

News and views

Industrial Research

Need for Full Investment Stressed

Research programs in industry must be protected from interruptions that might follow minor fluctuations in the business cycle, according to Harry A. Winne, General Electric's vice president of engineering, who delivered the keynote address of an industrial research conference sponsored by Armour Research Foundation during the Centennial of Engineering celebration at Chicago in September. Stressing the need for industry to invest an adequate portion of its profits in research, Mr. Winne urged that industry foster the kind of intellectual and physical environment that is essential to creative work and to make a place for free and uncommitted investigations. He cited figures from studies by the National Research Council indicating that industry spent more than one billion dollars on research in 1950 and employed some 165,000 scientists, engineers, and technical assistants in industrial laboratories—more than twice the number similarly employed in 1940 and almost ten times as many as in 1927. Pointing out that every one of America's one hundred largest industrial corporations have research programs, he said that the research investment expressed in terms of percentage of sales varies from one-half to four percent, with the average lying between one and two percent. Mr. Winne also urged the cultivation by industry's top management of a full understanding of the essential and relative characteristics of fundamental research, applied research, and advanced development.

Unesco in Latin America

Technical Assistance Under Way

A total of thirty-five technical specialists representing many fields of science and education have been sent by the United Nations Educational, Scientific, and Cultural Organization to assist governments in the Latin American area in planning and directing national development programs. A brief, but comprehensive, progress report, prepared by the U. S. National Commission for Unesco and issued in August by the Department of State, adds that Unesco had specific projects under way in ten Latin American countries by April of this year and was engaged in a number of related major activities affecting most countries in that part of the world. A regional field science office has also been established in Montevideo to make available the services of three science specialists to governments and scien-

tists in the region. It has prepared a register of more than fifteen thousand scientists and institutions with details of their particular field of activity and publishes brochures on the state of the various sciences in Latin America. These publications are mailed regularly to more than one thousand institutions and individuals, who are thus kept up to date on research in their particular fields.

Unesco's technical assistance program in a number of the countries (especially in Colombia, Costa Rica, El Salvador, Haiti, and Panama) is confined primarily to general education problems. In other countries, however, the projects are often highly specialized and diverse. In all cases, when an expert goes into the region, scholarships are provided whereby local persons are sent abroad to be trained as quickly as possible in the particular field needed to replace the international advisor. Forty-five individuals from Latin America are now studying abroad under this plan. Unesco does not enter a country under the technical assistance program as a single agency, the National Commission makes clear, but works in conjunction with experts from the United Nations and its other specialized agencies as part of an overall plan for economic development.

In Mexico, a center for scientific and technical documentation has been established by the government with the help of Unesco which is now receiving more than five thousand scientific and technical journals. These publications are classified, summarized, transformed into abstracts, and translated into Spanish for periodic distribution in a bulletin to scientists in Mexico and other Latin American countries. According to present plans, the bulletin will abstract nearly one million printed pages to permit rapid perusal of all publications on specialized topics. Research workers and institutions can write to the center for the article or periodical and will either be provided with a translation or a microfilm version of the entire work.

In Brazil, technical assistance by Unesco fits generally into the country's five-year economic development program which places heavy stress on scientific research. Six specialists and a continuing program of fellowships will be made available to the Brazilian Center for Physical Research over a three-year period. Scientists now in the field include: G. Hepp, an electronics expert from the Netherlands; the Italian nuclear physicists U. Camerini and M. Occhialini; Edmond Brun of France, a specialist in thermodynamics who is assisting in the development of the National Institute of Technology; and W. Parkinson, from the United Kingdom, who is directing a preliminary survey of the conditions of the local magnetic field to assist in identifying the mineral resources of Brazil and who is also training personnel.

In Ecuador, R. Ouvrard (France) has assisted in the development of the physics laboratory at the Central Technical College of Quito, has advised on the exploitation of water power for two nearby communities, and has made a scientific survey of Ecuador's earthquake region where construction work is going on.

In Guatemala, three Unesco experts are advising the government in technical education and assisting in the development of technical schools under a joint agreement entered into by Unesco and the International Labor Organization.

In Peru, Unesco's technical assistance program fits into the country's ten-year plan of educational development, under which seventeen percent of the national budget is to be devoted to education at every level from developing literacy to training professors. Among the specialists Unesco is sending to Peru is R. Zuckerman from France, who will contribute to the nation's education program by helping to train physics teachers.

Weather Physics

G-E to Conduct Study for ONR

A one-year study of long-distance weather migrations and cloud physics will be made by scientists of the General Electric Research Laboratory under a contract with the Office of Naval Research. Irving Langmuir, Nobel prize winner and G-E consultant, will conduct research on weather movements over long distances, extending and intensifying studies he has made on the transcontinental travel of weather systems. The laboratory study of cloud physics will be carried out by Vincent J. Schaefer, who has worked with Dr. Langmuir on cloud-seeding techniques, and by Raymond E. Falconer, G-E meteorologist. At the outset, the study will be concerned with spontaneous formations of ice crystals and the role that atmospheric dust plays in developing snow crystals. The new project has no connection with Project Cirrus, joint weather research program of the Army Signal Corps and the Office of Naval Research, which is being conducted in consultation with the G-E Research Laboratory.

Speaking at a meeting of the Institute of Mathematical Sciences at East Lansing, Michigan, on September 4th, Dr. Langmuir stated that investigation of recent rainfall patterns recorded throughout much of the country has produced new evidence of close correlation between periodic cloud seeding and periodic weather changes. First reports of the periodic nature of the weather patterns last spring seemed to refute earlier findings of high correlation with silver iodide seeding in New Mexico, he said, but a thorough study of commercial seeding operations in the West during the spring showed that seedings had been conducted at regular intervals. Commercial seedings during the middle of the week in western states, he pointed out, correlated extremely well with rainfall patterns occurring later in the week in eastern states.

The Giant Skyhook

Cosmic-Ray Balloon Fails in Test

A huge plastic high altitude balloon, the "Giant Skyhook", intended to carry a load of 250 pounds to an altitude of nearly twenty-three miles, was inflated early in September by personnel from the Office of Naval Re-

search and the engineering research and development department of General Mills, Inc., but suffered damage in the process and its load of scientific instruments had to be cut away before it was launched. The balloon, even in its perforated state, managed to reach an estimated altitude of 35,000 feet before it was automatically dropped to earth two hours later some fifty miles from the launching site in Minnesota.

ONR's plastic balloon project has been in progress since 1946 and hundreds of flights have been made from a variety of locations within the United States and from naval vessels in the Atlantic, Pacific, and Caribbean. Flight objectives have been primarily to obtain meteorological and cosmic-ray information from measuring and recording instruments carried aloft by the balloons. The particular significance of the plastic balloons used in ONR-sponsored research programs is that it has been possible to send them to high altitudes where they automatically level off and float for hours, thus enormously increasing the likelihood of observing certain of the rarer cosmic-ray events which take place in the upper regions of the earth's atmosphere. Numerous flights have been made to altitudes of about 100,000 feet, above approximately 99 percent of the atmosphere. The Giant Skyhook had been designed to rise above an additional 0.6 percent of the atmosphere at 120,000 feet, a region of considerable interest in cosmic-ray research.

The Giant Skyhook, made of 0.001-inch plastic film which, if spread flat, would cover an area of more than two acres, presents a more difficult launching and flight problem than has been encountered with the smaller balloons. According to the Navy, however, the scientific advantages of such high altitude flights and the knowledge engineers will gain in designing better balloons are sufficient to justify the project.

National Science Foundation

Graduate Fellowship Program Announced

The second graduate fellowship program of the National Science Foundation, providing awards for study during the 1953-54 academic year in the physical, mathematical, engineering, biological, and medical sciences, will get under way early this month. Most awards will be made to graduate students seeking master's or doctor's degrees in science, although a limited number will be made to postdoctoral graduates. Emphasis is placed upon awards for graduating college seniors who hope to continue their studies. Candidates will be judged on their scientific aptitude and achievement as reflected in academic records and recommendations from individuals who are familiar with their work. Predoctoral applicants will take a special examination designed to measure scientific promise and level of advancement, and all applications will be screened by panels of outstanding scientists chosen by the National Academy of Sciences.

NSF graduate fellows may attend any accredited non-profit institutions of higher learning in the United