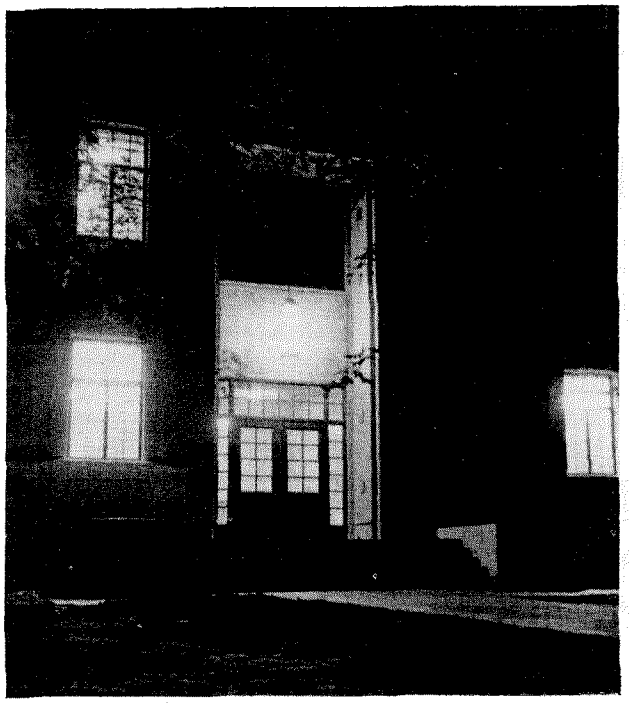

THE SUMMER AT CALTECH

Engineering Building

As THE NEW SCHOOL year started, workmen were still putting the finishing touches on the new engineering building on campus—though the offices were all occupied and most of the laboratories in operation nevertheless.

A $500,000 structure, the new building adjoins—and extends—the present Mechanical Engineering building, making one continuous structure which is now called the Engineering Building. It is three stories high, with two basements and 34,000 sq. ft. of floor space.

In planning the building the general policy was to make it as nearly flexible as possible. It has no geegaws or arrangements for special gadgetry which might be unique today and outmoded tomorrow. Consequently it is a severely simple and eminently usable general-purpose building.

It houses Civil Engineering, Applied Mechanics (and those teaching advanced mathematics to engineering students). There are two general classrooms and four special classrooms for the use of graduate students. Several general research rooms provide much-needed space for graduate students and faculty members engaged in Institute research or that sponsored by outside agencies.

The sub-basement of the building is completely devoted to metallurgy and the materials problem. Lab space is also available for additional work on the properties and strength of materials, for work on corrosion, using radioactive tracers; and for the testing lab itself. Space has also been provided—and facilities new to the Institute—for research in concrete, complete with curing rooms with controlled temperature and humidity. There are improved facilities for soil mechanics work—both instruction and research. And there are new facilities for dynamics research and vibration work.

When the engineers, who had been pretty much scattered around the campus, packed up and headed for the Mecca of the new Engineering Building, they set off a chain reaction. The Electrical Engineering Department took over part of the space in Throop that had been vacated by Civil Engineering. The Institute Purchasing Office moved into another part of the old C.E. quarters. The Graduate Office moved into the old Purchasing Office in Throop. The Bookstore expanded into the space left by the Soil Mechanics Lab in Throop. Electrical Engineering set up its Servo-Mechanisms Lab in what had been the Testing Materials Lab in Throop. And E & S, not to be left behind, took over the engineers' eyrie in the Throop tower.

Present plans are to hold an open house in the new Engineering Building early in November.

Merrill Tunnel

On AUGUST 31 THE INSTITUTE dedicated a new subsonic wind tunnel on the campus, officially known as the Merrill Tunnel, in honor of Albert A. Merrill, veteran Caltech instructor and a pioneer in the field of aeronautics.

The new tunnel was designed for a top speed of about 175 miles an hour. Approximately 110 feet long, it has a 32 by 45-inch test section, which can handle models with a wing span up to 40 inches. Power is supplied by a 75-horsepower electric motor with a three-bladed fan, and speed is attained through control of the pitch of the fan blades. The tunnel will have a balance system capable of handling six component forces.

This is the eighth wind tunnel on campus. These now range in size from a 2½-inch supersonic tunnel to a 10-foot one, and in speed from 175 miles an hour (the

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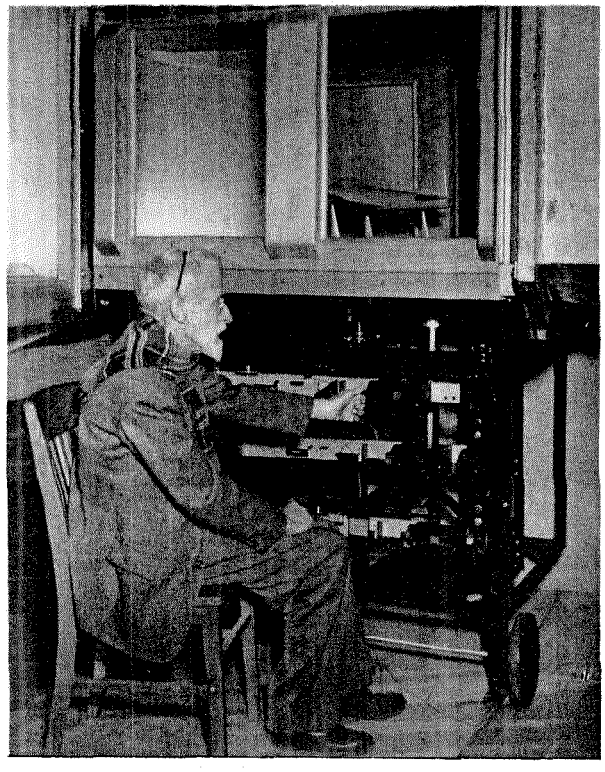
Merrill) to ten times the speed of sound (the hypersonic tunnel—E&S, Nov. '49).

The subsonic Merrill tunnel will be used for instruction and student research work, and will also be available for industrial research in the field of low-speed aerodynamics for planes and missiles as well as for testing aircraft components.

Albert Merrill came to Throop College—forerunner of Caltech—in 1917 when the first wind tunnel was built on the campus. He was, in fact, entrusted with the supervision of the design, construction and operation of the tunnel, which continued in operation until it was destroyed by fire in the '30s.

Mr. Merrill's interest and activity in aeronautics dates back as far as 1892, when he graduated from high school in Boston and delivered a commencement address on progress in flying. Shortly before 1900 he was one of the founders of the Boston Aeronautical Society—probably the first such society in this country.

At the dedication of the Merrill Tunnel last month Dr. Clark Millikan, Director of the Guggenheim Aeronautical Laboratory, recalled some of the countless practical aeronautical inventions for which Dr. Merrill was responsible. One of his early patents was the "Up Only" aileron, which gave lateral control by deflecting upwards only. This eliminated the drag on the down aileron and accordingly eliminated the necessity for the combined use of rudder and aileron—a combination that was one of the basic elements in the famous Wright patent which dominated the field for so many years.



Albert A. Merrill

Another of Mr. Merrill's inventions was the stagger-decalage biplane, which furnishes automatic longitudinal stability without the use of an auxiliary tail.

His most important contributions, however, have been associated with a number of ingenious and powerful techniques for getting accurate and precise experimental data with inexpensive, simple tools.

He was probably the first experimenter to use an automobile to tow a glider for launching purposes. He was the first inventor and user of an "open-air wind tunnel" for testing full-scale manned, captive gliders. He developed the first moving tube micromanometer, which has since become the standard precision manometric instrument of practically all aeronautical laboratories.

But perhaps his greatest contribution was the development of a very small, inexpensive wind tunnel which one man could operate by himself, and hence produce very inexpensively and quickly, valuable scientific data. The new Caltech tunnel, which bears his name, is such a one. It is located above the archway which connects the Central Shops Building with the Optical Shop.

Radiation Detection

CHARLES LAURITSEN, Professor of Physics, and his son Thomas, Assistant Professor, announced this summer that they had developed a pocket-size radiation detector for general use in case of an atomic disaster.

Several years ago C. C. Lauritsen invented a highly sensitive radiation-measuring device to be used for the protection of people engaged in work with radioactive materials or with X-rays. The new detector, intended for possible use by citizens, rescue teams and military personnel, is simpler, cheaper to make, easier to use, and more rugged.

The device will go into production shortly at the Consolidated Engineering Corporation in Pasadena. First production models will probahly go to atomic energy centers, while later models will go to civilian defense headquarters throughout the nation. Sometime next year production should reach the point where the detectors can be sold to the public. They will probably retail at from $15 to $25.

Radiation, of course, is undetectable by the senses. A general body dose of a few hundred roentgens, accumulated in a sufficiently short time, may produce no visible effect but may, nevertheless, result in death in a few days or weeks. Anyone carrying the Lauritsens' pocket-detector, which is about the size of a pack of cigarettes, would be able to determine whether he was absorbing too much radiation. A dial on the face of the instrument records, cumulatively, the amount of radiation absorbed over a 24-hour period. If the dial takes a full 24 hours to reach its maximum point, the person carrying the instrument is safe; but if the dial moves rapidly toward the maximum, the radiation is dangerous. At the

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end of each 24-hour period, the turn of a knob recharges the instrument for another day.

The instrument is essentially an electrostatic voltmeter of low capacity, mounted in a case that serves as an ionization chamber, and provided with a friction charging device. The voltmeter movement consists of a stiff, light aluminum needle, mounted in a simple pivot arrangement with a spiral restoring spring and repelled by a fixed arm at the same potential. The meter movement, including the repelling arm, is insulated from the case. A stop prevents accidental discharging by limiting the motion of the needle.

Patents on the detector are held by the California Institute Research Foundation, and royalties will be used for Institute research.

Arrival

DR. RICHARD P. FEYNMAN has joined the Institute faculty this fall as Professor of Theoretical Physics.

Dr. Feynman comes to Caltech from Cornell University where he has been a member of the Laboratory of Nuclear Studies since 1945. During the war he was a group leader at the Los Alamos Laboratory, and prior to the establishment of that laboratory he worked on earlier stages of the Manhattan project at Princeton University.

Since 1945 Dr. Feynman has made important contributions to our understanding of the structure of the atom and its nucleus. In this work he developed what have become known as "Feynman Diagrams," a technique which has speeded up and simplified many calculations in the field of quantum mechanics. More recently he has been working in the field of quantum electrodynamics, and here too he has added to our understanding of electrical phenomena within the atom.

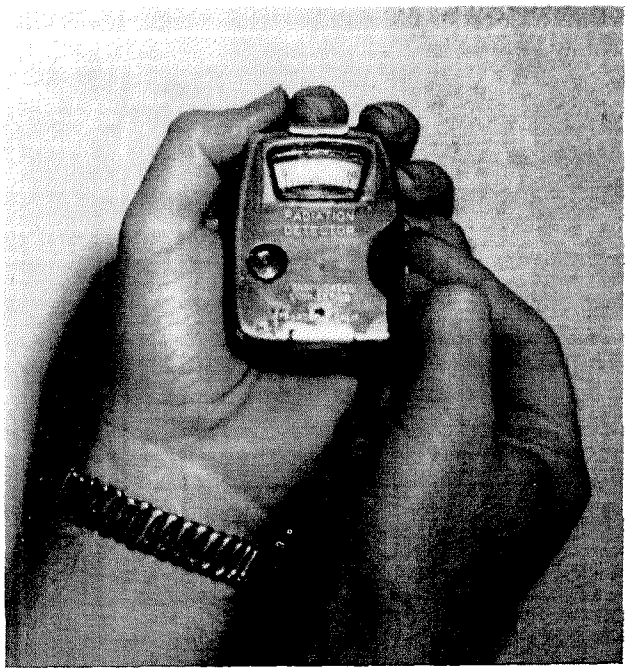
Last spring Dr. Feynman delivered a series of 12 lectures at Caltech on "Quantum Electrodynamics and Meson Theories," as a part of a series of physics seminars in which other outstanding physicists participated—including Dr. J. R. Oppenheimer, Director of the Institute for Advanced Study at Princeton, N. J., and Dr. I. I. Rabi, Nobel Prize winner in Physics from Columbia University.

A native of New York, Dr. Feynman obtained his bachelor of science degree at the Massachusetts Institute of Technology in 1939 and his Ph.D. degree at Princeton in 1942.

According to President DuBridge, Dr. Feynman's appointment here means that "the Institute now has a well-rounded team of some of the ablest experimental and theoretical physicists in the country."

And Departure

DR. HOWARD P. ROBERTSON, Professor of Mathematical Physics, has taken a leave of absence from the Institute to serve as Deputy Director of the Weapons System Evaluation Group of the Department of Defense in Washington. The Group was set up in 1948 primarily to analyze and evaluate present and future weapons systems. Dr. Robertson, who came to the Institute in 1947, was a member of the National Defense Research Council from 1940 to 1943, and served as a scientific liaison officer to the London Mission of the Office of Scientific Research and Development from 1943 to 1946. He was also an expert consultant to the Secretary of War from 1944 to 1947.



Working model of the Lauritsen radiation detector

Hughes Fellows

HOWARD HUGHES FELLOWSHIPS in Creative Aeronautics have been awarded this year to Arthur E. Bryson, Jr., of Temple City, Warren E. Mathews of Pasadena and Norman M. Wolcott of Westwood, Calif. Each of the three men will receive a grant from the fund established by Hughes to cover tuition and research expenses, as well as a salary from the Hughes Aircraft Company for work done in connection with study at the Institute.

The fellowship program, combining advanced theoretical training at the Institute with industrial tutorial training at the Hughes Aircraft Company in Culver City, was set up last year in recognition of the growing need for creative research men in aeronautics. The three men awarded fellowships this year are the second group to participate in the program.

Arthur Bryson, 24, attended Haverford College and Northwestern Missouri State Teachers College, and began graduate study toward an advanced degree in aeronautics at Caltech last year.

Warren Mathews, 28, received his B.A. at Ohio Wesleyan University, and an M.S. degree in electrical en-

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gineering at M.I.T. in 1944. He entered Caltech in 1949 and is working towards an advanced degree in classical theoretical physics.

Norman Wolcott was graduated from Harvard University in 1949 and received an M.S. in physics there this year. He will study for an advanced degree in physics at Caltech.

Flair on Campus

MAYBE YOU MISSED the College Review Issue of *Flair* in August—in which case you missed the handsome picture, reproduced below, of Caltech's ASCIT Prexy Ulrich Merten. Merten appeared in a line-up of Big Men on Campus, representing Princeton, Minnesota, Virginia and Caltech respectively—Caltech being characterized by *Flair* as "reputedly the toughest, most advanced, best-equipped technical school in the country."

More than this, though, you missed a good deal of miscellaneous information about Mert's wardrobe. What good this information will do you—or anybody, for that matter—is hard to say, though it's clear that *Flair's* reporter had a regular whee of a time riffling through Merten's dresser and closet in pursuit of the information.

Well, Mert, it seems, keeps his clothing budget down to $200 a year on principle. His premium on neatness forbids his wearing the usual Caltech T shirt and Levis; in fact he doesn't even own a pair of blue jeans, and though he has three or four T shirts he only wears them when tinkering with his car. He has five white shirts, five short-sleeved patterned sport shirts, and five long-sleeved solid-colored sport shirts. This puts Mert way out in front of *Flair's* other BMOCs on shirts, though the Virginia representative takes the lead in suits (7) and is also on record as owning a pair of cuff links, while the Princeton man has the most trousers (5). All of which may possibly have some signficance.

Mert owns 20 ties—all loud, all gifts, and 16 of them never worn.

He has three sport jackets, a dark blue winter suit, an off-white Palm Beach suit, a tuxedo, two pairs of shoes, two sweaters, a raincoat, and three pairs of pajamas for winter wear. "In summer," this little rhapsody on raiment concludes, "he sleeps in his shorts."

Everybody up on Merten's wardrobe now? Further inquiries may be directed to *Flair*. Meanwhile this should at least provide the other occupants of Merten's entry in Ricketts with a good, sound working knowledge of the kind of finery that is available to them if they just play their cards right.

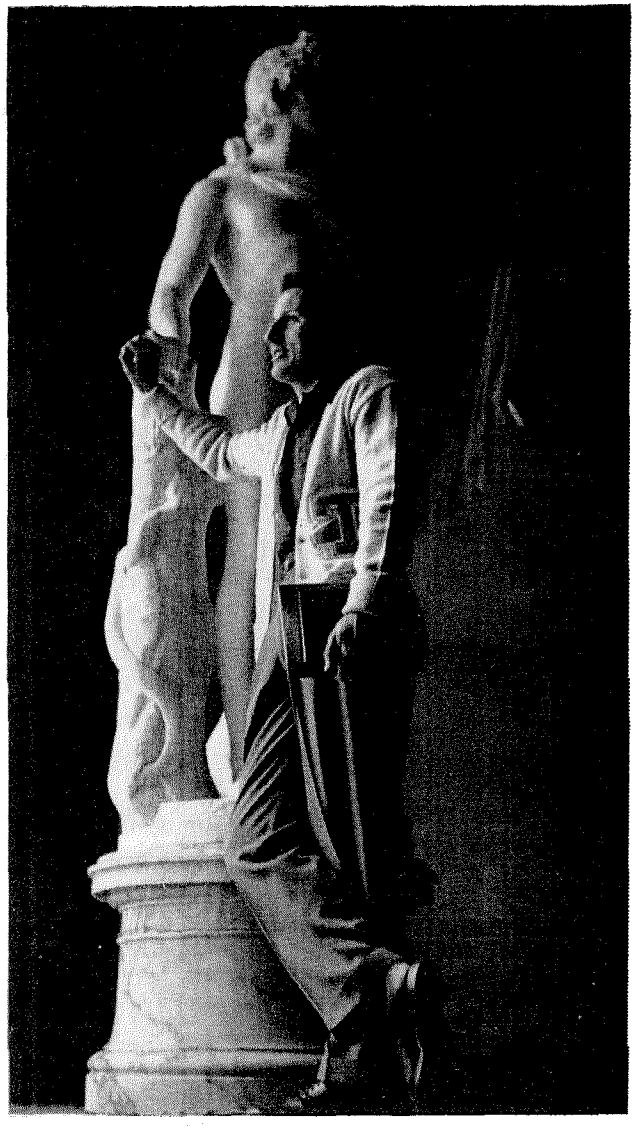
Honors and Awards

DR. IRA S. BOWEN, Director, and Milton Humason, Secretary of the Mt. Wilson and Palomar Observatories, received honorary Doctor of Philosophy degrees from the University of Lund, Sweden, in June. In announcing the awards the University faculty cited Dr. Bowen for his contributions in both atomic and astrophysical research, his interpretation of spectra of nebulae, and the fact that he directs the two largest observatories in the world. Dr. Humanson's citation was for his contributions to astronomical research, and particularly for his "magnificent observation work" in measuring the spectra and radial velocities of far-distant galaxies.

William Howard Clapp

WILLIAM HOWARD CLAPP, Professor Emeritus of Mechanism and Machine Design at the Institute, died on August 7 at the home of his son, Roger, in Vista, Calif. He was 76 years old.

Born in Cleveland, Howard Clapp received his college training at the University of Minnesota. He joined the Caltech faculty in 1911, when the school was called Throop Polytechnic Institute, and served actively until 1944.



Merten and Apollo—Merten's the one in clothes