should be addressed to Dr. Richard T. Arnold, Program Administrator, Basic Science Program, Alfred P. Sloan Foundation, Inc., 630 Fifth Ave., New York 20, N.Y.

Faculty members receiving grants under this program are designated as Alfred P. Sloan research fellows. The foundation does not wish to infringe upon the academic prerogatives of its research fellows and, as a matter of policy, agrees that they should (i) choose, without approval, the scientific problem for investigation, (ii) direct its progress, and (iii) select both the appropriate time and place for the publication of results.

Perhaps the reader has already concluded that these grants have somewhat the aspect of an award. While this is true, it should be stressed that the grants are not rewards for past achievements, but are given in the hope that they will help broaden the base of pure research and stimulate an even greater degree of creative thinking in the fundamental sciences.

How are grants negotiated? All grants are negotiated with the appropriate college or university. The funds thus made available are spent at the discretion of the scientist being supported but in accordance with the established policies of his institution. All equipment and supplies purchased under these grants become automatically the property of the institution with which the grant is negotiated. In addition, the foundation attempts to defray, in a realistic manner, indirect costs to the institution that accepts the grant.

Typically, initial grants will be made for a period of 2 years, and these may be continued for a year or two. In order to prevent having funds "spent under pressure," as an alternative to returning unexpended balances to the foundation, an effective scheme has been devised whereby unspent and uncommitted balances remaining on the terminal date of a grant may be carried forward.

Size and growth of the program. At the outset in 1955, a program was envisaged which would ultimately have an annual value of approximately $500,000. During the 2-year period 1955–57, some 75 grants were negotiated in the amount of approximately $650,000.

In the course of the first year's operation, however, it became increasingly apparent that the need for unencumbered research funds in support of highly talented individuals doing fundamental research warranted a substantial increase in the size of the program. This matter is currently under discussion in the foundation. For the year 1957–58, 76 grants, totaling some $600,000, have been approved by the trustees.

Money alone, in spite of the current need for much more of it, will not make a university great. Indeed, unless certain basic conditions obtain its effect can be deleterious [P. E. Klopsteg, "How shall we pay for research and education?" *Science* **124**, 965 (16 Nov. 1956)].

In formulating policies for this program, an attempt has been made to make funds available in such a way as to preserve the integrity of educational institutions and to respect the academic prerogatives and freedoms so essential to a scholar if his research efforts are to be commensurate with his innate capacity to do creative thinking. The responses to the program, to date, have been most gratifying and reassuring.

RICHARD T. ARNOLD
Alfred P. Sloan Foundation, Inc.
630 Fifth Avenue, New York, N.Y.

N.Y. Experiment Station Anniversary

The 75th anniversary date of the organization of the New York State Experiment Station at Geneva was 1 Mar. A unit of Cornell University and the State University of New York, the station plans to celebrate the anniversary by special events throughout the year. The station was among the first half-dozen agricultural research institutions established with public support; now every state in the Union has at least one experiment station.

Australian Physicians Plan Visit to Chinese Mainland

Leonard Cox, an Australian neurologist, who is also an authority on Chinese ceramics, visited China last May. He is seeking to arrange a visit of leading Australian physicians for an inspection of Chinese medical facilities in Peking, Shanghai, and Nanking. Cox reports that many young Chinese physicians desire graduate work in English-speaking countries. The Chinese research institutes are active, particularly in the field of tropical medicine. Cox also reports that the Peking Union Medical College Library remains intact, and is widely used.

Among those who may take the spring trip from Australia to China are the following, all from Melbourne: John Lindell, chairman of the Victorian Hospital, Melbourne; Peter MacCallun of the Cancer Council; S. Sunderland, dean of the Melbourne Medical School; T. Travers, ophthalmologist; Clyde Fitts, internist; Charles Osborn, surgeon; Howard Williams, pediatrician; and S. Houseman, anesthetist. From Canberra, Frank Fenner, professor of microbiology, is expected to be included. A group from Sydney will consist of Edward Ford, dean of the faculty of medicine, University of Sydney; I. D. Miller, neurologist; Eric Clarke, physician; J. Chesterman, gynecologist; and H. C. Barry, orthopedic surgeon.

Synthetic Penicillin

The chemical synthesis of penicillin, which for years has been one of the most baffling problems in chemistry, has been accomplished at Massachusetts Institute of Technology by John C. Sheehan, professor of chemistry, and K. R. Henery-Logan, research associate. Ten new kinds of the synthetic penicillin are now being tested for possible medical use. While the new chemical method probably will not be economical enough to compete with the established fermentation process by which penicillin is derived from molds, it is hoped that new forms will prove effective against disease organisms now resistant to natural penicillin and against a wider variety of infections. New penicillins might also have less tendency to produce allergic reactions.

The penicillin molecule is not an unusually complex one. Similar molecules, such as those of quinine, morphine, cortisone and sucrose, had yielded to synthesis. But the penicillin molecule is unstable and disintegrates easily—especially at one point in the process.

During World War II, it is estimated a thousand chemists worked in 39 laboratories in the United States and Great Britain in the attempt to synthesize penicillin. One group did succeed in producing a microscopic quantity but the process was not a methodical one and practical production was out of the question. At that time, the structure of the molecule was not thoroughly understood.

Sheehan undertook the task in 1948, and, with the help of graduate and postdoctoral students, continued the laboratory work for nearly 9 years. Final results have been announced in the 11 Mar. issue of the *Journal of the American Chemical Society.*

The Sheehan process employs reactions and technology which are expected to be useful in solving other chemical problems. It consists chiefly of a series of reactions at room temperature or below. The crucial step occurs when a carbon atom is bonded to a nitrogen atom, completing the structure of the final product, phenoxymethylpenicillin, which is known as penicillin V, the antibiotic which is commonly administered by mouth.

The research has been aided financially by Bristol Laboratories of Syra-

cuse, N.Y. Medical research is being conducted by Merck, Sharp and Dohme Research Laboratories at Rahway, N.J., where the ten new types of the synthetic penicillin were prepared. These types are all antibiologically active and could not have been obtained through the fermentation process. They are being tested on animals.

Fellowships in Psychiatry

The American Psychiatric Association has announced that the next review of applications for Smith, Kline and French Foundation fellowships in psychiatry will be held in May. Applications must be received *before 15 Apr.* by the Fellowship Committee, P.O. Box 7929, Philadelphia, Pa.

Seven chief types of Smith, Kline and French Foundation fellowships are available: (1) support for advanced training for full-time staff psychiatrists of public mental hospitals and schools for the retarded; (ii) awards to hospitals for visiting lectureships and for teaching fellowships; (iii) support for medical schools, teaching centers, and so forth, for extension training programs; (iv) student fellowships to encourage talented medical students to engage in summer activities in psychiatry (the aim here is not only to draw more students into psychiatry as a life work, but also to expand the psychiatric knowledge of those who plan to enter other fields); (v) medical fellowships to encourage broadened skill in psychiatric problems of everyday practice by physicians other than psychiatrists; (vi) foreign scholar lectureships to bring outstanding men to the United States; and (vii) residency training fellowships under unusual circumstances.

U.N. and Medical Irradiation

A recent statement by the United Nations Scientific Committee on the Effects of Atomic Radiation about the responsibilities of the medical profession in the use of x-rays and other ionizing radiation ends with the following summary.

1) The Scientific Committee on the Effects of Atomic Radiation established by the United Nations General Assembly accepts the view that the irradiation of human beings, and especially of their germinal tissue, has certain undesirable effects.

2) Information received so far indicates that, in certain countries (Sweden, United Kingdom, United States of America), by far the most important artificial source of such irradiation is the use of radiological methods of diagnosis and that this may be equal in importance to radiation from all natural sources. It is possible that such radiation may be having a significant genetic effect on the population as a whole.

3) The committee is fully aware of the importance and value of the medical use of radiations but wishes to draw the attention of the medical profession to these facts and to the need for a more accurate estimate of the amount of exposure from this source. The help of the medical profession would be most valuable to make it possible to obtain fuller information on this subject.

4) The committee would be particularly grateful for information through appropriate governmental channels on ways in which the medical irradiation of the population can be reduced without diminishing the true value of radiology in diagnosis or treatment.

John Mayor Appointed

The board of directors of the AAAS announces the appointment of John R. Mayor to the newly established position of director of education. Since September 1955, Mayor has served on the association's staff on a temporary appointment as director of the Science Teaching Improvement Program that is financed by a grant from the Carnegie Corporation of New York. The new appointment reflects a decision of the board of directors that active effort to improve the teaching of science and mathematics should constitute a major and continuing part of the association's program.

The direction of work in science education calls for a thorough acquaintance with both science and education. Mayor has both. His doctorate was in mathematics; his first major position was as chairman of the department of mathematics at Southern Illinois University; from 1947 to 1955 he was associate professor and professor of mathematics at the University of Wisconsin. Early in his career he developed an interest in the education of teachers of mathematics, and at the University of Wisconsin he held appointment in the department of education as well as the department of mathematics. At Wisconsin he also directed the work in mathematics at the university high school and for 1954–55 served as acting dean of the school of education.

The association's activities in the field of science teaching were described at the time of Mayor's original appointment [*Science* **122**, 145 (22 July 1955)]. The new appointment means that those activities can be continued under permanent and excellently qualified guidance. —D. W.

Tubercle Bacillus Anniversary

Seventy-five years ago this month the first description of the rod-shaped microorganism which is the specific cause of tuberculosis was given the world. The story of Robert Koch's isolation of the tubercle bacillus and how he proved, in a paper read before the Berlin Physiological Society on 24 Mar. 1882, that it was the cause of tuberculosis is told in the March issue of the *Bulletin* of the National Tuberculosis Association.

The organisms that Koch described are from 1/5000 to 1/6000 of an inch long and approximately 1/25,000 of an inch wide. Yet, as the *Bulletin* article points out, they are made up of protein, fats and waxes, and carbohydrates. "Their chemical composition is extremely complex, and despite the fact that for 75 years we have known how to isolate the tubercle bacillus and to grow it under artificial conditions, we still do not understand it well enough to know why it has such a predilection for human tissue and why it is so difficult to kill it in the human body without hurting the tissue itself."

Puerto Rican Health

Puerto Rico's effective health and sanitation campaign has lowered its death rate to 7.2 per 1000. This is two points lower than the United States figure.

As recently as 1940, life-expectancy in Puerto Rico's slums and farm villages was 46 years. Today, it has been raised to 68. Infant mortality, malaria, and tuberculosis all have been reduced drastically.

The main factor in this transformation has been the island's intensified health and hospital program. Since 1948, 24 health centers, a 1000-bed psychiatric hospital, and an 800-bed tuberculosis sanatorium have been constructed. The island now has 12,096 hospital beds and a $34-million budget for the Department of Health for the current fiscal year.

To staff these facilities, the University of Puerto Rico's medical school is turning out more than 50 scholarship graduates a year who are obliged to work 1 year in the Department of Health for every year they receive government financial aid to complete medical school.