SCHOLARSHIPS, one Rhodes Scholarship, and two Frei University of Berlin Exchange National Fellowships, 7 Fulbright Awards, change Scholarships, 13 Woodrow Wilson of Pennsylva. 4 British-American Ex-
entering graduate or professional school, the percentage data are:

<table>
<thead>
<tr>
<th>Engineering</th>
<th>Wharton</th>
<th>Col. for Women</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>63%</td>
<td>37%</td>
<td>39%</td>
<td></td>
</tr>
</tbody>
</table>

The proportion of students planning graduate studies from other undergraduate divisions in percentages are:

<table>
<thead>
<tr>
<th>1969</th>
<th>1968</th>
<th>1967</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.5</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>57%</td>
<td>25%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Responses from 1179 members out of 1398 students graduating in the Class of 1969 from these four undergraduate divisions were reported in the study, “Postgraduate Plans of the Class of 1969”, compiled by James B. Yarnall, director of the Office of Fellowship Information and Study Programs Abroad.

The proportion of seniors entering military service was greater in 1968 than either 1967 or 1969. Comparative data as percentages are:

<table>
<thead>
<tr>
<th>1969</th>
<th>1968</th>
<th>1967</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>23%</td>
<td>25%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Plans for employment following graduation have shown a steady increase over the past three years. Comparative percentage data are:

<table>
<thead>
<tr>
<th>1969</th>
<th>1968</th>
<th>1967</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td>37%</td>
<td>54%</td>
<td>51%</td>
</tr>
</tbody>
</table>

A substantial number of the students entering graduate or professional schools won fellowships and scholarships. Among these awards were 15 Thouron-University of Pennsylvania, British-American Exchange Scholarships, 13 Woodrow Wilson National Fellowships, 7 Fulbright Awards, two Free University of Berlin Exchange Scholarships, one Rhodes Scholarship, and (continued on page 2)
The Towne School of Civil and Mechanical Engineering has proposed an unmanned system for future exploration of the ocean depths.

A year-long study comparing existing techniques for ocean exploration, Towne School engineers have developed a system which would consist of a stable, manned surface ship and underwater vehicle capable of exploring large areas of the ocean gathering data and commands from the mother ship.

Once the broad search vehicle locates and marks an interesting site, the command ship would launch a tethered vehicle capable of detailed exploration in a hostile environment of up to 1,000 atmospheres of pressure. Operating like a robot, the craft would be able to maneuver around the clock, "see" terrain through its sonar and high-resolution TV or laser systems, and gather in sample objects of all shapes and sizes with its sensitive manipulator arm.

Instrument packages for measuring and evaluating samples will be interchangeable, and the storage system will maintain original ambient temperature changes and pressure conditions.

One of the major advantages of this tethered, unmanned search vehicle would be the direct cable to the command ship for power and communications which would also afford a means of recovery if the vehicle runs into trouble seven miles down.

The report indicates that commercial fisheries and the petroleum industry, whose objectives are essentially the same as those of the marine geologist and deep-sea biologist, would probably benefit equally with them from such a system.

For biological studies, stereoscopically-mounted color television cameras or laser systems could track schools of fish or other marine life. Special lighting systems and high resolution conventional cameras could take detailed pictures of underwater flora and fauna. For quantitative samples, a mechanical hand scoop could gather in hard-shelled animals and fossils while monitored by a topside TV camera. Movie cameras, sound recording equipment and videotapes would aid in behavioral studies. Soft materials would be scooped up in a vertical, self-sealing cylinder. For geological purposes, it may also be possible to drill hard core samples for the first time, and take bottom photographs of unusual geographic features and areas where natural resources are most likely to occur. Measurements of gravity, slope stability and other factors could be made for construction purposes, and information on the ocean floor's composition would aid in determining its geologic history. Hydrographic and chemical analyses of the water itself, including acoustic measurements and magnetic and radioactive surveys would also be included.

Communications and data handling difficulties caused by signal loss in sea water must be considered, as well as the propagation of light underwater and the cable design for the seven-mile link with the mother ship. In addition, structural designs for the pressure hulls and navigation, and sonar and inertial guidance systems for controlling and tracking the search craft must be investigated and developed as must internal power systems.

Ocean Exploring System Is Being Developed

(continued from page 1)

one Danforth Foundation Graduate Fellowship (four other students received honorable mention in this competition).

The remaining students in each school indicated that they would be engaged in such projects as the Peace Corps or VISTA or that they had not made definite plans at the time of the survey. In the Class of 1969, there were 21 students planning to enter the Peace Corps or VISTA, compared to 18 in 1968 and 14 in 1967. Three members of the Class of 1969 indicated status as conscientious objectors to military service, compared to two in 1968 and none in 1967.
Provost's Office Announces Promotions of Faculty

Additional faculty appointments and promotions approved by the Trustees last month were announced recently by the Provost's Office.

Newly appointed faculty in the College of Arts and Sciences are Dr. Fay Azenberg-Selove, research professor in physics; Dr. Irving Friedman, adjunct professor of geology; Mr. John G. Witthoff, associate professor of anthropology; and Dr. Peter van Sommers, visiting associate professor of psychology.

Dr. Thomas L. Saaty has been appointed professor of statistics and operations research in the Wharton School.

Appointments in the School of Medicine include Dr. Sukhansy Lahiri, associate professor of environmental physiology; Dr. James E. Wood, professor, and Dr. Peter A. Cassileth, Dr. Norman H. Edelman, Dr. John A. Kastor and Dr. James C. Shelburne, assistant professors, of medicine; Dr. Giuseppe G. Pietra, assistant professor of pathology; and Dr. Otakar Koldovsky, assistant professor of pediatrics.

Mr. David Polk in the Graduate School of Fine Arts has been promoted to associate professor of architecture. In the School of Medicine, Dr. David S. Polk has been promoted to associate professor of clinical pediatrics; Dr. Herbert Lipschitz to associate professor of clinical plastic surgery; Dr. Harold Dillon to associate professor of clinical psychiatry; Dr. David B. Geselowitz to associate professor of electrical engineering in medicine; Dr. Lee W. Henderson to associate professor of medicine; Dr. Zachary B. Friedenberg to professor of orthopaedic surgery; Dr. Chaun-Pu Lee to associate professor of physical biochemistry; Dr. Aaron Katcher to associate professor of psychiatry; Dr. James E. Griffin to professor of physical therapy; and Dr. Robert Radvan to professor and Dr. Stanley Dudrick to associate professor of surgery.

Education Courses Expanded

Action has been taken by the Graduate School of Education to accommodate all undergraduate students desiring to enroll next semester in Education 240 and 241, which form part of the requirement for admission to the undergraduate Teacher Preparation Program.

The School had been planning on an increase in enrollment for these courses in the spring semester of 1970 comparable to the increase between the spring semesters of 1968 and 1969. The following statistics show the enrollment for the past three spring semesters, and the estimated pre-registration enrollment for next semester.

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>Ed. 240</td>
<td>86</td>
</tr>
<tr>
<td>1968</td>
<td>Ed. 240</td>
<td>115</td>
</tr>
<tr>
<td>1969</td>
<td>Ed. 240</td>
<td>125</td>
</tr>
<tr>
<td>1970</td>
<td>Ed. 240</td>
<td>199</td>
</tr>
<tr>
<td>1970</td>
<td>Ed. 241</td>
<td>158</td>
</tr>
<tr>
<td>1970</td>
<td>Ed. 241</td>
<td>115</td>
</tr>
</tbody>
</table>

Dr. Neal Gross, dean of the School, said, "When we learned of the situation, efforts were immediately initiated to explore means by which the increased demand could be met. More specifically, a search was immediately begun to recruit qualified instructors for additional sections of these courses. In so doing, the School was very much concerned that it maintain the high quality of instruction that has been offered in these courses in the past."

Education 240 (Social Foundations of Education) and 241 (Educational Psychology) are offered by the Graduate School of Education for students in the College and the College for Women.

Interest in enrolling in the Teacher Preparation Program has increased substantially among both men and women undergraduates. Some undergraduate men have indicated interest in teaching as a career since draft deferments for graduate study have been eliminated in many fields and teaching frequently provides the opportunity for occupational deferment from military service.

Students admitted to the Teacher Preparation Program by the University Committee on College Programs for Teachers and who satisfactorily complete the requirements of these programs are then recommended for an Instructional Level I teaching certificate. This certificate is currently accepted as the initial teaching certificate in at least 27 states.

Among other things...

APPOINTMENTS:

GEORGE L. HASKINS, professor of law, has been elected to a two-year term as president of the American Society for Legal History.

DR. RALPH M. SHOWERS, professor of electrical engineering, has been appointed chairman of the U.S. Standards Committee on Radio-Electrical Coordination. He was also a member of the committee which prepared the report published by the Joint Technical Advisory Committee of the Institute of Electrical and Electronic Engineers and the Electronic Industries Association.

Dr. Peter Friedman, adjunct professor of mathematics; Dr. Lee W. Henderson to associate professor of medicine; Dr. Zachary B. Friedenberg to professor of orthopaedic surgery; Dr. Chaun-Pu Lee to associate professor of physical biochemistry; Dr. Aaron Katcher to associate professor of psychiatry; Dr. James E. Griffin to professor of physical therapy; and Dr. Robert Radvan to professor and Dr. Stanley Dudrick to associate professor of surgery.

on "Spectrum Engineering—The Key to Progress, a Report on Technical Policies and Procedures Recommended for Increased Spectrum Utilization."

AUTHORS:

DR. JOHN SILVERIO, associate in pediatrics, is author of an article on "Organic Phosphorus Insecticide Poisoning in Children" in the November issue of the Journal of School Health.

JERRY MANGIONE, professor of English, is author of America Is Also Italian, the first in a series of books about immigrant groups in America to be published this month by G. P. Putnam's Sons.

ARNOLD R. POST, associate in the Government Studies Center of the Fels Institute of Local and State Government, is author of a research report on "Mobility Analysis as an Appropriate Technique in Small Area Demography" in the November issue of the Journal of the American Institute of Planners.


DR. STEVEN J. GITOMER, assistant professor of electrical engineering, had a paper on "Electromagnetic Instability in an Electron Cyclotron Resonance Plasma" (with J. L. Shohet) published in the November issue of Physics and Fluids.

DR. NABIL FARHAT, assistant professor of electrical engineering, is author of "Relation between Wave Structure Functions Looking Up and Looking Down through the Atmosphere" (with A. Decu) and of "Time Dependent Resolution of Liquid Crystals" respectively in the Journal of the Optical Society of America and Applied Optics.

DR. WILLIAM C. McDermott, professor of classical studies, is author of an article "De Lucceis in Hermes."

HONORS:

DR. BRITTON CHANCE, professor and chairman of the department of biophysics and director of the Johnson Research Foundation, has been named to receive the Dr. R. P. Heineken Prize in 1970 by the physics section of the Netherlands Academy for Sciences.

DR. HENRY L. BOCKUS, emeritus professor of medicine and gastroenterology, has been named to receive the 1970 Distinguished Service Award of the American Medical Association.
Among other things . . .

DR. PHILIP RIEFF, Benjamin Franklin Professor of Sociology, has been named a Fellow for life of the Royal Society of Arts in Great Britain.

STAFF APPOINTMENTS:

ROBERT M. ENGMAN and NEIL G. WELLIVER, professors of fine arts, have been appointed co-chairmen of the department of fine arts, effective July 1, 1970.

TRAVELERS & SPEAKERS:

DR. HOWARD E. MITCHELL, director of the Human Resources Center and 1907 Foundation Professor of Urbanism and Human Resources, visited residential centers for children in Austria and Switzerland in relation to the responsibility of the Human Resources Center for planning of a model interracial residential center and pre-school unit for dependent and neglected children in Mansfield, Ark.

DR. DAVID W. C. SHEN, professor of electrical engineering, gave a special course on “Introduction to Adaptive and Learning Techniques in Engineering Cybernetic Systems” to the NASA-ASEE Summer Faculty Institute and the NASA-ASEE Faculty Systems Engineering Institute at the Manned Space Center in Houston. He also presented the following papers: “Sensitivity and Optimal Control of Multivariable Systems” at the Joint Automatic Control Conference in August (coauthored by Dr. Robert Chen); “A Self-Optimizing Distortionless Filter” presented at the Eighth International Symposium on Space Technology and Science (with James Rome); “A Multilevel Approach to the Adaptive Control of Large-Scale Engineering Cybernetic Systems” with Dr. Donald Orr; “Response Time Distribution in a Command and Control System with High Traffic” with Charles Theobald at the International Congress of Cybernetics in September. He was also invited by the International Cybernetic Congress Committee to serve as a co-chairman with Professor Gordon Pask of Great Britain in the Session on Cybernetics and Industry and published a joint paper with Dr. B. Chandrasekaran on “Stochastic Automata Games” in Volume 5, No. 2 issue of IEEE Transactions on Systems Science and Cybernetics, 1969.

DR. STEVEN C. BATTERMAN, associate professor of engineering mechanics, attended the first International Conference on Pressure Vessel Technology in Delft, The Netherlands, in October.

DR. ROGER ALLEN, assistant professor of Arabic, gave a paper titled “Mir'at al-Alam by Ibrahim al-Muwailihi and Layali Satih by Hafiz Ibrahim” at the annual meeting of the Middle East Studies Association in Toronto in November.

DR. LEONARD NANIS, associate professor of chemical engineering, lectured on “Atomic Structure of Electrode Surfaces” at Trenton State College in November.

BRITTON HARRIS, professor of city and regional planning, was a discussant on “Urban Density Functions” at a conference of the Committee on Urban Economics in Cambridge, Mass., in September. He was chairman of a panel on “Examples of Past Experiences” at the Engineering Foundation Research Conference in Deerfield, Mass., in August. Mr. Harris also was chairman of the Conference on General Systems Aspects of Urbanism at Wayne State University in June. That month he also addressed a conference on the Environmental Design Research Association at Chapel Hill, N. C., on “Understanding and Insights: Content as Opposed to Process”.

DR. WILLIAM ROACH, professor of Romance languages, spoke on “Francisque Michel: A Pioneer in Medieval Studies” at the annual general meeting of the American Philosophical Society held in November in Philadelphia.

DR. STANLEY BAUM, associate professor of radiology, was a lecturer at the Lahey Clinic in Boston in a symposium on “Diagnostic Radiology of the Gastrointestinal Hemorrhage” in November. He also participated in a course on “Recent Advances in Gastroenterology” in Santo Domingo, Dominican Republic and was a guest speaker at the Detroit Roentgen Ray Society.

DR. ALFRED KIDDER, professor of anthropology and curator of the American Section of the University Museum, spoke on “Pre-Columbian Art of the Mayan and Peruvian Cultures” at the Allen Lane Art Center in Philadelphia in November.

DR. FRANK P. BOWMAN, professor of Romance languages, spoke this month at Bryn Mawr College “Form and Language in Autobiography”.

The University has been assigned identification numbers for use by area radio and television stations in announcements of closings of schools and colleges because of snow. The code number for the University (excluding the College of General Studies and the Wharton Evening Division) will be 102. The number to be used to identify class cancellation in the College of General Studies and the Wharton Evening Division will be 2102.