in June, 1941, through the summer of 1944. To provide instruction for men and women who are urgently needed for basic work in mechanical engineering and allied branches of industry, a faculty eminent in the applications of advanced mathematical theory has been serving for eight terms in this program, which is under the auspices of the U. S. Engineering, Science and Management War Training, with liberal support from the Carnegie Corporation and the Rockefeller Foundation.

A recent compilation has shown that from this program more than sixty students have entered on research in mathematics, physics and engineering for government agencies and that twenty-five are serving similarly in war industries. While it was originally expected that students would remain for three or four years and proceed to the doctorate, in the emergency men have taken up useful research after fifteen months of training beyond the baccalaureate.

In addition to the regular instruction given, activities have included

(1) two conferences, one on Non-Linear Vibrations and the other on Exterior Ballistics; (2) fifty-five special lectures by authorities in related fields; (3) the inauguration of a new journal, the *Quarterly of Applied Mathematics*, (4) the publication of twenty research papers by students and the preparation of as many other confidential reports; (5) the preparation of two advanced treatises for printing and the mimeographing and distributing of eleven others; (6) research at Brown University for various government agencies connected with the war.

The Advisory Committee consists of Dr. Thornton C. Fry, mathematical research director, Bell Telephone Laboratories; Marshall H. Stone, professor of mathematics, Harvard University; Theodore Theodorsen, chief of the physical research division of the National Advisory Committee for Aeronautics, Langley Field. The Board of Editors of the *Quarterly of Applied Mathematics* consists of H. L. Dryden, J. M. Lesells, T. C. Fry, W. Prager, J. L. Synge, Th. v. Kármán, I. S. Sokolnikoff; it is assisted by an equally eminent international Board of Collaborators.

The progress made by America in the physical sciences and in the practical aspects of engineering since the turn of the century almost outruns the imagination. But, as was pointed out by Thornton C. Fry in the 1940 report to the National Resources Planning Board, there are some sectors in which we have lagged. We have not kept pace with mathematics fundamental to the development of new industries, such as aircraft manufacture; other countries have ranged dangerously ahead of us. In order that the nation forge ahead in war or in peace, there is need for a more intensive cultivation of the theoretical aspects of some branches of mechanical and electrical engineering. The deficiency is in part due to the paucity of university courses for the graduate training of industrial mathematicians. In part also it is due to a fundamental attitude of the American public which is suspicious of theory. The nation has relied on practical and experimental methods for solving problems; we see this in government as well as in engineering. In a democracy this attitude is attended with grave dangers, for it does not have within itself the seed for its own correction. Some extraordinary means must from time to time be found to bring the necessities of the case home to those with influence in making policies.

These were some of the considerations which occasioned the inauguration at Brown University of the program a few months before war came to America. For the twelve weeks Summer Session of 1944, beginning on June 12, a series of ten courses has been scheduled. On the faculty for the summer are S. Bergman, L. Bers, W. Feller, D. L. Holl, W. Hurewicz, R. K. Luneberg, W. Prager, J. D. Tamarkin and one other still to be chosen. In addition there will be a series of special lectures. No tuition fees are charged; small stipends to cover living expenses are available for some specially qualified persons. A prerequisite is an undergraduate major in mathematics, physics or engineering performed with distinction. The number of participants will be limited to seventy-five. Inquiries may be directed to the Dean of the Graduate School, Brown University, Providence 12, R. I.

R. G. D. RICHARDSON

## SCIENTIFIC INSTRUMENTS NEEDED

REQUESTS for instruments urgently needed for essential war work have been received by the Committee on Location of New and Rare Instruments. Any one having any of the following instruments, willing to sell, rent, lend or give them for necessary work, will perform a service by informing D. H. Killeffer, Chairman, 60 East 42nd St., New York 17, N. Y.

Weston Ammeter #622 (0–100 ma)
Weston Ammeter #280 (0–50)
Surface Tension Balance
Precision Cathetometer 32″ Range .003″ error
Babinet Compensator (Soleil)
High Speed Impulse Counter (Cenco #73506 or #73511)
Amsler #4 Integrator
Gas Interferometer (Zeiss or Hilger) (several)
G. E. or Esterline Angus Recording Milliammeter Spring Drive 0–5 ma 6″12″/min speed
Beckman Industrial Model M or Coleman Model 3A pH meter
Weston Microammeter
#643 100 scale div. Res 385 ohms.
#741 100 scale div. Res. 1110 ohms.

Potentiometer—L & N 8660
Potentiometers (type K or other) (several)
(Moderately high or quite high sensitivity)
Campbell Shackelton Shielded A.C. Ratio Box
(Equivalent to L & N A.C. Ratio Box 1553)
Abbe Refractometer (several)
Spectrotelephotometer (Cenco-Sherd)
Quartz Spectrograph
Strobotacs (Genl Radio 631-B)
Stroboscopic equipment
Western Electric Electrometer Tube D-96475
Tinius-Olson Stiffness Testing Machine. Cat. #932
G. E. X-ray Diffraction Unit
Recording Oscillograph (Minimum Sensitivity) (several channels capable of recording one hour at one inch per second. Suitable for aircraft operation.)

## A WESTINGHOUSE RESEARCH GRANT TO PURDUE UNIVERSITY

G. STANLEY MEIKLE, research director of the Purdue Research Foundation, and A. A. Potter, dean of the Schools of Engineering, announce the establishment at Purdue University of a project for the "intensive training of graduate students in exploring the field of heat transfer for data upon which many of the practical developments of the future depend." The project was made possible by a grant of $75,000 from the Westinghouse Electric and Manufacturing Company. Dr. George A. Hawkins, professor of mechanical engineering at Purdue University, who has been appointed Westinghouse research professor in heat transfer, will conduct a five-year program for training and research.

Dr. Max Jakob, of the Illinois Institute of Technology, will cooperate with Dr. Hawkins in the capacity of non-resident research professor. Research associates to be known as fellows will be appointed. For their experiments they will have access to the heat transfer laboratory of the School of Mechanical and Aeronautical Engineering. Facilities will be provided also in other departments of the university.

According to the official statement, Director Meikle stressed the importance of advanced student training and research in this field. He described the undertaking as "contributing to the liberalization of the mechanic arts in response to the demand for enlightenment relative to industrial development. It is believed that education and industry are logical participants in the aggressive and balanced development of four major concerns which confront the executives and scholars of a university. These are the conservation of knowledge and ideas; the interpretation of knowledge and ideas; the search for truth, and the training of students who will continue to practice its teachings and carry on its work in the everyday contacts with life's problems."

M. W. Smith, vice-president of the Westinghouse Electric and Manufacturing Company in charge of engineering, said:

The Westinghouse grant is the latest step in the company's broad educational program which, in cooperation with the nation's universities and colleges, encourages scientific education and research. Annually, the company awards scholarships and fellowships and contributes to the support of research and special educational activities in the belief that knowledge thus gained helps all industry.

## NOMINATIONS FOR OFFICERS OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

THE national nominating committee of the American Institute of Electrical Engineers, consisting of members from various parts of the country, has nominated the following official ticket of candidates for the offices becoming vacant on August 1, 1944:

For *President:* C. A. Powel, manager of the Headquarters Engineering Departments of the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

For *Vice-presidents:*

(North Eastern District)—R. T. Henry, assistant chief electrical engineer, engineering department, Buffalo, Niagara and Eastern Power Corporation.

(New York City District)—J. F. Fairman, assistant vice-president, Consolidated Edison Company of New York.

(Great Lakes District)—M. S. Coover, professor and head of department of electrical engineering, Iowa State College.

(South West District)—R. W. Warner, professor and head of department of electrical engineering, University of Texas.

(North West District)—C. B. Carpenter, assistant chief engineer, Oregon Area, Pacific Telephone and Telegraph Co., Portland.

For *Directors:*

P. L. Alger, staff assistant to vice-president in charge of engineering, General Electric Co., Schenectady.

M. J. McHenry, director of sales promotion, Hydro-Electric Power Commission of Ontario, Toronto.

D. A. Quarles, director of transmission development, Bell Telephone Laboratories, New York.

For *National Treasurer:* W. I. Slichter, professor emeritus of electrical engineering, Columbia University.

These official candidates, together with any independent nominees that may be proposed later, will be voted upon by the membership at the coming election this spring.

H. H. HENLINE,
*National Secretary*