movement. Since 1930 a modest publication, *The Radiations*, has been issued at intermittent intervals by society headquarters. This has been sent without charge to all members. Since 1954 a "house organ" for the council and chapter officers has been published under the name of *The Bulletin*. Other publications include the *Information Booklet*, *Handbook for Chapter Officers*, and leaflets for various purposes.

The primary objective of Sigma Pi Sigma has been to award recognition to students having high scholarship and promise of achievement in physics. Emphasis always has been placed, however, upon maintenance by the chapters of strong programs of worthwhile activities throughout the academic year. Each chapter, as a self-governing unit, has been designed to be an integral part of the physics department in the promotion of programs for the benefit of the members.

Most chapters have monthly meetings with speakers, movies, field trips and social events.

Membership qualifications

Candidates for membership in Sigma Pi Sigma are selected from upper-class undergraduates, graduate students, faculty members and qualified alumni. Students who are not physics majors may be elected to membership if they meet the other requirements and have demonstrated a sincere interest in the science of physics.

High academic standards for admittance are established by chapter bylaws and national regulations. The minimal standard that may be used by the chapters for undergraduate students is a ranking of the candidate in the upper third of his class in general scholarship. A higher average than this for physics courses is usually established. Candidates for membership are not eligible until they have completed at least one semester in an intermediate physics course that follows the usual first-year course in general college physics. Graduate students and faculty members are eligible for membership in accordance with the standards established by chapter bylaws.

Prior to incorporation of Sigma Pi Sigma into the new Society of Physics Students, the national organization of

Sigma Pi Sigma was governed and administered by a council of 19 members elected regionally by the chapters and an executive committee of five national officers. Policy established at occasional national conventions guided the council; in addition, national officers were elected at these meetings. The headquarters staff in early 1968 included the executive secretary, who served without compensation, and three or four secretarial employees.

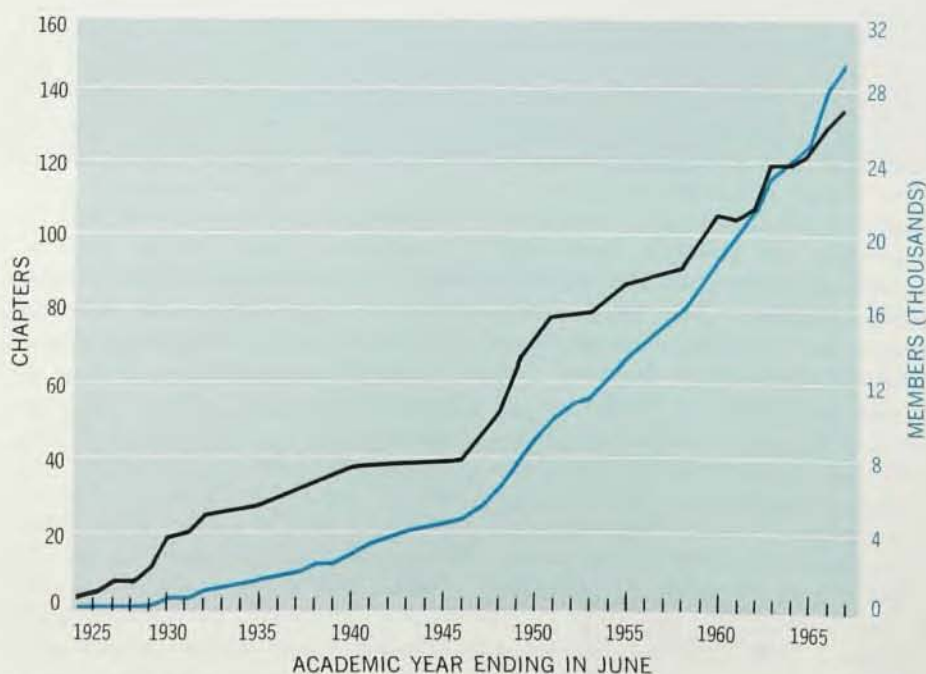
Chapters were given great autonomy in the conduct of their local programs. The national organization has been fortunate to be able to retain the services of many well qualified officers and council members who have contributed generously of their time and energy to the welfare of the society. We expect that these officials will be equally willing to work toward the development of the new Society of Physics Students.

AIP STUDENT SECTIONS

The AIP conceived its Student Sections in 1950 in response to a growing realization that undergraduate physics majors and other students who were potential physics majors needed an affiliation with the professional societies of physicists. Local physics clubs existed on many campuses. Affiliation with AIP meant that clubs and individual students could become more aware of the nature of physics, the depth of training that physicists require and the enormous satisfaction associated with creative discovery.

The period between 1950 and 1959 was one of experimentation for the AIP Student Sections. Several meetings were held to explore ways to increase the level of activity within local Student Sections and to strengthen the bonds between students and the physics profession. As a result of a recommendation by an AIP committee headed by Robert S. Shankland of Case Western Reserve University (then Case Institute of Technology), AIP agreed to hire a full-time physicist in the Education and Manpower Division to oversee Student Sections. Even then money was a problem, and the full-time man turned out to be a half-time man, the other half of his time spent running the Visiting Scientists Program under a National Science Foundation grant.

Donald Cunningham arrived at the



GROWTH OF SIGMA PI SIGMA is shown through end of last academic year.—FIG. 1

AIP offices in New York in 1959 to find an organization efficiently run by Mrs Ethel Snider, whose official title at that time was National Secretary for Student Sections. If any single person is primarily responsible for continued development of the Student Sections it is Mrs Snider. She kept the sections going over the years and worked with them continuously until the recent union with Sigma Pi Sigma. Her experience should prove invaluable to those who are charged with piloting the new society.

Section goals formed

With the increase in manpower available, AIP was able to undertake a major evaluation of what the sections should do and, once aims were established, how best to accomplish them. Until this time, when a section became affiliated with the institute, section members paid dues and received for these dues a subscription to *PHYSICS TODAY*, a membership pin and the opportunity to subscribe to AIP-published journals at member rates. No information was provided to the sections concerning how to run a series of meetings during the year, when and how to attend meetings of the various professional societies or how individuals might become junior members of the professional societies. Some information was available, but it was not channelled to the sections systematically. During the next two years (1959-61) an effort was made to overcome this problem.

Cunningham visited a large number of universities to determine what was needed. Visiting-Scientist-Program participants were asked for their opinions. The wisdom of a Student Section Advisory Committee was sought frequently. As a result of many suggestions, the following forms of assistance were prepared, or assembled, and distributed to the sections: an annotated film list; a Speakers List, including also those industrial research laboratories that would welcome visits; a newsletter; an information booklet telling how to join member societies as junior members; information about graduate schools and job placement; and other special information of interest to students.

Professional meetings

At the same time, an attempt was made to encourage students to attend

meetings of the professional societies. A special area was set aside for student registration and some students did attend—not many, to be sure, in the beginning. Those who did attend were faced with another problem. They could not understand what was being talked about. Out of this dilemma emerged the “impedance-matching” sessions. These one-hour lectures were delivered during the lunch breaks so as not to conflict with regular sessions. They were delivered, in general, by physicists who were giving an invited paper, and the aim was to supply enough of the basic information about what was being done, and how, and why it was being done, so that a student could proceed to the actual society session and understand a fair amount of what was going on. These sessions were immediately successful and have been offered recently at four locations each year: New York, Washington, Chicago and one other selected meeting. To help further in making the sessions intelligible, popularized versions of selected papers are distributed to the sections. These papers are collected by the public-relations division of AIP and made available to the sections through that office.

Corporate support

One last major feature of the section program was added in 1962. The Bendix Corporation made it possible for AIP to make cash awards of up to \$500 to a section on the basis of a proposal submitted by the section. Any project that promised to strengthen the section program was acceptable. In the years since 1962, from six to eleven sections per year won these awards. Rarely was a section able to complete its project in the time proposed, usually four months or so, but rarely was a project not finished by the end of the summer or by succeeding classes. Section interest has been high and the cooperation of the Bendix Corporation has been enthusiastic (figure 2).

We may have put too much emphasis on program rather than history. History, however, in the case of the sections, is closely tied to program. As services became available the number of sections grew from 52 in 1958, to 200 in 1963, to approximately 290 at present. Sections appeared at institutions both large and small, liberal arts and technical. The base upon

AUTHORS

Donald E. Cunningham has been dean for research and a professor of physics at Miami University since 1967. He was adviser to the AIP Student Sections in 1959-61 and was a consultant until last year. He studied at Brown University and received his PhD from Case Institute of Technology.



L. Worth Seagon-dollar was national president of Sigma Pi Sigma from 1962 through 1967. A graduate of Kansas State Teachers College and the University of Wisconsin and a veteran of the Manhattan Project, he is now the chairman of the physics department at North Carolina State University.



Cecil G. Shugart, the first director of the Society of Physics Students, is a nuclear physicist. He received his PhD from the University of Texas, where he was on the staff of the Center for Nuclear Studies. He will direct society activities from the State University of New York at Stony Brook.



Arnold A. Stras-sen-burg has directed the AIP Education and Man-power Division since 1966. He studied at the Illinois Institute of Technology and California Institute of Technology and is now professor of physics at the State University of New York at Stony Brook. He serves on the new society's council.



Marsh W. White was national or executive secretary of Sigma Pi Sigma for 40 years until his election as president last year. He has been emeritus professor of physics at Pennsylvania State University since 1961. He studied as an undergraduate at Park College and received his PhD from Penn State.



which we can anticipate future development is well established.

HISTORY OF A UNION

The sequence of events that culminated in the union of the two organizations started at a meeting of Sigma Pi Sigma's national council on 15-16 June 1965 in Oak Ridge, Tenn. Van Zandt Williams, the relatively new director of AIP, discussed problems of future physicists—the students—and what he thought AIP and the society could do to help them. He offered his own statistics and ideas and pledged that AIP would pay even more attention to educational problems than it had in the past.

During the summer of 1965 Sigma Pi Sigma officers discussed Williams's talk and the society's own problems.

White had served as executive secretary for over 30 years and insisted that a younger man be found for the job. The officers agreed that they wanted a professional physicist to fill a full-time job but found they had neither a suitable candidate nor enough money.

In September, December and again in January 1966, society and AIP officials meeting in New York agreed that a single organization for physics students might be able to accomplish more than the sum of the two existing organizations. Sigma Pi Sigma officers were directed to present their ideas for a merger during the April 1966 Washington meeting of the American Physical Society.

National council vote

At that Washington meeting the society's national council voted 12 to 2

for the merger. Vincent E. Parker, chancellor of Sigma Pi Sigma, and L. Worth Seagondollar, president, met with Williams, Cunningham and Wallace Waterfall, deputy director and secretary of AIP. Cunningham was asked to revise the society's written proposal.

A few days later, however, Williams died. For two months merger negotiations stood still; then, even before a new AIP director was named, Arnold A. Strassenburg, director of the AIP Education and Manpower Division, helped get them moving again. He worked with Leonard Olsen, chairman of the AIP Student Sections Advisory Committee, and Stanley Ballard, past president of Sigma Pi Sigma.

Sigma Pi Sigma and AIP officials sat down during a meeting of the Optical Society of America in San Francisco that October and hammered out the details of a proposed constitution. In the following months the document was discussed and debated. New draft revisions appeared almost constantly.

The AIP Governing Board unanimously approved the proposal by a mail ballot sent out in August. The society learned in the meantime that it had both the money and the right candidate to fill a full-time executive-secretary post. Thus the society's decision on the merger would not be based only on practical and financial necessities.

To ensure thorough discussion, the society called a national convention at Purdue University for 15-16 Dec. 1967. Attendance broke all records; 200 delegates representing 90 chapters turned out. On the first day the delegates heard invited talks for and against the merger. That evening H. William Koch, the new AIP director, described how the society could be fitted into the institute's structure and what it would mean for the society.

Voting took place the following day. Each chapter was given three votes. On the first ballot 181 votes were cast for merger, one more than the minimum required. The vote accepted the constitution subject to minor changes to be worked out by an ad hoc committee. These changes were in turn approved by the AIP Governing Board on 21 March.

Finally, not quite three years after the original meeting in Oak Ridge, Sigma Pi Sigma and AIP officials sat



CORPORATE SUPPORT. University of Maryland students working under a Bendix Corporation cash grant adjust receiving equipment at radio-telescope site. —FIG. 2

down in Washington at noon on 22 April and signed Articles of Agreement implementing the merger. The Society of Physics Students was born.

SPS AND THE FUTURE

Although the Society of Physics Students was established from the union of Sigma Pi Sigma and the AIP Student Sections, it should be understood that the new society is not merely a continuation of either Student Sections or Sigma Pi Sigma; it is a new organization. Certainly the best features of both organizations have been incorporated into the new society, but additional advantages justify the union of these two successful student groups.

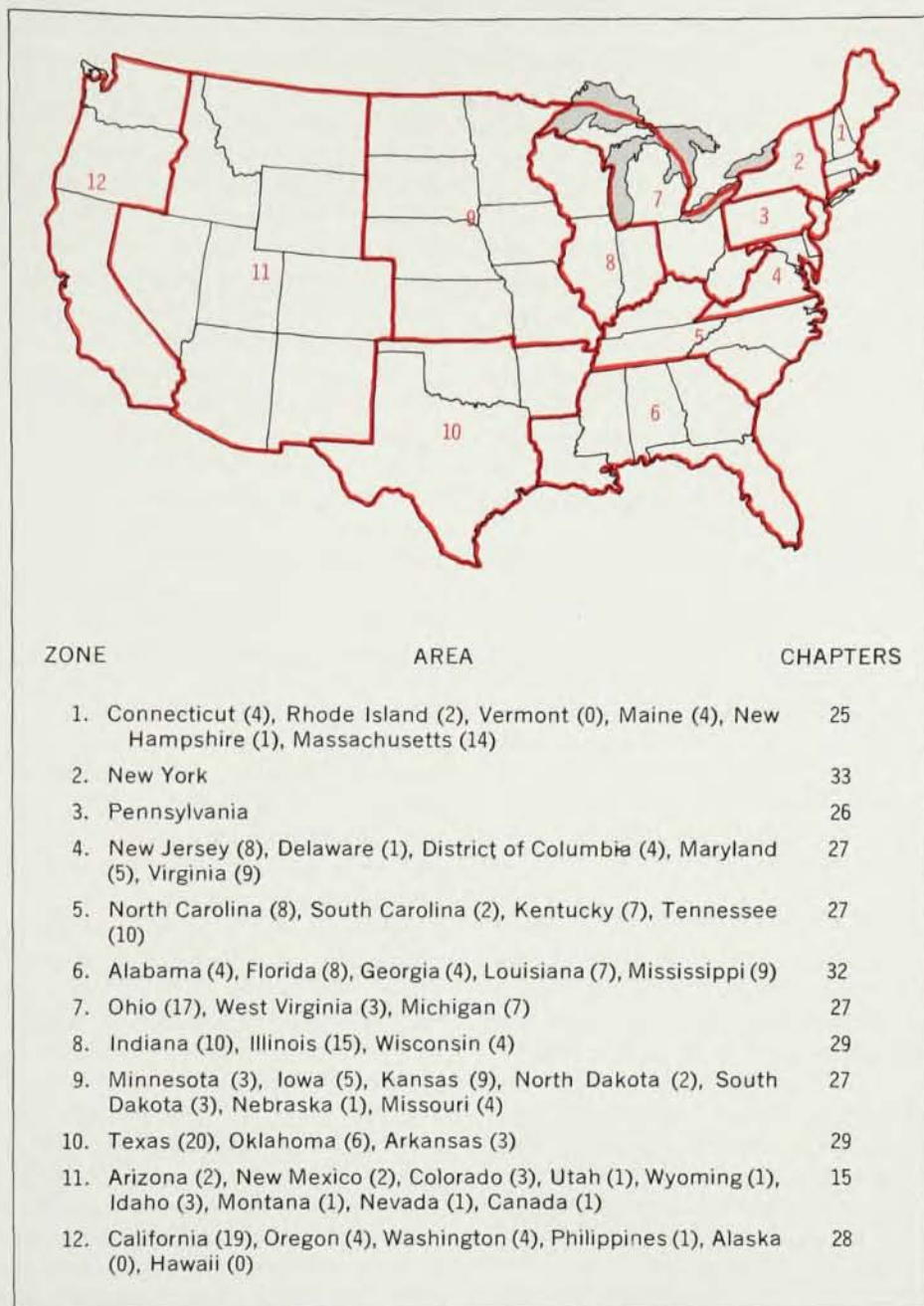
The society has begun operations at its new headquarters at the State University of New York at Stony Brook. This fall there will be about 335 active chapters, representing just under half of the institutions offering a physics major. There are two classes of membership, one open to all interested students and one restricted to students who achieve high standards of scholarship. All chapters are encouraged to take full advantage of both aspects of the society.

A full-time physicist, Cecil G. Shugart, will direct the activities of the society, working directly under Strassenburg. Shugart's responsibility is to improve the quality of society publications, increase the vigor of meeting programs, coordinate the activities of the national organization and recruit new chapters to society membership. He will be guided by policies that a national council will establish.

National organization

The policy making and legislative functions of SPS are the responsibility of the council of the society. This council includes twelve persons elected regionally by the chapters and an Executive Committee composed of the following six individuals: the director of AIP, the director of the AIP Education and Manpower Division, the director of the AIP College Physics Program, the chairman of the Council of SPS, the president of Sigma Pi Sigma and the director of SPS.

This executive committee has primary administrative and supervisory responsibility for operation of the national SPS organization and its headquarters office.



MAP AND TABLE show distribution of charter chapters of the new society.—FIG. 3

For election of councillors who are regionally representative, the chapters of the society are divided into twelve geographical zones containing approximately equal numbers of SPS chapters (figure 3 and table 1). Councillors are elected for terms of three years, with a staggered system whereby four councillors are elected each year. The council elects its chairman at an annual meeting.

Each regionally elected councillor is expected to arrange for the selection of a "student associate." Each student, at the request of the regular councillor, may serve as a voting alter-

nate at council meetings. In addition, student associates may attend meetings with regular councillors, and participate in discussion, but only one representative from each region may vote.

Financial resources for the operation of SPS will come in part from membership dues and initiation fees and in part from AIP funds. The annual budget is estimated at \$70 000.

Immediate advantages

Several advantages of SPS are particularly obvious when compared with the previous organizations. Extension of

previous advantages of Sigma Pi Sigma and the Student Sections to colleges and universities that have previously had only one of these groups is most outstanding. Institutions that have had only Sigma Pi Sigma will now offer a student organization that accepts *all* local students interested in physics activities while still providing special recognition to those of high scholastic ability. Institutions that previously had only a Student Section will now have the means to recognize students for outstanding academic achievement by electing them to membership in Sigma Pi Sigma within the SPS.

Probably the most important advantage for the former Student Sections is that of representation. SPS was specifically designed for student participation in policy making by inclusion of the elected-councillor feature. The primary advantage from the point of view of former Sigma Pi Sigma chapters is closer association with the professional-physics community through AIP.

Where do we go from here?

Possibilities for the Society of Physics Students are vast. With coöperation of physics faculties at colleges and universities, the new society will try to serve the physics community by increasing student interest and professional involvement in physics. This coöperation would include aid in expansion of the SPS to large universities and to small colleges, and general support for SPS programs.

Programs presently being designed should contribute a useful addition to even the strongest departments and will certainly serve the smaller colleges. SPS publications will attempt to furnish news of how students are participating in research, teaching, educational policy making and enrichment of campus culture. Initially chapter members will receive *PHYSICS TODAY* as a part of their membership. Efforts are already under way to initiate a student journal. The publication envisioned would invite student papers on physics research and present specifically student-oriented news. Until these efforts produce satisfactory results, other means of communication such as newsletters and AIP publications will be used to transmit information of interest to the students.

Research symposia are another area

for expansion. Those previously sponsored so successfully by Sigma Pi Sigma and AIP Student Sections in the New York City area and by similar groups at other meetings, such as the Southeastern Section meetings of the APS, will be extended to other parts of the country. Students will be invited to present papers at these symposia and the better papers may be submitted for publication.

The impedance-matching lectures have been limited primarily to larger APS meetings. These will be extended to more APS meetings on a trial basis. If attendance is reasonably good, further expansion of this program will be considered.

We will provide a more extensive list of speakers for local meetings than has been previously available. Researchers from large universities will be sought for university interchanges and to speak at smaller colleges, and industrial physicists will be sought as speakers for all schools. The primary considerations in this program will be quality of presentations and low cost to local chapters.

Interactions between chapters should also be considered as a major project within the SPS. Ideas that work at one institution may be adaptable to others. Some of these interactions will take place at professional meetings; some will take place at the research symposia discussed earlier. Regional conferences, used for many years by Sigma Pi Sigma with varying degrees of success, will be attempted as time goes on. Certainly encouragement will be given to the individual chapters to visit with one another and exchange programs.

Registration for undergraduate SPS members will be free at AIP member-society meetings where a student-registration desk will be maintained. This service is provided to encourage undergraduates to attend professional-society meetings and participate in activities of physics groups.

Formation of chapters

All the chapters of Sigma Pi Sigma and all the AIP Student Sections existing as of 22 April automatically became charter chapters of the Society of Physics Students. We anticipate that only a modest effort will be needed at each school to submit the SPS Constitution and the new Sigma Pi Sigma Constitution to the appro-

priate local agency with responsibility for approving student organizations. In addition, a local set of bylaws will be necessary to specify requirements for local Sigma Pi Sigma membership (minimal requirements are set by the SPS Constitution), to establish local dues, if any, and to determine other local policies.

Institutions that did not have either of the old organizations may form chapters of the SPS by a rather simple petition procedure and at no expense. The proper forms for such a petition are available on request from society headquarters at SUNY, Stony Brook, N.Y. 11790. The primary requirement of a successful petition is the inclusion of evidence for accreditation by appropriate agencies, the existence of a physics major or its equivalent, and sufficient local interest to provide for continuing operation of the chapter. This interest certainly includes approval of the proposed chapter by the physics faculty.

The executive committee of the SPS Council acts promptly on petitions and makes arrangements for an installation program designed to add dignity to the occasion. An installing officer is designated by the SPS director and he presents a charter to the chapter in a short ceremony.

Special consideration will be given where local school regulations do not allow professional societies or honor societies. Early in the academic year 1968-69, the headquarters office will begin efforts to expand the society into nonmember institutions.

The Society of Physics Students is the result of many years of effort by many people to provide a useful and viable physics society specifically for physics students. Obviously the rules are not all hard and fast at this time; the society is looking for the means to utilize and increase student interest in the physics profession. Problems will arise. Not all the answers, or even all the questions, are known. AIP and Sigma Pi Sigma officials are convinced that the single Society of Physics Students organization will eliminate the duplication and competition for time and money that existed to some extent in the two formerly independent organizations. The strong endorsement by AIP and the use of its resources and facilities should greatly enhance the value of membership in the new society. □