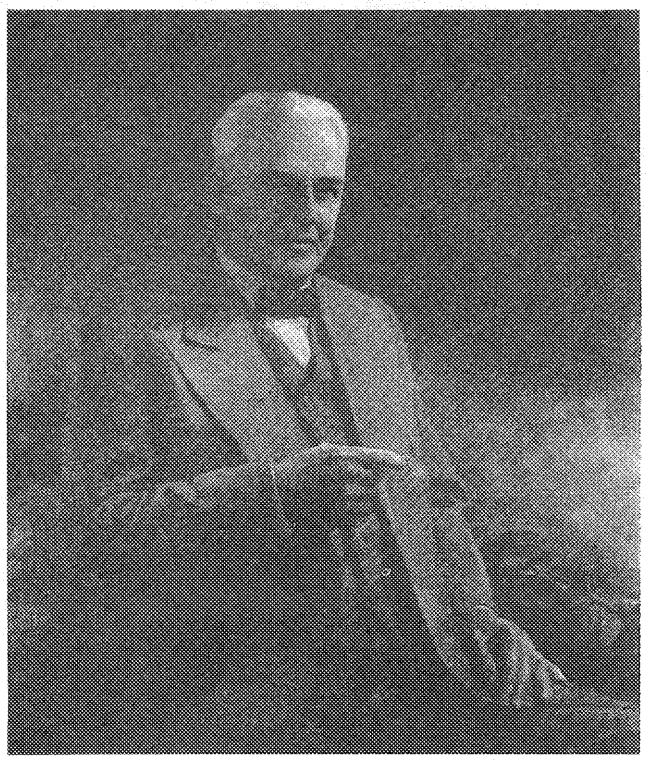
THE MONTH AT CALTECH



Millikan portrait

■ A new portrait of Robert A. Millikan (above) hangs in the first-floor corridor of Bridge. Painted by Arthur Cahill, who has done at least two other "official" portraits of Dr. Millikan—not to mention the unofficial one which hangs in the basement of the Athenaeum—the recently-completed portrait will remain permanently at the Institute.

Smog in the Plant Lab

■ In recent years many crop and garden plants in the Los Angeles area have begun to suffer from a new type of plant injury. Vegetables like romaine, endive, and spinach developed brown, dried spots on their leaves. In recent months the damage became so extensive that crops were unsalable, and in some areas the profitable culture of these vegetables became almost impossible.

Preliminary investigations put the blame on smog. At a symposium on air pollution at the Hotel Huntington last month, Dr. Frits Went, Director of the Institute's Earhart Plant Research Laboratory, reported on studies now being conducted which corroborate the original findings.

In the Earhart Laboratory a number of plants which are susceptible to smog and gas injuries (spinach, endive, romaine, beets, gladiolus, alfalfa, barley, and tobacco) are being subjected to known concentrations of gases which are known to occur in smog. Clear differential effects have been observed already. Eventually it may be possible to identify the constituents of smog which are harmful to plants, and to develop a more or less quantitative and objective test for smog.

"It can be assumed that most gases injurious to plants would be harmful to animals as well," says Dr. Went, which is why an attack on the smog problem from the plant angle seems to him particularly worth while.

Taking a long range view, Dr. Went explains that air pollution is at least partly caused by man's upsetting the natural cycle of assimilation and dissimilation.

"Instead of letting microorganisms decompose plant and animal remains," he says, "we burn them in a usually very ineffective way. Thus we not only produce air pollution, but also rob the soil of its natural source of fertility: humus."

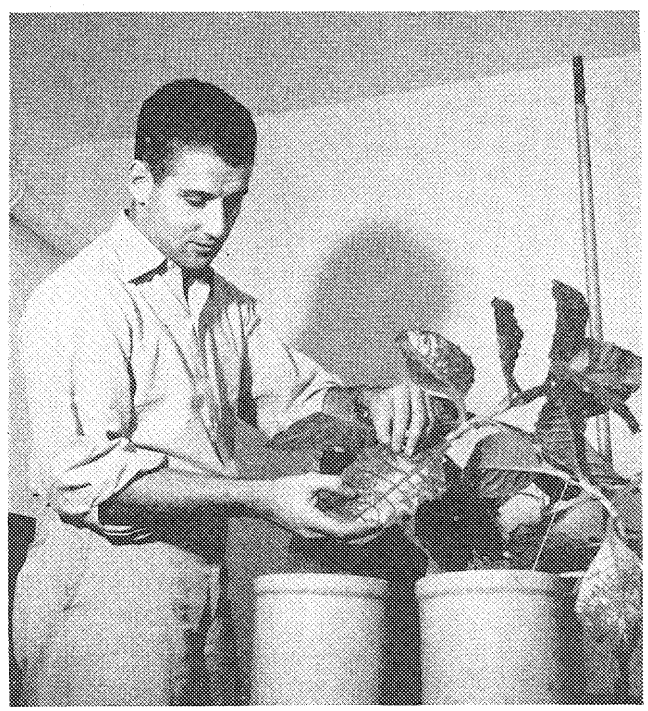
His solution: the organization of city-wide composting of refuse, hedge clippings, leaves and other combustible materials. If the system were well-organized collection and production costs could be paid out of the sale-value of the compost produced. And our soils, depleted of organic materials, could be improved.

Light on bacteriophage

■ Dr. Renato Dulbecco, who joined the Biology Department this fall as Senior Research Fellow in Biophysics, recently reported on experiments in which light had been used first to "kill" organisms, then to bring them back to life again.

The experiments were begun last year at Indiana University, where Dr. Dulbecco was working in the Department of Bacteriology, on an American Cancer Society grant directed by Dr. S. E. Luria.

In the fall of 1948 Dr. A. Kelner, working with spores of streptomyces at the Carnegie Institution for Genetics in Cold Spring Harbor, New York, discovered



Tobacco plant in Earhart Lab shows effect of smog gases.

that light in the visible range was capable of reactivating material which had been rendered inactive by ultraviolet radiation.

Several weeks after Kelner's discovery Dr. Dulbecco accidentally observed a similar phenomenon in bacteriophage (bacterial viruses) in his Bloomington, Indiana laboratory. Plates of nutrient agar containing UV-inactivated phage and sensitive bacteria had been left for several hours on a table illuminated by a fluorescent lamp. After incubation it was noticed that the number of plaques was higher on these plates than on similar plates incubated in darkness.

Subsequent experiments revealed that the phage could be "killed" by ultraviolet light of short wave length, and after 24 hours or more, could be "revived" by light of longer wave length. After they were restored to life the phage became as active as ever in halting the growth of bacterial cells.

One of the simplest organisms we know, bacteriophage are viruses present in the human body, which attack bacteria. They literally explode bacteria and eat up the cells. In Dr. Dulbecco's experiments it is significant that bacteriophage can be "restored to life" only when they have penetrated the cells they attack.

"We are more interested in the growth of the organisms than in killing them," Dr. Dulbecco says. "If, in the presence of the reactivating light, the inactivated viruses are placed in the cells, the viruses take control of the growth process like active viruses, and impress their pattern, instead of the cell pattern, on the growth." How this growth occurs, of course, is the nub of Dulbecco's research. So far unable to explain *how* light revives the bacteriophage, Dr. Dulbecco is equally unwilling to make any predictions as to the possible importance of the research results. Similar studies, however, are now under way in a number of other laboratories throughout the country.

Concentrated B-12

■ Five Caltech scientists reported in the magazine *Science* last month on a new process for concentrating Vitamin B-12 from commercially available sources. Vitamin B-12, at present, is of greatest importance in the treatment of pernicious anemia—a disease that affects some 50,000 people in the U. S. each year. Recently B-12 has been found to be as much as 9,000 times more powerful than previous treatments for the disease.

First synthesized in 1947 at the Merck Chemical Company, Vitamin B-12 has always been difficult, and expensive, to obtain. The scientists responsible for developing the new process are all members of the Biology Department at the Institute—Henry Borsook, Clara L. Deasy, A. J. Haagen-Smit, Geoffrey L. Keighley, and Peter H. Lowy. The research was done under a joint contract with the Office of Naval Research, the Navy Department and the Atomic Energy Commission.

New comet

The 48-inch Schmidt telescope at Palomar Observatory started its five-year photographic survey of the universe last month (E & S, July '49) and promptly discovered a new—or lost—comet. Though the object was first suspected to be a minor planet, subsequent photographs revealed a tail. It isn't certain yet whether the object is a large comet at a great distance or a smaller comet close to the earth. It was identified by Dr. Albert G. Wilson and his assistant, R. G. Harrington.

Honors and awards

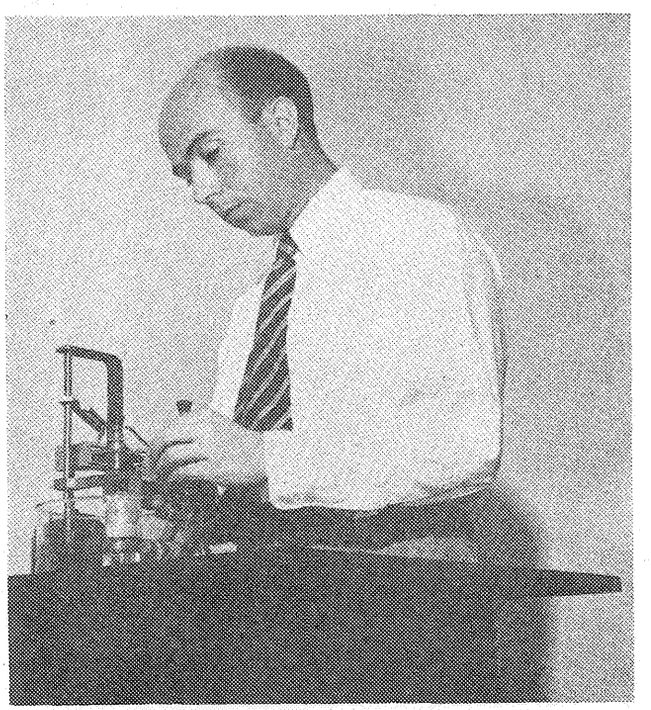
■ Professor L. Zechmeister was recently awarded the Claude Bernard Medal for his investigations in the field of biochemistry by the French Society of Biological Chemistry in Paris. Just 15 years ago he was awarded the Pasteur Medal by the same organization.

■ Prof. Warren P. Spencer, Gosney Research Fellow in Biology, has been awarded the 1949 Leidy Medal by the Academy of Natural Sciences of Philadelphia for "his distinguished studies on the occurrence of visible mutations in native Drosophila (fruit fly) populations, for his determinations of the frequencies of iso-alleles (minor variations in the standard form of a gene) in natural populations, for his contributions to population genetics . . . and for his stimulating undergraduate teaching."

Prof. Spencer, who is on leave from the College of Wooster, Ohio, has done genetic research at the Institute before, as a National Education Fellow in 1937.

■ Dr. Myron H. Nichols, who joined the faculty this fall as Associate Professor of Electrical Engineering, has received a $4,000 grant from the Research Corporation to make basic studies on the emission of electrons from hot metals, as in radio vacuum tubes.

■ Caltech students registered a clean sweep this year in the Annual Student Papers Contest sponsored by the Southern California Section of the American Institute of Mining and Metallurgical Engineers. First prize winner in the Graduate Division was Charles W. Allen, who submitted a report on the stratigraphy and structure of a part of the Puente Hills. Second place went to William R. Muehlberger, B.S., M.S. '49, whose entry dealt with the problems of origin of the granites at Barre, Vermont. First prize in the Undergraduate Division was taken by Thomas R. Fahy, '50, with a report on the geology of the Sunland area. Don E. Hibbard, '49, with a paper on the geology of the Pacoima Hills, received second prize.



Dulbecco brings "dead" bacteriophage back to life.