Radar--Military Weapon or Civilian Life Saver?

(continued from page 11)

As far as airborne radar is concerned, it has already been indicated that a search type of radar is neither necessary nor desirable, expect perhaps in the simple form of a collision indicator. What is more important is the radar, or radio, altimeter with Loran for trans-oceanic flying. Absolute altimeters could well be standard equipment on all commercial planes, and, in fact, developments in this direction had started before the war. Loran is almost a necessity for long flights over the ocean. Successful all-weather flying needs some sort of radar equipment in the plane, or, more probably, GCA equipment at all major airports. It is hardly necessary to point out that in commercial flying, every pound of equipment added to the plane is a matter of deep concern to the operators. Therefore, future developments must be in the direction of simplifying and combining existing devices rather than adding new ones to satisfy every whim of the gadgeteer.

As an example of a commercial search radar for ships, the following is a brief description of a General Electric design.* The set is in three units: antenna, console, and motor alternator. The antenna is a truncated paraboloid of revolution made up of parallel metal slats and rotated by a small motor at 10 rpm. It is about three and one-half feet wide and one and one-half feet high, and will normally be mounted as high as possible on the ship. The console contains the transmitter, receiver, cathode ray tube, and the auxiliary equipment. Seven controls are needed for normal operation. The cathode ray tube presents a PPI picture. A choice of three ranges, two, six, and 30 miles, is available. The console is designed for easy servicing, with the circuits on removable chassis. It will be located on the bridge or in the chart room. The motor-alternator provides the necessary AC power to the equipment.

This radar set is reported to have been used over a period of six months and to have been operated successfully by persons with a wide variation of technical skill.

*"Maritime Radar for Peacetime Use." L. H. Lynn and O. H. Winn, **American Institute of Electrical Engineers Technical Paper 46-47**,—January 1946.

C. I. T. NEWS

INAUGURATION OF PRESIDENT DUBRIDGE PLANNED FOR NOVEMBER

CALIFORNIA Institute's first presidential inauguration will take place on November 12, when Dr. Lee A. DuBridge will formally take office as president. To be held in Pasadena's Civic Auditorium on Tuesday at 3:00 p. m., the event will be one of utmost importance to those having any connections with the Institute.

Invited are the alumni, the student body, the board of trustees, faculty, associates, and friends of C.I.T.

Academic regalia will prevail, and the procession should be colorful with representatives of schools, colleges and universities from all parts of the country participating.

Speakers at the actual inauguration will be James R. Page, chairman of the Board of Trustees, Karl Compton, Ph.D., LLD., D.Sc., president of the Massachusets Institute of Technology; Robert A. Millikan, Ph.D., LL.D., D.Sc., vice president of Board of Trustees and former chairman of the Executive Council, of California Institute of Technology; and Lee A. DuBridge, Ph.D., D.Sc., incoming president of the California Institute of Technology.

Also expected to be present at the ceremony are scientists and academic administrators including Alan Valentine, president of the University of Rochester, where Dr. DuBridge formerly headed the physics department, and which recently lost three men from its staff to college presidencies, six in the past 10 years; Vannevar Bush, president of the Carnegie Institute, and director of the Office of Scientific Research and Development; and Frank B. Jewett, president of the National Academy of Science and former president of the Bell Telephone Laboratories.

Further events of the inaugural week are a luncheon in the Athenaeum for visiting academic representatives, a dinner in Los Angeles on the day following the Inauguration, and a reception at the Athenaeum following the ceremony for faculty, trustees, and the alumni.

BIOLOGY DEPARTMENT RECEIVES ENDOWMENT IN KERCKHOFF WILL

LAST of the gifts which the late William G. Kerckhoff made to the Institute was the amount stipulated in clause XX of his will. This ". . . will bequeath $400,000 to the Institute to be known as the WILLIAM G. AND LOUISE E. KERCKHOFF ENDOWMENT FUND, the income thereof to be used to support, and for the purposes of the William G. Kerckhoff Laboratories of the Biological Sciences."

In 1928 the Kerckhoffs gave $1,000,000 to the Institute for the purpose of creating facilities for biological research. Most of this amount was used for the several units of C. I. T.'s now extensive and well-equipped laboratories.

The west section of the Kerckhoff Laboratory was completed in 1930 at a cost of $276,680.86. Nine years later the building was enlarged to its present size. This addition cost $392,159.82. Also included in the Institute's laboratory system was the experimental farm in Arcadia, where corn genetics experiments are now being carried out, the William G. Kerckhoff Marine Biological Laboratories at Corona del Mar, and the Plant Physiology Laboratory and first greenhouse, located on the corner of San Pasqual street and Michigan avenue opposite the Institute.

The remainder of the original $1,000,000 and the interest accrued, with the recent endowment will be available for further pursuit of the biological sciences. This generosity of the Kerckhoffs has made possible

the construction and maintainance of the finest biological laboratory in the world. The late Thomas Hunt Morgan was given an opportunity offered to no other man: that of building a biological department literally from the ground up. Many of the men he brought to Pasadena 15 years ago have remained at the Institute.

Dr. Morgan's original idea, that the biological sciences be developed in connection with the physical, has been followed. Bio-chemistry is now a keynote of the research being carried on at the Institute. Cooperation between the departments of the natural and life sciences is on a level not attained by any comparable institution.

THROOP CLUB FOSTERS WOMEN'S AUXILIARY

CARRYING on traditions of action to meet the situation, shown by its inauguration in 1935, the furnishing of a clubhouse in 1936, a consistent winning streak in intramural sports, and the maintenance of a haven for war-weary students during the Navy's invasion of C. I. T., Throop Club rose again to the occasion and incorporated a subsidiary organization, Throop Club Wives.

Started at the beginning of the spring semester in 1946 as Caltech Wives, the members allied themselves with Throop Club as the Women's Auxiliary, when the two obvious facts: that it was the only social organization their husbands could join; and that it offered the most logical quarters for meeting; appeared. Throop Club Wives continue to give the war time impression that the Institute is coeducational. The sorority-like atmosphere will be heightened by a series of rush teas, parties, and other attempts to sell the organization to wives of returning and new students at the start of the fall term. The girls promise, however, that new members will be admitted on an equal status, with no pledge interlude.

The majority of the members now are either employed by the Institute or busy raising families. Meetings are held on Monday nights so that husbands can watch the children while the Throop Club Wives get together, transact organizational business, nibble at refreshments, and play bridge. The ends of meetings are usually spent in shooing away bachelor Throop Clubbers and husbands intent on dragging wives home or picking up an extra cup of coffee or a doughnut for themselves from the girls' refreshments.

Parties for mothers and children are planned for the organization, the feeling being that Throop Club Men, as the auxiliary members call the other half, are quite capable themselves of organizing mixed gatherings of adults.

A separate treasury is maintained by the women's club, or at least some listing of their financial state. As of the middle of September accounts were kept in red, the result of sending parcels of food and clothing to Europe at a total cost for postage of $15.67 at a time when club funds totaled $14.00.

Risen recently in Throop Club business is a question of membership. The men have passed an edict that a woman's husband must be a member of Throop Club before she can join Throop Club Wives. The wives consider this a convenience, but not a necessity. They point out that $90 a month does not in all cases permit the support of a family and Throop Club membership too. At the last women's meeting in September a poll was taken of opinions on the matter, followed by the collection of written statements. The difference of opinion will apparently be settled shortly after the beginning of the fall term.

Between the formal bi-monthly meetings of Throop Club Wives, the girls congregate to knit and discuss their respective husbands' grades. Usually members' record collections are played during these gatherings. Other informal meetings have been for the purpose of wrapping the previously mentioned bundles for Europe, and involve strewing the Throop Club Lounge with paper, paste pots, scissors, twine and the clothes and food to be sent.

The most direct contribution to Throop Club that the auxiliary has provided, is the offer of help in redecorating the lounge. Between terms the chairs and couches are to be mended and re-covered, and new drapes hung, while the men paint and polish the floor. Also planned is a kitchenette for the lounge to facilitate the production of coffee and other refreshments for evening meetings.

Apparently the offer of redecoration was a deciding factor in the struggle between the Throop Club Men and Wives. Never too strenuous, as over half of the officers of the men's division are married, it has been alleviated to the point where the membership committee letter sent to incoming men stresses the fact that Throop Club now offers benefits to the entire family.

NEW PROFESSOR IS DESIGNING CALCULATOR FOR INSTITUTE

GILBERT McCann '34 will assume his teaching duties as associate professor of Electrical Engineering at C. I. T. on October 28. Now working in Pittsburgh on an Analog Calculator for the Institute, McCann will have the necessary design and engineering data assembled some time next month.

Transferring to the Institute for his Junior year, McCann received his B.S. degree in 1934, his M.S. in 1935, and his Ph.D. magna cum laude in Electrical Engineering in 1939. As a graduate student, McCann worked summers for the Southern California Edison Company and Westinghouse Electric Corporation. At the Institute he demonstrated marked teaching and research ability, was twice given a best paper award by the American Institute of Electrical Engineers.

Dr. McCann has produced a great many research papers since 1940. Now consulting transmission engineer for Westinghouse, where he has been since receiving his Doctorate, he has lately been developing analog methods of calculation, involving the reduction of mechanical problems to electrical circuits.

Two Analog Calculators are being built by C. I. T. and Westinghouse. These machines will solve any linear differential equation, and some non-linear problems. Less accurate than the differential analyzer, the Analog Calculator is much faster, and in many ways better fitted for solving electrical engineering problems.

Installation of the Institute machine will be supervised by Dr. McCann, when it is completed and shipped to Pasadena.

ATHLETIC TROPHY CASE INSTALLED IN LOWER THROOP

GIFT of the class of '45, a trophy case has now been installed in lower Throop Hall. Reported to be the idea of Don Tillman, 1945 student body prexy, the case was under construction for a considerable time after its inception. Institute cabinet-makers finally obtained the wood, built the frame, waited. Further waiting seemed impractical after delivery was at last made on the glass, so the case was installed without lighting fixtures. Eventually the cups and other trophies which have been gradually crowding Coach Musselman out of his office will be illuminated by a built-in lighting system.

Also destined to go in the hall soon is the collection of footballs representing championship teams that were moved a few years ago from the second floor of Throop to the athletic office. With that room no longer partitioned by rows of silver and gold cups, the Coach is now in the process of obtaining privacy through having the north end walled off into a private office.

FOOTBALL PROSPECTS

STARTING with first practice on September 30, the C. I. T. intercollegiate football program will get under way with a few scrimmages with Pasadena Junior College and practice games with La Verne College and Muir Junior College, former West Campus of P. J. C., now a separate school, early in October.

Since the Navy V-12 men who composed the great majority of the highly successful teams of 1944 and 1945 completed their college work before leaving, comparatively few lettermen will return. Expected a few weeks prior to the first practice were Don Hibbard, end; Denis Long, tackle; Norman Lee and George Lyons, guards; and Stan Mendes, fullback: all members of the better-than-average 1945 team.

Football was played during the past two years by special permission of the Institute. This season, however, it is a regular intercollegiate sport, and an integral part of Tech activities.

Coaching the squad will be former chief specialist (A) Mason Anderson, who coached the unbeaten, untied, unscored-upon 1944 eleven.

The first game of the season will be the homecoming game with Occidental, to be played Friday night, October 25 in the Rose Bowl. All games this season will be played within a few miles of the Institute, the greatest distance fans will have to travel being to Inglewood for the Pepperdine game, which on November 23 will mark the last of the 1946 Institute football.

FOOTBALL SCHEDULE 1946

October 25	*Occidental	at Rose Bowl
November 2	*Whittier	at Whittier
November 8	*Redlands	at Rose Bowl
November 16	Pomona	at Claremont
November 23	*Pepperdine	at Inglewood

*Night Games

AS ELSEWHERE FALL REGISTRATION LARGEST

PRE-registration figures indicate that the 1946-1947 undergraduate enrollment will be the largest group ever to attend the Institute. Although registration will not be until October 4 for freshmen and October 7 for upperclassmen, the actual enrollment is expected to closely follow the estimates based on pre-registration. The undergraduate student body, comprising 816, with 248 in the science course, 388 in the engineering course, and 180 freshmen, of whom 20 are returning from a leave of absence, will see the resumption of the three-term system, undergraduate housing on campus, and occasional vacations. The graduate student body is expected to reach a total of 662, making the entire enrollment approximately 1478 against the 900 of previous years.

Most disproportionate classes are the sophomore and junior, with 261 and 220 men respectively. As a result of this large number of returnees, no transfers to the third year level in electrical engineering, mechanical engineering, or chemistry will be permitted in 1947-1948.

Because the summer just ended permitted most students to make up an odd semester, almost all undergraduates will be commencing a year's work, with no mid-year class changes or graduations. A few men are repeating a term's work, and some, notably those who left in the spring of 1943 with the A. S. T. P., are skipping a term.

Expansion of the undergraduate faculty has been undertaken to the point where the 20-man limit on sections will be maintained. Every C. I. T. facility is to be expanded to the utmost to permit the training of the returning men and those admitted to the freshmen year following graduation from high school.

Of these returnees, three-fourths are former Institute students, the rest mostly freshmen with a few transfers to advanced standing.

An interesting change in the undergraduate engineering curricula is the remodeling of mechanical and electrical engineering courses to the point where both options take the same course through the junior year.

FORMER GRADUATE FELLOW APPOINTED HEAD OF BIOLOGY

CHAIRMAN of the Division of Biology is G. W. Beadle, who did research at C. I. T. during the period that the late Thomas Hunt Morgan was expanding the department to its present degree of excellence. Coming to the Institute first in 1931 as a National Research fellow, Beadle remained for two years on that grant, and three more as a research fellow. From C. I. T. he went first to Harvard as an assistant professor of genetics, then to Stanford University as a professor of biology. Remaining at Stanford for nine years, Dr. Beadle was called last spring to head the Institute biological division. With him came a number of fellow researchers, all working with a form of bread mold called Neurospora. Installed in Kerckhoff,this group, including Professor Beadle, is now commencing the study of Neurospora growth.

AIRCRAFT COMPANIES OFFER SCHOLARSHIPS

THE Douglas Aircraft Company and the Consolidated Vultee Aircraft Corporation have recently provided funds for Institute students doing undergraduate and graduate work.

Douglas is awarding two scholarships, one for $500 to a "highly recommended Student in Aeronautical or Mechanical Engineering who has completed his Junior year at the California Institute of Technology," and another for $1,000 to "a highly recommended Graduate Student in Aeronautical Engineering."

All Scholarships will be awarded for one year. The recipients of these grants will be selected by C. I. T. with Douglas reserving the right to approve the selections.

Consolidated Vultee has provided funds for graduate fellowships in the fields of engineering, including aeronautics, metallurgy, chemistry, physics, and mathematics. These fellowships carry a grant of $750 per year for the time necessary to obtain the degree approved by the Institute and Convair.

The student at the time of acceptance of the Fellowship agrees (the agreement being between the student and Convair) to work at Convair for a total period of 37 weeks. Part of this time may be put in during summer vacations, the remainder to be put in after the student receives his degree. Pay will be at the current base starting rate.

At the conclusion of the scholastic work and the 37 week training period, the student will be offered an employment contract at the discretion of Convair. The student is not under obligation to accept this offer.

APPOINTMENT TO MATH DEPARTMENT MADE

NEW in the mathematics department of the Institute is Dr. H. F. Bohnenblust, recently appointed a full professor. A native of Switzerland, Professor Bohnenblust took his undergraduate work at the University of Zurich. Coming to the United States in 1928 as an exchange student, Dr. Bohnenblust studied at Princeton, received his Ph.D. there in 1931. His thesis dealt with the application of abstract methods to the Dirichlet series.

Remaining on the Princeton staff until 1945, the professor during the war used his New Jersey position as a base, making journeys to the west coast, where he collaborated with Drs. Theodore von Karman and D. S. Clark at the Institute on metallurgical problems; for the National Defense Research Council, to Washington, D. C.; and to England, where he studied effects of bombing.

Modern methods of analysis is Dr. Bohnenblust's favorite field of mathematics. At the Institute he will take charge of the sophomore mathematics course for the coming year, teach a graduate course in functions of real variables, and assist in a seminar on non-linear mechanics.

ENGLISH PRIZE ESTABLISHED

A YEARLY prize for the greatest proficiency and improvement in English by a Junior student has been promised the C.I.T. humanities department by Samuel A. McKinney of Los Angeles, an 1884 graduate in Civil Engineering of Rensselaer Polytechnic Institute. The award will be made in the name of Mary A. Earl McKinney.

Two awards, consisting of trophies and money prizes from the income on $3500 will be made each year. The first McKinney prize was awarded in June of this year on the basis of an essay contest with "The Making of an American" as topic.

A committee headed by Professor George R. MacMinn of the humanities department required contestants to read Lincoln Steffen's **Autobiography** and **From Immigrant to Inventor,** by Michael Pupin, as background for their essays.

First prize of $80 was awarded this year to John William Harrison '47 for an essay entitled "First the World", and a second prize of $60 to George Austin '47 for "The Making of an American".

NUCLEAR PHYSICIST ADDED TO DEPARTMENT

ONE of the young men who worked on the Atomic Bomb, new associate professor of physics, Robert F. Christy will specialize in nuclear physics at the Institute. Receiving his Ph.D. in 1941 from the University of California for a thesis comparing properties of the mesotron with the results of cosmic ray bursts, Christy remained at Berkeley for a year, working in the metallurgical laboratories, then moved to the University of Chicago where the first uranium piles were developed. For two years he was at Los Alamos, New Mexico.

During the last year Dr. Christy taught at Illinois Institute of Technology and the University of Chicago. Coming to the Institute recently, he will teach an introduction to quantum mechanics, nuclear and theoretical physics courses, and will assist in a seminar with Dr. Epstein and other Institute physicists on theoretical physics.

Now an American citizen, Dr. Christy is a native of British Columbia, and received his bachelor's and master's degrees from the University of British Columbia, winning the Governor General's Medal for the excellence of his work there.

C. I. T. COACHING STAFF ENLARGED

IN CHARGE of physical education and intramural athletics will be a new man on the C. I. T. coaching staff, James H. Nerrie, former lieutenant in the Naval Reserve. A Rutgers graduate, Nerrie took his first three years of undergraduate work at the Savage School of Physical Education. Joining the Navy after coaching in the Valley Stream School System of Long Island, Nerrie was first a chief specialist (A), then commissioned in February 1943. Most of his work in the service consisted of being physical training officer for the Naval Armed Guard in Brooklyn.