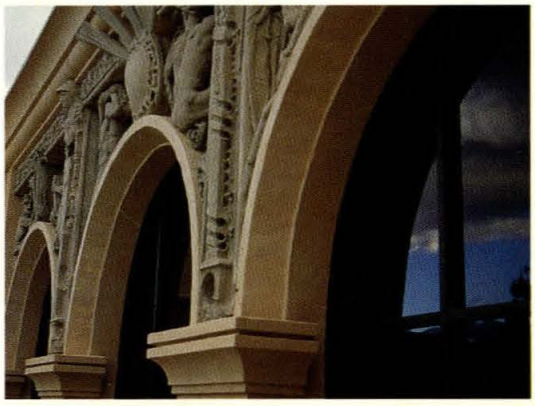
1985-86

Annual Report



California
Institute of
Technology

CHAIRMAN'S MESSAGE

The year 1985-86 at Caltech was a year of substantial achievement—exceptionally talented new graduates, pioneering research, expansion of research and teaching facilities, and dramatic space exploration by JPL.

In March, President Goldberger announced his decision to retire by June of 1988. A Faculty Advisory Committee and a Trustee Selection Committee are now working to find his successor. Over the years, Caltech has been led by men of great stature and perception, and the two committees are dedicated to a continuation of that tradition.

Several changes have taken place in the Board of Trustees during the past year. We have welcomed three new members: Donald E. Guinn, chairman and chief executive officer of Pacific Telesis Group; Stephen R. Onderdonk, president and chief executive officer of Econolite Control Products, Inc.; and Benjamin M. Rosen, chairman of Sevin Rosen Management Company.

A new category of Board membership—that of Senior Trustee—was created for trustees who wish to remain active after age 72 and before becoming a Life Trustee. William A. Hewitt and Lew R. Wasserman are our first Senior Trustees.

Louis E. Nohl, who joined the Board in 1966 and became a Life Trustee in 1973, died on September 29, 1986. We shall miss Mr. Nohl as a thoughtful and concerned member of the Board and as a significant contributor to the Institute. Most recently he provided the resources to establish the Louis E. Nohl Professorship.

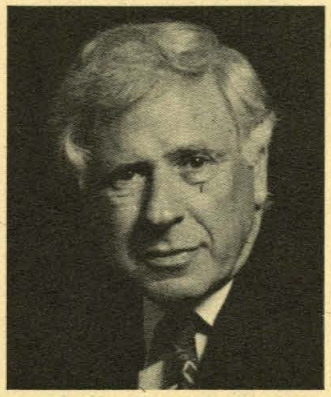
Once again we are indebted to Dr. Arnold O. Beckman, chairman emeritus of the Board of Trustees, and Mrs. Beckman for their magnificent pledge, through the Beckman Foundation, of $50 million to create the Beckman Institute at Caltech. The Beckman Institute will conduct interdisciplinary research in biology and chemistry.

When *TIME* magazine devoted its special June 16, 1986, issue to the "American Best," Caltech was profiled as a national treasure—a place where scientific supremacy is accompanied "by freedom of inquiry, an intellectually stimulating environment, and continuous recruitment of the best minds." Proud of this accolade and aware of our responsibility to continue to maintain the environment that has made Caltech's achievements so noteworthy, we look to the future with confidence and commitment.

Ruben F. Mettler

Chairman

PRESIDENT'S MESSAGE



Caltech's achievements during the past year were truly remarkable, once again demonstrating the Institute's commitment to remaining fresh and vital. Caltech never rests on its laurels. We have, for example, just established a new option in Computation and Neural Systems that will study problems arising at the interface between neurobiology, electrical engineering, computer science, and physics. The unifying theme of this program is the relationship between the physical structure of a computational system, the dynamics of its operation, and the computational problems that it can efficiently solve. CNS is one of the most exciting intellectual developments I have seen in my years at Caltech, and I doubt that it could have happened anywhere else.

Also exciting is the establishment of the Beckman Institute, which will launch studies in interdisciplinary science at another interface—that between biology and chemistry. The Beckman Institute, whose first director is Caltech chemist Harry Gray, was made possible through a pledge by Dr. Arnold O. Beckman and Mrs. Beckman.

The Caltech faculty has achieved many distinctions this past year, as the list on pages 4-5 of this report attests. One of the most prestigious was the Crafoord Prize awarded by the Royal Swedish Academy of Sciences to Gerald Wasserburg for his work in geophysics. He is also the new chairman of the Division of Geological and Planetary Sciences. An honor of a different sort was physicist Richard Feynman's appointment to the Presidential commission that investigated the Challenger explosion.

With an eight-win, one-loss season, Caltech's Beavers enjoyed continued success on the football field as well as in the lab. The team also won national media coverage, which is impressive considering Caltech's lack of conventional football muscle.

Muscles or not, Caltech's greatest asset is its students. These young people will help determine the direction that science—and the world—will take in the future. The Institute was happy on the occasion of its 92nd commencement last June to welcome 197 bachelors of science, 162 masters of science, 3 engineers, and 133 doctors of philosophy to the ranks of its distinguished alumni.

Improving the quality of student life is an ongoing concern at Caltech. One effort we began in 1985-86 was the major rehabilitation of the four south student houses, which were built in 1931. Blacker and Ricketts houses were renovated during the summer of 1986, and work on Fleming and Dabney houses will be completed this year. To provide new space for student activities, the basement beneath the south houses is also undergoing major renovation, and it is scheduled for completion in September 1987.

The W. M. Keck Observatory project is well under way. Construction of the telescope dome on Mauna Kea began last spring, and the observatory will become operational in 1991.

The Caltech Submillimeter Observatory, also on Mauna Kea, was dedicated last November.

Construction was completed last summer on the Fox Stanton Track and Field, which was provided through a gift from the Lon V. Smith Foundation.

A major step in the space program was taken in January of 1986 with the encounter of Voyager 2 with the planet Uranus. JPL's engineering effort achieved greatly improved performance from the in-flight Voyager spacecraft and its ground system, and this resulted in superb and unexpected results.

This was an extraordinary year for Caltech's fundraising efforts, as the Institute's friends demonstrated outstanding commitment through their financial support. During the 1985-86 fiscal year, the Institute received $77 million in gifts, setting an all-time record and substantially exceeding the $38.5 million raised in 1984-85. The totals include payments of $21.5 million from the Keck Foundation for the W. M. Keck Observatory, $18.63 million from the estate of Liliore G. Rains, and $2.5 million from the Lucille P. Markey Trust for a new program in developmental biology.

A major new gift from IBM will be used to fund new research and to support young scholars, and the Sherman Fairchild Distinguished Scholars Program was renewed for another six years.

This show of trust on the part of such distinguished donors seems to me to be evidence of the Institute's reputation for good judgment about its calculated risks and remarkable success in their outcome. People know they can believe in Caltech.

I am proud to have served as President for the past nine years, and I view my impending retirement with mixed feelings. There are challenging frontiers on the horizon for Caltech and an opportunity for the Institute to surpass its own high standards of achievement in the years ahead. Quite honestly, I envy my successor.

Marvin L. Goldberger

President

FACULTY HONORS AND AWARDS

A partial list of faculty honors and awards for 1985-1986:

Don L. Anderson is president-elect of the American Geophysical Union.

Erik K. Antonsson and **P. P. Vaidyanathan** are recipients of 1986 Presidential Young Investigator Awards.

Giuseppe Attardi was awarded a 1986 Guggenheim Fellowship.

James E. Bailey was elected to membership in the National Academy of Engineering for research leadership in kinetic models, and for innovative basic measurements of genetically engineered cells and immobilized enzyme biocatalysts.

Barry C. Barish, David G. Hitlin, L. Gary Leal, and **John Schwarz** were elected Fellows of the American Physical Society, an honor conferred annually upon a select number of scientists for outstanding and innovative research in the physical sciences.

Charles A. Barnes has been awarded the Medal of Astrophysics by the Paris Institute of Astrophysics in recognition of his major contributions to the field of nuclear astrophysics. He has also received a Senior U.S. Scientist Award from the Alexander von Humboldt Foundation.

Seymour Benzer is the recipient of the Fifteenth Annual Rosentiel Award in Basic Medical Science and of the Thomas Hunt Morgan Medal of the Genetics Society of America in recognition of a lifetime's contributions to genetics.

John F. Brady and **Terrence J. Collins** have been awarded Camille and Henry Dreyfus Teacher-Scholar Grants.

Roy J. Britten and **Alan H. Donagan** were elected Fellows of the American Academy of Arts and Sciences.

Terrence J. Collins, David Gabai, Philip J. Hanlon, and **Daniel P. Weitekamp** are recipients of Alfred P. Sloan Foundation Fellowships.

Peter B. Dervan received the 1985 Arthur C. Cope Scholar Award established by the American Chemical Society to recognize and encourage excellence in organic chemistry. He was also elected to the National Academy of Sciences in recognition of his distinguished and continuing achievement in original research.

Jeffrey A. Dubin shared the Frisch Medal of the Econometric Society with a colleague from MIT.

William A. Fowler received the first William A. Fowler Award for Excellence and Distinguished Accomplishments in Physics from the Ohio Section of the American Physical Society. He also received an honorary doctorate of humane letters from Georgetown University.

William Goddard has been elected a member of the International Academy of Quantum Molecular Science.

Harry B. Gray was awarded the National Medal of Science for pioneering research in bio-inorganic chemistry and photochemistry. He is also the 1986 recipient of the Pauling Medal of the University of Washington.

Harry B. Gray and Hans W. Liepmann were awarded the National Medal of Science.

Bradford H. Hager and **Edward M. Stolper** are two of three recipients of the 1986 James B. Macelwane Award presented by the American Geophysical Union.

Philip T. Hoffman was awarded a special prize of $5,000 by The Arnold L. and Lois S. Graves Awards in the Humanities by Pomona College and the American Council of Learned Societies in recognition of his achievement in the humanities.

Leroy E. Hood has been named a co-recipient of the Biochemical Analysis Prize by the German Society for Clinical Chemistry for achievement in the field of biochemical analysis or biochemical instrumentation.

Wolfgang G. Knauss is a recipient of an Alexander von Humboldt-Stiftung award in recognition of his past accomplishments in research and teaching.

Steven E. Koonin has received a Senior U.S. Scientist Award from the Alexander von Humboldt Foundation.

Robert B. Leighton and **Gerry Neugebauer** will receive the Rumford Premium from the American Academy of Arts and Sciences.

Hans W. Liepmann was awarded the National Medal of Science for invaluable contributions to the physical sciences and engineering and their impact on the national defense, and for theoretical and experimental advances in fluid mechanics that have laid the groundwork for high-speed flight. He also received the 1986

Daniel Guggenheim Medal for outstanding leadership in fluid mechanics research and education.

Heinz A. Lowenstam has been awarded the 1986 Medal of The Paleontological Society.

Andrew G. Myers has been awarded a Dreyfus Grant for Distinguished New Faculty by The Camille and Henry Dreyfus Foundation, Inc.

Gerry Neugebauer has been selected the 1986 George Darwin Lecturer by the Royal Astronomical Society. He was named Scientist of the Year by the California Museum of Science and Industry; he was elected a member of the American Philosophical Society; and he was selected to give The Richtmeyer Memorial Lecture by the American Association of Physics Teachers.

H. David Politzer has been awarded the 1986 J. J. Sakurai Prize by the Council of the American Physical Society for his pioneering research into the nature of quarks, the fundamental constituents of matter.

John D. Roberts is the recipient of the 1987 Priestley Medal, the highest honor of the American Chemical Society.

Ronald F. Scott has been selected to present the 1987 Rankine Lecture. The lecture and the award are the most prestigious honors given by the British Geotechnical Society.

John H. Seinfeld is the recipient of the 1986 William H. Walker Award presented by the American Institute of Chemical Engineers.

Charles L. Seitz was selected by *Science Digest* as one of America's outstanding innovators responsible for the 100 most significant technological achievements in 1984-85.

Roger Sperry has received the 1985 Realia Honor from the Institute for Advanced Philosophic Research in Boulder, Colorado, for his contributions to the cognitive school of the behavioral sciences.

Eli Sternberg was awarded the Timoshenko Medal by the American Society of Mechanical Engineers in recognition of the significance of his contributions to the foundations and applications of the theory of elasticity.

Homer J. Stewart was awarded the I. B. Laskowitz Award for Research in Aerospace Engineering Sciences, Support Systems, and Components for 1985 by the Board of Governors of the New York Academy of Sciences.

Edward M. Stolper received the F. W. Clarke Medal for 1985, annually presented by The Geochemical Society for a "single outstanding published contribution to geochemistry or cosmochemistry, published within five years of the completion of graduate studies."

Edward C. Stone, Jr., was elected a member of the International Academy of Astronautics, an honor conferred on those who have distinguished themselves in basic engineering and life sciences in areas connected with astronautics. He was also awarded the NASA Outstanding Leadership Medal.

Gerald J. Wasserburg was co-recipient of the 1986 Crafoord Prize in Geosciences for pioneering studies of isotope geochemical relations and the geological interpretations that these results permit. He also received the title of Docteur Honoris Causa de l'Université Pierre et Marie Curie by the Université Pierre et Marie Curie in Paris; and he was awarded the Holmes Medal for 1987 by the European Union of Geosciences.

Peter J. Wyllie was elected president of the International Mineralogical Association. He was also elected an Honorary Member of the Mineralogical Society of Great Britain and Ireland.

Amnon Yariv received the 1986 Frederic Ives Medal for his numerous pioneering contributions to lasers, opto-electronics, and phase-conjugate optics as well as the important role that his textbooks play in the education of optical scientists and engineers. He has also been selected to receive the Harold Pender Award presented by the faculty of The Moore School.

Gerald J. Wasserburg was co-recipient of the Crafoord Prize in Geosciences.

This financial report of the California Institute of Technology has been prepared from the Institute's accounting records and reflects the Institute's financial position as of September 30, 1986, and the results of its operations for the year then ended. These statements have been reviewed by the Board of Trustees Audit Committee, whose members are designated by an asterisk in the list of board members on the inside back cover of this annual report.

The *Balance Sheet* portrays the assets, liabilities, and fund balances for each major fund group as well as the total for the Institute. Total net assets increased from $541.7 million to $658.5 million, consisting primarily of an increase of $44.6 million in campus equipment, buildings, and land and an increase in investments of $94.5 million.

The *Statement of Changes in Fund Balances* reflects the impact of revenue, expenditures, and transfers in the fund balances, thus portraying the sources and uses of funds by major category. The increase of $46.3 million in gifts and grants from private sources for fiscal year 1986 included $21.5 million representing the additional installments on the $70 million grant from the W. M. Keck Foundation to construct a 10-meter telescope in Hawaii. Approximately $30 million is expected to be received in fiscal year 1987. A significant increase of $18.8 million was also realized in the net gain from disposal of investments.

The *Statement of Operating Expenditures* provides the detail of current fund expenditures for educational and related purposes. Total expenditures for fiscal year 1986 for the campus increased $10.8 million or 8 percent over fiscal year 1985. Expenditures for direct costs of sponsored research at the Jet Propulsion Laboratory increased $176.2 million or 26.8 percent.

Current Funds are those funds available for operating purposes. They are classified as unrestricted—available for any purpose; or restricted—to be used for purposes specified by the sponsor or donor. They include tuition and fees, investment income, gifts, and grants or contracts from federal and private sponsors.

Loan Funds are provided by gifts and participation in the government's National Direct Student Loan Program, and are subject to repayment with interest after graduation. As repayments are made, the principle and accumulated interest are lent again to new borrowers.

Endowment and Similar Funds include both the principal of funds set aside as endowment in accordance with the donors' wishes, which are invested to produce income and capital appreciation, and also the principal of discretionary and expendable funds, which are designated by the Board of Trustees to function as endowment.

Investment objectives for Caltech's endowment funds focus on three principles: 1) preservation of capital, 2) ability to meet current income targets, and 3) appreciation of capital to foster future income growth. In this way, the Institute endeavors to provide a stream of investment return, after considering inflation, that will strike a fair balance between current and future support of its instruction and research programs.

The 12 months ended September 30, 1986, provided an excellent investment climate for this strategy. The Institute positioned its investment mix to participate in the stock and bond market rallies during this period. The market value of the Institute's endowment fund at September 30, 1986, was $347.9 million, compared to $274.6 million at September 30, 1985. Gifts, bequests, and favorable investment performance contributed to the $73.3 million growth in 1986. The annual compound total rate of return (income plus market appreciation) on the Institute's endowment for the five years ended September 30, 1986, was 17.5%.

Life Income and Annuity Funds consist of gifts received subject to living trusts for which the Institute is trustee, or annuity agreements. Payments are made to beneficiaries and annuitants during their lifetimes in accordance with the terms of these agreements.

Five Years in Review

	1982	*1983*	*1984*	*1985*	*1986*
Current funds expenditures *(in thousands)*					
Instruction and research (including libraries)	$ 64,938	$ 74,535	$ 80,516	$ 93,019	$ 99,578
Scholarships and fellowships	4,494	5,095	6,198	6,839	8,178
Institutional and student support	12,836	14,314	15,692	17,260	20,031
Plant operation, maintenance and utilities	8,116	9,586	10,013	11,084	10,988
Total operating expenses	90,384	103,530	112,419	128,202	138,775
Auxiliary enterprises	4,219	4,435	4,796	5,543	5,731
Total	$ 94,603	$107,965	$117,215	$133,745	$144,506
Capital expenditures, campus *(in thousands)*	$ 10,526	$ 12,459	$ 21,679	$ 18,551	$ 44,579
Jet Propulsion Laboratory, direct expenditures *(in millions)*	384.8	425.2	505.2	656.4	832.5
Total gifts and nongovernment grants *(in thousands)*	25,652	24,747	29,697	38,578	84,920
Endowment and similar funds at market value *(in millions)*	208.3	248.3	247.0	274.6	347.9
Investment income *(in millions)*	20.4	19.6	22.5	22.8	25.0
Tuition rate *(in thousands)*	6.2	7.5	8.7	9.4	9.9
Student enrollment (first term)–Undergraduate	866	874	829	817	845
Student enrollment (first term)–Graduate	888	936	936	999	994

Summary Of Changes In Fund Balances

Year ended September 30, 1986
(in thousands)

ADDITIONS

(Excluding reimbursement of direct costs at the Jet Propulsion Laboratory)

Gifts and Nongovernment Grants	
Includes gifts and grants from private sources for education and research.	$84,920
United States Government Grants and Contracts	
Reimbursement from various government agencies for direct costs of research, instruction and student support.	47,847
Realized Gains	
Net realized gains on investments sold.	36,715
Indirect Costs and Management Allowance	
Recovery of indirect costs and management allowance under federally sponsored programs at the campus and the Jet Propulsion Laboratory.	33,389
Plant Acquisitions	
Additions to campus plant for land, buildings and equipment.	30,893
Investment Income	
Endowment income and investment income of other funds, including earnings from short-term investments.	24,987
Tuition and Fees	
Includes tuition and fees assessed students.	17,576
Auxiliary Enterprises	
Revenues from sales by food services, student housing, and bookstore.	6,342
Other	
Income from sales and services and other miscellaneous revenue.	2,097
Total Additions	$284,766

DEDUCTIONS

(Excluding direct costs at the Jet Propulsion Laboratory)

Research	
Activities specifically organized to produce research outcomes supported by federal and private sponsors.	$53,120
Instruction	
Expenditures for activities that are part of the instructional program, including departmental research.	46,458
Plant Fund	
Includes plant fund expenditures for buildings, equipment, renewals, payments on interfund advances for plant purposes, as well as retirement of plant assets.	21,030
Institutional and Student Support	
Includes business and financial affairs, student services, Institute relations, and general administration.	20,031
Plant Operations	
Represents utilities and other expenditures for the operation and maintenance of the campus grounds and facilities.	10,988
Scholarships and Fellowships	
Awards made to students enrolled in formal course work with no requirement that they perform services or repay the awards.	8,178
Auxiliary Enterprises	
Expenditures, including maintenance, of auxiliary enterprises.	5,731
Other	
Includes payments to life beneficiaries with life income and annuity agreements and miscellaneous other charges.	2,448
Total Deductions	167,984
Increase in Fund Balances	116,782
Total	$284,766

Life income and annuity agreements are a source of meaningful additions to the Institute's endowment and other funds. This form of deferred giving has proved attractive to many donors who wish to support the activities of the Institute and receive income on their gift during their lifetime while obtaining a charitable income tax deduction for their gift. Upon termination of beneficiary agreements, the principal is transferred to the endowment or other fund groups as designated by the donor.

The Institute's life income and annuity agreements consist of pooled income funds, annuities, and taxable and non-taxable unitrusts. Investment assets include cash equivalents, equities and fixed income securities (including tax-exempt municipal bonds, where appropriate), real estate, and various royalty interests. The Institute functions as trustee with the majority of the marketable securities managed by a major institutional investment advisory firm. The Institute does not charge a trustee fee at present. At September 30, 1986, the market value of the life income and annuity funds was $32.6 million.

Plant Funds consist of funds that have been received for, or designated by the trustees for, facilities. The group is divided into two categories: unexpended plant funds and investment in plant. Unexpended plant funds are available for expenditure for land, buildings, and equipment. As these funds are used, they are transferred to funds invested in plant. This transfer records the original cost of the Institute's physical facilities.

The Institute sold $20 million of tax-exempt revenue bonds on December 26, 1985, after receiving ratings of AAA by Moody's Investors Service and Standard and Poor's Corporation. The bonds were sold at par with an average coupon yield of 8.47 percent. The proceeds are being used to finance construction of graduate student housing, parking facilities, and rehabilitation of the undergraduate student complex.

The *Notes to Financial Statements* are an integral part of the financial statements and provide significant information on accounting policies, investments, campus properties, funds held in trust, retirement and deferred compensation plans, pledges, and sale of revenue bonds.

California Institute of Technology maintains its accounts in accordance with the guidelines suggested by the American Institute of Certified Public Accountants and the National Association of College and University Business Officers.

David W. Morrisroe
Vice President for Business
and Finance and Treasurer

BALANCE SHEET

California Institute of Technology

Exhibit 1 *(in thousands)* *September 30, 1985*

	Total All Funds
Assets	
Cash (demand deposits)	$ 889
Accounts receivable:	
United States government (note B)	97,841
Other	3,674
Student accounts and notes receivable	9,496
Investments (notes A, C and D)	309,619
Interfund advances	
Prepaid expenses and other assets	3,518
Campus properties (notes A and D):	
Equipment	111,272
Buildings	108,312
Land	12,604
	$657,225
Liabilities and Fund Balances	
Accounts payable and accrued expenses (note B)	$104,606
Deferred student revenue	4,702
Funds held in custody for others	5,196
Annuities payable (note A)	1,024
Revenue bonds payable (note I)	
Fund balances	541,697
	$657,225
Fund balances comprise (Exhibit 2):	
United States government grants refundable	$ 3,495
Institute funds–	
Unrestricted	5,049
Discretionary endowment:	
Unrestricted	49,116
Restricted	34,494
Endowment principal	166,772
Other restricted funds	59,436
Invested in plant	223,335
	$541,697

See accompanying notes to financial statements

September 30, 1986

Total All Funds	*Current Funds*	*Loan Funds*	*Endowment and Similar Funds*	*Life Income and Annuity Funds*	*Plant Funds*
$ 1,066	$ 662	$ 108	$ 7	$ 289	
118,444	118,444				
5,108	5,108				
10,057	4,085	5,972			
404,160	29,923	899	307,977	26,628	$ 38,733
	3,233		2,368		(5,601)
3,088	3,088				
131,314					131,314
132,295					132,295
13,158					13,158
$818,690	$164,543	$ 6,979	$310,352	$ 26,917	$309,899
$132,777	$131,249			$ 277	$ 1,251
4,399	4,399				
1,671	90		$ 1,581		
1,364				1,364	
20,000					20,000
658,479	28,805	$ 6,979	308,771	25,276	288,648
$818,690	$164,543	$ 6,979	$310,352	$ 26,917	$309,899
$ 3,689		$ 3,689			
5,026	$ 1,379				$ 3,647
56,610			$ 56,610		
39,116			39,116		
213,045			213,045		
81,675	27,426	3,290		$ 25,276	25,683
259,318					259,318
$658,479	$ 28,805	$ 6,979	$308,771	$ 25,276	$288,648

STATEMENT OF CHANGES IN FUND BALANCES

California Institute of Technology

Exhibit 2

(in thousands)

Year ended September 30, 1985

	Total All Funds
Fund balance at beginning of year (Exhibit 1)	$493,301
Revenues and other additions (notes A, E and H):	
Student tuition and fees	16,336
Investment income	22,758
Net gain on disposal of investments–	
Unrestricted	4,296
Restricted	13,622
Gifts and nongovernment grants	38,578
United States government grants and contracts–	
Reimbursement of direct costs	43,900
Recovery of indirect costs and management allowance	29,733
Auxiliary enterprises revenues	5,483
United States government advances	319
Plant acquisitions, etc. (including $12,956 included in campus operating expenditures and $17,937 included in plant acquisitions, payments on interfund advances and renewals)	19,781
Other	1,459
Total revenues and other additions	196,265
Expenditures and other deductions:	
Campus operating expenditures (Exhibit 3)	(133,745)
Plant acquisitions, payments on interfund advances and renewals	(9,819)
Retirement and disposal of campus properties	(1,558)
Interest on advances for plant purposes	(544)
Interest on revenue bonds payable	
Payment to life beneficiaries	(1,934)
Other	(269)
Total expenditures and other deductions	(147,869)
Transfers among funds:	
Gifts allocated	
Discretionary endowment transfers to (from) current funds	
Allocations for plant purposes	
Terminated trust and annuity agreements	
Other	
Total transfers among funds	
Increase (decrease) for the year	48,396
Fund balance at end of year (Exhibit 1)	$541,697

See accompanying notes to financial statements

Year ended September 30, 1986

Total All Funds	*Current Funds*		*Loan Funds*	*Endowment and Similar Funds*	*Life Income and Annuity Funds*	*Plant Funds*
	Unrestricted	*Restricted*				
$541,697	$ 651	$ 20,508	$ 6,477	$250,382	$ 26,012	$237,667
17,576	17,576					
24,987	7,722	12,528	171		2,055	2,511
8,431				8,431		
28,284				26,863	1,421	
84,920	5,534	26,240	112	21,708	1,288	30,038
47,847		47,766				81
33,389	33,389					
6,342	6,342					
247			247			
30,893						30,893
1,850	641	182	96		95	836
284,766	71,204	86,716	626	57,002	4,859	64,359
(144,506)	(66,198)	(78,308)				
(19,393)						(19,393)
(273)						(273)
(516)						(516)
(848)						(848)
(2,055)					(2,055)	
(393)		(261)	(132)			
(167,984)	(66,198)	(78,569)	(132)		(2,055)	(21,030)
	(1,184)	(61)		1,245		
	1,964	(659)		(1,305)		
	(4,669)	(622)		(2,361)		7,652
				3,540	(3,540)	
	(389)	113	8	268		
	(4,278)	(1,229)	8	1,387	(3,540)	7,652
116,782	728	6,918	502	58,389	(736)	50,981
$658,479	$ 1,379	$ 27,426	$ 6,979	$308,771	$ 25,276	$288,648

STATEMENT OF OPERATING EXPENDITURES

California Institute of Technology

Exhibit 3

(in thousands)	*Year ended September 30,* 1985	1986
Educational and general:		
Instruction, including departmental research	$ 44,429	$ 46,458
Organized research	48,590	53,120
Scholarships and fellowships	6,839	8,178
Institutional and student support	17,260	20,031
Plant operation, maintenance and utilities	11,084	10,988
Total educational and general	128,202	138,775
Auxiliary enterprises	5,543	5,731
Total campus expenditures	$133,745	$144,506
Direct costs of sponsored research at Jet Propulsion Laboratory (fully reimbursed by the United States government)	$656,353	$832,517

See accompanying notes to financial statements

NOTES TO FINANCIAL STATEMENTS

September 30, 1986

NOTE A—Summary of Significant Accounting Policies

Basis of accounting and reporting

The financial statements of the Institute, a not-for-profit educational organization, have been prepared in accordance with the principles of accrual basis fund accounting for colleges and universities. Under these principles, Institute resources are accounted for by the use of separate funds so that visibility and control are maintained for the benefit of the Institute and its sponsors. Funds that have similar objectives and characteristics have been combined into fund groups. Within each fund group, fund balances restricted by outside sponsors for specific purposes are so indicated and are distinguished from unrestricted funds that are available for use in achieving any Institute objective.

The financial statements of the Institute reflect the volume of activity at the Jet Propulsion Laboratory, which is managed by the Institute, but owned and supported by the United States government through the National Aeronautics and Space Administration.

Investments

Institute investments are stated at their approximate market value at date of gift, or at cost if purchased by the Institute, less applicable amortization and depreciation of real estate, unless there has been an impairment of value not considered temporary.

All investments of endowment and similar funds are carried in an investment pool unless special considerations or donor stipulations require that they be held separately. Pool share values are computed periodically based upon the total market value of the investment pool and the total number of pool shares invested.

Income on investments of endowment and similar funds is recorded as current fund revenues for the purposes specified by the donor. Such income is supplemented, where necessary, by transfers of additional amounts so as to result in a total return from the investment pool equivalent to 5% of the average market value of the pool over a three-year period. This total return concept is authorized by the California Uniform Management of Institutional Funds Act, which allows the prudent use of realized appreciation on investments, thus permitting greater flexibility in investment strategy.

Campus properties and plant funds

Campus properties are recorded at cost of construction or acquisition, or at appraisal value at date of gift, and no depreciation or amortization is recorded. The Institute provides for the renewal and replacement of its campus properties from funds designated for this purpose. Expenditures for maintenance and repairs are generally charged to current funds as plant operation and maintenance expenditures.

Annuities
Annuities payable to certain donors of the Institute are recorded at the present value of the liability calculated under an actuarial method which takes into account the life expectancies of the recipients.

Tax-exempt status
The Institute is a tax-exempt educational organization under federal and state income, gift, estate, and inheritance tax laws.

NOTE B—United States Government Contracts

The Institute has many contracts with the United States government that provide for reimbursement of costs incurred for sponsored research at the Jet Propulsion Laboratory and at the campus. These contracts gave rise to a substantial portion of the accounts payable and accrued expenses in the current funds at September 30, 1986 and 1985, and in turn to accounts receivable from the United States government.

NOTE C—Investments

Institute investments, at carrying values (see Note A), comprise the following:

	September 30, 1985	1986
Marketable securities—		
Debt securities (approximate market value of $72,558,000 in 1985 and $150,929,000 in 1986)	$ 71,906,000	$144,620,000
Equity securities (approximate market value of $165,410,000 in 1985 and $180,784,000 in 1986)	142,215,000	144,821,000
	214,121,000	289,441,000
Short-term commercial obligations	61,612,000	64,501,000
Settlements in process—		
Receivables for securities sold	258,000	291,000
Payables for securities purchased	(2,208,000)	(1,072,000)
Real estate, less amortization and accumulated depreciation of $2,307,000 in 1985 and $2,320,000 in 1986	22,510,000	23,964,000
Mortgages, notes and other securities	13,326,000	27,035,000
	$309,619,000	$404,160,000

Investments shown above include the investment pool as follows:

	September 30, 1985	1986
Investment pool assets at year end—		
At carrying value	$216,174,000	$276,754,000
At approximate market value	$236,363,000	$310,298,000
Pool share value at market	$ 13.67	$ 16.41
Annualized income earned per pool share	$ .87	$ .82

NOTE D—Campus Properties

In January 1985, the W. M. Keck Foundation awarded the Institute $70 million to construct a 10-meter telescope in Hawaii. As of September 30, 1986, approximately $29 million had been received: $11 million had been expended and is included in Buildings and $18 million was unexpended and is included in investments of the Plant Funds. Gifts to Plant Funds for the year ended September 30, 1986, include $22 million of this award, and Pledges (Note H) include approximately $41 million.

NOTE E—Funds Held in Trust

The Institute is the income beneficiary of certain funds, recorded at a nominal value, which are held in trust by others and which had current market values, estimated by the Institute, of approximately $11,500,000 at September 30, 1986 and 1985. The income derived from these funds amounted to $679,000 and $756,000 for the years ended September 30, 1986 and 1985, respectively. This income has been included as investment income in the Statement of Changes in Fund Balances.

In addition, the Institute is the trustee for several revocable trusts in which it has a remainder interest and for which it makes income payments for life to the grantors of the trusts. These trusts totaling $3,518,000 and $3,551,000 at September 30, 1986 and 1985, respectively, have been excluded from the financial statements due to their revocable nature.

NOTE F—Retirement Plans

The Institute has three retirement plans covering substantially all its employees that are funded by periodic transfers to the respective insurance companies. The provisions for these pension costs for the years ended September 30, 1986 and 1985, totaled $4,275,000 and

$3,595,000, respectively for the Campus; $16,738,000 and $10,948,000, respectively for the Jet Propulsion Laboratory (included in direct costs of sponsored research). The Institute's policy is to fund pension costs accrued. At the most recent annual valuation the plan assets for retirement plans were sufficient to cover the actuarially computed value of vested benefits. A comparison of accumulated plan benefits and plan assets for the defined benefit plans at the most recent annual valuation date (September 30, 1985) is presented below:

	September 30, 1985	
	Campus	*JPL*
Actuarial present value of accumulated plan benefits:		
Vested	$24,362,000	$112,881,000
Non-Vested	1,398,000	6,041,000
	$25,760,000	$118,922,000
Plan assets	$25,798,000	$119,471,000

In determining the actuarial present value of accumulated plan benefits as of September 30, 1985, the rates of return used were 7.25% for fixed dollar annuities and 3.75% for variable annuities. This represents a weighted rate of 5.25%.

NOTE G—Deferred Compensation Plan

The Institute has established a deferred compensation plan whereunder eligible employees may elect to defer a portion of their normal salary, generally until retirement. The Institute's liability for future benefits payable to active employees under this plan, which approximated $15,005,000 and $10,075,000 at September 30, 1986 and 1985, respectively, is matched by Institute investments in an annuity contract with a major insurance company. It is expected that any payments by the Institute to employees would be matched by payments from the insurance company to the Institute. The amounts representing future benefits payable and the matching investments are not reflected in the financial statements.

NOTE H—Pledges

The Institute does not record pledges in its financial statements. At September 30, 1986, the Institute had pledges on hand (principally for restricted purposes) totaling approximately $128,000,000, of which $82,800,000 is expected to be collected in 1987. It is not practicable to estimate the net realizable value of such pledges.

NOTE I—Revenue Bonds

On December 26, 1985, the Institute borrowed $20,000,000 through the California Educational Facilities Authority for the purpose of constructing, acquiring, and refinancing the cost of certain educational facilities. Funds were obtained through the sale of revenue bonds, repayable together with interest from the general revenues of the Institute over a 30-year period. Interest rate varies from 6.4% to 8.625%. Required principal and interest payments on the bonds for the fiscal years 1987 through 1991 are approximately:

1987	$1,650,000
1988	1,650,000
1989	2,042,000
1990	2,040,000
1991	2,044,000

Investments of the Plant Funds include $1,500,000 held by a trustee as a Bond Reserve Fund.

Price Waterhouse

West Los Angeles, California
January 9, 1987

To the Board of Trustees of
California Institute of Technology

In our opinion, the accompanying balance sheet and the related statements of changes in fund balances and of operating expenditures (Exhibits 1 through 3) present fairly the financial position of California Institute of Technology at September 30, 1986, and the changes in fund balances and the operating expenditures for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year. Our examination of these statements was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

We have previously examined and reported upon the September 30, 1985, financial statements which are included in summary form for comparative purposes.

Price Waterhouse

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