THE INSTITUTE AND THE FIRST WORLD WAR

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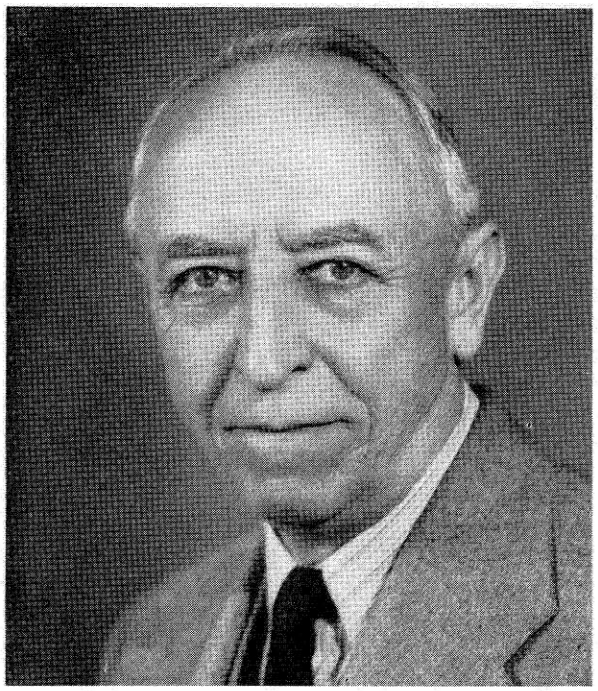

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HARRY CLARKE VAN BUSKIRK

What follows should not be looked upon as a historical treatise but rather as the random recollections of a staff member.

The college department of Throop Polytechnic Institute moved to the present campus in September, 1910, and after the excitement and bustle of registration were over it was found that we had twenty-seven students. Later registrations swelled the grand total to thirty-one for the year. Attendance increased steadily and for the year 1914-15, following the outbreak of war in Europe, had reached ninety-one.

As the European war progressed it became increasingly evident that sooner or later the United States would be drawn into the conflict. In April, 1916, President Scherer announced that a system of voluntary military training would be introduced the following September. Upon petition by the students the military training was made a part of the required curriculum. The same spring President Scherer advised the students who could afford it to take the citizens' summer training course at Monterey, and followed up this advice by taking the course himself. With the opening of college in the fall a unit of the R.O.T.C. was established with Captain Louis R. Ball, U.S.A. (ret.) as Commandant. In March, 1917, before war was declared, the first volunteers, Bruce Burns and Frank R. Mosher, juniors, and Paul A. Scherer, a sophomore, left the college to join the U.S. Navy.

Shortly after the United States entered the war plans were made to hold a training camp on the campus west of Throop Hall, but the war department finally decided to concentrate efforts on the Presidio camp at San Francisco and the plan was abandoned.

MID-YEAR CLASS ADMITTED

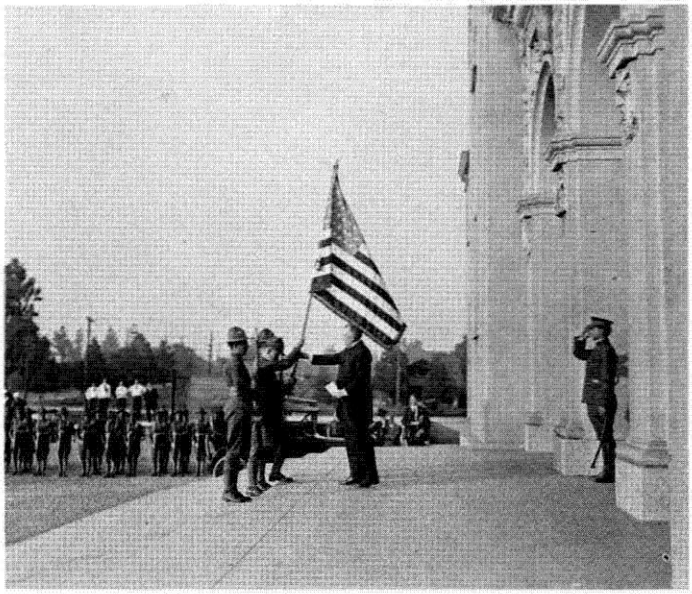
Because of the need for engineers it was decided to admit a freshman class at the mid-year. An invitation was extended to high school students who completed their courses at the mid-year and to a selected group of seniors who would normally have graduated from high school the following June. On this basis a class of thirty-one students was admitted in February, 1918. They continued their work during the summer and entered the regular sophomore class the following fall. The tempo for the juniors and seniors was also increased and the seniors were graduated April 7, 1918. The juniors continued their work during the summer and were graduated in September.

By the summer of 1918 the Federal Government had plans completed to use the colleges and universities for army training purposes. Under this plan the Reserve Officers Training Corps (R.O.T.C.) was replaced by the Student Army Training Corps (S.A.T.C.), translated by some scoffers as "Safe At The College." The S.A.T.C. was part of the United States Army. For the accommodation of these young soldiers the Federal Government built three barracks buildings and a mess hall on the campus. The barracks buildings, now rather frayed and minus their original glamour, are still standing. Scholastic requirements for admission were somewhat "simplified" and while the number of freshmen admitted in the fall of 1917 was sixty-six, in 1918 it increased to about 190, the largest freshman class ever admitted to the Institute. The total registration jumped from 193 to 340. One small neighboring college, without a military department, sent a large part of its students to the Institute; and after the war was over and the students were mustered out of the service, the college head came over to Pasadena and took them all back again, except for a couple who decided to remain.

CURRICULUM LITTLE CHANGED

The Institute was then practically under military control, but due to the fact that it was an engineering and scientific institution the curriculum was not seriously interfered with. As I remember it, the principal change consisted in the substitution of military subjects for modern foreign languages previously required. Two hours of military drill were required each day, but it is doubtful if this interfered with scholastic work. It was during this term that the country had its first epidemic of influenza, and the Institute lost four students. I shall never forget how funny we looked and how uncomfortable we felt wearing the "flu" masks prescribed for us. Twice during the term work was suspended because of the flu.

Army officers contended that good food, plenty of exercise and regular habits as required by military discipline would more than make up for the time required for military purposes. As far as my own classes were concerned, I do not recall that the slump in scholarship was more than could be accounted for by the flu and the previously mentioned simplification of entrance



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DEDICATION OF COLORS
President James A. B. Scherer presenting colors to the color-bearer. Throop College of Technology, Pasadena.

requirements. Of one thing I feel quite certain—that in spite of the flu, when the boys were mustered out at the end of the term they were the plumpest, healthiest looking student body we have ever had.

Another thing seems to me to be worth noting. The armistice was signed November 11, and the boys were practically all mustered out of the service by Christmas. A rather embarrassing incident occurred when, on mustering out, a boy was found with only one hand. The enlistment papers provided no explanation and there had been no report of armed conflict on the campus. The boy had been very much surprised at being accepted for military service and had been used for office work.

AERONAUTICAL RESEARCH BEGUN

During the war period aeronautical research was begun, and a special war laboratory was erected for the use of Dr. H. J. Ryan of Stanford University and Dr. J. A. Anderson and Mr. H. D. Babcock of the Mount Wilson staff.

Space permits the mention of only a few of the Institute family who rendered conspicuous service during this period. Dr. George E. Hale, of the Board of Trustees, was responsible for the founding of the National Research Council and served as its chairman for three years. He devoted much of his time and wonderful ability to war work. President Scherer was granted leave of absence from the Institute and, as a dollar a year man, was Chief Field Agent, Council of National Defense and Special Representative, U.S. Shipping Board, Emergency Fleet Corporation. Dr. Robert A. Millikan was in Washington from the spring of 1917 to January, 1919. He held the rank of Lieutenant Colonel and was in charge of the Science and Research Division of the Signal Corps and the Bureau of Aircraft Production. He was also Vice-Chairman of the National Research Council. Dr. Arthur A. Noyes was for a short time Acting Chairman of the National Research Council. He was Chairman of the Committee on Nitrate Investigations of the National Research Council, Chairman of the Nitrate Commission of the War Department, and Consulting Chemist of the Ordnance Department. More than forty per cent of the Institute staff were either in the army or in other war work. More than forty per cent of the graduates joined the army or navy. In spite of the fact that undergraduates were advised to complete their college work, eighty-three enlisted in the army or navy. When the war was all over it was found that the service record of the Institute was second to none.

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DU MOND DESIGNS NEW X-RAY TUBE

A major difficulty in the operation of X-ray tubes in hospitals may be eradicated by a recent development in the Institute's laboratories by physicist Jesse W. M. Du Mond.

The diffculty, which has heretofore defied attempts at solution, arises from the fact that in medical use of the X-ray there has been a demand for more sharply focussed X-ray pictures, and for "snapshot" pictures of organs in motion.

The only tubes which will supply these demands are of such nature that intense heat is developed during their operation, and they are subject to serious damage if use dtoo often within a given length of time.

Still in its experimental stages, Du Mond's development will, if successful, eliminate the danger that heat may destroy the tube, and at the same time will make possible finer-focus X-ray pictures.

Other X-ray experts have expressed enthusiasm and confidence in his project and believe the development will be of tremendous value to modern medicine and industry. They feel it is an important step in turning the principle of the X-ray to the greater service of man.

LARGE QUANTITY OF HEAT

X-rays are generated when high voltage electrons are shot in a vacuum at a mass of metal called a target. When the electrons strike the target, they give off tremendous energy in the form of heat, and the target's surface may become hot enough to melt. This danger becomes serious when it is realized that X-ray tubes for use in hospitals may cost as much as $1200.

Many methods have been devised to cool the target, that longer operation time, greater power and finer-focus X-rays may be obtained. These methods have involved keeping the target in constant motion, so that the fine stream of electrons will strike a greater surface and the heat will not be so intense at any one point.

Devices to water-cool the target also have been used. But since the target must be placed in a thorough vacuum within the tube, the difficulties involved in keeping the target both water-cooled and in motion are tremendous.

ROTATE ENTIRE TUBE!

In Dr. Du Mond's proposed tube, both cooling and motion would be solved by rotating the whole tube, instead of just the target, in a bath of liquid. The target would be placed near enough to the surface of the tube to take advantage of the cooling medium.

With such an arrangement, it is hoped that nearly continuous operation and sharper-focus X-rays may be achieved.

Several advantages are anticipated in the new tube. It is

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CALTECH'S "MEN IN WHITE"

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Dr. Richard C. Armstrong, '28, was graduated from the University of Michigan Medical School in June, 1939, and has received a four-year appointment in Ophthalmic Surgery at University Hospital, Ann Arbor, Michigan. The first year of this service is spent as a rotating intern, while the last three are limited to training in the diagnosis and treatment of diseases of the eye. Dr. Armstrong is a member of Nu Sigma Nu medical fraternity, and during his second year in medical school he worked as student Assistant in Bacteriology. He plans to return to Southern California to practice Ophthalmology following the completion of his service at the Michigan institution.

Dr. Laurence J. Stuppy, '35, is serving a two-year medical internship at Peter Bent Brigham Hospital, Boston, Massachusetts, following his graduation from Harvard Medical School in June, 1939. During his last two years in medical school he worked as Clinical Pathologist at the Boston Psychopathic Hospital and as Assistant in Bacteriology and Pathology. He has also spent several months in research on arthritis. Dr. Stuppy wants to settle down near Los Angeles, perhaps in academic work, but he plans first to top off his internship with a year as assistant resident in pathology in the east and some further time as a hospital resident on the Pacific Coast.

Dr. Ralph E. Homann, Jr., '35, began a two-year mixed internship at the Los Angeles County General Hospital on July 1, 1939, having received his degree from the University of Southern California School of Medicine in June. He is a member of Phi Rho Sigma medical fraternity, and has been quite active in fraternal and class affairs as well as in the Hollywood 20-30 Club. During the first six months of 1939 he served as externe at St. Vincent's Hospital, Los Angeles. Upon completing his internship, Dr. Homann plans to specialize in Internal Medicine, and to round out his training with a residency at Los Angeles County General Hospital followed by further work in Boston. He hopes finally to return to practice with two well-established internists in Los Angeles.

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DU MOND DESIGNS NEW X-RAY TUBE

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expected that it will have a longer life than conventional tubes, since the rotating and cooling mechanism are more efficient and simple.

It will be possible to use the tube almost continuously without damage, a very practical consideration in busy hospitals where a great number of X-ray exposures may be desired within a short length of time.

The new tube should make possible more sharply focussed pictures. This advantage will be effected because the target can be more easily cooled, and therefore a finer stream of electrons ,with much greater power, can be aimed at it. The added power would make possible the "snapshots" of moving subjects, much as the fast films and lenses of modern cameras make possible unslurred action photos of the fastest types of sports.

RECENTLY GRANTED PATENT

Dr. Du Mond recently was granted United States Patent No. 2,209,963 for his tube. He assigned the patent to the Institute. Within the next few months he hopes to build half a dozen or more working models of the tube to develop it practically.

ARTHUR H. FLEMING

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Dr. Millikan made the following statement when informed of Mr. Fleming's death.

"The death of Arthur H. Fleming removes one of the most active, devoted and influential of the early creators of the California Institute of Technology — a man who literally gave all he had of energy and substance that there might rise on the Pacific Coast an educational and research center of the highest quality having the ideals and purposes first formulated in 1908 by George E. Hale.

MAKE VISION REALITY

"It is one thing, however, to realize a great need, to see a great opportunity and to formulate what ought to be done to meet it, but quite another thing to comamnd the influence and the resources necessary to put the plan into execution. Mr. Fleming was a devoted and indefatigable leader of the group of men who gave themselves and their substance to begin to make it possible to realize some day the vision which they had seen. Arthur H. Fleming, Henry M. Robinson, Robert R. Blacker, James A. Culbertson, John Wadsworth, Norman Bridge, Charles W. Gates, Harry Chandler, George E. Hale, Robert C. Gillis, and James A. Scherer were foremost among those early pioneers on whom the responsibility fell of laying the foundation of a great structure when there was little more than an ideal and faith to build upon.

"In 1910 Mr. Fleming and his daughter Marjorie bought the 32 acres which is now the site of the California Institute of Technology, and with the aid of many citizens erected on it in that year the first building on this campus now known as Throop Hall in honor of the original founder of the old Throop Polytechnic Institute, started in 1891.

"From 1910 until 1921 Arthur H. Fleming, president of the board of trustees, met from his own resources the annual deficit of the struggling institution known in that period as the "Throop College of Technology; and in 1921, in order that the college in the next stage of its metamorphosis into the California Institute of Technology might have the beginnings of an endowment to grow upon, Mr. Fleming made a trust in which the whole of his property was turned over to that purpose.

"Arthur H. Fleming, born a Canadian, thus made the greatest gift that any man can make, namely himself and his all, for the development of his adopted home and country, Southern California and the United States of America."