

Theoretical Physicist

DR. MURRAY Gell-Mann, at 26 one of the outstanding young physicists of the country, joins the Caltech staff as Associate Professor of Physics this month.

Dr. Gell-Mann comes to Caltech from a position as Assistant Professor of Physics and member of the Institute for Nuclear Studies at the University of Chicago.

A native of New York City, he received his BS degree from Yale in 1948. Two years later, at the age of 21, he received his PhD at the Massachusetts Institute of Technology. He spent the following year as a member of the Institute for Advanced Study at Princeton, N.J., and joined the teaching staff of the University of Chicago in 1952. During the summers of 1951 and 1953, he was a Research Associate at the University of Illinois. From September, 1954, until the present, he has been on a leave of absence from the University of Chicago; he spent the 1954 fall term as Visiting Associate Professor of Physics at Columbia University, and since the first of this year has been engaged in research at the Institute for Advanced Study in Princeton.

In addition to teaching at Caltech, Dr. Gell-Mann will continue his research in nuclear physics and, in particular, his studies of the life-times, decay modes and other properties of various sub-atomic particles.



Murray Gell-Mann, Associate Professor of Physics

THE MONTH

Commenting on his appointment, President DuBridge said: "Dr. Gell-Mann is one of those exceptional theoretical physicists who have attained great stature at a very young age. He has already made substantial contributions to our understanding of the theory of atomic nuclei and the basic particles of which nuclei are composed. He will be invaluable to our program of training new scientists and carrying on research at Caltech."

Academy Member

DR. HARRISON S. BROWN, Caltech Professor of Geochemistry, was elected to the National Academy of Sciences last month, bringing to 27 the number of Caltech staff members in the Academy.

The Academy, holding its 92nd annual meeting in Washington, D.C., also elected Dr. Saul Winstein, who is now Professor of Chemistry at UCLA and a Caltech alumnus (PhD '38), bringing alumni membership to 22.

Election to the Academy, one of the highest scientific honors in the country, is in recognition of outstanding achievement in scientific research. Membership is limited to 500 American citizens and 50 foreign associates.

Harrison Brown came to Caltech in 1951 to establish its geochemistry laboratories in the Division of the Geological Sciences after five years at the University of Chicago Institute for Nuclear Studies. Previously he had made key contributions to the atomic bomb, first on the Plutonium Project at Chicago and later as assistant director of chemistry at the Clinton Laboratories, Oak Ridge, Tennessee.

His special fields are investigation of the age of rocks, the abundance of elements in the universe, and the composition of the earth and of meteorites. These problems

AT CALTECH

involve the fields of chemistry, physics, astronomy and biology as well as geology, and his work has earned him the \$1000 prize of the American Association for the Advancement of Science and the American Chemical Society Award in Pure Chemistry.

He received his BS degree from the University of California in 1938 and his PhD in 1941 from Johns Hopkins, where he spent a year as an instructor before entering war research. He was born in Sheridan, Wyoming.

He is the author of *The Challenge of Man's Future*, published last year, and *Must Destruction Be Our Destiny?* (1946).

Caltech staff members previously elected to the National Academy include:

Carl D. Anderson, Robert F. Bacher, Richard M. Badger, George W. Beadle, Eric T. Bell (emeritus), Hugo Benioff, James F. Bonner, Max Delbruck, J. W. M. DuMond, Lee A DuBridge, Paul S. Epstein (emeritus), Richard P. Feynman, Beno Gutenberg, D. Foster Hewett, Charles C. Lauritsen, Carl G. Niemann, Linus Pauling, H. P. Robertson, A. H. Sturtevant, Theodore von Karman (emeritus), Frits Went, Oliver R. Wulf, and Don M. Yost.

Mount Wilson and Palomar Observatories staff members include: Horace W. Babcock, Ira S. Bowen and Seth B. Nicholson.

Harrison Brown was also named last month to a new board of editors-at-large for the *Saturday Review of Literature*. He will contribute editorials and occasional articles to the magazine, along with author Joseph Wood Krutch, historian Walter Millis, opinion analyst Elmo Roper, author John Steinbeck, and art expert Francis Henry Taylor.

Cancer Grants

AMERICAN CANCER SOCIETY grants totalling \$47,549 were made to five Caltech scientists last month. Dr. Renato Dulbecco received ACS support for the first time this year for his studies of tumor-producing viruses, and continuing grants were made to Drs. Henry Borsook, Arthur W. Galston, Herschel K. Mitchell and Frits W. Went.

In supporting research throughout the country, the American Cancer Society attacks the problem of cancer at both the clinical level—where researchers are trying to find cures for cancer—and at the basic level—where researchers are seeking the causes of cancer. The \$47,549 granted to Caltech this year is entirely in support of fundamental research.

Dr. Renato Dulbecco, Professor of Biology at Caltech, and Research Fellow Harry Rubin are studying the viruses which are known to produce tumors in animals. They are investigating what viruses in general do to cells, and how tumor-producing viruses turn a normal cell into an abnormal tumor cell. This work may help answer the question of whether viruses play any significant part in human cancer. Plans include research with human tissue cultures. The project received a National

CONTINUED ON PAGE 34



Harrison Brown, elected to the National Academy

grant of \$15,000 from the ACS, and a California Division grant of \$7,232.

One of the most important questions concerning the basic phenomena of growth involves the study of protein synthesis. Dr. Henry Borsook, Professor of Biochemistry, is in charge of continuing research at Caltech on the process by which proteins are made from amino acids. He and his colleagues are tracing the chemical reactions involved in this aspect of the growth process. The work received a \$7,500 ACS grant.

Dr. Arthur W. Galston, Associate Professor of Biology, received a grant of \$7,417 for his continuing studies of the action of enzymes in plant cell growth, with particular regard for agents controlling the cessation of growth. The enzyme peroxidase, which he is studying, affects this cell aging by destroying the growth hormone. Parallel findings in animals and humans with cancer indicate that the enzymatic action may be closely related.

Dr. Herschel K. Mitchell, Professor of Biology, was given \$6,804 for his studies of how cells make nucleic acids—which are considered to be key substances in growth—and what chemical changes are produced in this process. The work may play a significant role in understanding cancer as a disease which alters the chemical production of cells.

Dr. Frits Went, Professor of Plant Physiology, was granted \$3,596 for his research concerning the differentiation of living plant tissues of various specialized organs. The work is important to the study of cancer because malignant tissue loses its ability to function in its normal individual pattern. Instead, the malignant tissue grows in a disorganized fashion, without pattern, crowding out the healthy tissue and eventually destroying the organism.

Harvey Mudd

HARVEY SEELEY MUDD, vice president of the Caltech Board of Trustees, died of a heart attack on April 12 at his home in Beverly Hills. He was 66 years old. Mr. Mudd had been a member of the Board since 1929, serving on the finance committee and, later, on the executive committee. Mudd Laboratory, on the Caltech campus, was given to the Institute by his mother, in memory of his father, the late Col. Seeley W. Mudd.

Born in Leadville, Colorado, Harvey Mudd came to Los Angeles with his family in 1902. He went to Stanford for two years, then transferred to Columbia University, where he received the degree of mining engineer in 1912.

In 1918 Mr. Mudd became president—and later, chairman of the Board—of Cyprus Mines Corp., succeeding

his father. As head of this corporation, he developed and managed copper mines in the Mediterranean area, an iron mine in Peru, and oil properties in the United States. He served as president of the American Institute of Mining and Metallurgical Engineers, and was given a scroll by the Engineers and Architects Association for his outstanding achievements in engineering. In 1949 the Columbia University Engineering School Alumni Association awarded him its Egleston Medal for distinguished engineering achievement—the highest honor in the field of engineering.

For more than 25 years Mr. Mudd was an outstanding Los Angeles civic leader. At his death he was chairman of the Board of the Southern California Symphony Association, the Welfare Federation of Los Angeles, and Greater Los Angeles Plans, Inc. Among his other cultural activities, Mr. Mudd was a trustee and former president of the Southwest Museum, a member of the Board of Governors of the Los Angeles County Museum, a member of the advisory committee of the Henry E. Huntington Library and Art Gallery, and chairman of the Board of Fellows of Claremont College.

Mr. Mudd's will leaves \$50,000 to Caltech for research on the genesis of ore deposits.

Commencement Speaker

CLARENCE B. RANDALL, chairman of the Board of the Inland Steel Company, will deliver the Commencement address at Caltech on June 10.

Mr. Randall organized and headed the Commission on Foreign Economic Policy which drew up the tariff plan presented to Congress in 1953. Since that time he has served as a foreign economic consultant to President Eisenhower.

A 1912 graduate of Harvard, Randall received his law degree there in 1915. After practicing law in Michigan for ten years, he joined the Inland Steel Company in 1925, and served as its president from 1949 to 1953.

Mr. Randall is the author of "A Creed for Free Enterprise" and "Freedom's Faith," books dealing with the role of business and industry in present-day America. He is also active in the field of education; now a trustee of the University of Chicago, he has served as a trustee of Wellesley College and as a member of the Harvard Board of Overseers.

Guggenheim Fellows

DR. JOHN D. ROBERTS, Professor of Organic Chemistry, and Dr. Robert L. Walker, Associate Professor of Physics, were awarded John Simon Guggenheim

THE MONTH . . . CONTINUED

genheim Fellowships last month to carry on studies in their special fields of research.

Dr. Roberts intends to study the possibility of fixing molecular nitrogen under mild conditions with organic reagents, in hope of providing reasonable chemical models for mechanical considerations involving biochemical systems.

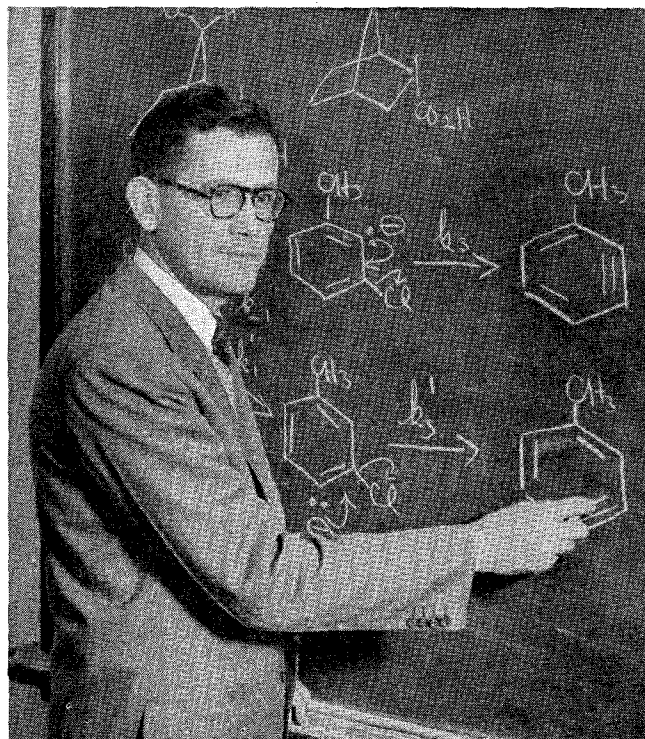
Dr. Walker will study the interpretation of experiments in high energy physics.

AAAS Meeting

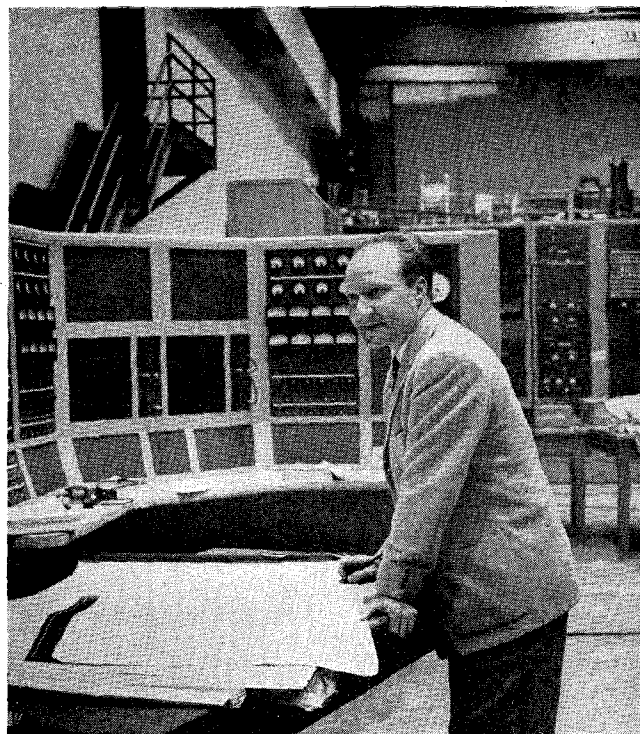
CALTECH plays host next month to the Pacific Division of the American Association for the Advancement of Science, which will be holding its 36th annual meeting here from June 20 to 25.

This will be the largest scientific gathering ever held at Caltech. More than 1000 delegates from the western states, British Columbia, Hawaii, and Alaska are expected to attend the meeting, at which 25 societies affiliated with the AAAS will present programs covering current developments in astronomy, biology, botany, chemistry, geology, physics, physiology, psychology and zoology.

The major lectures to be given at this meeting will be open to the public—including an address on "The Support of Ideas" by Dr. Dean Rusk, president of



Dr. John D. Roberts, Professor of Organic Chemistry, and recipient of a Guggenheim Fellowship.



Dr. Robert L. Walker, Associate Professor of Physics, awarded a Guggenheim Fellowship.

the Rockefeller Foundation, and a Sigma Xi lecture by Dr. Linus Pauling, Nobel Laureate and chairman of Caltech's Division of Chemistry and Chemical Engineering.

Dr. George W. Beadle, chairman of Caltech's Division of the Biological Sciences, and national president of the AAAS, will also speak.

General chairman of the meeting is Dr. Arthur W. Galston, Associate Professor of Biology at Caltech.

Tuition Goes Up

STUDENT TUITION FEES at Caltech will be raised next year from \$600 to \$750. This increase—long considered—has finally been dictated by the need for additional income to meet the growing costs of the educational program, and particularly the need to continue to make selective salary increases to faculty and employees.

At \$750, Caltech tuition fees are still low. Pomona College recently announced an increase to \$800. MIT tuition, which has been \$900, will go to \$1,000 next fall. Princeton will also charge \$1,000, and practically every other major private institution is charging between \$750 and \$1,000.

Caltech tuition fees would have to be far greater than \$750 if it were not for the fortunate fact that the Institute's endowment yields an income more than twice as great as that which is provided by student fees, and the Institute receives gifts and grants whose total is almost as large as the endowment income.

A 25 percent increase in scholarship funds will match

the 25 percent increase in tuition fees for the coming year, so that students who qualify for scholarship aid may receive larger grants than before.

New Honors

SCARCELY A MONTH goes by now that Dr. Theodore von Karman, Caltech Professor of Aeronautics Emeritus, isn't awarded new honors for his distinguished contributions to aviation. Latest additions: The Exceptional Service Award, the highest award presented by the Air Force to a civilian; and nomination by Pope Pius XII to membership in the Pontifical Academy of Sciences.

The citation accompanying the Air Force award reads: "For more than a decade Dr. von Karman has served Air Chiefs Arnold, Spaatz, Vandenberg and Twining as chairman of their scientific advisory organization . . . giving sound imaginative advice on technical problems when such counsel was desired . . . Throughout this work Dr. von Karman's management of this scientific effort has been of the highest order and by his exceptionally farsighted vision and personal dedication to

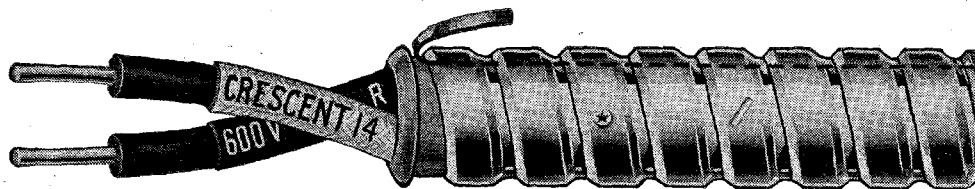
Air Force interests he has effected great contributions to the achievement of the advanced weapons systems that now characterize the United States Air Force."

Counselors

DR. ROBERT F. BACHER, chairman of Caltech's Division of Physics, Mathematics and Astronomy, has been appointed to serve on a new committee set up by the National Academy of Sciences to "counsel" with the government on its policy with regard to relationships between questions of loyalty and the awarding of government grants and contracts in support of unclassified research.

The committee, formed in response to a request from the Eisenhower administration, is headed by J. A. Stratton, vice president and provost of MIT. In addition to Dr. Bacher, its members are: Laird Bell, Chicago attorney; Wallace O. Fenn, Professor of Physiology, University of Rochester; Robert F. Loeb, Professor of Medicine, Columbia University; E. Bright Wilson, Jr., Professor of Chemistry, Harvard University; and Henry M. Wriston, president of Brown University.

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