

of Ships, and engaged in research and engineering work allied with the Navy's submarine program.

Fred returned to Edison as assistant manager of industrial sales after completion of his project at Columbia University in July of 1945. Recently he has been appointed district manager of the Edison Company's Compton district.

Howard B. Lewis, '23, entered C.I.T. in 1918, when the Institute was still the Throop College of Technology. Due to the loss of a term in his junior year with eye difficulties, he received his B.S. degree "in absentia" in 1923. He taught and studied at Cornell the following year and acquired an M.E. degree from Cornell in 1924.

After a year of teaching physics at Riverside High School, he spent six years with Howard Hughes as an experimental engineer, manager of the Hughes Development Company, and general manager and assistant to the president of Multicolor, Ltd., a production laboratory for the processing of colored and black and white motion picture film. These operations were drastically curtailed when the crash came and Howard Lewis found himself out in the cold world in the bottom of the depression. From this unhappy position he started a ten-year program of the development and proof of a philosophy and formula under which an engineer, or group of engineers, could maintain a reasonable degree of independence of action, and obtain and retain a fair proportion of the earnings resulting from the work done.

Work, worry, and luck brought sufficient success and security to justify expansion, and in 1940 Howard Lewis and Glen M. Larson formed the Lewis-Larson Company. They bought a building at 5959 South Hoover Street, Los Angeles, and remodeled and equipped it to serve as offices, laboratories, and experimental shops for twelve to fifteen men. There they gathered a group of men of varied talents able to do justice to almost any problem in the fields of mechanical, electrical, or chemical engineering not involving the expenditure of great blocks of manpower. The efforts of the Lewis-Larson Company have been devoted primarily to the service of the smaller business which needs high grade engineering services, but insufficient quantities of such service to justify maintenance of an adequate engineering staff of its own.

A REFRIGERATED ALTITUDE CHAMBER

(Continued from Page 9)

borhood of -100°F. and $+200^{\circ}\text{F.}$, with gratifying results as to uniformity throughout the chamber and constancy over the time periods involved.

Cost figures for this installation may be of interest to some readers. The basic chamber and operating equipment cost about \$60,000, excluding engineering design time. The complete installation, including those accessories (such as the controlled air source) which are required for special tests, and also including design costs, represents an investment of about \$75,000. A continuous and substantial backlog of items awaiting tests is convincing evidence of the usefulness of this equipment.

RECEIVES WILLARD GIBBS MEDAL

DR. LINUS C. Pauling, chairman of the California Institute of Technology chemistry division, and noted for his work on molecular structures, will receive the nation's highest award for progress in chemistry, the 35th annual Willard Gibbs Medal of the American Chemical Society, the society announced June 4.

C. I. T. NEWS

SUPERSONIC WIND TUNNEL

CALIFORNIA INSTITUTE OF TECHNOLOGY has just been granted priority approval by the Civilian Production Administration to erect a \$150,000 addition to the aeronautics laboratory of the Guggenheim Graduate School. Housing a hypersonic wind tunnel which will be used for studies of projectiles at higher-than-sound speeds, the five-story structure will also contain classrooms for Army and Navy officers training in the special laboratory. Equipment valued at \$90,000 will be installed in the building.

It will be recalled that the Cooperative Wind Tunnel has operating conditions to cover speeds up to the velocity of sound. A \$2,500,000 project, financed and owned by four southern California aircraft companies—Consolidated Vultee Aircraft Corporation, Douglas Aircraft Company, Inc., Lockheed Aircraft Corporation, and North American Aviation, Inc.—the Cooperative Wind Tunnel is operated by the California Institute of Technology, and dedicated to the development of aeronautical science in war and peace, in the hope that America will always retain her leadership in the air.

ATHLETICS

By H. Z. MUSSELMAN

Director of Physical Education

ALL the spring sport teams, Track, Baseball, Tennis, and Swimming, experienced a very mediocre season, with victories few and far between. No contests in any of the four sports were won from Southern Conference opponents.

In contrast to the past three years, the 1946 teams were composed almost entirely of inexperienced material, most of which was about one year removed from varsity standards. On the whole, the Caltech teams were a little below pre-war standard, while our opponents, finding a greater response from former service men, were somewhat stronger than normal.

Coach Mason Anderson held a six-week spring football practice with thirty-five men reporting. At present, only one letterman from last year's team, Don Hibbard, end, is in school. However, about six lettermen who played on the 1944 and 1945 teams expect to be separated from the Service this summer, and are planning to enroll at the Institute this fall. Their return will greatly brighten the 1946 football outlook.

INVENTOR OF SYNCHOTRON

A NEW atom-smasher called the synchotron three times as powerful as the betatron, the next largest atom-smasher, is scheduled for completion at the University of California early next year, according to an announcement received from that institution.

The synchotron was invented by Dr. Edwin M. McMillan, one of the co-discoverers of neptunium, element 93, used in the manufacture of the atomic bomb. Dr. McMillan received his B.S. degree in 1928 and his M.S. in 1929 from the California Institute of Technology. As an undergraduate at C. I. T., Dr. McMillan took an active

part in extra-curricular activities. He was a member of Tau Beta Pi and Sigma Xi, as well as an energetic worker on the Tech staff and the Big-T staff.

Dr. Ernest O. Lawrence, Nobel prize winner and head of the University of California's radiation laboratory, said that the new synchotron is as important a development in atom-smashing as was the cyclotron. With the aid of the new equipment scientists hope to study the fundamental forces which hold matter together. The announcement said that the new atom-smasher may produce energy equal to that of the cosmic rays, which are the most powerful forces yet encountered by science.

The synchotron will accelerate electrons to energies of 300,000,000 electron volts, thus converting them into cosmic rays. At that velocity, Lawrence said, atom smashing "will mount a new threshold."

THE MONTH IN FOCUS (Continued from Page 3)

ing speed up to four times the velocity of sound now exist, one of them at C.I.T. However, the Caltech experiment is the first involving hypersonic speeds where air velocities up to seven times the speed of sound are produced.

The new president of C.I.T., Dr. Lee DuBridge, who supervised a staff of 3,900 to develop radar during the war, declared on his recent visit to the campus that the most important duty ahead for Caltech and similar institutions is that of supplying the nation with research engineers. Looking toward a future where man will at least have realized some of his cherished dreams of peace and security, Dr. DuBridge said, "The world is not going to disappear in a cloud of atomic dust, nor will an atomic bomb ignite the nitrogen in the atmosphere to give birth to another blazing sun." This danger, often expressed, he declared, has been scientifically disproved. But atomic energy is one million times greater than any form of energy yet known to man, and to determine how intelligently this will be used is the job of the research engineers and the research scientists of England and Russia and the United States, and of all other countries, working together with industries and governments.

Careful integration of all existing specialized knowledge with the avowed purpose of making it best serve the needs of civilization, plus unflagging concentration on basic research, would seem to be the scientific approach to disentangling the confusion and indecision among our contemporaries. For it is only by such a controlled method that we shall be able to avert the inherent dangers of too much specialized knowledge.

COLLECTIVE BARGAINING (Continued from Page 13)

sonal friction, irritations, and misunderstandings are bound to develop. The professional employee is no exception. Prompt, intelligent, and impartial handling of complaints and grievances is essential to the development of loyalty and morale. Other non-financial considerations include a clear statement of duties and responsibilities as well as the engineering standards that are to be attained, adequate information concerning company policies, programs, and other matters of concern to engineers, working conditions and treatment on the job which measure up with the job's importance and which will buttress the engineers' desire to be regarded as an essential part of management.

In closing, the writer would stress the fact that a majority of American engineers still believe that they can count on management to help them to achieve their basic wants. They still prefer to "go it alone." How long they will continue to feel that way about it depends on a number of factors. Perhaps the most important single factor is management itself. Will management have the foresight to create working relationships which will make for understanding, confidence in each other's honesty of purpose and fair dealing, a will to cooperate, and mutual accommodation when conflicts of interests arise? Such a relationship may not forestall unionization. Engineers may still find it necessary or advisable to establish or join labor organizations. In that event, however, the relationship described above would be no mean asset and should help to make collective bargaining a constructive force within the company.

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