

# C. I. T. NEWS

## THE MONTH OF JUNE AT CALTECH

By GEORGE HALL

**T**HE CASUAL PACE at which the academic year drifts to a post-commencement summer slow-down was noticeably absent at Caltech this year. In fact, June not only came in with a roar, it ended on the same note with the first and last chords rolling off the top of Palomar Mountain.

The dedication of the Palomar Observatory, Commencement, a three-day Symposium on Cosmic Rays, a three-day meeting of the American Physical Society, a four-day joint get together of the American Astronomical Association and the Astronomical Association of the Pacific, plus two days of meetings on Heat Transfer and Fluid Mechanics problems, were all packed into 12 June days.

If there have been busier June days in the Institute's history, old timers on the campus were unable to recall them. The Palomar Dedication, covered in the June issue of *E and S*, set the pace when some 850 invited guests plus more than 100 press and radio representatives gathered beneath the 200-inch Hale telescope in the big observatory dome on June 3 for a ceremony that lasted just short of an hour and a half.

Commencement followed on June 11 in the same grandiose manner, when the largest class in the history of the Institute was graduated—501 students. Of this number 189 received degrees of Bachelor of Science, 217 degrees of Master of Science, 52 Engineer's degrees and 43 degrees of Doctor of Philosophy.

Commencement speaker was Dr. Vannevar Bush,

President of the Carnegie Institution of Washington, D. C. who had also been one of the Palomar Dedication speakers.

Taking as his subject, "The Freedom of Science,"\* he stressed need for freedom of the individual scientist to "pursue the search for truth wherever it may lead him and without coercion by those who would use him and his findings for their mundane purposes. Hence, we require the absence of political pull, of the arbitrary use of power or position, of all else that tears men down. And we require governing bodies that truly recognize the nature of science and conditions under which it can flourish. These conditions mean a system where masters, selected by their colleagues, because of their intellectual power, are surrounded by disciples on the way to mastery, where there is a free field and no favor, and where there is rigorous and undeviating following of logic in pursuit of the truth.

"This is the system in which we believe. It is now under challenge on two fronts," he said. "One front is that upon which there are those who say that the race in its mad competition for the applications of science, in a world where power rules, is on the way to commit suicide." The other front is that upon which we face the challenge of those who regard science as merely one servant of the state, he said. It was this second challenge, which he further characterized as "a part of the great clash of ideologies; on the one hand the ideal of the dignity of man and the blessings of liberty and on the other hand the ideal of the powerful state bringing all means and all men under its centralized control as the only hope for an exit from chaos" to which he chiefly directed his address. He left no doubt but that it is his opinion that national support of science for both research and development of men qualified to lead in research in the future is not only possible but desirable; that a National Science Foundation as now envisaged as workable and necessary, and that it can be operated for the benefit of man without hindering the freedom of science or the scientist, providing necessary limitations are recognized.

President Lee A. DuBridge reviewed another year of Caltech progress. He announced that total gifts for the year amounted to \$1,700,000 of which \$493,000 was from various sources for research projects; \$700,000 from the Rockefeller Foundation in support of a seven-year program of research in chemical biology; \$300,000 was a Rockefeller grant for completion of the Palomar Observatory and \$207,000 an additional grant from the Earhart Foundation to finance a new air-conditioned plant physiology laboratory.

He gave special attention to the California Institute Alumni Association drive for an Alumni Fund, stating that of its initial goal of a quarter of a million dollars \$68,000 had already been pledged or received. Similar

\*Full text being printed in the INSTITUTE FORUM and mailed to alumni in near future.



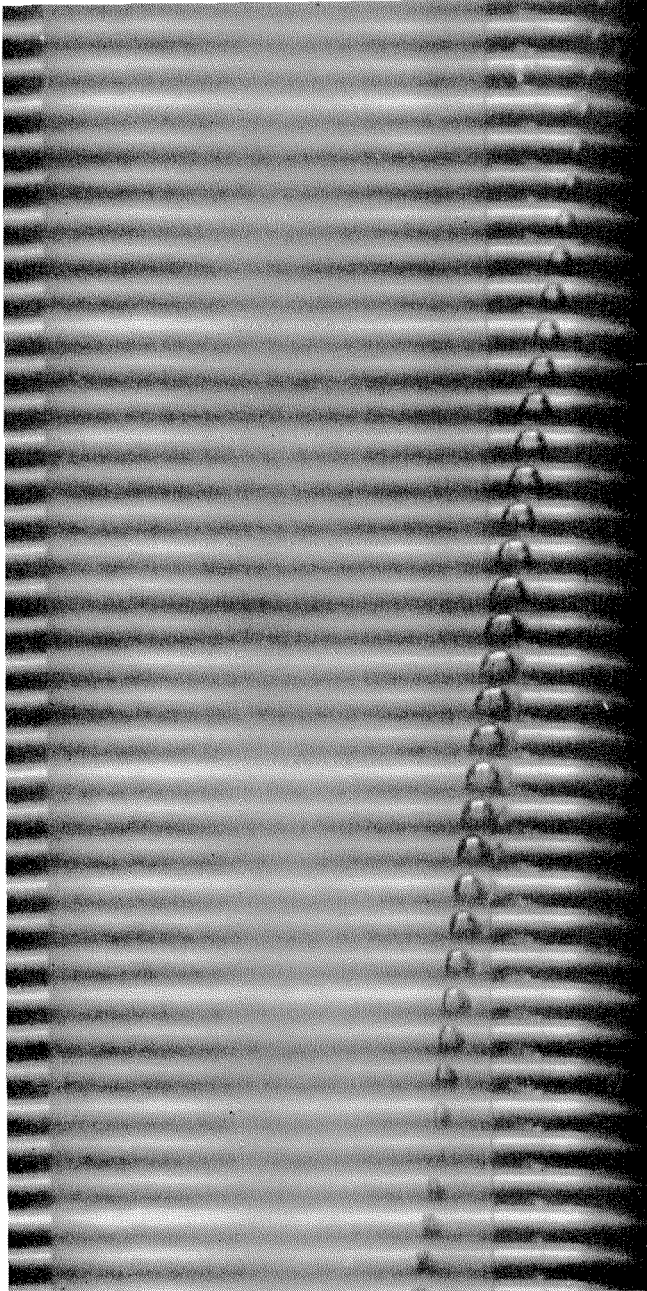
Academic procession at Commencement, July 3.

At the June meeting of the Institute on Heat Transfer and Fluid Mechanics, Professor Plesset of the Applied Mechanics Department, Caltech, presented a paper on "The Dynamics of Cavitation Bubbles". This paper gave an analysis and explanation of the growth and collapse of cavitation bubbles.

The experiments he analyzed were performed in the high speed water tunnel in Caltech's Hydrodynamics Laboratory. This water tunnel gives the highest speed flow of any water tunnel in the world. The figure shows an example of the data which have been studied.

In this series of pictures, the water flows by the model in the water tunnel with a velocity of 70 feet per second. These pictures were taken at a rate of 20,000 per second on film moving at 100 feet per second. Each exposure lasts approximately one-millionth of a second. The series of pictures shows a cavitation bubble growing to a maximum diameter of approximately two-tenths of an inch and then collapsing. This whole cycle lasts only two-thousandths of a second.

A high pressure, generated near the bubble when it collapses, may be the cause of cavitation damage such as is often found in pumps and propellers. In Dr. Plesset's theory the bubble was assumed to be a "hole" in the liquid, containing water vapor; good agreement was found between the theory and the experimental observations.



recognition was given an anonymous donor of \$500 for an inter-house scholastic trophy to be awarded annually to the student house whose residents attain the highest scholastic average.

Tribute was paid Edward W. Crellin, member of the Institute Associates and donor of the Crellin Laboratory of Chemistry and Crellin Endowment Fund, and to George Grant Hoag, Institute trustee and donor, with his wife, of the George Grant and Grace Hoag Endowment Fund. Both men passed away in May.

William Rudolph Muehlberger, member of the senior class, was announced as the first winner of the Frederick W. Hinrichs Jr. award. Conger Peace Prize Oration awards went to Robert H. Heppe, first; John Heath Jr., second. The Mary A. Earl McKinney prize in English went to James D. Young with Carl A. Price taking second place.

James R. Page, chairman of the Caltech Board of Trustees, presided over the exercises.

As students drifted off the campus, more than 30 leading Cosmic Ray Researchers, representing every major research team in the field throughout the world (Russia excepted), began arriving on the campus for a three-day invitational Cosmic Ray Symposium June 21, 22 and 23. The event was held in honor of Dr. Robert A. Millikan's 80th birthday. The first of a series of invited papers covering up-to-the-minute research in that field was presented by Dr. Millikan to get the conference off on a tight schedule that saw sessions invariably run well into the dinner hour.

Others who presented papers included Dr. Louis Laprinco-Ringuet, Paris; Dr. Pierre Auger, Paris; Dr. George D. Rochester, Manchester, England; Dr. G. Cocconi, Cornell University; Dr. Manuel S. Vallarta, Mexico City; Dr. Carl D. Anderson, Caltech; Dr. Serge A. Korff, New York University; Dr. Marcel Schein, University of Chicago; Dr. J. Clay, Amsterdam, Netherlands; Dr. Bruno Rossi, Massachusetts Institute of Technology; Dr. Alter Heitler, Institute for Advanced Study, Dublin, Ireland; Dr. J. Robert Oppenheimer, head of the Institute for Advanced Study, Princeton, N. J.; Dr. Robert B. Brode, University of California at Berkeley; Dr. C. M. G. Lattes, Radiation Laboratory, Berkeley, Calif.; Dr. John Wheeler, Princeton University; Dr. H. V. Neher,

Caltech and Dr. Frank Oppenheimer, University of Wisconsin.

These scientists, plus some 15 others who were invited to attend but did not present papers, took the cosmic ray apart particle by particle. Out of it all came general agreement that the symposium was an extremely successful affair; that our knowledge of these mysterious rays that bombard the earth from outer space is still fragmentary but progressing well, and that no one has yet determined from whence they come or how they originated.

Simultaneous with the Cosmic Ray symposium, the Heat Transfer and Fluid Mechanics Institute was also holding a three-day meeting in the Los Angeles area, one session of which was held on the campus. Some 300 scientists, and engineers from industry, the armed forces and colleges and universities participated in this conference. A symposium was held later on the campus to deal specifically with heat transfer problems as they relate to jet propulsion.

On the heels of the Cosmic Ray Symposium came a three-day meeting of the American Physical Society with approximately 300 physicists from throughout the United States attending. Opening session, with Dr. Millikan presiding, was held in Sexson Auditorium at Pasadena City College with subsequent sessions

split between the campus and the auditorium at McKinley Junior High school.

In addition to some 50 contributed papers, 12 invited papers were presented. Members of the Caltech staff who contributed papers included M. M. Mills, R. N. Hall, W. A. Fowler, J. O'Reilly, R. F. Christy, Charles H. Wilts, Jesse W. M. DuMond, David Lind, Bernard B. Watson, A. V. Tollestrup, J. W. Keuffel, Nicholas Begovich, Guy C. Omer, Jr., C. W. Snyder, C. C. Lauritsen, S. Rubin, Tom Lauritsen, W. F. Hornyak, C. B. Dougherty, V. K. Rasmussen and E. Richard Chohen.

The Caltech research team of DuMond, Lind and Watson presented three papers dealing with their new Gamma Ray Spectrometer recently completed and announced in May. The spectrometer, which makes possible measurement of Gamma Rays to an accuracy never before possible, was begun some ten years ago. Work was interrupted by the war and resumed at the end of the war with support of Office of Naval Research funds. It is the most precise instrument ever built for measuring accurately the infinitesimally small gamma rays.

No sooner had the physicists adjourned than the astronomers took over for a four-day joint meeting during which sessions were held at both Mt. Wilson and Palomar Observatories in addition to those on the campus.

The Palomar session served in a sense as the scientific dedication of the observatory, since the official dedication on June 3 was a ceremony covering a considerably broader field of interest.

Too much credit cannot be given for the excellent planning that went into making it possible to crowd so many events into so short a span of time. A general committee headed by Dean E. C. Watson, chairman of the Division of Physics, was responsible for over-all planning of the Cosmic Ray and Physicists meetings and gave yeoman assistance with the Dedication Ceremony and the Astronomical meeting. Visit-

ing scientists were housed, when requested, in student dormitories and could obtain meals both there and at the Athenaeum.

Special arrangements were made for entertainment of wives who accompanied their husbands to the Cosmic Ray and APS meetings while the Mt. Wilson staff handled similar details for the astronomical meeting.



George Hall, director of public relations, has been at the Institute since January 1947. He arrived just as the question of the City of Pasadena's abandoning Tournament Park and selling it to Caltech was raised, and his work on that project resulted in a three and one-half to one vote of confidence in C.I.T.

After graduating from the University of Arizona in 1932, where he was an editor of the campus paper, business manager of the campus magazine, and a member of Sigma Chi, George went to work as a reporter for the Tucson, Arizona DAILY STAR. Then, from 1933 to 1936 he was busy working up from bell boy to purser on Grace Line ships sailing between New York and South America. His first public relations work was with DeBoth Homemakers Schools, New York, doing publicity and advance work in setting up cooking schools for newspapers throughout this country and Canada. In 1937 he returned to the DAILY STAR and married Miss Caroline Montague of Pasadena.

Hall stayed on the STAR until 1942 when he joined the Tucson Division of Consolidated Vultee as an assistant director of public relations. Through that job he became an employee of the PR firm of Hill and Knowlton, and resident director of public relations for Consolidated Vultee in Tucson.

Leaving Tucson in 1945, George came to Pasadena and went to work for North American Aviation, Inglewood, doing general PR work, and having charge of the plant paper. In January 1947 he came to Caltech.

#### NEW E & S EDITOR IS NAMED

WITH THE resumption of fall publication of **Engineering & Science**, the magazine will be edited by Edward G. Hutchings Jr., newly appointed managing editor. The alumni editorial board and the editor-in-chief will remain with the magazine.

Mr. Hutchings is a graduate of Dartmouth College, having received a B.S. degree in 1933. Since that time he has held editorial positions on the **Literary Digest**, **Tide**, **Business Week**, **Look**, and **Liberty**. Since 1945, Mr. Hutchings has been an associate and managing editor of **Science Illustrated**, a McGraw-Hill publication.

#### SERVICE LEAGUE COMPLETES FIRST YEAR

LOOKING back over slightly more than a year's work the Caltech Service League has reason to be proud of itself. Now made up of almost 600 mothers and wives of students and faculty members, the League has spent a busy year serving Caltech.

Under the direction of Mrs. George W. Beadle, wife of the Biology Division Chairman, a bulletin has been prepared and sent to each married student and research fellow. It contains factual information about

the League, Caltech Health Service, hospitals, counselling services, nursery schools and child care opportunities as well as other important names and telephone numbers.

The Well Baby Conference is under the leadership of Mrs. John Gee Clark, R.N. Eighteen conferences have been held, 37 babies registered, and 115 examinations made. Very young babies (13 days and up) are seen every week; older children once a month. There is a Motor Corps. Books on child care donated by a member have proven a helpful addition.

Mrs. A. H. Sturtevant, wife of the professor of genetics, is in charge of the Baby Furniture Pool. The most consistent demand, she reports, is for bassinets and cribs, with which the Pool is well supplied. The requests hardest to fill are for play pens and Taylor-tots or folding carts.

Caltech has 75 foreign students registered. This is 6 per cent of its enrollment, a far higher percentage than the national average for colleges, which is three-fourths of one per cent. The Inter Nations Association has been assigned a room on the campus, but their only furniture was a single chair. Two League members collected furnishings, and the Inter Nations students now have a comfortable, pleasant meeting room.