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Harvey Mudd College : The Third Decade Plus, 1976-1988

D. Kenneth Baker
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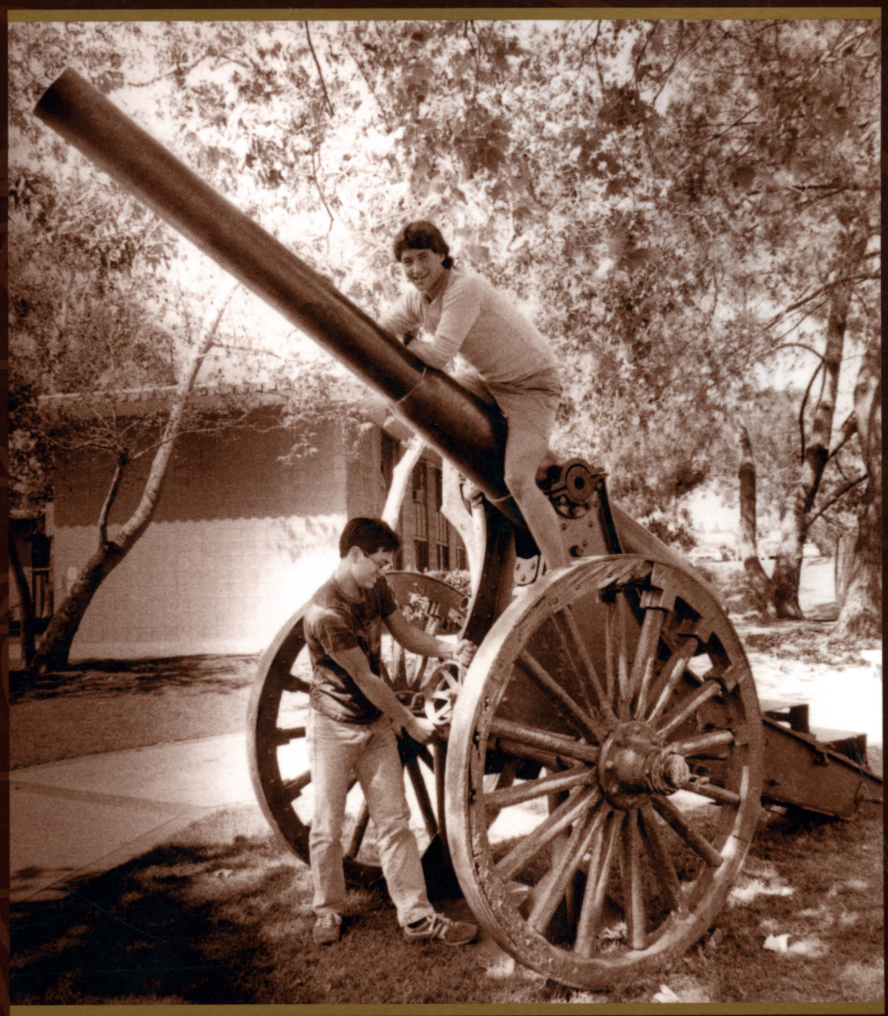

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1976 – 1988

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HARVEY MUDD COLLEGE
1955

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"What greater or better gift can we offer the Republic than to teach and instruct our youth?"

Cicero

Although many individuals contributed to making this tome a reality, some deserve special recognition. Many thanks are due trustees Trude Taylor, Alexander Hixon, and Joe Jacobs, who pushed and prodded me to get on with the task. Grateful thanks are due faculty members who taught and instructed the talented, hard-working students enrolled at the college during the Third Decade Plus. Their activities, only some of which are recorded here, constantly added to and assured the college's enviable reputation. Thanks are also due to Dean Sam Tanenbaum and Assistant to the President Mary Myhre, who read the early manuscript and made invaluable suggestions. Lois Wilde, Dean Tanenbaum's senior secretary, provided frequent and willing research help.

Special thanks to my wife, Vivian, who for twelve devoted years worked graciously and tirelessly on behalf of the college, its trustees, students, faculty, and staff. She truly is the second first lady of HMC.

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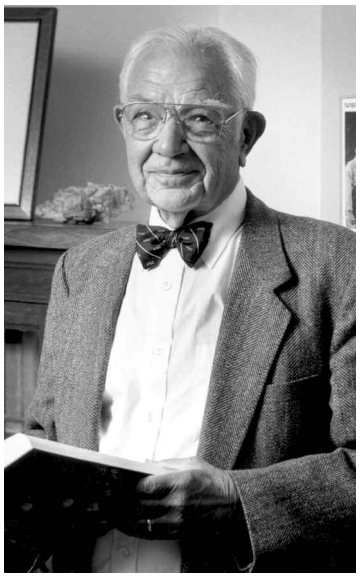
FOREWORD

THE telephone rang in our home in upstate New York and I answered. The voice at the other end said, "Hello, this is Henry Mudd calling from California. I am calling for the board of trustees to invite you to assume the presidency of Harvey Mudd College."

Thus, Vivian and I began an adventure which we shared for twelve satisfying years with all others at Harvey Mudd College, and with those who shaped the broader intellectual community of The Claremont Colleges. We found great pleasure in the furtherance of these unusual institutions and their goals. We found it a privilege to continue the work of Joe and Jean Platt. They surely deserve full credit for bringing the college from "the idea of Harvey Mudd College" (to use Joe's words) to a functioning and lively reality which was a "going concern in all aspects".[1] In twenty years, Joe had fashioned a miracle. Out of a few scrub-covered acres in the north of Claremont, he forged an undergraduate college with a national reputation for excellence. His new college aided by the pre-existing colleges in Claremont and in particular by Claremont Men's College, quickly became an equal partner in the unique academic environment of Claremont.

When we arrived in Claremont, Joe and Jean had already moved to the presidency of Claremont University Center. The center and the graduate school were in disarray and Joe undertook the task of resuscitation and stabilization. He served in that position for five years, and he and I as fellow presidents in the council of presidents shared responsibility for Claremont as a whole. In the council, I came to know his unique strengths and to appreciate his leadership ability. During those five years, I am sure Joe frequently looked over his shoulder at his creation. At times, he attended Harvey Mudd College Board of Trustees meetings, where he served as an important resource. To his credit and my eternal gratitude, he never intruded

Vivian and Ken Baker


Dr. Joseph B. Platt

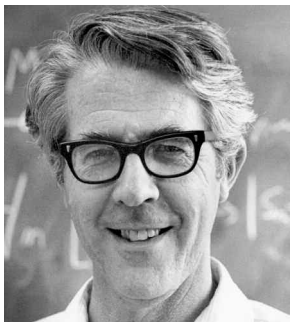
in HMC affairs. We sometimes traveled together to Los Angeles to attend meetings. Joe helpfully responded to questions I raised about the college during those trips, and when I sought advice, he advised; he never imposed. I am grateful.

What attracted me to the presidency of this college about which I knew very little?

In part, it was because trustees Fred Lindvall, Ken Julin, Bob Hastings, and Henry Mudd, along with faculty members Dave Saunders and Courtney Coleman, alumnus David Howell, and the others that I met during interviews, were enthusiastic about the college and dedicated. Most of all, HMC was a college at which the faculty was committed to maintaining a strong relationship between engineering, mathematics, the sciences, and the humanities/social sciences.

This commitment reflects the college's unique and succinct mission statement. Although Joe, when speaking to his "idea of a college," frequently referred to the relationship between the humanities, engineering and science, the origin of the mission statement is, to my knowledge, not documented. Its origin can be found in a number of places. Early in the *First Twenty Years,* Joe Platt refers to a trustee discussion of "Goals" and wrote that

> "Trustees believed strongly in the importance of liberal education for engineers and in the need for a strong understanding of basic science and mathematics as background for engineering applications."[2]


Dr. Courtney S. Coleman

Joe also records that in 1961, at the request of trustees during a Saddle Rock meeting, he drafted a statement of purpose that was subsequently approved by the board of trustees. The statement reiterated his earlier thoughts. I can find no historical reference in the intervening years until the year before my arrival, when the Executive Committee of the board of trustees adopted a "Statement of Purpose" written by Joe at the request of the Long-Range Planning Committee.[3] At its September 1975 meeting, the board of trustees ratified the entire Statement including the following Mission Statement:

> "Harvey Mudd College will provide men and women with an educational opportunity to acquire the intellectual skills, understanding of society, and motivation necessary to develop and manage science and technology for the benefit of a free society and for the fulfillment of their personal goals. Integrity, a high level of personal ethics, and a reverence for truth shall guide both the teaching and learning processes."

The complete statement, including the purposes as amended on November 1, 1976 to include the life sciences, can be found in Appendix 1. The Mission Statement remained unchanged during my twelve-year tenure.

So we now turn to the "Third Decade Plus." This narration relates the events of twelve years as I recall them. It is not a simple task to reconstruct the past, particularly after the passage of so many years. I undertake it in the hope that in some useful manner it will continue the story provided by *Harvey Mudd College–The First Twenty Years,* Joe's invaluable history.

The events at Harvey Mudd College from 1976 to 1988 are prefaced and framed by the larger world outside the campuses of The Claremont Colleges. A brief look back provides a useful context for the events I have recorded here.

In the years immediately before 1976, great social, political, economic, and technological changes were in the wind. The upheavals of the late sixties were behind us, but the struggle for racial and social justice for blacks, women, and other minorities continued. Martin Luther King Jr.'s "I have a dream" speech of 1963 was followed by the appointment in 1967 of Thurgood Marshall as the first black Supreme Court Justice. The first woman justice, Sandra O'Connor, followed him. Martin Luther King Jr. and Robert Kennedy were assassinated in 1968, just nine years before the beginning of The Third Decade Plus. In 1973, the Supreme Court ruled that, within limitations, women might legally seek and obtain an abortion. In 1974, military academies enrolled women for the first time.

Politically, the Vietnam War had been on center stage, a result of President Johnson's escalation of the war from 1964 through 1968. University and college campuses were in an uproar. In 1975, the war was lost and ended. On the other side of the world, the Israelis won the Six-Day War in 1967 and the Seventeen-Day War in 1973, but saw the emergence of the militant PLO. In 1974, the Watergate scandal ended Richard Nixon's presidency. In 1976, Jimmy Carter was elected president; hyperinflation followed the election. Ronald Reagan entered the national political landscape that year at the Republican National Convention; he was elected President in 1980. In the first few months after his election, he succeeded in convincing a reluctant Congress to pass a significant tax cut, only to see it followed by an economic recession.

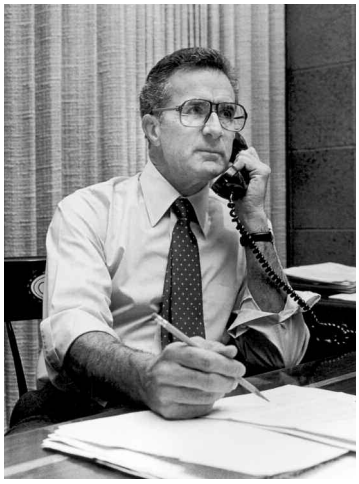
Economically, OPEC, the cartel of oil-producing nations, became a force after Israel won the war of 1973, bringing a sharp escalation in world fuel prices. From 1974 to 1975, the stock market collapsed. Price increases in other commodities followed in the late 1970s and brought record inflation.

Technological gains in solid-state devices led the way to the space program, and research on DNA held the promise of dramatic improvements in

health technology. In 1969, Neil Armstrong and Apollo 11 reached the moon. In 1972, the spacecraft Pioneer 10 was launched to pass out of the solar system carrying a message from its developers to whomever might find it. In 1976, the first public biotech company, Genetech, appeared on the New York Stock Exchange.

In 1977, George Lucas directed and filmed the first *Star Wars* movie.

These remarkable events brought accelerating change to the world, the nation, our lives, and, in particular, to Harvey Mudd College.



President Baker

An explanatory note about format is a necessity. In considering how best to describe this period in the college's history, I choose to engage broad topics, such as "trustees" or "campus expansion." I found that a chronological basis, as desirable as it might be, was impossibly complex. In each chapter I have found it useful to refer to campus or other events that took place before my arrival. *The First Twenty Years* served as the source for nearly all of these instances. The reader interested in learning more of the early years of the college might also enjoy the Oral History prepared as a class assignment by Roger Sensenbaugh '84 and submitted to Professor Seven in Humanities 190.

The author is certainly not a historian. A professional historian might have produced quite a different story of these twelve years. The manuscript is mine alone and I hereby assume all responsibility for the errors I know will be the result of failed memory, insufficient research or bias. I hope some future writer will correct the most egregious of them. I apologize if I have unwittingly offended anyone.

Finally, throughout the manuscript abbreviations for the names of the individual colleges occur. The reader unfamiliar with The Claremont Colleges will need the following equivalents:

CGS	Claremont Graduate School
CUC	Claremont University Center
CMC	Claremont McKenna College (Claremont Men's College)
HMC	Harvey Mudd College
PITZ	Pitzer College
POM	Pomona College
SCR	Scripps College.

CHAPTER I

An Expanding Campus

FOUR significant land and property acquisitions occurred in the Third Decade Plus. Each served to meet major campus needs, both short term and long term, and together reshaped the campus. Some illuminated the critical central coordinating role of the Claremont University Center in Claremont; others, the interesting, often complex, but ultimately cooperative interactions between the several colleges.

The acquisition of the building now known as the Keck Wing was the result of a happy combination of unforeseen, fortuitous circumstances; the others came about only after prolonged negotiation or debate.

1. In January of 1977, the city of Claremont, at the request of The Claremont Colleges, vacated the portion of Mills Avenue that extended south from Foothill Boulevard past the then eastern end of the Harvey Mudd College campus, through the center of the CMC campus, to Sixth Street.
2. In February of 1979, the college acquired twenty acres of land east of Mills Ave. subject to agreements to be reached with Pitzer College.
3. In December of 1981, the college, under agreements reached a decade earlier, reacquired the Graduate (Keck) Wing of the Libra complex from the Claremont University Center.
4. In April of 1988, the college acquired the right to purchase approximately five acres of land west of Sprague Library.

Each had a major impact on the campus.

1. Mills Avenue Vacated

In 1976, Mills Ave. was a four-lane busy city street extending south from northern Claremont across Foothill Blvd. and through The Claremont Colleges. Its width and heavy traffic made crossing it on foot a hazardous undertaking at best, and traffic noise was an undesirable nuisance. More importantly, the street was a major obstacle to an expanded and unified Harvey Mudd College campus, and completely prevented the consolidation of the CMC campus.

In June of 1975, a year before I arrived, the Presidents Council of The Claremont Colleges proposed the closure of Mills Ave. to vehicular traffic as part of The Claremont Colleges' Long Range Development Plan. The Joint Campus Planning Committee of the colleges approved the proposal, and with CMC President Jack Stark playing a lead role and Joe Platt representing The Claremont Colleges as a whole, the proposal was submitted to the Claremont City Council.

When my wife and I arrived in 1976, the city council had under consideration the larger question of which streets would be future keys to a north-south artery in Claremont. Mills Ave. was a possibility, but it dead-ended at a wasteland south of First St. at the southern border of the Pomona campus, and had no freeway access. In late 1976, the city council earmarked Claremont Boulevard as a major north-south artery and authorized improvements, including the construction of the rock and shrub mid-road separator now found there. This decision cleared the way for favorable consideration of the college's request. On January 11, 1977, the city council declared Mills Ave. vacant from Foothill Blvd. south through the CMC campus.

President Jack Stark's political acumen in these negotiations cannot be understated; he deserves full credit for his leadership in this sensitive exchange with the city council. He was supported by the Claremont University Center, HMC, and Scripps, but Pitzer College opposed the closing because it wished to maintain Mills Ave. as its "front door" access.[1]

As one of the conditions for vacating Mills Ave., the Los Angeles County Fire Department required that fire lanes be constructed wide enough for two fire trucks to pass one another. This requirement explains the very wide concrete paths now found on the HMC and CMC campuses.

The closing of Mills Ave. had an enormous impact on the northern colleges. It extended and reshaped the eastern end of the Harvey Mudd College campus and the northern Pitzer campus, making possible a major redesign and consolidation of the CMC campus. The timing of the colleges' request could not have been better. It is doubtful that a decision to close a busy street could be achieved today, and it is difficult to imagine what the configuration of the three northern campuses would currently be without this significant change.

Shortly after the erection of the wooden barriers and warning signs that actually closed Mills Ave. to traffic, an incident occurred that was to demonstrate the legalities of modern life. I was writing at the desk in the den of the President's House when, after midnight one evening, a loud crash, followed by calls for help, sent me scurrying outside to discover the cause. There were no lights on the closed street and in the darkness I could see nothing, but the pleas for help led me to a young man who was lying on the ground in the middle of what had been Mills Ave. He had a badly broken leg and was unable to move. Nearby were the twisted remains of a motorcycle. Apparently, he had driven down from Foothill Blvd., threaded his way among and around the barriers marking the closure of the street, and tumbled into a rather large hole dug by utility workers. An ambulance eventually arrived to take him to a hospital.

Some weeks later, my office received a summons from the cyclist's lawyer seeking damages of tens of thousands of dollars for negligence and liability. This, in spite of several carefully placed warning signs and major barriers that the cyclist had chosen to ignore. Despite my opposition, the college's legal advisors and trustees urged me to agree to a settlement on the basis of unforeseen costs if the college was to litigate and lose. It was a difficult decision to accept.

2. The Acquisition and Partition of land east of Mills Avenue

In 1976, approximately 20 acres of vacant land extended east from the President's House and Mills Ave. to Claremont Blvd. It was bounded on the north by Foothill Blvd. and on the south by the Pitzer campus. Covered with scrub oak and chaparral, it was a haven for rabbits, coyotes, and snakes. Two commercial enterprises held leases on parcels along Foothill Blvd.: the Soup's On, a small and popular luncheon restaurant, and O'Hara's Fireplace and Fixtures, a small retail store. There was also an old ten-unit motel, that had been acquired by the Claremont University Center and converted to apartments for graduate students. The Claremont University Center held the parcel, in trust, for The Claremont Colleges as a whole and had granted Pitzer College the right to construct the bell tower on the southern edge of the property and to site the Grove House now located near the tower.[2]

A 1976 chronological list of campus buildings provides an overview of campus development during the Platt years.

Building	**Date Occupied**
Mildred E. Mudd Residence Hall (East)	September 1957
West Residence Hall	September 1958
President's House (Garrett House)	August 1959
North Residence Hall	October 1959
Science Building[3]	January 1960
Kingston Hall	September 1961

Thomas-Garrett Hall	September 1961
Joseph B. Platt Campus Center	September 1963
Horace Bell Pool	July 1967
David X. Marks Residence Hall (South)	September 1969
Project Libra:	
Jacobs Science Center	September 1971
Ralph M. Parsons Engineering Building	November 1971
Galileo Hall	December 1971
Norman F. Sprague Memorial Library	January 1972

This list, dated 1976, indicates that no addition had been made to student housing since 1969. It also shows that the 1971–72 academic year produced a significant increase in academic space. Finally, it shows that no additional space for administration had been added since 1961! A glance at a 1976 map shows that these buildings almost fully occupied the land acquired by President Platt early in the development of the college.

Substantial enrollment growth before the beginning of my term created urgent needs for additional housing, dining, and academic space. Student enrollment increased from 376 undergraduates in 1969, when Marks Residence Hall was opened for the first time, to 493 in 1976—a 31 percent increase. The number of full-time faculty tenure-track positions, not counting faculty in physical education, increased from forty-one in 1969 to fifty in 1976, a 22 percent increase. This growth, plus the lack of available space for current and future needs, led me to use the term "landlocked" in an early report to the trustee Building and Grounds Committee. I urged trustees to consider expanding the college property holdings to both the east and west.

It was a request made none too soon. Just three months later at the March 1977 board of trustees meeting, I reported that the Claremont YMCA had asked to lease space and construct a building on the parcel east of the recently vacated Mills Ave. The proposed lease would have provided CUC an annual savings of $12,000 in taxes, a possibility of some considerable interest to them. To me, however, the request completely negated any long range planning by either HMC or Pitzer College. I opposed the proposal, and urged trustees to offer to purchase,[4] as soon as possible, at least six acres of the parcel, or if possible, all of it.

At the June 5, 1977, trustee meeting, I not only reported that the YMCA request was earnest, but that the request had stirred the interest of both Scripps and Pitzer Colleges. Scripps wanted space for staff and student parking. Pitzer College had a clear claim, perhaps more valid than ours. They already held a lease on a portion of the parcel. Historically, the land had been held for a future college whose campus would be the mirror image of Pitzer. The Pitzer Board of Trustees opposed the sale of the land to anyone. These divisive interests caused Joe Platt, then president of

Claremont University Center, to recommend the establishment of an ad hoc four-college (CUC, HMC, Scripps, Pitzer) "Twenty-Acre Study Group"—a committee comprised of two trustees from each of the interested institutions. The HMC trustee representatives, Ken Julin and Ken Jonsson, were first, and later, Bill Keck and Hugo Riemer. We are indebted to these trustees for the time they dedicated to the prolonged negotiations[5] that were to follow.

On January 3, 1978, the Study Group discussed a recommendation from the Pitzer representatives that Twelfth Street be extended to the east to Claremont Blvd.[6] It was a recommendation we vigorously opposed because of the increased traffic that would inevitably result. On February 14, the CUC representatives on the Study Group presented to the Buildings and Grounds Subcommittee of the board of fellows a series of principles to guide CUC in the negotiations. The principles stated that CUC owned the property outright, that the parcel was the last remaining undeveloped land of its size south of Foothill Blvd., and that it had long been considered the site of the next college to be developed in Claremont. Their report concluded that CUC should keep the parcel intact for new institutions, but equivocated by stating that the interests of existing colleges should be considered, especially if presented as joint proposals. At the following board of fellows meeting, the Study Group reported that each of the four colleges involved had a "legitimate interest" in the property. Trustee Ken Julin reported this development to the HMC Board in February of 1978. At the HMC Executive Committee meeting in June, Dr. Platt, president of Claremont University Center, reported the good news that the land would be made available to HMC if agreements could be reached with Pitzer and Scripps. The cost would be CUC's plus carrying charges, or the current appraised value, whichever was the least.

The entire future of the twenty-acre parcel became clouded in late 1978 because of a request by the owners of Cable Airport (the small airport north of Foothill Blvd.) to extend their runway. The issue delayed further negotiations among the colleges because of the possibility of the land being rendered should the runway be extended. However, the city of Upland ultimately refused the request.[7]

In late 1979, President Ellsworth and I contracted with Mark Wodtke, a landscape architect in Claremont, to prepare a preliminary landscape plan for the then vacated Mills Ave. and the twenty-acre parcel. I wrote to Joe Platt on April 9, 1980, and formally requested the purchase of one half of the parcel.

On July 16, the Twenty-Acre Study Group recommended and the board of fellows of Claremont University Center confirmed that:[8]

1. Harvey Mudd College shall purchase from CUC for educational purposes...the entire twenty-acre site...; that Pitzer College and

Scripps College shall subsequently negotiate with Harvey Mudd College regarding any interest...in the twenty-acre site; that Harvey Mudd College shall make available... for twenty years the free use of the plot on which the Claremont Graduate School ten-unit dormitory and the two commercial properties are located... but may on seven months notice...terminate the leases...[9]

2. That...the sale price ... be calculated as follows:

Original land acquisition costs	$101,934
Carrying cost @ 5% per annum, (compounded)	210,669
Un-reimbursed taxes	179,251
Carrying cost on taxes @ 5%	117,264
Total	**$609,118**[10]

The "Twenty Acres" at the east end of the college.

The Twenty-Acre Study Group concluded that they could no longer be effective in settling the details of the acquisition, and that the presidents of the interested colleges needed to negotiate directly. At their behest, I met with the presidents of Scripps and Pitzer to consider an appropriate division of the parcel. On May 14, 1980, the three presidents signed a formal agreement allocating a portion of the parcel to each. The Pitzer Board of Trustees refused to accept the recommendations, but fortunately, Scripps decided to withdraw from the negotiations.[11] The May 14 agreement was

rendered void, but HMC eventually secured a final agreement of much greater consequence.

Pitzer College was not in a financial position at that time to share in the transaction, but maintained its interest in the property. President Ellsworth and I held a series of conversations on the terms of a parcel division. In October 1980, we signed an agreement specifying the division, along with a five-year option to provide sufficient time for Pitzer to raise the necessary funds. We agreed further that Pitzer would pay a pro rata share of the costs outlined above plus carrying costs.[12]

One other complication arose–a matter of timing. We were in the process of negotiating a loan for a number of campus projects and trustees raised the legal question of whether we would be in a position to secure the loan if the property was not under our control. To avoid complications, we executed a lease-purchase agreement with CUC and the loan was processed.

On May 17, 1981, the HMC Board of Trustees voted to grant an option to Pitzer College on a portion of the parcel. The option allocated 10.95 acres to HMC and 9.95 acres to Pitzer. Pitzer later picked up its option, and a supplement agreement dated June 22, 1982, finalized the arrangements.

During this time, we approached the Keck Foundation and presented the case for a grant to support the acquisition of the parcel. Happily, the foundation acknowledged the importance of the project to the future of the college and awarded a grant of $609,000—the entire amount we needed.

Joe Platt's original campus contained some eighteen acres.[13] The acquisition of almost eleven additional acres increased the size of the campus by 60 percent and provided not only sites for future residence halls, but opened up possibilities for future development. Over three years had passed since I had first called the "landlocked" nature of our property to the attention of trustees.

There was to be one more land acquisition of equal importance.

3. The Graduate Wing and its Repurchase

The academic heart of the campus, consisting of Sprague Library, Hixon Court, Parsons Engineering Building, the Graduate Wing and all the space below ground level, was completed in January of 1971. Named "Project Libra," it was a major and ambitious undertaking masterfully brought to fruition by President Joe Platt.

The buildings were constructed on land that was owned by Claremont University Center, but leased and eventually sold to Harvey Mudd College in an agreement formalized in September of 1967.[14] According to President Platt, in the year following the agreement and during the planning of the complex, Immaculate Heart College in Los Angeles expressed a wish to move from Los Angeles to Claremont. As part of its plan, they

signed an agreement with HMC to build the Graduate Wing on the Science Building in which to house science laboratories for Immaculate Heart. However, at the last moment before construction began, Immaculate Heart decided to remain in Los Angeles and withdrew from the agreement.

The withdrawal provided the opportunity for the Claremont Graduate School to make an interesting offer. It offered to share the cost of construction of the proposed wing if HMC would lease the wing for graduate school use. President Platt negotiated a ten-year lease that would terminate in December of 1981. The cost to the graduate school was $300,000.[15] It was a happy arrangement for both signatories. The graduate mathematics department moved into well-appointed offices on the top floor, a convenient location for co-operation with the HMC Department of Mathematics. The graduate art department occupied the remainder (essentially a shell), including the basement and sub-basement. The wing is now known as the Keck Laboratories.

Early in the 1977–78 academic year, after the appointment of our first full-time biologist, I talked to Joe about the possibility of an early acquisition of the wing, or a part of it, in order to construct biology labs. Unfortunately, he had no alternative for the graduate departments housed there and HMC did not have the necessary funds for the repurchase. We were forced to consider other solutions.

In September of the following academic year, a further discussion with Joe led to a letter of understanding from him suggesting that we agree on a three-to-five year period to formally complete the exchange. The Buildings and Grounds Committee of the board, however, formally recommended that we hold to the date specified in the original 1970 agreement, a recommendation supported by our legal advisor. In March and June of 1979, I wrote to Joe declaring our intention to reclaim the wing in 1981 under the terms of the ten-year agreement. I am sure the letter gave him some pause, since his efforts years earlier on behalf of HMC to construct the wing had come home to haunt him in his role as CUC president. He now was faced with the task of finding a new home for both the graduate art department and the graduate mathematics department, thus placing on him the burden of solving the problem of the wing for the second time!

In response, Joe presented a preliminary financial plan for the repurchase based on the 1970 agreement. His proposal required HMC to pay the original cost of construction, plus the book value of improvements made by CGS, which we would wish to keep. The book value was to be depreciated linearly over a ten-year period. The calculation was:

Original cost of construction	$307,000
Book value, improvements	390,000
Less depreciation, 9.25 years	(181,000)
Total	**$516,000**

For HMC, this purchase agreement was a very pleasing bargain at 1981 prices, but a sum we still did not have at hand. This price turned out to be only the first payment in a long series of very significant outlays for the renovations that would follow.

As the date for transfer of the building approached, Joe asked for a possible extension of two years. CGS was in the process of planning a new art building and was seeking a partnership with Scripps. HMC was experiencing a growing shortage of academic space for a number of reasons, including a recent reallocation of existing space for biology labs and offices. Joe and I discussed the possibility of a phased takeover and finally agreed on a plan in which the graduate art department would leave on schedule in 1981 and the graduate mathematicians would vacate the top floor on June 1, 1983.

The need for academic space at HMC continued to be pressing. As a stop-gap measure in the second semester of 1977–78, we modified part of the fourth floor of Sprague Library to provide temporary and limited office space for faculty retirees and freshmen tutors. The original assignees were Emeritus Professors Davenport, Wicher, and Rae, and three tutors. This supposedly interim arrangement has unfortunately become semi-permanent.

The acquisition of the wing provided an additional 30,322-sq. ft. of space, an increase of 32 percent in the academic space overall. This addition made possible a plethora of alternatives. Our notice of repossession set in motion an intensive two-year planning effort by the dean of faculty and the department chairs to allocate the added space. An ad hoc Libra Wing Space Committee (Professors Tad Beckman, chair, Jack Alford, Art Campbell, John Greever, Bill Purves, Sandy Sandmann, and Jerry Spanier) was charged to bring wishes and realities together in the best interests of the college. Their recommended allocations were refined in the summer of 1979 and approved by the faculty on October 14, 1980. Individual departments then formulated plans for the use of their allocated space. One wish not accommodated was the wish of the HMC mathematicians to have space allocated in the wing for both themselves and the graduate mathematicians, a concept of some merit. Ultimately, however, more pressing priorities prevailed.

The changes recommended also included substantial changes in existing space in Jacobs Science Center, Parsons Engineering, and, to a lesser extent in Kingston Hall. In outline, the recommendations were:

In the Graduate Wing:

- 2nd floor - chemistry teaching lab, instrument and seminar rooms
- 1st floor - mathematics offices, lounge, project lab, conference rooms, and classroom for fifty students
- Basement and under courtyard - CGS mathematics offices (temporarily), student rooms, Clinic project lab, physics labs and faculty research labs.

- Sub-basement - physics research
- Other changes - add an elevator

In Jacobs Science Center:

- 2nd floor - research labs, chemistry offices, new stockroom
- 1st floor - physical chemistry and biochemistry
- Basement - physics reading room, media lab, emeriti offices

In Parsons Engineering building:

- 2nd floor - Engineering Clinic offices
- 1st floor - electronics lab, computer science lab, Engineering Clinic labs
- Basement - computer graphics lab, sophomore engineering lab, engineering instrument room, printed circuit lab, classroom

In Kingston Hall

- Seminar room

In January of 1981, Dean Tanenbaum issued a detailed and marvelously comprehensive space utilization plan based on this outline. His cost estimate was $2,730,000.


Dr. B. Samuel Tanenbaum

It was a grand plan, with many details to be filled in. With the guidelines in hand, we contracted with the architectural firm of Charles Kober and Associates to redesign the interior of the wing, its basement, and sub-basement. By early 1982, the architect produced preliminary cost estimates and we had a clear measure of the fund-raising demands facing us:

1. Phase I - purchase	$516,500
2. Phase II - ground floor - Mathematics	461,000
3. Phase III - basement (A) & (B) - Physics	687,000
4. Phase IV - upper floor - Chemistry	685,000
Total	**$2,350,200**

These estimates were clearly a major challenge for fund-raising. While the faculty discussions of space needs were underway, we were in the process of winding down Campaign 25/32 to its successful conclusion. Now we were faced with a further, not-so-mini campaign aimed at providing academic space in the wing.

In the end, the additional fund-raising efforts were successful. We were particularly grateful that foundations and a trustee responded generously to our proposals. Their contributions were:

Foundations	
Irvine	$100,000
Ahmanson	50,000
Stauffer	50,000
Booth Ferris	50,000

Keck	1,550,000
Atlantic Richfield	400,000
Trustee	
Dr. & Mrs. J Jacobs	120,000
Sub-Total	$2,570,000
minus (required by Keck Foundation as endowment for maintenance)	(400,000)
Total available for construction:	**$2,170,000**

The Department of Mathematics moved into their new offices on the campus level of the wing at the start of the fall semester in 1982. The physics laboratory construction was nearing completion. The CGS mathematics department was still in residence on the top floor, but plans were in hand for the multi-purpose "super" chemistry lab that would replace them. By April 1983, Phase III of the project—the construction of laboratories, classrooms, computer terminal rooms, and computer project rooms in the area under the Libra courtyard—was on schedule for completion by graduation in that year.

Moving the mathematicians from Kingston Hall into the Graduate Wing greatly alleviated the very crowded conditions in the lower floor of Kingston Hall, where faculty often commented there was little or no room in an office for a student to sit. Several particularly small offices were enlarged and occupied by the Department of Humanities and Social Sciences faculty. Equally important, the relocation of the mathematicians made it possible to create offices and workspace for the Admission Office, which was temporarily housed in the Campus Center after our withdrawal from the joint Office of Admission on the CMC campus. I was pleased to be able to announce to trustees that the new Admission Offices and new lobby in Kingston Hall were completed, and that we had started renovations to provide space for Financial Aid offices (still housed at CMC).[16]

We had hoped that these reallocations and increases in available space would meet our needs for some considerable time. Such was not the case. In October of 1986, in response to additional pressure to accommodate the growing needs of biology and computer science, Dean Tanenbaum and the department chairs established a new Space Planning Committee. The committee included Professors Tad Beckman, Stavros Busenburg, T.J. Mueller, Sandy Sandman, and Sedat Serdengecti, with Daniel Cohen, a visiting intern in the Dean's Office, as staff support. An astonishing 30,300 square feet of additional space was requested. Since the existing academic space amounted to 66,070 square feet, the addition would be a 45 percent increase, confirming that an additional building on the campus would be necessary. The Cohen report included an estimate of $5,700,000 for a new building and $1,600,000 for renovations.[17] The report became the first step

that led to the first of my two preliminary visits to the Olin Foundation. Time, however, was running out in the Third Decade Plus; further efforts to advance this new project fell to my successor.

4. The Acquisition of the Parcel West of Sprague Library

Of all the various challenges that confronted The Claremont Colleges as a group in the 1980s, the one that would have the greatest long-term impact was the challenge of proper land use and the development of the "Land Bank" concept. These issues arose as a result of the interest of HMC and others in a vacant parcel of land west of Sprague Library.

When I first arrived, the area west of the library was covered with untouched scrub growth and dusty paths. Unimproved flat spaces provided temporary auto parking for graduate students living in apartments along Dartmouth Ave. One old grove house that was in poor condition faced Foothill Blvd. and was occupied by Professor Warner Neal of the Claremont Graduate School. On Twelfth St. a small building (one could hardly call it a house) was the home of the elderly Mr. David Waingrow, father of Professor Marshall Waingrow, a member of the Graduate School faculty. David's home was the closest residence to the President's House where Vivian and I lived, so he was our only neighbor apart from students. We got to know him as a special person.

From the outset, I (and others in the Harvey Mudd College community, I am sure) believed that this undeveloped parcel was being held by Claremont University Center in trust for future academic buildings of Harvey Mudd College. As a matter of fact, *The First Twenty Years* records that:

> "... Claremont University Center (in 1967) designated the area between Dartmouth and Columbia Avenues, and between Twelfth St. and Foothill Blvd. for laboratories, and other facilities for the teaching of mathematics, the natural sciences and engineering."[18]

Nothing could be more clearly stated. However, we were destined to have a very rude awakening.

Late in 1982, I learned that John Maguire, the newly appointed president of Claremont University Center, had suggested that a graduate school apartment building be built on the site west of Sprague Library. I wrote to him in November, expressing the HMC view that the space should be reserved for science activities, as long planned. Shortly thereafter, Scripps College requested the land for a parking lot. I was able to report this stunning series of events to the board of trustees in December. By that time, President Maguire had acknowledged HMC's position, but the issue remained unresolved.

We were in a tenuous situation. Long-held HMC assumptions about the land were in serious doubt, and we would need to begin immediately a major effort to affirm our claim. There was no guarantee that our position would prevail.

The board of fellows of CUC was now faced with the various claims on the land by several colleges. On May 14, 1983, the CUC Board announced and established a general procedure for adjudicating land disputes between colleges. The chair of the CUC Buildings and Grounds Committee would preside over a select panel comprising the board chair and the president of each college not involved in the disputed matter. (In the case in question-Pomona, Pitzer, and Claremont Men's.) The chair of the board of fellows and the president of CUC would serve as ex officio members. After appropriate hearings, the panel (which eventually became known as the Land Bank Panel) would meet with the leadership of the colleges to see if a compromise among the competing interests was possible. The panel would then make its report to the CUC Buildings and Grounds Committee, the Executive Committee of the board of fellows, and finally, to the board of fellows itself. The deadline for a final decision on the land west of the library was set at the conclusion of the 1983–84 academic year.

On May 15, President Maguire reported this procedure in person at our regular meeting of the board of trustees. On the same date, I wrote to the CUC's Building and Grounds Committee and formally requested the acquisition of the entire parcel.

During the early weeks of the fall semester, much of my time, my staff's time, and a considerable amount of trustee chair Hubie Clark's time, was devoted to preparing our case. We were asked by the Land Bank panel to present a long-range campus plan that would make clear our need for the land, a plan that we did not have at hand. For the presentations, we prepared a series of slides and a script rather boldly entitled "The Campus Master Plan" (see Appendix 9). Unfortunately, we had no time to involve the various constituencies of the campus, or even the trustees, as full participants in the preparation. The presentation emphasized the historical development of the campus and our current and anticipated future needs. Clearly, this document could not claim to be a true master plan because time constraints precluded wide participation. We did consult our legal advisors to make sure the historical documents we relied on were reasonable and of some merit. On November 16, we made our first presentation to the Land Bank Panel. We made the same presentation on November 29 to the Physical Plant and Campus Planning Committee of the board of trustees, then to the full faculty at its regular meeting on December 5. The final presentation to the board of trustees was made on December 15.

Our colleagues at the other interested colleges also made their presentations to the Land Bank Panel. The panel, however, did not meet its decision deadline. When the hearings revealed the complexity of the issues,

the panel asked the Council of Presidents to set in motion a Claremont Colleges-wide planning effort so that a decision could be fashioned in a broader context. This was a momentous step in the history of The Claremont Colleges.

Not until December of the following year did John Maguire, President of CUC, report that the presidents had agreed on both the general principles that would direct further analysis, and on the draft of a policy that would govern future transactions in which CUC land was involved.[19] Several excerpts from the general principles follow:

3. The Central Libraries complex and the surrounding block, bounded by Columbia Ave., Dartmouth Ave., and Tenth St., comprise the core of the cluster.
4. Central vehicular access routes to that core are Dartmouth Ave., Eighth St., Tenth St., and Twelfth St.
5. With the possible exception of graduate student housing, the land north of Foothill Blvd. held by Claremont University Center on behalf of the cluster will be reserved for new colleges and for other ventures associated with The Claremont Colleges, on the assumption that existing colleges would be able to satisfy their land use needs south of Foothill Blvd.:
   - Proceeds from the sale of land owned by Claremont University Center and Graduate School to the east of Dartmouth Ave. would accrue to the All-College Land Bank.
   - Proceeds from the sale of buildings owned by Claremont University Center and the Graduate School to the east of Dartmouth Ave. would accrue to the constituent entities currently occupying them. Thus, proceeds from the sale of the Benezet Psychology Building would accrue to the Graduate School. Proceeds from the sale of the Joint Science Center and of Baxter Science Building would accrue to the Colleges participating in the Joint Science program. Proceeds from the sale of the buildings occupied by Central Programs and Services would accrue to the Land Bank.
   - A major grade-level entrance to The Claremont Colleges is planned for development at Dartmouth Ave. and Foothill Blvd.

The twelve-paragraph document spelled out various exchanges and purchases anticipated by the Land Bank Panel. Paragraphs eight and eleven were of special interest to HMC:

> **Paragraph 8:** CUC agrees to grant Harvey Mudd College the right of first refusal, at a price determined by the land bank formula, on any sale within the parcel of

land north of Twelfth St. and east of Dartmouth Ave. a parcel which falls within HMC's zone of interest.

Paragraph 11: If presently unforeseen circumstances constrain Harvey Mudd College to commence construction in this parcel before completion and approval of the plan (for landscaping) outlined above, then HMC could purchase a portion of the parcel, subject to approval by the council and the board of fellows.

We had been successful in making the case for Harvey Mudd College. The decision in our favor was a welcome relief, for it assured proper space for future academic activities. Hubie Clark, chair of the board, spent many hours of his busy schedule advising me, meeting with committees, and generally monitoring the effort to make sure that our case was properly and reasonably presented. The college owes him a deep debt of gratitude for successfully guiding us through this troublesome period.

E. H. "Hubie" Clark Jr.

On March 6, 1985, I happily asked the board of trustees to ratify the entire Claremont planning document. This they did, and with considerable enthusiasm. On December 10, Hubie Clark asked the board of trustees to instruct me to proceed with the purchase of the parcel. The actual purchase, at a cost of approximately $376,000, was briefly delayed by a disagreement with CUC over a small number of parking spaces used by graduate students from adjoining residences. With this matter concluded, trustee A. J. Field issued a timely challenge to his fellow board members: he would make a gift of $150,000 toward the purchase of the property in memory of his mother, if others would match his contribution. The board rose to the occasion and, on April 14, 1988, approved the purchase for the sum of $412,000.

These had proven to be touchy and anxious years for us. We were frankly astonished that others in Claremont might not see or accept the logic in our position regarding the future of the land west of Sprague Library. In the end, and in large measure, the Claremont Group spirit prevailed over strong individual college special interests, although at the time and in relating them here, it seemed that self-interests were overwhelming driving forces. It is an interesting historical footnote to recall that at the time of the debates over land-use, the colleges as a group undertook a major joint effort to upgrade the central library. Two buildings joined by a bridge—Honnold Library and Seeley Mudd Library—made up the central library complex, with smaller libraries at Scripps, Pomona, and HMC. A total of 1.3 million volumes were spread among the buildings and overflowed into the basements of a number of buildings throughout Claremont. Mechanical systems in the two main libraries were fifty years old. In December of 1982, the Council of Presidents received an initial master concept plan reconfiguring the two buildings and proposing an expansion

of 48,000 square feet. The cost estimate was $8,000,000, to be raised jointly. The renovation was completed, and the building dedicated, in September of 1987.

The acquisition of the land west of Sprague Library was the final of four events that had a major impact on the events during my term. All four brought, or made possible, expansions in the physical plant of the college and each played a significant role in three planning issues facing the college: the size of the college, student housing, and academic resources.

CHAPTER 2

The Size of the College

In Retrospect

THE college opened in 1957 with an enrollment of forty-eight undergraduates. It was, by anyone's definition, a small college! During the first ten years, enrollment grew steadily (Appendix 7, Chart 2-1). Two hundred and eighty-five students were enrolled in 1965, and President Platt reported that the faculty "was ready and eager to enroll more."[1] To house the students, three dormitories-East, West and North-provided 264 beds; Scripps dormitories provided twenty-five or more additional beds. Accommodations matched enrollment.

At the Saddle Rock meeting of 1965, discussion centered on enrollment growth. An undergraduate enrollment of 400 was proposed as the "full size" of the college. Joe's position was clear:

> "By any reasonable estimate, we couldn't afford a size increase. …To increase to 400 students would require a new dormitory, additional laboratory buildings, more classroom space, and more faculty offices."

As if in response to Joe's comments, the Ford Foundation, with fortuitous timing, challenged The Claremont Colleges as a group to adopt long-range plans and to initiate major fund-raising campaigns. The board of trustees at HMC, in April 1965, elected to undertake an ambitious seven-year fund-raising and building campaign named "Impact/72." Its goal of $18.75 million was to be achieved by the year 1972.[2] In 1967,

trustee David Marks made an early "start-up" gift of $400,000 for the express purpose of constructing a new dormitory.

With this impetus, the board of trustees formally voted to increase enrollment to a "full size or "ultimate size" of 400 undergraduates by the year 1972. Construction under Project Libra, a massive effort to provide faculty offices, laboratories, and a library, began in 1970 and was completed in 1971–72. That year, enrollment was 395 undergraduates–right on target! It was a remarkable period in the College's history.

The academic year 1972–73 was a year of assessment. Joe Platt charged Academic Dean Jack Frankel to study the impact on various college operations of a growing student enrollment, an enrollment that had reached 386 undergraduates. The Frankel Size Impact Committee (Jack Frankel, Mel Henriksen, Mits Kubota, Mike Seven, Enos Wicher) examined the impact of size changes on more than twenty college activities and services ranging from admissions to telephones. The committee assumed no radical changes would occur in either the current operations or character of the college.

The committee's first conclusion was that the college could increase its enrollment to 480 students with only minor adjustments and, with the addition of one faculty member, maintain a student-to-faculty ratio of eight-to-five. The second conclusion was that the undergraduate enrollment could be 600, with a student-to-faculty ratio of ten-to-one, if new faculty were added, new faculty offices were made available, and additional secretarial services, laboratory stations, and a dormitory were provided. The size impact report did not address fiscal implications. Dean Frankel resigned the following year. Apparently, no further action was taken on the report.

A reading of this report clarifies the significance of the student-to-faculty ratio in college planning. The report implicitly redefines "size" to include not only undergraduate enrollment but also student-to-faculty ratio. Thus, discussions would be aided by understanding, and agreeing, that size is defined by the number of students and the number of faculty, as expressed by the student-to-faculty ratio.


Kenneth A. Jonsson

In the 1974–75 academic year, the board of trustees initiated a long-range planning effort led by trustee Ken Jonsson. He and other trustees believed the college could benefit from regular and systematic planning. He proposed a process in which small ad hoc "matrix" committees made up of representatives of each constituency of the college would study specific issues and make recommendations, which would then be reviewed and commented on by all interested parties. The consolidated conclusions would then be reviewed and forwarded to the board of trustees by the Long-Range Planning Committee. The process was intended to be flexible, and conclusions changeable, if circumstances warranted.

His committee consisted of Professors Jack Alford and Bob Wolf, students Steve Bedford '77 and Chris Lindsey '75, alumnus Gael Squibb '61,

trustee Hubie Clark, and staff member Ellie Johnston. They first undertook the task of developing a "Statement of Purpose" and a first draft was available in April of 1975. On September 23 of that year, the committee submitted a draft to the board of trustees for their approval and ratification. A review by the faculty in November of 1975 approved the statement with minor editorial changes.

With the mission statement ratified, trustee Jonsson asked the committee to develop quantitative planning goals that would "accomplish the mission purposes." The committee began with the issue of size and was charged by the chair to determine an "ideal planning number" for the college's enrollment. At their meeting of October 1, President Platt was asked to offer his views on the present enrollment of 458. His remarks follow:

> "The preferred size of the college should be established as a basis for any planning. At 430–440 students, no additional residence hall would be needed and faculty size could be maintained with a drop in student/faculty ratio, but there would be a net loss of income of approximately $36,000. If a student body size of 480–500 were chosen, more campus living space would be necessary.... However, the additional tuition income could support more faculty. Financial, admission, and academic arguments for both options need to be developed and studied."

These remarks reflected Joe's keen awareness of the links between enrollment, student housing, the faculty, academic programs, and available funds. In effect, his statement laid out the complexity of the "size" issue, a complexity that would prove to muddle discussions of enrollment over the next several years.

Students would be the first to take a position on the issue. In the month following the October 1975 long-range planning meeting, Ted Burkey '76, chair of the student Dormitory Affairs Committee, Steve Bedford '77, chair of ASHMC, and Don Hawthorne '77, student representative to the board, presented a three-page paper to the trustee Committee on Student Affairs.[3] The paper claimed that every student felt the college should reduce its enrollment from the current size of 458, and argued forcefully for a student body size in the range of 400–420 students. Students also recommended that an abandoned infirmary building north of Foothill Blvd. be renovated to provide additional housing.

On November 12, 1975, Chair Ken Jonsson asked President Platt to appoint a small ad hoc matrix Committee on Size charged to recommend an ideal planning number for the size of the college. The members of the committee were Professors Rich Phillips, chair, Jack Alford, Jerry Van

Hecke '61; trustee Clair Peck; student representative Don Hawthorne '77; and secretary Ellie Johnston.

Before my arrival in May, the ad hoc committee issued its final report.[4] It included three attachments that presented faculty, alumni, and student views. The faculty's greatest concern was for the size of the faculty and relationship of faculty size to programs and the number of students; they recommended a size of 450–465 students. The alumni viewed the sense of community at the college and the quality of education as most important, and recommended a size of 400–425. The student section of the report, written by Don Hawthorne '77, was especially critical of the growth in recent years. He reiterated the students' earlier position and argued forcefully for a decrease in size. He claimed that in a recent survey 82 percent of students favored decreasing the size of the college by an average of 13 percent (about sixty students). Only 11 percent favored no decrease. Consequently, the student recommendation was a size of 381–411. It is interesting to note that the students also suggested three alternatives for solving the size issue. The second of these—to "retain the present size of 458 students in 1975–76 and expand the faculty and the physical plant"—proved closest to the future reality.

The final recommendation of the committee was:

> "Based upon consideration of the exhibited position papers, the Committee recommends that a student body figure of 425 be employed for planning purposes.
>
> "The recommended figure assumes that the college programs will remain comparable to their present scope. (We have taken into account the planned addition of a biologist to the teaching faculty.) It also assumes that the faculty will not be reduced below its present number of fifty-four."

Professor Phillips presented this report to the trustee Long-Range Planning Committee on May 27, 1976. In the discussion that followed, a faculty member on the Long-Range Planning Committee asked about the financial implications of the sharp reduction in enrollment that would result if the recommended number were to be adopted. The matrix committee had no comment since it had been instructed not to consider the financial implications of their recommendations. The Long-Range Planning Committee then voted to forward the recommended number of 425 to the board of trustees and to the faculty for their consideration.

In retrospect, the initial failure to link enrollment to financial considerations (note the clear linkage expressed by Joe Platt in his comments of October 1975) may have been an omission that confused and delayed all future discussion of the issue.[5]

The Matrix Committee on Size was discharged with thanks.

It was at this juncture that President Platt's resignation became effective. I arrived and found the enrollment to be 493, a full twenty-five percent over the "full size." The "full size" number of 400 would come to haunt future discussions.

The Size of the College Early in the Third Decade

The 1976 enrollment was far beyond both the upper limit discussed by Joe a year earlier and the compromise of 425 recommended by the ad hoc matrix committee.

I arrived quite unaware that the issue of size was under study, and was a growing concern in all of the constituencies of the college. Curiously, I do not recall the matter arising during the interview process either with trustees, faculty, students, or staff, or in several telephone conversations with Henry Mudd prior to my appointment.

The senior administrative staff, however, soon brought the issue to my attention. They listed the "size of the college" as the first agenda item for our first meeting. The topic was also an agenda item at my first meeting with the Executive Committee of the board of trustees.

And understandably so: the 493 undergraduates were straining campus facilities to such a degree—particularly residence hall and dining room space—that I reported to the Executive Committee that I felt determining the college's planned size and the proper housing of students was of the highest priority.[6] I was to discover that the issue of size had a life and a momentum of its own.

In 1976–77, the first year of the Third Decade Plus, the Long-Range Planning Committee was comprised of trustees Ken Jonsson, chair, and Charlie Lee; professors Jack Alford, Art Campbell and Ted Waldman; alumni Gael Squibb '61, Joe Barrera '62, and Chris Lindsey '75; student Don Hawthorne '77; and staff members George McKelvey, Dean Tanenbaum, and Ellie Johnston.

My first meeting with this committee took place in September of 1976; it was a lively meeting in which strong opinions were thoroughly aired and enthusiastically defended. I urged that the proposed planning number of 425 be re-examined fully and carefully, and that all trade-offs, including financial, be amply considered. Don Hawthorne, the student representative, made it clear that the planning number had already received much discussion in the student body and that students widely accepted 400 as the appropriate number. His position reiterated the student view presented in the position paper of October 1975, which I was not aware of at the time. Gael Squibb '61 reaffirmed that alumni also felt that the maximum size should be 400.

In spite of these strongly held views, and despite my plea for a complete analysis, a majority of the Long-Range Planning Committee voted to reaffirm its May 27 recommendation of a planning number of 425.

The faculty as a whole, however, had not formally acted on the final report of the matrix committee. On November 30, 1976, faculty members endorsed a planning number of 450 students. Now we had recommendations of 400, 425, and 450. (The actual enrollment was already 496.)

On Dec. 14, with the faculty vote in hand, Ken Jonsson recommended to the board of trustees that an ideal enrollment goal of between 425 and 450 students be adopted for planning purposes. The board voted approval subject to review of academic, physical plant, and financial feasibility.

These meetings early in my first year made it clear that size was an emotional issue, deeply embedded in the fabric of the college. Conversations with individuals elicited strongly held, but quite personal, views. Some students felt that the current enrollment was about right, but that overcrowding in residences and in the dining hall was a very significant problem; many students, perhaps a majority, expressed the view that social interactions would be improved if the college were somewhat "smaller." Alumni spoke of the value of a small college without defining "small." Alumni also emphasized values other than size, including the value of the core curriculum, the Honor Code, on-campus housing, and a low student-to-faculty ratio. Faculty, particularly department heads, emphasized the need to maintain the student-to-faculty ratio. Individual faculty members argued that "smallness" was one of the founding virtues of the college and not to be treated cavalierly. Trustees expressed a strong wish for closure on the issue so that planning might proceed. None of these views was surprising or inappropriate, but they pointed to the fact that the question of "size" was not to be a simple matter to resolve.

"Unsettled" best describes the status of the debate during the remainder of the academic year. In January, trustee Ken Jonsson invited both the trustee Academic Affairs Committee and the trustee Student Affairs Committee to determine whether the enrollment range of 425–450 adopted by the board was feasible.

Trustee Hubie Clark was chair of the Academic Affairs Committee and had demonstrated an acute sensitivity to the campus academic community. In response to Ken Jonsson's invitation, he chaired two key meetings of his committee; the first in May of 1977 and the second in September. He invited students, faculty members, and staff to share their views on the issue with his committee. The first meeting examined in detail the relationship between enrollments of 425, 450, and 475, and the number of majors in the various departments. The committee concluded the range of enrollment figures had little impact on academic major programs under reasonable assumptions.[7] It also found that the minimum enrollment should be in the range of 450–475 in order to maintain the current level of activity.

Hubie Clark invited the academic department heads to participate in the September meeting. The data presented at the previous meeting was reviewed, along with an additional study of cost per major prepared by Sam Tanenbaum. The department chairs present emphasized two assumptions critical to the academic quality of the college:

1. Maintenance of current student quality; and
2. Maintenance of current level of faculty, facilities, and student services available per student.

Thus, the current student-to-faculty ratio emerged as the crucial factor in considerations of size. The committee concluded that there were no specific arguments, either academic or social, "…for the current planning goal figure of 425–450." The committee also expressed a general consensus that growth can be positive, revitalizing the college."[8]

Dean Tanenbaum reported these findings to the Long-Range Planning Committee on September 27. He concluded that the college could operate with minor adjustments at any enrollment within the 400–600 range as long as ratios were properly maintained. Ken Jonsson objected, stating that a specific enrollment level was necessary for long-range planning. In spite of Mr. Jonsson's earnest efforts to focus on a single planning number, the spread was instead becoming greater.

In October of 1977, Hubie Clark reported the Academic Affairs Committee's findings on size to the board:

> "the college could operate with an enrollment in the range 400–600 range without affecting academic or student affairs. However, at the lower range of 400, productivity and innovation would be stifled since new programs could not be started until old ones were discontinued. A larger enrollment would give a broader base for a greater variety of activities.
>
> Any discussion of the upper bound of the range brings faculty concerns into sharper focus. They believe that greater numbers of students would require commensurate larger budgets, additional facilities and increases in the number of faculty in order for them to maintain the quality and the type of teaching which is one of the present strengths of the college."[9]

Chair Hubie Clark later amplified this report in an important letter to me dated December 4, 1977. I quote the essential paragraphs:

> "It seems as though a quick summary, to you and Henry (Mudd) as well as other interested Harvey Mudd committees, of my report to the board on the size of the college would be in order.
>
> "In summary, the Academic and Student Affairs Committee recommends that the board (revise) its statement on the size of the college to make it clear that the 425 to 450 enrollment level shall be considered a target area based on current number of majors and current priorities and objectives. On the other hand, the board of trustees recognizes that this range is reducible to a low of 400 and expandable to a high of 600, ... without violating the college's desire to maintain the concept of a small college, (provided that) resources, (financial, faculty, and facilities) are adequately incorporated.
>
> "The low side we see limited largely by financial (concerns). On the high side, the six hundred seemed to be ... still low enough that neither faculty, trustees, alumni, nor students in attendance at the meeting could really feel that we had in any way violated the small college concept. In addition, (the high side) does allow us some room for creating new programs without having to 'take it out of the hide' of another program or major.
>
> "In coming to the above conclusions, our committee considered, in detail, studies on: minimum faculty staffing for various majors and flexibility as to faculty teaching in more than one major; the social interaction of students; the ability of students to know their instructors; and other items. From this the committee concluded that the college can fulfill its mission and maintain its present form for creative new programs and for new majors, such as biology."

The committee's report did much to clear the ambiguities surrounding the issue. First, the committee found that with an enrollment between 400 and 600 the college could still be considered "small." Second, the committee revealed that the upper level of enrollment was the principal concern of the faculty, and that additional financial resources, more faculty, and additional facilities were needed if such a level were to be approached or maintained.

Concurrent with these discussions in the Academic Affairs Committee, the trustee Student Affairs Committee (Malcolm Lewis '67, chair) began its consideration of the issue of size. However, the committee was diverted almost immediately to considerations of a new dormitory when in June of 1977 the board of trustees responded to the critical student-housing

problem and charged the president to undertake the planning of a fifth dormitory.

The diversion of the Student Affairs Committee and Hubie Clark's report effectively concluded the 1976–77, 1977–78 search for a long-range plan. In late 1977, Ken Jonsson and I met to review our progress. Although progress had been made, we agreed that the process of matrix committees was cumbersome and not responsive to urgent campus needs. Furthermore, complications of committee jurisdiction were inhibiting decisions. We agreed to shift direction. In February of 1978, I formed an on-campus planning group of academic department heads and administrative staff members to draft a comprehensive planning report setting the direction for the next decade. We reported our decision to abandon the matrix committee process as such to the Long-Range Planning Committee.[10] On October 30, 1978, I reported to the Faculty Executive Committee that a first draft was ready. In November, we presented a discussion paper entitled "Directions for the Eighties" to the faculty for "review and consideration." The paper indicated that discussion would be the first step toward a plan that would, when complete:

- State our purpose or major goal and the type of institution we intended to be;
- Outline its principal characteristics (including size) and consider its feasibility;
- Review the purposes of various components of the college;
- Set specific goals for the various components that will point toward our major goal;
- Analyze the resources required to accomplish goals;
- Set priorities and timetables.

The paper addressed the first three of these topics and asked for responses that would serve to script the final four. It included data prepared by staff and position statements on departmental purposes prepared by each academic department. On the evening of November 30, the faculty held an informal meeting for an open discussion of the document without the pressure of conclusions or voting. The discussion raised twelve significant questions, among them:

- How might the growth of the scholarship budget be controlled?
- Should the college expand its applicant pool by accepting lower math ability if the verbal skills are strong?
- What are the components of instructional costs in the budget?
- Have there been any serious attempts to consider other model sizes for the college, and what are their fiscal implications?

- Is adequate effort being given to the present pressing problem of the need for additional large classrooms?

Beyond this meeting and some further consideration by the department chairs, little progress on an overall plan was made in the following year. There was a sound reason. Intensive planning of academic space in the Graduate Wing and in Libra by faculty and staff interrupted their participation in long-range planning. At the same time, the administrative staff was involved with planning and construction of a new residence hall. With these major projects underway we were fully engaged.

The prolonged discourse on size revealed the considerable sensitivity that existed about the issue among the constituencies of the college. Part of the cause was the strong historical legacy of smallness; part was a fear that the college would lose a particularly attractive feature of its character if the enrollment were to increase further; and part was a reaction to the substantial enrollment growth between 1974 and 1976 and a fear that it would continue unchecked. To a considerable degree, the sensitivity was the growing concern about available resources, including number of faculty, residential space, laboratory and classroom space, equipment, finances, and the priorities among them.

On the other hand, the college was functioning well and we were making excellent progress on many fronts. We were already deeply involved in the resource issue: Campaign 25/32 to raise $32,000,000 was in mid-course and successful, and land acquisition and campus planning was proceeding rapidly. We had reached agreement that a college of 400-600 students was a small college.

During this one-and-a-half academic year period and beyond, the actual enrollment had leveled at approximately 500 undergraduates through a sequence of events that is worth recording here.

Enrollment Stabilizes at Five Hundred Students

During the discussions of size in 1976–77, admission recruiting for the freshmen class of 1977–78 was already underway and Dean of Admission Emery Walker and his Admission Office staff were asking for guidance. Emery needed a recruiting goal; he could not wait for an ultimate resolution of the enrollment issue. Very reluctant to reduce significantly the freshmen class size, Emery pointed out that over a period of years, public and private high school counselors and teachers had become keenly aware of how many and what kind of students we were seeking, and knew when to recommend their students for admission. He argued that any sudden drop in the level of the freshmen class would negatively impact the number of students recommended by counselors in future years. Emery saw this as a worrisome problem, because we were seeking the relatively rare, high-quality student who was interested in science, mathematics, and engi-

neering. He saw the present recruiting process as a pipeline in an equilibrium state, and did not want to choke off the flow.

Emery's reservations were strong. However, I was more than aware of the board's acceptance of an enrollment planning number of 425 and of the then current problem arising from the large number of students who did not have the opportunity for on-campus housing. Consequently, I asked Emery to reduce the size of the freshman class entering in 1977–78 to 110 rather than the 153 students in the previous year. (We actually enrolled 129 freshmen and the total enrollment dropped to 470.) In the following year, 1978–79, we enrolled 152 freshmen when an unusually high acceptance rate took Emery entirely by surprise; total enrollment returned to 493. This experience taught us that in spite of our good intentions, large fluctuations in total enrollment were probable unless we had a reasonably workable enrollment formula that would stabilize the size of the college.

After the enrollment surge in the fall of 1978, I asked Dean Sam Tanenbaum to prepare a long-term analysis of enrollment and recommend a plan that would lead to a size of approximately 470. He examined three possibilities: freshmen classes of 135, 140, and 145. He reported his analysis in a key memorandum dated October 24, 1978. Drawing on the college's experience with attrition rates, he recommended fixing the freshmen class at 140, a number which should—if attrition stabilized—produce a steady-state enrollment of approximately 470 over a period of three years. We adopted his plan and fixed the freshmen class at 140 for the next six years. The enrollment did level, but at 500, higher than anticipated, in part because of strong and successful faculty efforts to reduce attrition, and in part because the target for the freshmen class would not be exactly met, reflecting Emery Walker's frequent claim, "Student recruiting is not an exact science."

This leveling, along with Hubie Clark's reports of the Academic Affairs committee's conclusions, put to rest the matter of the "size" of the college. However, as did the phoenix, it was to rise again; two further considerations of size or long-range planning surfaced in the remainder of the Third Decade Plus. The first occurred in early 1984, when trustee Malcolm Lewis '67 asked for a college-wide symposium on the subject. The academic department chairs declined, stating that faculty discussion of programs should precede further discussion of size. The second was in November of 1984, when the resolution of the computer science debate included a recommendation to increase the size of the freshman class from 140 to 150. During the remainder of my tenure, 150 was the operative planning number.

In the final year of the Third Decade Plus, the department chairs undertook a further study of the college in anticipation of my successor's appointment. In February of 1988, they issued a lengthy and carefully constructed report entitled "The Next Step Forward." It proved to be of considerable use to the college's third president, Henry Riggs.

CHAPTER 3

Residence Halls

The Need for Additional Residence Space

In September of 1975,[1] the board of trustees asked then President Platt to prepare preliminary cost estimates for an additional residence hall. The enrollment had grown well beyond the planned "full size," and the available housing was not meeting the need. A reading of the minutes of the board of trustees through 1975–76 shows that no action was taken, perhaps the result of Joe's pending resignation.

At my first meeting with the trustee Executive Committee, I reported that the need for additional student housing was at a crisis stage. The four dormitories—East, North, West, and Marks—provided 336 beds. With the 1976 opening enrollment at 493 students, the shortage was 157 beds. The college was certainly not meeting its goal of providing residential on-campus housing.

This shortage had the greatest impact on the sophomore class because of both college policy and the student room-draw process. College policy required male freshmen to live on campus and freshmen women students to live at Scripps. Once these assignments were made, student room-draw procedures granted first choices to seniors-to-be, in order determined by lot. Second choices went to juniors-to-be, also by lot. The net effect was to assign sophomores-to-be the lowest priority and to force a great majority of them off-campus. Some were able to share in "triples" (three in a room normally housing two), or some were able to "draw in" with an upper-class friend. For the remaining sophomores, the possibilities for housing were dim and of deep concern to the parents of students affected, as one might imagine. Faculty members also registered their concern, believing the

sophomore year was a year of significant stress for students even without the problem of housing.

Contracts with other colleges had alleviated the housing shortage for a considerable number of years and created a false aura of sufficient accommodations. Scripps College provided twenty-five rooms to accommodate all freshmen women and some upper-class women under a long-standing agreement.[2] Pitzer College provided housing for HMC students for a number of years since surplus housing on that campus was available. In 1976, sixty-two Mudders were housed there.

Other more short-lived arrangements helped ease the shortage; three old houses adjacent to the campus were used to house a small number of students during the academic years 1978–79 and 1979–80, certainly substandard housing at best. As a stop-gap measure for one semester, Vivian and I temporarily shared the President's House with two students, Randy Blair and Terry Eldridge '80, who preferred to live with us rather than the alternative of a bed in the basement of the Campus Center! These temporary arrangements eased the shortage somewhat, but too many students (100 in 1976) lived either off-campus or in dormitory triples. A further complication arose when several freshmen women expressed their conviction that by being forced to live at Scripps, they were missing out on an important element of the HMC freshmen experience. They wanted equal treatment.

After my arrival on the scene, Dean of Students Bill Gann and student leaders again put forward the recommendation they had originally made in 1975 that the vacant Claremont Colleges' Memorial Infirmary building located north of Foothill Blvd. be converted to a dormitory. The cost to refurbish the abandoned building was estimated by architects to be $340,000.[3] This option was quickly dismissed when I visited the structure and found it small, totally in ruins, and hopelessly isolated.

We were soon to receive disturbing news that made a barely tolerable situation much worse. Pitzer College informed us that in 1977–78, they would reduce the number of Mudders housed on that campus from 62 to 38. Further reductions in the following two years dropped the number of Mudders housed there to nearly zero in 1980–81. This disturbing, but understandable, change in policy (Pitzer's enrollment was growing) was exacerbated by the news in 1978 that a growing enrollment at Scripps had created a shortage of residence space there. As a result, Scripps sought reductions in the number of HMC freshmen women housed at Kimberly Hall under the agreement that had served both colleges well for nearly sixteen years. In response to Scripps' demands that the agreement at least be clarified, we agreed in 1978 to amend the understanding to state that the housing commitment in Kimberly Hall was 28 beds, not the previous 25 rooms. This reduction was the first of several that ultimately led to the dissolution of the agreement with Scripps.

Trustees became increasingly concerned. The trustee Academic Affairs Committee, Hubie Clark, chair, studied housing needs during its discussions of the size of the college. By May of 1977, his committee was so concerned that it passed a resolution asking the board of trustees to charge the president to plan an additional dormitory. In June of 1977, the board voted to instruct the president to "appoint a committee to develop concepts and options."

In response, I appointed an ad hoc committee on student housing to study options, best current dormitory design, and current student interests. The committee was charged to consult with the Academic and Student Affairs Committee, the Long-Range Planning Committee, and the Buildings and Grounds Committee and report by December of 1977. Trustees Malcolm Lewis '67, chair, and Marian Garrett; Professor Bell; four students—Keri Ostrofsky, Joe Burkholder, Susan Larson, and Jeff Guild; and Dean of Students Bill Gann comprised the committee. Surveys, discussions, and at least one visit to newly constructed dormitories in the Los Angeles area led the matrix committee to propose a cluster of smaller buildings with a higher proportion of suites and single rooms than found in the existing residences. The committee also recommended apartments for two or four occupants and the preservation of the courtyard effect and the balconies of the earlier dorms, if possible. Several of these recommendations ultimately shaped the design of the new residence hall.

On June 30, 1977, Bill Radley, the director of business affairs, unexpectedly resigned, leaving us without leadership in fiscal affairs and buildings and grounds responsibilities. We had the good fortune to appoint a superb temporary replacement, Ed Ryder, who had recently retired from the treasurer position at Claremont University Center. Radley's successor, Tim Johnson, was appointed June 1, 1978, to the position of treasurer and director of business affairs. Tim was a 1971 cum laude graduate of Claremont Men's College and a Harvard Business School MBA graduate. He brought unique strengths to the position, including a determination to change the college's financial data to a computer base. He had a great interest in appropriate debt financing and budget control. He needed time, however, to get his arms around the continuing efforts to acquire a new dormitory.

The 1977–78 academic year began with the ad hoc Committee on Student Housing reporting informally to the Long-Range Planning committee that a study of a 70–80 bed residence hall was underway, and that an apartment-style complex was the favored format. The Academic Affairs Committee urged further action.

In January of 1978, the Executive Committee of the board reviewed highlights of the housing committee's report and referred them to the Building and Grounds Committee for action. The following month the Buildings and Grounds Committee of the board of trustees received and approved the committee's report.

A year had passed since Hubie Clark had asked the board to plan a dormitory, and he was increasingly concerned. On May 3, 1978, Hubie wrote a strong letter to Henry Mudd. One paragraph follows:

> "I perceive that we are headed for another September start-up with students sleeping in broom closets and in the president's house and this greatly troubles me. Although not a major factor, some of the problems with our less-than-expected academic performance in the Fall semester came from the shuffling of housing and the inability of the students to study in over-crowded quarters, and I am deeply concerned that it could happen to us again. Of further danger is that some of our sophomore students, who cannot get housing on campus, will decline to re-register which will definitely have an impact on our upper-class numbers and on our number of graduates, neither of which strikes me as being very healthy."

There were dissenters to the plan to construct a residence hall among campus constituencies. They felt that the construction of an additional residence hall meant that a determination had already been made to increase the size of the college. This was clearly not the case. The new residence hall would assure on-campus housing for only approximately 90 percent of the current enrollment.

A New Residence Hall: The Size

The housing committee had recommended a residence hall of seventy to eighty beds. However, assuming no change in college enrollment, the termination of all accommodations on adjacent campuses and the housing of all students on campus, the 1976 shortage of beds would be 157. A new residence hall providing 150 beds would meet the need. On the other hand, the assumption of a decrease in enrollment to the upper bound of 450 as adopted by the board indicated 114 beds would be needed. The number finally adopted was 120 beds, thus providing 456 on-campus beds, still short of the actual enrollment. Since a few students always voluntarily chose to live off-campus, the deficit would not be significant.

A new residence hall of 120 beds would be a marked departure from the original dormitories, each of which provided approximately seventy-five beds. The new building would of necessity be quite a different size than the existing residences and because of the emphasis on suites, quite a different configuration.

The Site

Very little space was available for new construction on the original campus. Three possibilities[4] for siting a residence hall were briefly considered. One possibility was the only open space left on the campus—the playing field north of the President's House, the present site of the Linde Activities Center. The space was used frequently for baseball, flag football, and frisbee games. There were many strong supporters for this choice, but since it was the only playing field then available to students, the option was dismissed.

The razing of one or more of the original dormitories and the construction of larger units was a second alternative, a possibility that had some merit. We were not sure how well the original dormitories met earthquake regulations, and two decades of hard use in those dormitories had produced an urgent need for extensive renovation.

A third possibility would mean extending an existing residence with an additional wing.

The trustees quickly rejected these alternatives because of the now probable expansion[5] of the campus to the east. The timely closure of Mills Ave. in January of 1977 enabled trustees to designate a location for the new residence hall east of, and across Mills Ave., even though the parcel had not yet been acquired.

Design and Construction

The college had not built a dormitory since 1969,[6] the date of the completion of Marks Hall ("South"). During the planning of the residence, students had recommended the inclusion of suites of rooms (i.e. several bedrooms surrounding a common area), a departure from the design of East, West, and North dormitories. The suites had become a popular innovation in Marks and were strongly recommended by students for the new dormitory.

To move the project forward, Henry Mudd recommended that we contact Quincy Jones, a distinguished Los Angeles architect, to see if he would be interested in the project. Mr. Jones agreed to draw up concept drawings, provided that small apartment-like units play a significant role in the plans. At the April 1979 Buildings and Grounds Committee meeting, Mr. Jones and his architectural associate presented site plans, floor plans, and elevations of the proposed small residences. Committee comment was generally sharply critical of the concept of small individual buildings and the concept was dropped. Unfortunately, further work had to be suspended when Mr. Jones became terminally ill.

The delays caused by these abortive efforts were unsettling, but in 1978–79, an issue arose that threatened not only the siting and construction of the new residence hall, but any future use of the just-acquired twenty acres. The owner of Cable Airport,[7] the small local airport north and east

of the campus, appeared before the zoning authority (The West Valley Airport Land Use Commission) to request an extension of his airport for private jets. (At that time there was very little construction along Foothill Blvd. and no housing developments in the immediate area.) Suddenly, George McKelvey and I were involved in evening community meetings and public hearings. The plans would have allowed jet aircraft after take-off to fly at low altitude directly across the twenty acre parcel and turn over The Claremont Colleges. The most grievous problem, however, was that FAA regulations required that no buildings be placed under the airspace along the extension of the runway. That extension stretched across the 20-acre parcel. In a letter to the Land Use Commission dated December 19, 1978, the presidents of The Claremont Colleges took strong exception to the proposed expansion.

These unforeseen circumstances temporarily, but adversely, affected site planning for the new residence hall. As a precautionary measure, we revisited alternative site possibilities with the Buildings and Grounds Committee on November 27, 1978. Expansion of existent residence halls, and use of the land north of Foothill Blvd. and west of Sprague Library all were considered. All were deemed poor alternatives to the preferred first choice. Fortunately, none was needed. Combined pressure from the colleges, the cities of Claremont and Upland, and local citizens finally convinced the Land Use Commission in late September of 1979 to deny the request for a runway extension. We had escaped a major setback.

Not until April of 1980 did we have a second presentation ready for the Building and Grounds committee. At its meeting of April 18, two architectural firms made presentations to the committee. The committee voted to proceed with a design/build contract with the Sheldon R. Pollock Corporation of Los Angeles and Houston, Texas, for a single building of 120 beds, to be predominately arranged in suites.

Student housing was not the only campus need. The dining hall in Platt had opened in 1963 when the enrollment was 277 students. By 1980, with 488 students, it was stretched far beyond its limits. A new dormitory would increase the crowding to an intolerable degree. Not only was space a problem, but the kitchen equipment was seventeen years old and had to be replaced. The one-line serving buffet was no longer effective either. An architect's study recommended extending the dining halls north wall toward Foothill Blvd., the renovation of the serving area to provide serving stations instead of a one-line buffet, new kitchen appliances, a new dishwasher area, and new furniture. Trustees approved the renovations at a cost of $600,000. The enlarged dining room opened for student use in September of 1981.

A New Residence Hall: Financing

During the debates over the size of the college, and during the acquisition of the twenty acres and the closure of Mills, we were searching for the means to finance the residence hall estimated to cost about $2,000,000.

Tim Johnson investigated the possibility of obtaining funding through the sale of tax-free bonds authorized by the California Educational Facilities Authority, known as CEFA. CEFA was established by the State of California to strengthen private higher education by providing a lending source for private colleges needing funds for capital purposes. Since a majority of the prior bond issues had gone to the largest of the private institutions in the state, the authority was searching for small colleges as borrowers. Interest rates were volatile, but CEFA bond rates were several percentage points below bank commercial rates.

When Tim had determined that the college was eligible for the issuance of bonds, we were ready to present our case to a joint meeting on May 16, 1980 of the trustee Executive Committee and the Buildings and Grounds Committee. The decisions reached at that meeting surely stand as important as the notable decisions reached by trustees during Joe Platt's tenure.

The attendees were asked first to review the plans and the contract for construction of the residence hall. The architect's design called for a three-story building containing 120 beds; the majority of beds would be in suites for eight students, each suite to include two double rooms, four single rooms, two baths and a living room. In addition, on each floor there would be two double rooms with connecting baths and two efficiency apartments. Every room would have an outside window and a small balcony. The living area would total 36,771 sq. ft. and the central atrium would provide an additional 6,000 sq. ft. The proposed cost was $2,818,900, which included all fees and perimeter landscaping, but not the cost of construction bonds, testing, or inspections.

Tim then turned to financing. He placed a bold proposal on the table that included not only the financing of the residence hall, but all capital improvements currently planned and reduction of debt. The list comprised the following:

For the east campus

1. Removing Mills Ave.
2. Site development of the former Mills Ave
3. The new residence hall
4. A parking lot for the new residence hall
5. A new playing field

For the center campus

1. Enlargement of Platt Campus Center to provide better dining facilities for 500 students
2. Renovation of North, West, and East residence halls

3. Renovation of the Green Room in the Campus Center
4. Renovation of Thomas-Garrett Hall

For the west campus

1. Acquisition of the Graduate School Wing of Libra
2. And, in addition, refinancing the remaining debt on the long-held, original construction of Libra.

The total estimated cost for this astonishing list was $5,000,000.

Following the presentations, members of both committees voted to recommend approval of the borrowing of sufficient funds through CEFA for the "consolidation of the campus" to include land acquisition, site preparation, a residence hall, and the expansion and rehabilitation of buildings as follows:

- The closure of Mills Ave. between Foothill Blvd. and Twelfth St.
- The purchase of twenty acres of land east of Mills Ave.
- Site development
- The construction of a new residence hall
- The expansion and refurbishment of the Campus Center
- The refurbishment of Kingston Hall, Thomas-Garrett Hall, and the Green Room

With this authority, we sought a bond issue of $6,000,000 and on May 17, announced[8] that the bonds had been successfully sold. The bond issue yielded net proceeds of $5,145,515 to the college plus a reserve in the amount of $589,117 held for the benefit of the college, by the CEFA Authority as a contingency fund.

In May of 1980, we approved a contract for the construction of the new residence hall; we officially signed it in June. The building was completed when students arrived in 1981. Accommodations for students on campus then totaled 456 beds plus twenty-five beds under contract off campus at Scripps. Enrollment that year was 500 undergraduates. We felt that we had finally resolved the housing issue.

The New Residence Hall: The Aftermath

In September of 1981, New Dorm (later known as Atwood Hall) opened for occupancy just in time for the arrival of students. Only seven months later, and just before the end of the academic year, I toured the building with several trustees, one of whom was Jim Kilroy. His business included the construction and operation of major office buildings at Los Angeles International Airport and other locations in Los Angeles. After our tour, he took me aside and quietly reported that he was concerned about several cracks he had noted in the concrete floor of two of the balconies.


John B. Kilroy Sr.

He asked if one of his structural engineers might be permitted to examine them. It was an offer I was not happy to accept.

The report of the engineer was very disturbing; it pointed to possible structural defects and the need for further investigation. The investigation revealed a number of deficiencies, the most serious of which was the apparent failure of a sub-contractor to use sufficient reinforcing steel and cement in some of the core columns supporting the building.

These findings immediately posed a real dilemma. Should we leave students in residence and risk an earthquake? Or, for safety reasons, should we close the building immediately for repairs? Or, should we continue through the remainder of the semester? Since we were within a week or two of final examinations, and since 120 students had no place to go, we hesitantly and reluctantly made the decision not to close the building and to complete the semester before allowing the contractor to begin rectifying the deficiencies. Students were instructed to be out of the building within twelve hours after their last day of examinations.

That summer, the contractor made extensive modifications under the supervision of Jim Kilroy's structural engineer at no cost to the college. Everyone, particularly the building inspector who had missed the deficiencies, was assured that the modifications had produced a building of greater strength than the original design and fully met all code requirements. The changes were completed just in time for students to arrive in September 1982.

Jim Kilroy's concern, persistence, and professional help was another example of how the college continually benefits from trustees' interest in and commitment to the college.

A final note. Although students had been involved from the outset in the planning and design of the prospective dormitory, midway through the construction I realized that we had not given women students the opportunity to look carefully at the details of the building. Nancy Paiva '81 and Martha Morton '83/84 agreed to meet with the architects and review the plans. Nancy took one of the architects on a tour of the existing residences both at HMC and Scripps. The two students recommended eighteen changes and improvements in the plans ranging from shelves in showers to a central kitchen area where students might at least bake cookies! I believe that almost all of their suggestions were incorporated in the dormitory.

In 1985–86, the new residence became Atwood Hall when trustees named it in honor of long time trustee John Leland (Lee) Atwood, distinguished engineer who pioneered the development of World War II aircraft, postwar jet aircraft, and spacecraft.[9]

Repair, Replacement and Renewal

Although we were much involved in considerations of a new residence hall, it was clear that other buildings and the existing residence halls were badly in need of renewal.

Thomas-Garrett Hall, which had been constructed in 1961, provided the majority of classrooms on campus until Project Libra was completed in 1971. There were eight classrooms on the ground floor and five on the upper floor; by 1981 they were badly in need of renewal. Renovation began in the summer of 1981 and was completed the summer following. New heating/ventilating/air conditioning systems were installed; walls, ceilings, and chalkboards were renewed; lighting was replaced, and a carpeted seminar room constructed.

Parsons Hall received extensive renovation as well. In 1984, an experimental chiller was installed and a new microprocessor laboratory was constructed on the main floor. A large classroom on the second floor was converted to a suite of offices. In the summer of 1987, four additional offices and a lounge were constructed on the upper floor.

In the summer of 1982, renovation of the residence halls began. East Hall (Mildred Mudd Hall) was the first to receive attention. The lounge, all ceilings, closet doors, floors, interior wall paint, electrical work, and fire alarms were renewed. A new roof was installed. The bathrooms were in such bad condition that work on them was not completed until after students arrived in the fall. The exterior of the building was cleaned; the balcony railing was replaced, and numerous "warts" that had disappeared over the years were also replaced. At the Buildings and Grounds Committee meeting of January of 1984, we reported preliminary estimates of $138,000 for the complete restoration of North Dorm planned to begin that summer.

These many major and minor projects needed supervision. In August of 1981, Michael Bever was appointed to the new position of director, Physical Plant Services. When he resigned a year-and-a-half later, Larry Hartwick replaced him effective March 1, 1983, as director of campus services. Larry served in that capacity through the remainder of my term.

In 1984, North residence hall received the full treatment. The exterior was sand blasted and waterproofed. The balcony and stair railings were replaced. All wardrobe doors were replaced, the interior was repainted, plaster was repaired, all acoustical tiles were replaced, and new carpets installed. All electrical fixtures inside and out were replaced, and the bathrooms were renovated.

Architectural estimates for the remodeling and enlarging of the dining hall and kitchen areas of the Platt Campus Center in March of 1981 totaled $600,000. We had planned only $500,000.

In the summer of 1986, the carpets in Galileo Hall auditorium were replaced and the chairs refurbished.

The New, New Dormitory: Case Hall

In 1982, President Chandler of Scripps again asked for a further reduction in the number of beds occupied by Harvey Mudd College women at Scripps College. My response was that HMC was not in a position to do so, a response that did not make President Chandler's day a happy one. After reviewing the circumstances, the Executive Committee of the board directed me to maintain my position.[10]

President Chandler and I were at an impasse, an impasse resolved only when we agreed to have trustees serve as negotiators. Trustee Charles Bakaly was the designated Scripps trustee and Hubie Clark represented Harvey Mudd College. At their first meeting, Hubie maintained the HMC position that we were not in a position to surrender additional beds. Mr. Bakaly followed up with a threatening legal response (dated April 8, 1983) that led Harvey Mudd College to reply with an equally sharp response. Negotiations began in earnest. On August 4, 1983, Hubie Clark and Bob Miller reported to the Executive Committee that an agreement subject to approval by both boards of trustees had been reached.[11] The agreement called for Scripps to pay HMC $271,000 in four annual installments; in return HMC would relinquish five additional beds in each of the four years. The sum agreed to was approximately the net of our debt obligation to Scripps and the replacement value of the beds lost by Harvey Mudd College, adjusted by the debt payment paid earlier by HMC. The boards of trustees of each college ratified the agreement. Credit for the successful conclusion of these negotiations goes largely to Hubie Clark. His insight and tenacity, yet willingness to accept a reasonable compromise, carried the day.

The loss of the Scripps beds, however, again produced a housing shortage. In the 1983–84 academic year (assuming that all Scripps beds would be lost that year) our housing numbers would have been;

East, West, North, South Dormitories	336 beds
Atwood Hall (New Dorm)	120
Total beds available	476
Enrollment (1983–84 undergraduates only)	520
Bed shortfall	-64

Concerned again about a shortfall, the Executive Committee of the board authorized the preparation of preliminary plans for a dormitory to house approximately fifty students. The initial plan[12] was to provide a fifty-bed building with a flexible configuration so that another fifty beds could be added if needed in the future. Trustee Jim Kilroy recommended that Charles Kober and Associates be asked to prepare the plans. In January of 1984, the architects had submitted a preliminary cost estimate of $2,263,000 for a two-story building, but proposed that initially only one

floor be built. The architects also recommended the simultaneous construction of a playing field to the east beyond the building. In May, the board approved an expenditure of $500,000 for the planning, grading, landscaping, and construction of a recreational playing field in the vicinity of the proposed dormitory. No decision, however, had been made to go forward with the building itself.

In the meantime, room-draw for the 1984–85 academic year was underway. Students, with the support of the dean of students, voted a significant change in room assignment policy; all upper-class students would be housed on campus, if they so wished. This change gave priority status to sophomore-to-be for the first time. The inevitable result was the "tripling" of some forty sophomores, and since all freshmen were still required to live on-campus, they were tripled also.

The reaction of incoming students and their parents was understandable. A paragraph from one parent's letter is representative of others:

> "I would like to point out that up to and beyond the deadline for acceptance to Harvey Mudd College, no mention was made to prospective students about any change in the established housing policy, which was to provide incoming freshmen with either a small single or a slightly larger double room. Such a major change in policy should have been announced prior to the final date of admission acceptance so that prospective students would have a chance to weigh the second-class living conditions against Harvey Mudd's fine education."[13]

On the other hand, in early May, I was receiving strong signals from my senior administrative staff that we should not proceed with the construction of the dormitory because of growing opposition from members of the campus community, particularly the Department Chairs Committee. The dean of faculty informed us that the proposed dormitory had become a negative factor in the on-going discussions of computer science. I asked the Buildings and Grounds Committee at its April 1984 meeting to halt any further consideration of the project and announced my decision to the faculty at its meeting of May 7, 1984.

At the June meeting of the trustee Executive Committee, I reported the status of the project in its entirety, including the need, the cost and financing, the design, a tentative schedule, and my decision to terminate it.[14] After considerable debate the committee reached the conclusion that the project should proceed, but with the stipulation that Hubie Clark and I meet with representatives of campus constituencies to review needs and project plans with them. The meeting was held on June 11 at the President's House with trustees, faculty, and staff members present. A free and open

and, at times, somewhat heated discussion ensued. After the meeting, Hubie and I concluded that although we had emphasized that no enrollment increase was planned or anticipated, the size of the college and its relationship to the academic program was again the primary contentious issue. We further concluded that appropriate housing was paramount for students already enrolled in our residential college. We so reported to the board. On October 3, 1984, the board:

> "RESOLVED, That the Board of Trustees instructs the officers of the college to proceed with the construction of a new residence hall and athletic field; and
> "RESOLVED FURTHER, That the Board of Trustees approves the borrowing of $1,600,000 through CEFA for the partial funding of the construction, the athletic field, and necessary landscaping and site improvements, and
> "RESOLVED FURTHER, That the officers of the college be authorized to enter into a contract with Berry Construction Co. in an amount not to exceed $3,762,000 for the construction of a 96-bed residential hall, athletic field, and for site preparation."

The Executive Committee of the board had earlier committed the $271,500 payment for the termination of the housing arrangement with Scripps toward dormitory VI; when added to other sources, the total available for the project was approximately $1,500,000. The CEFA loan of $1,600,000 brought the total available to $3,100,000, leaving a shortfall of nearly $700,000 to be met by fundraising efforts.

One further delay occurred. On October 3, 1984, Hubie Clark signed the authorization letter for participation in the CEFA offering. On November 1, CEFA announced that the offering was "indefinitely postponed" because of complications in State of California affairs, setting us scrambling to consider other means of financing. Fortunately this crisis also soon passed, the bonds were sold, and Case Dormitory became a reality. It was completed in time for student arrivals in September of 1985.

Case Residence Hall

CHAPTER 4

The Faculty

SINCE the founding of the college, faculty members have been committed to its special mission and its innovative and rigorous academic programs. As the prime movers in establishing academic requirements and planning academic programs, they have made Joe Platt's "idea of a college" a reality. In so doing, they played a unique and central role in establishing and maintaining the college's reputation for excellence. Their commitment as the college adjusted to outside influences and new academic demands.[1]

Members of the faculty are, first, teachers. As teachers, by tradition and conviction, they have an evident and strong interest in the welfare of their students. They have a well-established and well-deserved reputation for being available to students outside of the classroom or laboratory throughout the day and oftentimes in the evening. Toward the latter part of my tenure, the introduction of e-mail began to provide contact between teacher and student well beyond office hours.

Our faculty members continually augment their teaching by research that results in published papers, books, texts, and technical reports. A number actively consult for government and industry and hold patents for their work. These combined activities of teaching, research, and applied development have created an academic reputation, (unmatched in my experience) in undergraduate science, mathematics, and engineering higher education.

The total number of tenured positions, plus tenure-track positions (tenure "slots") constitute the number of continuing full-time faculty positions authorized by trustees each year. During the Third Decade Plus, the tenured/tenure track faculty increased by 18 percent.[2] (Appendix 7, Table 4.1)

A number of individuals contribute to instruction but do not occupy tenure or tenure-track positions. They include instructors and tutors in the Department of Humanities and Social Sciences, coaches in the Physical Education Department, instructors in the Bates Aeronautics Program, faculty in Claremont joint programs who hold positions at one of the other colleges, and retirees. Adjunct appointments are made when specific academic needs or opportunities dictate, a process particularly important to the Engineering Clinic. Finally, retirees often continue in an as-needed role and are welcome additions in the classroom or laboratory. These individuals, combined with the tenure-track faculty, make up the "full-time equivalent" (FTE) faculty. (Appendix 7, Table 4.2) indicates a faculty growth of approximately 24 percent on this FTE basis.

The ratios were almost stable over the period. The increase in the number of faculty, however, considerably enriched the academic offerings available to students. (Student-to-faculty ratios are shown in Appendix 7, Table 4.3.)

Women in the Faculty

Throughout the Third Decade Plus, we obviously had too few female role models in the faculty. Although we were earnestly engaged in efforts to bring women faculty members to the campus, it was not an easy task. Turnover was relatively low. The need to appoint individuals with specific technical credentials also considerably inhibited the hiring of women.

In 1976, only two women held tenure or tenure track appointments. The first, J'nan Morse Sellery, B.A., M.A., Ph.D., University of California, Riverside, was appointed assistant professor in humanities and social sciences in 1970. Her outstanding teaching and research led to her tenure appointment effective September 1976. At the time of this writing, her continuing stellar work has been recognized by her appointment to the endowed Louisa and Robert Miller Professor of Humanities Chair. The second, Ellen Domb, was appointed assistant professor of physics in September 1976. She served in the department for three years.

Other women held non-tenure track appointments early in, and, in some cases, throughout my term. Catherine Koerntgen held the position of visiting assistant professor of chemistry for three years. In 1979–80, Jodie Burton, and in 1980–81, Gerry Lahanas, were appointed to full-time positions in physical education. Susan Brodt held a short-term appointment in humanities and social sciences. In addition to these tenure-track appointments, women held positions as laboratory assistants, instructors, or tutors in humanities and social sciences, or were visiting post doctoral fellows in the departments of mathematics or physics. Iris Critchell served as instructor of aeronautics and director of the Bates Program, where she played a very special role with students.


Dr. Kerry K. Karukstis

A significant breakthrough was not accomplished until 1984–85. Effective September of that year, Kerry Karukstis B.S., Ph.D., Duke University, was appointed assistant professor of chemistry, and Shirlynn Spacapan B.S., University of Tulsa, M.S., and Ph.D., University of Oregon, was appointed assistant professor of psychology in the Department of Humanities and Social Sciences. Both were outstanding additions to the faculty. (Sadly and tragically Professor Spacapan succumbed to cancer in July of 1995). In 1986–87, Rebecca Freeland joined the tenure track faculty as assistant professor of psychology.

At the end of 1988 we could claim some success but not enough to be in any way satisfied. The number of tenure/tenure track female faculty members had doubled from two to four. Only one of the four was found in a technical field of study (chemistry). The four, however, formed a group that enthusiastically welcomed prospective, and new, women faculty members. As the founding faculty rapidly reached retirement age, the increase in the number of female faculty hires was dramatic.

Academic Department Leadership

The academic department chairs play a key leadership role in the faculty, a role that is seldom recognized and rarely celebrated. They undertake their responsibilities voluntarily with the concurrence of their departmental colleagues and the dean of faculty. Each chair plans teaching assignments for colleagues, manages the departmental budget, and recommends initial and continuing appointments, promotions, and tenure decisions to the dean of faculty. The Department Chairs Committee, which comprises the department chairs and the dean of faculty, meets regularly to review budget concerns, personnel assignments and appointments, funding for equipment, policy questions, proposal writing, recruiting, research needs, and space needs.

While I was president, the college was well served by outstanding department chairs. Appointments generally extended over five years but were often renewed for additional terms. At times, appointments were interrupted by leaves-of-absence or sabbaticals. (Appendix 7, Table 4.4)

Faculty Governance

The faculty exercises its responsibility for both faculty business and the curriculum through its Faculty Executive Committee, an elected committee made up of representatives from each of the academic departments and, ex officio, the president, the dean of faculty, and the dean of students. On critical issues, the executive committee forwards recommendations to the full faculty for action. The chair of the Faculty Executive Committee also sits as the chair of the faculty. In that role, he or she has the enormous responsibility for seeing that faculty business is carried out efficiently, effectively, and in a timely manner in conjunction with the dean of faculty.

Since faculty business includes curricular detail, faculty benefits, faculty welfare, faculty and college policies, budgetary review, and the planning and scheduling of faculty meetings, the chair has a heavy load, indeed. During my tenure, the college was fortunate to have had strong leadership in its faculty chairs, each of whom displayed patience, thoroughness, and in particular, goodwill, during their appointments. Faculty chairs were as follows:

Professor Jim Monson	1976–1979
Professor Dave Sanders	1979–1982
Professor Mack Gilkeson	1982–1985
Professor Gray Bell	1985–1988

An important responsibility of the Faculty Executive Committee is to review proposals concerning faculty policies. These policies make up the "Faculty Notebook," a changing but remarkably consistent compendium, updated regularly by the dean of faculty in consultation with the Faculty Executive Committee.

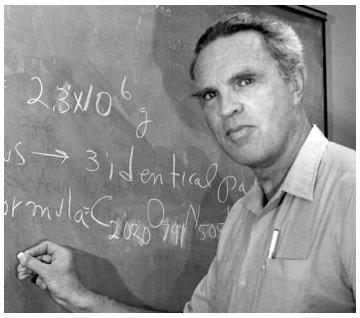
Turnover in the Faculty

From 1976 through 1988, two tenure or tenure-track individuals per year on average left the faculty. The reasons for these included retirement (2), health reasons or death (3), not granted tenure (3), and resignation (16). Reasons for resignations included opportunities to obtain greater support for research, to work with graduate students at a research university, to return to or enter industry, or to meet family needs or changes.

As in every institution, some grievous losses occurred. In 1982, ill health forced George Orland, a sixteen-year member of the mathematics department, to request long-term disability status. Mike Seven, a nineteen-year member of the Department of Humanities and Social Sciences and, at one time, chair of the department, became ill and tragically died at age 57 in 1984. Ted Stoddard, a twenty-six-year member of the Department of Physics, died in 1985 after a year of serious health problems. Each was, in his own way, a key contributor to the college's academic program, to the faculty as a whole, and especially to the nature of the college. The entire college mourned the losses.

A particularly notable loss was the retirement of Art Campbell in 1986. Art was a graduate of Oberlin College with a doctorate from Berkeley. In 1957, Joe Platt enticed Art to leave Oberlin and his position as a tenured professor in the chemistry department to accept appointment[3] as the first faculty member of Harvey Mudd College.

At a dinner honoring Art and his partner-in-life, Dotty, at the time of his retirement, I introduced Art with some remarks about his appointment:


Dr. J. Arthur Campbell

> "Dr. Campbell's first contact with Harvey Mudd College goes back further than some of you might imagine. Art was actually formally proposed as a candidate for the first presidency of the college (before Joe Platt was appointed), but in a delightful, pointed letter, still in the college records, he declined consideration, as follows:
> ' Thanks for proposing me. Such offers are most tempting, but one of the few tentative resolutions I have made from past such offers was to decline them all, politely, I hope. I can see many fascinating and rewarding sides to a presidency, but I can see more for me in staying closer to teaching.'" (Letter: JAC, 2/22/56)

A master teacher knew his heart and held steadfast. His response, however, carried a subliminal and important message to Joe Platt. At the end of that same year, Joe, now the president, approached Art and asked whether or not he would come to Claremont as chairman of a non-existent chemistry department and be a faculty member in a non-existent faculty. Art agreed only to visit. During the negotiations following the visit and prior to his acceptance, the records show Joe wrote what was probably the understatement of the half-century in trying to encourage Art to come. He wrote:

> "You should know that this small college setting gives a great deal of latitude for experimentation."

Small indeed! There were no students, there were no buildings, there were no faculty members. There was a great deal of latitude.

Art sensed some uncertainties. He concluded the negotiations in a letter indicating that Dotty, their two daughters, Christine and Kathleen, and he would come. But he set forth seventeen—yes, seventeen—certain features or items which required general agreement.

This statement was followed by a disclaimer: the seventeen items were not conditions of employment. In one of them, number six, the teacher emerges again:

> "Intimate contact between student and faculty member will be fostered through careful selections of both groups and the use of small classes."

And so it became.

Another of Art's values was revealed when Joe later posed to him the question of whether or not to admit women when the college opened.

Art's written response was prompt and unequivocal. "Why deny training to good females?" he responded.

The rest is history. Art and Dotty arrived safely in Claremont, and Claremont hasn't been the same since. No one meets Art or Dotty without being charmed by their warmth, their hospitality, and their wit.

A final anecdote. On November 2, 1957, Art organized the very first Parent's Day at Harvey Mudd College. Here is how that momentous day is recorded for posterity:

> "At noon, all retired to Collins (at CMC) for lunch. Art Campbell, who had organized the whole show and acted as host, overreached himself when he announced that it never rained on Parent's Day at Harvey Mudd. Those who took him at his word and went to the football game after lunch were thoroughly drenched."

Art's faulty prognostication was perhaps his only failure.

For 27 years, Art served with unmatched commitment to Joe Platt's "idea of a college." In early years, he served as dean of students and dean of faculty. He brought the student honor code to the college. He was an outstanding teacher, a sympathetic advisor, and a remarkably energetic administrator. His genuine concern for the welfare of students matched the affection students demonstrated for him. With exuberant joy, great white robes, and carrying two tablets inscribed with the ten academic commandments, he appeared regularly as "J. Arthur God" in the annual student talent show. When I once asked a group of students why they called him "God," they replied, "Because he knows all the answers." By example and through leadership, he set the tone of the department. His greatest achievement was the recruiting of a chemistry faculty that built a successful undergraduate chemistry department that was recognized nationally in 1981 as the number-one undergraduate department in the nation.

With his customary zeal, Art also undertook the leadership role of the CHEM Study project funded by the National Science Foundation. Project researchers prepared a high school chemistry curriculum, a textbook, instructions for teachers, test materials, laboratory equipment, and instructional movies. The project materials were ultimately used in high schools across the country.

Art did not really retire in 1984–85. He continued to teach half time and spent much of every day in his office. He served a second two-year term as chair of the freshman division, stepping down in January of 1987. At graduation in May of 1987, the board of trustees, with enthusiastic faculty approval, recognized Art's unmatched contribution to the college by conferring on him a rare honorary degree. He is the only faculty member, I believe, to receive such an honor.

Tragically, Art suffered from the dread and incurable Lou Gehrig's disease, amyotrophic lateral sclerosis (ALS). On November 24, 1986, he and Dotty, his charming wife and lifelong companion, wrote a poignant letter to the community addressing Art's loss of speech. Art's last public appearance was at the commencement ceremony, just eight days before his death on May 22, 1989. In a unique and touching measure of respect, students named the college's computer science computer "J. Arthur" in his memory.

Happily, these sad losses were mitigated, in part, by the appointment of outstanding new faculty members. They not only brought fresh competence and renewed spirit to the departments, but also in a very short time reflected again, in every sense, Joe Platt's "idea of a college." Full credit goes to the department chairs and the dean of faculty for meeting their responsibility to recruit these candidates and recommend appointments. Certainly, the future of the college is dependent on such appointments and, looking back from the date of this writing, a surprising number of those appointed during my tenure have more than adequately met the test of time; many of them have risen to leadership roles. Some of the more notable include:

- Dick Olson '62, appointed in 1976, rose to lead the Department of Humanities and Social Sciences as chair, and later as chair of the faculty.
- Bill Purves, appointed in 1977, led the faculty to the major in biology.
- Bill Daub, appointed in 1978, rose to chair of the Department of Chemistry.
- Hal Barron, appointed in 1979, rose to the chair of the Department of Humanities and Social Sciences.
- Jim Eckert and Dick Haskell, appointed to the Department of Physics in 1980, with Dick rising to chair of the faculty.
- Mike Erlinger, appointed in 1981, played a leadership role in the development of computer science at the college.
- Gary Evans, also appointed in 1981, successfully brought the academic discipline of economics to the campus.
- Ben Goldstein, appointed in 1982, was an outstanding teacher of engineering.
- Nat Davis, appointed in 1983, brought foreign studies to the college and a dimension long sought by trustee Alec Hixon and his spouse, Adelaide, who funded the endowed chair he held.
- Kerry Karukstis and Shirlynn Spacapan, both appointed in 1984 and both serious scholars and wonderful teachers.
- Joe King and Hal Van Ryswyk, appointed in 1986, and both outstanding teachers.
- Zee Durón '81, a Harvey Mudd College graduate who went on to study at MIT and Caltech, appointed in 1987 and an outstanding engineering faculty member.

Generations of students have benefited from the teaching, research, and advising of these outstanding individuals.

The Department of Chemistry

The academic mission of the chemistry department is to provide all students with a strong background in the principles and applications of chemistry and prepare them for graduate study in chemistry and related fields. The original requirement for all students was four semesters of chemistry, including a legendary physical chemistry requirement in the third and fourth semesters. In the Third Decade Plus, this requirement was reduced to three semesters, including one semester of physical chemistry. For the class entering in 1990, the requirement was reduced further to two semesters of general chemistry.

During my time at Harvey Mudd College, the department continued its emphasis on both faculty and student research. Experimental research or work on a project was required of majors in the senior year. Often, projects or research were supported by granting agencies and frequently produced publishable results. Summer grants to a limited number of students enabled them to share in a faculty member's on-going research. Each year, some students demonstrated sufficient competence to undertake research with minimal guidance. Students were further exposed to the intellectual challenges of chemistry through an on-going series of weekly seminars.

Upper-class curricular offerings were enriched through cooperation with the Pomona chemistry department and with chemists in Joint Sciences, a cooperation that made efficient scheduling of advanced courses possible. Altogether, the department was well known for its close contact between faculty, students, and alumni in a mutually supportive environment.

In a 1981 study of 100 undergraduate chemistry departments reported in the educational journal *Change*, the department was rated in the top ten nationally in five of six categories of evaluation; it was the only department to achieve that distinction. The quality and success of the department is also represented by the achievements of its graduates, including a Rhodes Scholar, a number of National Science Foundation and Watson Fellows, and a high percentage who have gone on to achieve the Ph.D. degree.

Four full-time members of the department held tenured positions at the beginning of, and throughout, my tenure: Mits Kubota, Phil Myhre, Bill Sly and Jerry Van Hecke '61. (Appendix 7, Table 4.5)

The Department of Physics

Courses and laboratories offered by the physics department included those required of all students, those required in the major, and elective advanced courses. The department also provided research experience at the senior level, the chance for seniors to share in the Engineering Clinics, and later in the Third Decade Plus, an increasing number of research

opportunities for lower classmen. The department's curriculum featured an unusual emphasis on laboratory work at all levels, and majors required one mathematics course beyond the core requirement. To top off a major program, a student was required to pass an oral examination (presided over by three members of the department) that might cover any undergraduate topic in physics. Approximately half of the graduating seniors went directly to graduate school for advanced study in physics or related fields.

Faculty engaged in active research programs in experimental and theoretical physics and observational astronomy, producing research papers by individual faculty members, co-authored with colleagues, or, occasionally, with students.

Six full-time members of the department held tenured positions throughout my presidency. They were Dave Beeman, Gray Bell, Tom Helliwell, Sandy Sandman, Jack Waggoner, and Bob Wolf.

Four retirees, Joe Platt, Enos Wicher, Al Focke, and Ro Rojansky, shared departmental activities on a regular basis. Bert Corben arrived in 1982–83 (he was the retired department chair from the University of Toronto) as scholar-in-residence and spent a number of years with the department. (Appendix 7, Table 4.6)

The Department of Engineering

The Department of Engineering remained committed to providing a broadly based, non-specialized, design-oriented engineering education. In keeping with the college's founders wish for an engineering education in a humanistic setting, it was strongly committed to requiring all engineering students to devote a significant segment of their education to the humanities and social sciences.

The engineering major may be seen as a three-legged stool in which engineering science, engineering systems, and engineering design each constitute a leg. The foot of the science leg consists of the basic science studies taken in the common core. The foot of the second leg consists of the course in systems required in the common technical core. The foot of the third leg, engineering design, consists of a sophomore laboratory course that emphasizes problem solving in a wide range of engineering specialties. One additional mathematics course beyond the common core is also required. Engineering majors then take additional courses in the legs and culminate their major in the required three-semester Engineering Clinic, the department's highly developed and extremely successful industry-sponsored project course. Elective courses are offered in major branches in engineering and provide the opportunity for a student to develop a specialty that may be of interest to him or her. (Appendix 7, Table 4.7)

Along with Claremont Graduate School, the department offered a five-year program continuing the broadly based engineering philosophy,

but combining it with a professional emphasis. The program led to the Master of Engineering degree.

From 1976–1988 approximately 60 percent of engineering graduates initially accepted positions in industry; 40 percent went on to graduate school. Many of those directly entering industry have eventually undertaken graduate study and achieved advanced degrees.

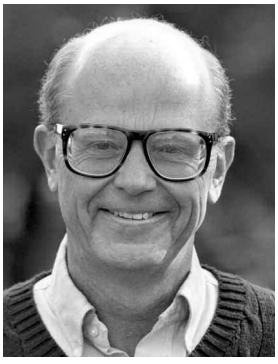
The Clinics

The Engineering Clinic began its highly successful history in 1964 under the leadership of its co-inventors Professors Jack Alford and Mack Gilkeson. The early history is admirably and enthusiastically documented by Joe Platt; the following paragraphs serve only to bring that narrative up-to-date. During my Presidency, the Engineering Clinic flourished under strong leadership provided by Clinic directors Tom Woodson (1972–76) and Rich Phillips (1976–1988.) The Mathematics Clinic expanded and thrived under the leadership of Bob Borrelli. Both Clinics were greatly aided by faculty members in the Departments of Engineering and Mathematics who supervised the Clinic projects, and by the industry engineers who served as the liaison engineers of sponsoring corporations. The goals of the Clinics remained unchanged during the Third Decade Plus. Clinic teams of four or five students continued to be the organizational unit in which students experienced real-world problem solving. On some teams, members elected a team leader. On others, a fifth-year graduate student was assigned the leadership role. Each team was required to report regularly, both orally and in writing, at scheduled technical sessions. A final written report and a formal presentation were required at the end of the academic year. Presentations take place in the formal setting of Clinic Day, an all-day technical meeting attended by liaison engineers, corporate guests, faculty, and staff.

Dr. Thomas Woodson

During my tenure, the Clinic matured into a program involving approximately 130 students each year, and consisting of as many as thirty projects.

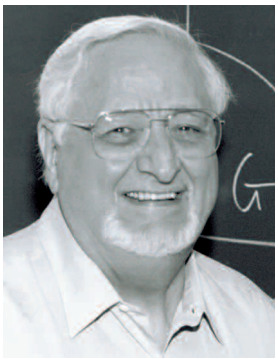
The six faculty members in who held tenured positions during that time were Jack Alford, John Molinder, Jim Monson, Rich Phillips, Sedat Serdengecti, and Harry Williams.



Dr. J. Richard Phillips

The Department of Humanities and Social Sciences

The commitment of the college to educate scientists, mathematicians, and engineers in a humanistic setting places a special responsibility on the Department of Humanities and Social Sciences. When I first came to HMC, each student was required to take fourteen courses in the humanities and social sciences, or approximately 33 percent of his or her degree requirements under general curricular requirements agreed to by the faculty. Since the department specifically identified and required only



Dr. Robert L. Borrelli

two freshman courses, students planned a coherent series of courses that met the requirements of the department with the help of a faculty advisor. In response to demands to accommodate biology and computer science in the common core and to allow more electives, we decided to decrease the requirement from fourteen courses to twelve. The decrease, however, did not reflect a loss of support for, or commitment to, the humanities and social science program by the technical faculty; the reduction occurred only after a great deal of soul-searching and compromise.

The department, itself, undertook a definitive study of its program in the late 1970's and revised its graduation requirements to clarify its vision of what constitutes a broad education in the humanities and social sciences.[4] The revision established a two-part program. The first part consisted of the college's core two-semester requirement in the humanities and social sciences; rhetoric in the fall semester emphasizing writing, reading, and reasoning skills; and an elective from among a specified group in the second semester. A student might also elect, with permission, an additional course in the second, third, or fourth semester.

The second part of the new program was an integrated series of studies outlined by the department in consultation with the student. It consisted of ten courses taken over the remaining years. A senior seminar required students to write a research paper on a topic involving the interface of technology and humane or social concerns. Five courses could be taken at the other Claremont Colleges. (Additional detail on this revised program is found in Chapter 5.)

The five members of the department who held full-time tenured appointments for the entire period include Bill Allen, Tad Beckman, Dave Sanders, J'nan Sellery, and Ted Waldman. (Appendix 7, Table 4.8)

Freshman Rhetoric

The freshman rhetoric program requires special mention. Its emphasis on writing, composition, and presentation provided a basis for an emphasis on good writing throughout the curriculum. In the academic year 1980–81, a revised rhetoric program was offered under the direction of Professors J'nan Sellery and Dave Sanders, aided by Frances McConnel, four instructors, and three graduate student tutors. The goal of the revision was to enhance instruction by using small sections and intensive help. As of the first semester, the roster of these graduate student/instructors was as follows, and demonstrates the added resources applied to this project:

	RHETORIC INSTRUCTORS	RHETORIC TUTORS (largely History)	SOCIAL SCIENCE TUTORS
1976–77	Anderson	Westfahl, Gary	Crawford, George
	Silver		Viator, Jim
	Zucker		
1977–78	Glyer	Taylor, Doug	Crawford, George
	Westfahl, Gary		Tucker, David
			Viator, Jim
			Wallech, Steve
1978–79	Bradford	Brady, Ken	Crawford, George
	Corben, Beverly	Rowley, Steve	Tucker, David
	Reclam, Joan	Tucker, Ellen	Viator, Jim
		Westfahl, Gary	Wallech, Steve
1979–80	Hunter, Susan	Goya, Colleen	Dees, Russell
	Koff, Leonard	Heckelman, Ron	Delana, Pat
		Woodside, Laura	Dillman, Ruth
			Jones, Lillian
1980–81	(rhetoric revised this year)		
	Hunter, Susan	Dennis, Suzanne	Dees, Russell
	Goya, Colleen	Finn, Dick	DeGolyer, Michael
	Heckelman, Ron	Smith, Lans	Delana, Pat
	Woodside, Laura		Sturges, Carl
1981–82	Hunter, Susan	Brown, Ted	Bass, Pat
	Goya, Colleen	Delana, Pat	DeGolyer, Michael
	Heckelman, Ron	Smith, Lans	Sturges, Carl
	Meskill, Frank		Varvis, Steve
1982–83	Hunter, Susan	Brown, Ted	Bass, Pat
	Goya, Colleen	Delana, Pat	DeGolyer, Michael
	McConnel, Francis	Stahl, Ken	Gordon, David
	Smith, Lans	Vaughan, Judith	Varvis, Steve
1983–84	Hunter, Susan	Groves, Jeff	Bass, Pat
	Brown, Ted	Smith, Johanna	Delana, Pat
	Heckelman, Ron	Stahl, Ken	Macauley, Diana
	Smith, Lans		Meyer, Susan
			Pereira, Denzil
			Shephard, Robert

	RHETORIC INSTRUCTORS	RHETORIC TUTORS	SOCIAL SCIENCE TUTORS
1984–85	Hunter, Susan	Jones, William	Birch, Shawn
	Delana, Pat	Roberts, Jeanette	Meyer, Susan
	Groves, Jeff	Shereen, Faiza	Rupert, Mark
	Masugi, Ken		Shephard, Robert
	Smith, Johanna		Stevens, Craig
	Smith, Lans		Wang, Judy
	Stahl, Ken		
1985–86	Hunter, Susan	Andrews, Karen	Dawson, Sandra
	Delana, Pat	Morgan, Aaron	Jones, William
	Groves, Jeff	Roberts, Jeannette	Lamb, Larissa
	Smith, Lans	Shereen, Faiza	Meyer, Susan
			Ramsburg, Martha
			Rupert, Mark
1986–87	Susan Hunter	Andrews, Karen	Frederick, Suzanne
	Delana, Pat	Carter, Margaret	Jones, William
	Groves, Jeff	Fragnoll, Delainne	Lamb, Larissa
	Stahl, Ken	Judd, Mathew	Meyer, Susan
			Smith, Randall
			Whetstone
1987–88	Andrews, Karen	Judd, Mathew	Carlson, Merry
	Fragnoll, Delainne	McNair, Robert	Jones, William
	Groves, Jeff	Rudicel, Stephen	Milstein, Janice
	Stahl, Ken	Teruya, LeAnne	Osborne, Jack
			Walsh, John

The Department of Mathematics

In addition to providing four Common Core courses covering calculus, linear algebra, and differential equations, the Department of Mathematics offered three options in its major program; the general program option, the applied mathematics option, and the computer science option. As a foundation for these options, each major was required to take fundamentals and abstract algebra, two one-semester courses considered to be fundamental to all three options. In the senior year, some majors chose to take two semesters of Mathematics Clinics, a long-standing curricular offering in which students gain experience in the analytical techniques necessary to solve "real world" problems. As in the Engineering Clinics, successfully meeting deadlines, preparing progress reports, and making public presentations are part and parcel of the program. Sponsors from private industries, government agencies, and government laboratories provide

the technical problems. Mathematicians from these sponsors serve as liaison mathematicians, bringing added talent to the department.

During the Third Decade Plus, members of the department were actively engaged in several areas of research. Research in applied analysis has attracted mathematicians from Europe and throughout the United States to spend one or more semesters collaborating in this research. A major effort in the department was project Mathlib, the development of a high-quality software-modeling program for mathematicians and scientists.

The eight members of the department who held full-time tenured appointments during this time were Robert Borrelli, Stavros Busenberg, Courtney Coleman, John Greever, Robert Ives, Henry Krieger, Alden Pixley, and Al White. The two additional positions were filled as shown in Table 4.9 (Appendix 7).

The instruction offered by the department was significantly expanded and enriched by a continuing flow of joint appointments with Claremont Graduate School and through interactions with the other undergraduate departments of mathematics in Claremont. The department was also one of the most active participants in welcoming the steady stream of visiting faculty and postdoctoral fellows (often supported by grants) who enlivened mathematics at the college.

Co-Operative Programs

The Claremont Colleges have a long-standing and strong tradition of cooperation. These activities can be categorized as follows:

1. Joint academic programs, cost shared
2. Cooperative academic programs, not cost shared
3. Joint faculty appointments
4. Intercollegiate cross registration of students
5. Central programs and services

The fifth of these, central programs and services, is a group of over twenty administrative activities ranging from libraries to a steam plant. This category differs from the other categories in that the council of presidents oversees the development and implementation of the budget of each activity on an annual basis. Cost allocations among the colleges are determined by carefully-crafted fiscal formulae.

1980–81 Joint Academic Programs — Cost Shared

	HMC	CMC	PZR	SCR	POM	CGS
Four-college Drama	●	●	●	●		
Four-college Music	●	●	●	●		
Language Laboratory	●	●	●	●		
Women's Studies	●	●	●	●	●	
Mathematics Clinic	●	●			●	●
Physical Education/Athletics	●	●		●		

1980–81 Joint Academic Programs — Not Cost Shared

Accounting	●		●			
American Culture	●	●	●	●		
Astronomy	●					●
Chemistry electives	●				●	●
Economics	●					●
European Intellectual History	●					●
History	●				●	
Humanities	●			●		
Mathematics majors	●	●	●		●	●
Philosophy	●	●				
Plant Physiology	●				●	

1980–81 Joint Faculty Appointments

Botany (Carlquist)	●				●	●
Economics (Meginniss)	●					●
Ethnic Studies (12 faculty)	●	●	●	●	●	
Four-college Drama (Grote; Jamieson)	●	●	●	●		
Four-college Music (Lamkin)	●	●	●	●		
History (Levy)	●					●
Language Lab (Frohlich)	●			●		
Mathematics (Abolnikof)	●	●				●
Phys Ed/Athletics (7 faculty)	●	●		●		

Ethnic Studies

One of the significant joint academic programs is the twelve-faculty Ethnic Studies program. The program had an unsettled history, and continuing difficulties eventually led Harvey Mudd College to withdraw its support. The circumstances that led to that withdrawal are varied.

Turbulent racial dissent[5] on the campuses in the late 1960's and Martin Luther King's assassination in April of 1968 spurred the Council of Presidents to found the Ethnic Studies Centers as an all-Claremont program in 1969. The program offered[6] academic courses in ethnic studies, a counseling service for Black and Chicano students, a minority admissions office to serve all of the colleges, and a cultural and social program. The colleges shared the costs by applying a formula based on total student enrollment. Harvey Mudd College was a full participant in the cost sharing in spite of the fact that, on a-per-minority-student-enrolled-at HMC basis, the cost was extremely high.

For four years the centers were successful. Enrollment of Black students increased by 69 percent in The Claremont Colleges during that time, but dwindled sharply thereafter to the pre-center level. Total enrollment of Chicano students increased 150 percent in the same time frame, reached a plateau, and then decreased to double the pre-center enrollment. As a result, the centers minority admission came under strong criticism.

The academic deans, who were the overseers of the academic segment of the program, found that decrease in enrollments led to unacceptably low class size, when compared to the colleges. As might be expected, the small class size provided a strong impetus for the deans to seek changes. However, without a clear mandate as to how they might adjust faculty in the centers, there wasn't much the deans could do. Administration and organization of the centers also proved to be a severe problem, particularly in the Black Studies Center. Four directors served in the period 1969–1976.

The administrative and faculty difficulties led the Council of Presidents, in 1975, to convene a "Conference Committee on Faculty Status and Recognition for the Ethnic Studies Centers," chaired by Dean Stan Hales, Pomona College. The committee's report presented two recommendations for faculty status in the centers: (1) an "in the college" tenure plan, referred to as option one; and (2) an alternative, labeled option two, offering tenure-track appointments in CUC. The report spelled out, at considerable length and in considerable detail, the pros and cons and possible procedures of the alternatives, but in the end favored option one. The option one recommendation was approved by the Council of Presidents and accepted (slightly modified) on June 5, 1976, by the board of fellows.[7] This acceptance marked the beginning of the Third Decade Plus.

The performance of the minority admission office continued to deteriorate early in the Third Decade Plus, and the Council of Presidents terminated the operation of the office effective 1978. HMC and CMC applied the savings generated by the termination to help support two new staff members who were assigned the responsibility for minority recruiting in the then joint CMC/HMC Admission Office.

Following the sudden resignation in January of 1978 of the fifth director of the Black Studies Center, parallel reviews of the centers began at the

all-Claremont level and at HMC. Again, the Council of Presidents appointed an all-Claremont committee. Since the Chicano Studies Center was functioning relatively well, the council limited the new committee's charge to a review of Black Studies and announced the committee as "The Special Committee on Black Studies and Black Student Affairs at The Claremont Colleges." The chair was Dean Sam Tanenbaum. After six months of study and hearings, the committee failed to reach a consensus, largely because a group of students absolutely refused to consider any changes in the existing program. The Council of Presidents ruled that the Centers would continue business as usual for one additional academic year.

The committee was reconstituted in 1978–79 and recommended the restructuring of the Centers in order to separate academic matters from student counseling. The change was approved by the council effective September 1979.

During this time, the parallel discussions on the HMC campus continued. In November of 1978, trustee Hubie Clark, chair of the Academic Affairs Committee, invited the two directors of the Ethnic Studies Centers to report on the goals of their centers and review with his committee the performance of the centers. The directors each reviewed their programs and both strongly urged no reduction in HMC support. The trustees, however, concluded they did not have enough information to act and called for a campus ad hoc committee to report on the issue. In December of 1978, I appointed a small committee (Bob Borrelli, Art Campbell, John Crowe) to review the goals and status of the ethnic studies centers and their relationship to HMC. In an excellent report,[8] the committee found first, that the Ethnic Studies Centers had not met the needs of HMC students nor been of real service; and second, that HMC should either facilitate reorganization of the centers or withdraw from them. The report concluded with a wide range of alternate possibilities suggested by individuals contacted by the committee.

During the spring of 1979, the ASHMC Student Affairs Committee, Bruce Arnheim '80, chair, studied the role at Harvey Mudd College of the Ethnic Studies Centers as seen from a student perspective. In April, the ASHMC committee recommended that the college withdraw from the centers and that the fiscal savings be applied to a faculty position at HMC staffed by a minority, to an activities director in the dean of students' office, and to training programs for freshmen proctors.

At a special meeting on March 27, the faculty received and debated the following resolution presented by the Faculty Executive Committee.

> "HMC should give its two-year notice of withdrawal to the Ethnic Studies Center and, in the interim, begin to develop its own program for ethnic studies. Such a program should concentrate on three areas of need: (A)

> Admissions; (B) Academic Services; and (C) Student Affairs. Academic services should involve at least one FTE devoted entirely to ethnic studies; student affairs should involve at least an up-grading of training of personnel so as to promote better aid to ethnic students of HMC."

The faculty approved the Resolution, and I submitted it to the trustee Academic Affairs Committee for their consideration. Committee chair Hubie Clark invited both Professor Borrelli and Bruce Arnheim '80 to represent their respective committees. The proposal was discussed at great length and with great care, recognizing that withdrawal from a central all-Claremont program was not only a significant act, but also rare in the life of Claremont. At the conclusion of the discussion, the committee unanimously agreed to recommend to the board of trustees that Harvey Mudd College give the required two-year notice of its intention to withdraw as a participant in the Ethnic Centers. The discussion concluded with several members emphasizing the importance of meeting the needs of Black and Chicano students on campus. On May 20, 1979, the board of trustees, with my support, voted the following Resolution:

> "RESOLVED, that Harvey Mudd College give notice of withdrawal at the end of 1980–81 from the Ethnic Studies Centers, and the appropriate committees consider the needs of Black and Chicano students and the interests in ethnic studies courses within the overall priorities of the college."

With some considerable degree of regret, but feeling that the issue had received more than careful consideration, I notified my colleagues on the Council of Presidents of our intention to withdraw under the usual two-year procedure.

The discussions of the minority centers had extended well over a decade and consumed much energy. The issue was extremely sensitive and considerable care was taken by all parties to maintain a reasonable level of debate and arrive at sensible judgments. Not everyone was satisfied with the result, and it was unfortunate that staffing problems in the Black Studies Center were the origin of so much concern. Harvey Mudd College was the only college to withdraw and, in retrospect, I am convinced that our logic was sound. HMC's withdrawal provided the impetus for the reorganization of the centers at a reduced and more efficient level of operation. To my knowledge, only a very limited number of faculty in the centers, if any, ever achieved tenure in one of the colleges under option one during my term.

Additional Academic Cooperation

Under the joint Bachelor/Master Programs, an undergraduate college executed a formal agreement with the Claremont Graduate School (now Claremont Graduate University) to award two degrees over a five-year period. HMC had two such agreements in addition to the long-standing master of engineering program. In one, a master's degree program in mathematics was introduced in 1973. Under the other, a master's degree program in economics began in 1976.

Each of these cooperative programs greatly enriched the academic opportunities of students. The programs provided welcome opportunities for faculty to apply their talents and expertise to graduate-level teaching, graduate seminars, and graduate dissertations, thus augmenting their undergraduate teaching and research.

Faculty Compensation

The Third Decade Plus was marked by critical events and factors that had a direct impact on employee wages and faculty compensation and, therefore, major impacts on the college budget. The collapse of the equity market in 1974–75, and hyperinflation during 1978–81 were not positive effects with which to cope.

In order to judge the appropriateness of the level of faculty compensation, we needed suitable criteria that could be applied in the budgeting process. As early as 1975, the faculty budget committee had recommended two goals for faculty compensation:

Goal 1: Average faculty compensation at HMC will be at least as high as the average of the AIEC.[9]

Goal 2: Average faculty compensation at HMC will place us in the first rank of the AAUP (the American Association of University Professors) category IIA.

To me, these goals seemed quite reasonable and appropriate. In discussions with the faculty budget committee, I suggested that faculty consider not only overall averages, but also the compensation of associate professors as well, believing that people in that rank were critical to the long-term future of the college. In May of 1978, the faculty budget committee modified its recommendations:

- Comparisons should be made with the sixteen members of the Association of Independent Engineering Colleges.
- The basis for comparisons should be total compensation.
- Part-time appointments would be excluded from calculations.
- Particular emphasis would be placed on the associate professor rank.

Over the next several years, increased budgets permitted substantial faculty salary increases. Annual AIEC compensation comparisons indicated favorable, if not overwhelming, improvements. There was, however, no firm consensus on just what the best comparison standards might be. Some people proposed that faculty compensation comparisons should consider The Claremont Colleges; others, that California institutions should be used.

In 1984, the trustee committee on compensation and personnel policy, along with the faculty budget committee, asked for reconsideration of the issue of compensation criteria. In a discussion paper, we analyzed the alternatives and concluded that three cohorts be considered as the bases for comparisons: (1) the AIEC, (2) The Claremont Colleges, and (3) the American Association of Engineering data for engineering faculty.[10]

The faculty budget committee responded and suggested that based on a criterion of excellence, the proper standard for comparison would be the third rank in the cohort of the AIEC, a rank that would place us immediately behind Caltech and MIT. It was an aspiration that I would have been happy to adopt, but the reality was that the very large resource base of these and other institutions made a difference. As unique and excellent as HMC was, the combination of our small endowment, our net tuition income heavily impacted by large scholarship demands, and our limited income from modest research grants did not provide a resource base comparable to the elite research institutions.

In April, a joint meeting of the trustee Compensation Committee and a faculty committee (John Molinder, John Townsend, and Sam Tanenbaum) explored the relationships between adequate compensation and the recruitment of faculty, the retention of faculty, and faculty morale in considerable depth. The joint meeting reviewed again the question of which peer group might best be used for comparison purposes.

Further discussions over the summer brought an understanding that I thought would be acceptable to trustees. In September, the faculty budget committee and the faculty executive committee recommended to the faculty, with my support, the following motion:

> "The faculty supports the agreement, reached by the President and the Budget Committee, on faculty compensation standards:
>
> 1. The AIEC will serve as our peer group for compensation comparisons.
> 2. The level of total compensation shall fall in the range between the third- and fifth-ranked AIEC school.
> 3. The College shall make yearly progress in order to realize the above position within the next three years.
> 4. While this action commits the College to using total compensation as the basis for comparisons, it is under-

> stood that we may have to revert to salary comparisons if appropriate total compensation data on the AIEC schools are no longer available."

(This latter statement was a necessary caveat; at that time there were indications that some AIEC institutions would no longer provide compensation ((as opposed to salary)) figures.)

The faculty voted approval.[11]

The following semester, the Executive Committee of the board of trustees received and discussed the faculty resolution. Some trustees believed that its adoption would bind the trustee Budget Committee and compensation committee to conditions they could not meet. Ultimately, the board debated and approved the following resolution:[12]

> "Whereas, the Board of Trustees agrees with the president and the faculty on the desirability of comparative standards, the necessity for comparisons with institutions of high quality, and the utility of having helpful implementation plans when considering faculty and staff salaries, and
>
> "WHEREAS, the Board of Trustees also recognizes its responsibility for the well-being of all segments of the enterprise, including faculty, academic programs, college operations, student activities, and the housing and feeding of students, and
>
> "WHEREAS, the Board of Trustees accepts the concomitant responsibility for the fiscal health and stability of the college, and therefore must rely, on a year-to-year basis, on its cumulative judgment when allocating resources,
>
> "NOW THEREFORE BE IT RESOLVED,
>
> "That, the Board of Trustees of Harvey Mudd College will receive each year, from the faculty and the president, a report comparing HMC faculty salaries with colleges in the Association of Independent Engineering Colleges, and
>
> "That, the Board accepts as a guideline the range of salaries between the fifth and third-ranked institutions at each rank as a suitable and viable range for comparison purposes, and
>
> "That, within its responsibility to maintain prudent fiscal oversight, the Board will strive annually to allocate resources to bring HMC salaries to that range in the future; but the Board finds it inappropriate to guarantee a schedule for reaching that target."

We had reached a workable and reasonable set of criteria and standards that served us well during the remainder of my term. Each year, careful and detailed plots were prepared by the dean of faculty, examined by the faculty budget committee, reviewed by the faculty, and presented to the board. One of the difficulties with our procedures and guidelines was the relatively small number of faculty at HMC in a given rank of assistant, associate, or full professor. Because the numbers were small, both the number of initial appointments and promotions from rank to rank had a disproportionate effect on the averages which made up the reported comparison compensations.

Within the overall allocations made in annual budgets for salary increases, decisions on the increases for individuals had to be made. This responsibility was left to the department chairs in consultation with the dean of faculty. They, in turn, were guided by annual merit and promotion considerations. (Chart 4-1 in Appendix 7 compares the annual percent increases in salary with the percent change in the consumer price index.)

The department chairs and the dean of faculty worked very hard each year to judge and reward the efforts of their colleagues in the faculty. The average faculty salary increase exceeded the increases in the Consumer Price Index by a considerable amount, except in the years 1978 and 1979, the years of federal wage-price guidelines. The substantial departures from the averages, both plus and minus, were the result of merit decisions reached each year.

Distinguished Visitors

In addition to the many visiting scientists and mathematicians who were invited guests in individual departments, distinguished visitors greatly enriched the general intellectual activity on the campus during the Third Decade Plus.

The Zarem Lectures were funded and sponsored by trustee (1963–1973) Abe Zarem and his wife, Esther, and made possible evening lectures intended to keep students and faculty aware of new technologies.

The Wright Prize, initiated and funded by trustee H. Dudley Wright, was awarded annually to a scientist or engineer whose work and achievements best represented a creative, pragmatic, multidisciplinary application of scientific knowledge. The purpose of the prize was to give students the chance to interact directly with the most distinguished scientists or engineers of the day. The recipient spent three to four days meeting students in small groups, holding seminars, and presenting a public lecture. The prize, which consisted of a bronze sculpture and a cash award of $25,000, was awarded at a formal trustee dinner. The prize recipients in the Third Decade Plus were:

The Wright Prize

1979–80	Dr. Edwin Land	Polaroid Corp; instant photography
1980–81	Dr. Luis W. Alvarez	Nobel Laureate
1981–82	Dr. Edward M. Purcell	Nobel Laureate, Harvard University
1982–83	Dr. Richard Garvin	Thomas J. Watson IBM Laboratories
1983–84	Bernard Oliver	Hewlett-Packard
1984–85	Sir William Hawthorne	Cambridge University
1985–86	Dr. Robert Wilson	The Fermi Laboratory
1986–87	Dr. Richard Feynman	The California Institute of Technology
1987–88	Dr. Francis H. Crick	Nobel Laureate, The Salk Institute

Seminars

Scheduled noontime or afternoon seminars presented by faculty, under the sponsorship of the dean of faculty, further stimulated intellectual activity and provided opportunities for faculty members in various departments to share their research. These seminars supplemented the almost weekly seminars organized by the academic departments themselves.

On a more social level, the dean of faculty provided daily coffee and donuts twice weekly in the Stauffer Lounge to bring faculty from various departments together on an informal basis. However, a rapidly growing number of coffee makers in offices throughout the campus led, in September of 1986, to a decision to place a coffee cart in mid-morning in Hixon Court. Coffee was free and donuts were available at bargain prices for all students, faculty, and staff.

To further faculty-trustee interaction, we held the first of what was to become the annual Chairman's Dinner in April of 1981. Sponsored and funded by the chair of the board of trustees, the dinner brought faculty, trustees, and senior staff together at a downtown Los Angeles location for an evening of conviviality and conversation. The dinners were informal, no business was conducted, and no speeches were made. They proved to be an excellent opportunity for trustees to meet faculty and senior staff in a relaxed and congenial environment. The one departure from the usual Los Angeles location was the dinner held in mid-September at the Newport Beach home of the Clarks after Hubie's election as chair of the board of trustees. It was a delightful evening.

CHAPTER 5

An Evolving Curriculum

IN 1955, the Board of Fellows of Claremont University Center considered the possibility of a new college in Claremont and recommended the establishment of "a college that teaches engineering and science in a humanistic setting." Harvey Mudd College was founded to that end and today remains totally committed to providing a broad technical education in a humanistic setting. Astute outside observers have noted that the primary strength of the college is the unique and challenging curriculum that carries out that commitment.[1]

During my time as president, the college continued to offer the bachelor of science degree in chemistry, engineering, mathematics, and physics, and, in conjunction with the Claremont Graduate School, the master of engineering and the master of arts degree in mathematics. The master degrees required a fifth year of study.

The curriculum did not provide a major in computer science or biology, but a student could plan an independent program of studies with concentration in these or other subjects. For students interested in biology, an individual program of studies could be planned in which a student drew on biology courses offered in sister colleges.

The goal of the curriculum was to offer a broad education in engineering, mathematics, and science and retain a strong commitment to the study of the humanities and social sciences. To achieve this goal in the early years of the college, all students were required to take a common core of courses, including two years each of mathematics, physics, and chemistry, two years of literature, one of history, and an introduction to engineering.[2]

In the 1960's the faculty devoted considerable time to refining this "common core" of studies. In 1968 a faculty committee recommended, and the faculty adopted, a number of significant curricular guidelines[3] that

today still provide direction to the curriculum. One of the most significant directed that one-third of a student's program be devoted to humanities and social science and two-thirds to technical subjects. To implement these guidelines, in January 1970 the faculty established the Freshman Division, a group of faculty charged with designing and teaching freshman year courses. The result was a curriculum structured in three-parts: (1) the Common Core, (2) the Humanities and Social Sciences Program, and (3) the Major.

1. The Common Core

The common core is a proscribed set of courses taken by every student. They are generally taken in the first three semesters, although some students postpone them as late as the junior year. The common core provided a strong basis in science and mathematics and an introduction to both engineering and the humanities and social sciences. The intention was to provide a broad education and bring all students to a high level of preparation for advanced courses in the upper class years. According to the 1977–78 college catalogue, the core at the beginning of the Third Decade Plus was as follows:

- The freshman year program (and in the years beyond the freshman year)
- Chemistry—physical, or carbon, or inorganic
- Engineering—systems
- Mathematics—multivariable calculus and linear algebra
- Physics—electromagnetic theory and laboratory

The core program later fell under extreme pressure as the need arose for the incorporation of biology into the curriculum, and as demands increased for stronger computer science courses.

The Freshman Year Program portion of the common core was intended to provide a bridge between the senior year of high school and the demanding upper-class college years. Courses were graded on a "high pass," "pass," and "no credit" scale in the belief that such a grading system removed some of the stress on students wrestling with the transition. Letter grades were assigned in the following years.

The Freshmen Year Program had changed a number of times in the years before I joined Harvey Mudd College. In 1971, the program comprised chemistry, physics, and mathematics courses coordinated to minimize redundancy and overlap; the Quest for Commonwealth, a Department of Humanities and Social Science experiment in team-teaching largely conceived by Ted Waldman; plus computer programming and a freshman project.[4]

The Quest was abandoned in 1975.

In 1975–76, Ted Waldman, director of the Freshman Division, proposed substantial changes in the Freshman Year Program for students entering in September of 1977. The revision called for the following: [5]

- Chemistry—7 1/2 units (of which 1 1/2 were lab units)
- Physics—7 1/2 units (of which 1 1/2 were lab units)
- Mathematics—8 units (adjusted to include a one-unit course in probability and statistics)
- Humanities and Social Sciences—8 units, reduced from 12 units
  The eight units of humanities and social sciences were made up of four units of rhetoric (to be taught in small sections), and a four-unit course chosen from a group of three. Finally, a one-unit course, Natural Philosophy, and a capstone three-unit course in the senior year, completed the requirement.
- Computation—2 units (and given a specific place in the program)
- Natural Philosophy—1 unit (to introduce elements of the philosophy of science)
- Freshman Project—1 unit (an introduction to engineering)

In the following year, Natural Philosophy was dropped and the Freshman Project was increased to two units of credit.

2. The Humanities and Social Sciences Program

The second element of the curriculum was intended to assure breadth and depth in the humanities and social sciences while providing some flexibility of choice. The 1970 program required students to take courses in three areas of study: arts and literature, which included art, drama, film, languages, and literature; humanities, including classics, history, philosophy, and religion; and social science, with a choice of anthropology, economics, political science, psychology, and sociology. At least two courses had to be selected from each area. A senior seminar or project was also required.

During the year The Freshman Year Program was under review, the Department of Humanities and Social Sciences reviewed the humanities and social sciences program as a whole. I was invited by the department to share a retreat at which the faculty examined in careful detail both the goals of the department and the options for a revised departmental program.[6] Their discussions were guided by the college's mission statement (Appendix 1), which requires that the curriculum will educate "engineers well trained in the physical sciences and scientists familiar with engineering and provide both with sufficient background in the humanities and the social sciences to fit them to assume leadership in their fields." The central question for the department's discussions was deciding what a "sufficient background" should be. The outcome was a proposal that recommended a new set of graduation requirements to the faculty curriculum committee.[7]

Their proposal required students to complete eleven courses in the humanities and social sciences beyond the required freshman year courses. Ten of the eleven were to be selected from among five areas of study: (1) historical perspectives; (2) political and social institutions; (3) psychology of individuals and groups; (4) literature and artistic expression, and (5) philosophy. Five of the ten were to be taken on the HMC campus. The eleventh course was to be a senior seminar. A new freshman rhetoric course was to place special emphasis on writing and argumentation facilitated by small classes of twenty students.

The curriculum committee and the faculty approved these changes as requirements that would take effect for students entering in September of 1977.

From the outset, a controversy arose when the Department of Humanities and Social Sciences adopted a "five-course requirement" that at least five of the ten courses required for graduation be taken on the HMC campus. The restriction reduced the choice of courses that students might elect at colleges off campus, leading some students and faculty to object.[8] The department, however, stood its ground and successfully defended its position.

These 1977 curricular revisions were substantial. It was not until 1986 that any further major changes in the curriculum were recommended and approved. However, complex and prolonged discussions of the place in the curriculum of biology and computer science went on to occupy much of my time at Harvey Mudd College.

In April of 1984, Art Campbell, director of the Freshman Division issued a long and detailed report on the freshman year experience, and at his request, the Faculty Executive Committee appointed a committee to review it. Its members were Jim Monson, Dave Sanders, and Al White, with Art Campbell, Tad Beckman, and Sam Tanenbaum ex officio.[9] After some considerable debate in the ensuing months over the committee's charge, the Executive Committee determined that the ad hoc committee should restrict its study to the freshman year and not review the core directly.[10] The committee reported a year later with very little to say about the curriculum, but listed a number of problems.[11] The committee recommended that in order to improve learning in the freshman year, closer attention needed to be paid to student academic needs; the freshman faculty should improve communication with each other; and student campus life needed attention.

In November of 1984, the Executive Committee had received the report of the Computer Science Steering Committee urging, among other recommendations, the appointment of a committee to consider adjustments in the core.[12] In response, the Executive Committee appointed John Townsend, chair, Courtney Coleman, Gary Evans, John Molinder, Bill Purves and Jerry Van Hecke '61. The Committee on the Core was "to study the core with an eye toward achieving the same, or better, general educa-

tion more efficiently"—a tall order indeed. The committee adopted as its goals: (a) to find a way of modifying the core and the humanities/social sciences program that would reduce the total load by six units; (b) if possible, to improve the core and the humanities and social science program in the process; (c) to alleviate some of the perceived problems in the freshman program.

On April 26, the Committee on the Core reported its findings and recommendations. It proposed that:

1. Chemistry restructure its freshman program and drop the physical chemistry requirement (an historic decision!);
2. Physics reduce both freshman laboratory and course content;
3. The one-unit freshman course on computation be dropped;
4. The Freshman Project course be dropped;
5. Introductory biology be moved to a core elective;
6. The Humanities II course be decreased from four units to three;
7. The hum/soc graduation requirement beyond the freshman year be decreased from eleven to ten courses.

This was a sweeping set of proposals.

The committee's recommendations, in effect, required that the core courses and required program in the humanities and social sciences be reduced from eighty-seven credit hours to seventy-three. The reduction was to be replaced by nine credit hours of core electives to be chosen from among twenty-one credit hours (i.e. three from among seven courses).

At the faculty meeting of May 7, 1985, after considerable debate the faculty adjourned to await the results of a mail ballot. The proposals were adopted in a 37 to 18 vote. (Tables 5.1, 5.2, and 5.3 in Appendix 7)

As I have pointed out, the freshman year makes up only part of the core. The remainder, the "sophomore" core, was to consist of three units of engineering, six units of mathematics, four units of physics, and six units of core electives chosen from among carbon chemistry or physical chemistry, engineering, modern physics, or any freshman core elective.

These substantive 1986 curricular changes provided students increased flexibility in planning their program. In addition, each department might require its majors to use one of the core electives to satisfy major requirements, providing somewhat increased flexibility in the major program. The timing of the changes placed a considerable burden on faculty, since new courses had to be prepared on relatively short notice to put the program in place for students entering in September.

Dick Olson '62, director of the Freshman Division, presented a two-year follow up report on the new Freshman Year Program to the trustee Educational Planning Committee on May 19, 1988. The good news, he reported, was that student evaluations of the program were laudatory; the

bad news was that the faculty did not feel that students were performing up to their potential.

The changes proved to be enduring, with the exception that after 1988, three units of biology became required and the number of core electives was dropped from three to two.

3. The Major

The third segment of the curriculum, the major, falls under the jurisdiction of individual departments. Successful completion of the freshman program and the sophomore year requirements leads students to the major program. During the time I was president, majors were offered in the departments of chemistry, mathematics, physics, and engineering. Each department emphasized breadth and depth in its major, laboratory work when applicable, individual effort, and, ultimately, individual or team research. The engineering major placed special emphasized on engineering design. Each major program was intended to provide the basis for graduate study or for immediate employment.[13]

Students were expected to seek early guidance in understanding the requirements of a specific major. By the end of the third semester, students were expected to be well along in selecting a major and were required to consult with departmental advisors to assure timely completion of the required courses of study. Changes in a planned program could be made only with the approval of an advisor.

If a student was unable to engage in a satisfactory major program, he or she could construct an independent program of studies with the aid of faculty advice and the dean of faculty.

The variations in a department's major are well illustrated by the example of the Department of Mathematics. In 1976–77, the department listed four major programs acceptable to the department: (1) the general program, leading to graduate study in mathematics; (2) the applied mathematics program, leading to careers or graduate study in the applications of mathematics; (3) the computer science program; and (4) the probability-statistics program. Each of these programs had its own set of requirements.

All major programs were open to any student with satisfactory prerequisites. There was a remarkable consistency in the percentage of major students carried by the three science departments, chemistry, mathematics, and physics, during the Third Decade Plus. (Appendix 7, Table 5.4 and Chart 5-1.) The Department of Engineering, on the other hand, grew to be the dominant major. This latter fact had been expected as early as the founding of the college, but had taken many years to become a reality.[14]

The Bates Aeronautics Program

The origin of the Bates Program is well described by Joe Platt in *The First Twenty Years*.[15] He states there that in reality the program was a joint pro-

gram, but joint in an unusual manner since the college provided fiscal and facilities support and the Bates Foundation, with its own board of directors, formally held the program's assets and provided the flight instruction.

By the time I came to Harvey Mudd College, the program was already a mature fourteen years old. Dynamically led by Iris Critchell, and staunchly supported by her spouse, Howard Critchell, and a growing cadre of program graduates, the program had flourished, attracting more students each year than it could assimilate. Enrolled students were required to take approximately four hours a week of ground and flight instruction over a four-semester period. The first-year course, Basic Aeronautics and Flight, included principles of flight, flight regulations, safety, navigation, meteorology, and flight training. The second-year course, Advanced Aeronautics and Flight, included theory and practice of instrument flying, advanced navigation, air traffic control, meteorology, and flight training emphasizing instrument flying. The Critchells' insistence on responsibility, personal development, aeronautical knowledge, and informed decision making while in the air made the program particularly rewarding for the enthusiastic students who enrolled.

Iris and Howard Critchell with students

In the twelve years of my tenure, a total of 263 students (including students cross-registered from the other Claremont Colleges) enrolled in aero classes.[16] One hundred and thirteen Harvey Mudders completed the first-year course, and 100 completed the second year. By 1988, the Bates Program was seen as a prime extracurricular instructional program with a special place in alumni activities.

In 1983, it became increasingly clear that the approaching retirement of Iris Critchell, and therefore the future of the program, needed to be faced. I asked the Bates Foundation Board to review the program and project its future. In December, I received the report "Bates Aeronautics Program: Five Year Projection 1983–84" and referred it to the Faculty Executive Committee for comment.[17] Alumni Ludd Trozpek '71 and Walt Foley '69, representing the Bates board, were present as guests during the initial discussion of the report in the Faculty Executive Committee. The committee's reaction was positive, but not optimistic, about the possibility of finding another Mrs. Critchell. The budget was also a concern. It consisted of less than one-half college funds, and more than one-half Bates Foundation, alumni, and corporate support. This structure was not forecast to change in any major sense, yet the Faculty Executive Committee expressed concern about a growing college fiscal commitment.

In the following academic year, Iris Critchell submitted a request to the Curriculum Committee seeking academic credit and GPA credit for

the Aero courses.[18] Before this, the Faculty Executive Committee had approved credit for Air Force ROTC courses to create equity with AROTC and NROTC courses.[19] Although there was no link between the Bates Program and the ROTC programs, it was difficult to separate the issues of credit. In October, the Faculty Executive Committee forwarded Iris Critchell's motion to the faculty recommending academic credit for the Bates Aeronautics courses.

On November 13, 1984, the faculty approved the recommendation for Bates program academic credit, but not GPA credit.

This popular and unique program produced very loyal and enthusiastic alumni. In large part, the loyalty was generated by the Critchells; most program participants regarded them as foster parents who cared in a very special way for each student and the program. Each year, the Critchells opened their home to Bates participants and alumni when they celebrated the annual "Glutz Day," a day near the end of the academic year when awards (of a sort) recognized the accomplishments (of a sort) of current participants. Great good humor was the order of the day and everyone enjoyed dinner on the Critchells' patio and around the swimming pool.

George "Pinky" Nelson '72

Program graduates have distinguished themselves as professionals and scientists working as aero engineers, space-flight guidance specialists, control systems engineers, M.D.'s in aero medicine, university professors, and airline pilots. Two astronauts, Pinky Nelson '72, and Stanley Love '87, are Bates program graduates. Ellen Martin Karl '87, a NASA rocket systems engineer for the Shuttle main engines recently received NASA's highest recognition as a professional science/engineer member of the "support team." A surprising number of graduates have acquired their own airplanes, and the Critchells each year arrange alumni "fly-ins" that bring many of them together to share interests with current undergraduates.

Since the termination of the program in 1990, the aeronautics classes and flight activity have continued, if considerably abated. The enthusiasm of the Critchells, however, has not. At the request of our students, Iris continued to offer the Aero I class for six semesters, and privately gave introductory flights for as many undergraduates as possible. Together, Iris and Howard prepared and distributed "From The Tower," an ambitious and delightful newsletter that keeps alumni and friends in contact and informed.

The Bates Aeronautics Program was truly unique and valuable to its participants. The personal development, pilot training, and practical experiences proved to have a significant impact on their lives.

CHAPTER 6

The Evolution of Biology

The Background

DURING the founding years of the college, the trustees, along with President Platt and the faculty, agreed to concentrate on five academic disciplines: chemistry, physics, mathematics, engineering, and the humanities and social sciences. Programs in biology were available at sister colleges in Claremont, and in general, were felt to meet the needs of the few Harvey Mudd College students who were seeking a limited exposure to the biological sciences. As the years passed, however, conviction began to grow that the lack of biology at HMC was a serious curricular deficiency. In 1969, a student-faculty Joint Academic Committee found that "the biological sciences should no longer be ignored."[1] In 1972, visiting life scientists recommended that life science be included in the curriculum. Over the summer of 1972, a trustee-faculty Long-Range Planning committee studied the place of life science in the curriculum. The committee's report offered three options: a major, a minor, or a specialized program.

In the fall of the 1973–74 academic year, extended faculty discussions of the previous summer's report culminated in a faculty motion "endorsing the introduction of life sciences into the curriculum," but urging financial caution so that existing majors would not be weakened.[2] The faculty also recommended that more examples of relevant biological problems be introduced in physical science courses. In response to these recommendations, two vacancies in chemistry were filled with biochemists the following year and a vacancy in physics with a biophysicist. Applied mathematics courses and the engineering clinic also began considering related life sciences problems.

By the 1975–76 academic year, the sense in the community was that this strategy was not providing a satisfactory response to the growing number of our students who were seeking study in the life sciences. It also appeared that the then emerging fields of micro- and molecular biology would find much common ground with chemistry, physics, engineering, and mathematics. The college's strong undergraduate majors in these departments led naturally to the consideration of biology's relationship to those majors.[3]

Just before my arrival early in 1976, the trustee Long-Range Planning Committee asked for the appointment of an ad hoc (matrix) committee on the life sciences. Its members were the following:

Dr. Norman F. Sprague Jr.	Trustee and Chair
Thomas Carr '69	Alumnus
Paul van Eikeren	Chemistry
Robert Wolf	Physics
David Grier '77	Student Representative
Ellie Johnston	Secretary
Dean Tanenbaum	

In May 1976, this matrix committee recommended a three-phase planning effort for the life sciences in a historically important report:[4]

1. A commitment to appoint a biologist to the faculty immediately
2. The appraisal in 1978 of the demand to expand the program and of the need to add a second biologist in 1979
3. The evaluation in 1982 of the need for a major and/or a department

The committee also discussed the possible location of a biology laboratory adjacent to the biochemistry laboratories on the second floor of the science building, the restructuring of the academic core program, and the place of biology in faculty governance.[5]

In the same month, Dean Tanenbaum happily reported that he had succeeded in obtaining a CAUSE grant of $298,196 from the National Science Foundation as seed money for the biology program.

The Evolution of Biology – The Third Decade Plus

With funding at hand and a favorable faculty review reported, the Long-Range Planning Committee voted to present to the board of trustees the following recommendation:

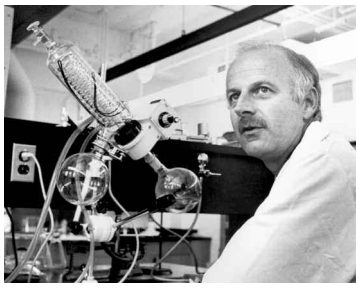
"**To be added to the Statement of Purpose:**

22.15 The Curriculum shall include appropriate opportunities for learning about living systems.

"**To be adopted as goals to fulfill item 22.15: (above)**

- To establish an introductory course in biology designed for students with a strong background in engineering, mathematics, and physical science.
- To bring to the Harvey Mudd College campus a teaching biologist who can interact with students and other faculty who wish to pursue research in the life sciences.
- To provide opportunity for advanced course work and research on the life sciences within the Harvey Mudd College curriculum."

The statement formally, and unequivocally, established for the first time that biology had a proper place in the curriculum of the college. It also provided much leeway for the determination of what was appropriate.


Dr. William K. Purves

With considerable enthusiasm, trustees approved the change in the Statement of Purpose on March 24, 1977. After a nationwide search in 1976–77, William K. Purves, a distinguished biologist became the college's first appointment in the life sciences, effective 1977–78. A B.S. graduate of Caltech and with a Ph.D. from Yale, his primary field of interest was plant physiology/biochemistry. He had also published over forty research papers. After holding postdoctoral fellowships at Universität Tübingen, Germany, and UCLA, he spent twelve years in the Department of Biological Sciences at UC Santa Barbara, where he rose to be chair of the Department of Biological Sciences. In 1973, he joined the Biological Sciences Group at the University of Connecticut as head, and from there, became the first appointment to the Stuart Mudd Professorship at Harvey Mudd College.

(Dr. Stuart Mudd was a cousin of Harvey S. Mudd. A distinguished microbiologist and for many years a faculty member at the University of Pennsylvania Medical School, he was the late husband of Dr. Emily Mudd, a social scientist also on the faculty at the University of Pennsylvania.[6] She and her family generously endowed the chair in his memory.)

When Bill Purves accepted his appointment at the college, he faced a challenge equaled only by the challenge undertaken by the founding faculty: how to begin a program with very little space, with no laboratories, no equipment, and few students, if any. He was charged to develop an introductory course uniquely appropriate for HMC students that would be offered in September of 1978. It was an awesome task, but the strategy of his appointment mirrored the initial appointments at the founding of the

college—to find a topnotch person and give him free rein. Bill, however, was to find that the reins were somewhat less than free.

Office and laboratory space was a serious problem. In March of 1977, I reported to the trustee Executive Committee that we had been unable to persuade the graduate school to give us access to space in the Graduate Wing for biology before the 1981 termination date of the lease.[7] As an interim solution, we installed a teaching laboratory, a research laboratory, and an office on the first floor of the Science Building (later Jacobs Science Center) in space ceded by the physics and chemistry departments.

Initial funding obtained by Dean Tanenbaum also enabled the non-tenure track appointment of Anne-Marie Stomp as laboratory assistant for Dr. Purves. She served in that role for three academic years.

In May of 1977, the faculty appointed an advisory committee to aid and advise Bill Purves on life science curricular matters. The committee comprised Professors Rich Phillips, chair, Dan Petersen, John Greever, Paul van Eikeren, Dave Sadava from Joint Sciences, and Albert Cohen from Pomona. As the years passed, this committee evolved into the Life Sciences Faculty, charged to further the interests of biology at HMC and in Claremont. Unfortunately, its influence proved to be minimal.

In September of 1977, the faculty approved the addition of four upper class courses: Biology 151, 152, Biology 197, and Biology 198. In January of 1978, the introductory course Biology 52 was taught for the first time. Twenty-nine students enrolled, the largest enrollment to that date in any elective course offered for the first time. Biology 54, the laboratory course, enrolled fourteen. Five students enrolled in advanced courses. Biology was off to a grand start, but its proper place in the curriculum was to prove elusive.

Bill Purves was faced with two issues: how to persuade the faculty to accept biology as a requirement in the curriculum and therefore part of the core, and how to convince the faculty that increases in biology staffing were both necessary and desirable.

As early as September of 1977, the Faculty Curriculum Committee began to discuss the life sciences and computer science and their possible place in the "sophomore" core. The committee asked academic departments and individuals to submit position papers commenting on the issue.[8] Bill Purves responded with a remarkable four-page paper, given that he had been on campus only a few weeks.[9] He examined the relationship of biology as a whole to the curriculum, concluding, not surprisingly, that students with a primary interest in biology should complete the core, as did all other students. He further postulated that Biology 52 should be a core requirement taken by all students. He argued that modern biology provided important insights to students majoring in all scientific, technological, and mathematical disciplines.

Unknowingly, Bill had initiated a faculty debate that would not be entirely resolved throughout the entire Third Decade Plus.

The Computer Science Group, sensing that the discussions would bring a change in the core, approached the faculty seeking a stronger computer science presence.[10] The Faculty Executive Committee, however, remained focused on biology.

In February 1978, after several weeks of discussion in academic departments and in the committee itself, the Executive Committee forwarded the following recommendation to the faculty as a proposal to restructure the sophomore core:[11]

> "As a college requirement, students will be expected to take two out of the three following options:
> - Chemistry — one course from among Chemistry 51, 56, or 103
> - Physics — 51,53
> - Biology — 52"

After a successful amendment removed the physics option, the amended proposal was referred to a mail ballot. In the mail ballot the faculty voted down the amended proposal by the narrow margin of 24 to 21, thus shelving the issue of the place of biology in the core for the moment.[12]

The faculty also voted to establish an ad hoc committee to reconsider the core requirements. The committee, with Tad Beckman as chair, polled the departments over the following months, but could not find any agreement on how to restructure the core or find any unifying direction that would guide the debate. The committee reported their findings to the Curriculum Committee in November 1978 and was discharged.

With the mail ballot lost and the ad hoc committee on the core ineffectual, an academic year would pass before any further action on the biology core issue. In the 1979–80 academic year, Bill Purves raised the issue of staffing in a series of meetings with the Faculty Executive Committee and the faculty during the second semester. At the April 22, 1980, faculty meeting, he presented resolutions seeking the appointment of a second biology faculty member in 1980–81 and a third biology appointment "within the next five years." The first resolution was approved unanimously. The second was tabled.

The approval to increase staffing was the first step forward for Bill Purves and the life sciences. Trustees approved the recommended increase, and in September of 1981, T. J. Mueller, B.S., from Loyola University (L.A.) and Ph.D., University of Southern California, was appointed the second tenure-track biologist at the college.

On October 7, 1981, the Faculty Executive Committee, sitting as the curriculum committee, again initiated discussions on how to proceed with

biology's place in the curriculum.[13] Conversations continued throughout the year under the persistent and very patient leadership of Professor Dave Sanders, chair of the faculty. At midyear, a survey of the faculty revealed widespread support for the core, but no collegial solution to the biology quandary could be found. The only result of the year's effort was to drop a one-unit course in mathematics (probability and statistics) and increase freshman computation by one unit.

The failure of this yearlong study greatly concerned Bill Purves. In April of 1982, he and seven members of the faculty asked the Faculty Executive Committee to poll the faculty on whether they wanted any change at all in the core and, if so, what changes they would prefer.[14] A Copeland ballot showed that the faculty was in favor of a change but again, no direction for the change was evident.

In the following academic year, Bill Purves appeared before the trustee Academic Planning Committee to report on the life sciences. He reported that the Life Sciences Group felt that

> "Their main function was to enrich the curriculum and to show students with other majors both that they may make a contribution in biology and that biological principles can help them in their disciplines."[15]

In summarizing his remarks he offered two concerns:

- There was no introduction to biology in the core curriculum;
- The group could not develop a sequence of courses with prerequisites since the group had difficulty trying to identify the role that the college expects biology to play in the curriculum.

Bill's muted frustrations were evident in this recital of his concerns. He was seeking direction, but sensed that only the faculty could resolve the issue. He realized, I think correctly, that the faculty was more than reluctant to undertake another review of the freshmen year program, a task that it had completed only recently. On the role of biology in the curriculum, one of the possible options would be a major in biology, a very sensitive issue.

Nearly a year later, Bill again pressed the Executive Committee to act by proposing a motion for the Committee to present to the faculty.[16] He hoped to get agreement on the principle that a biology course would be required before attacking how it might be placed in the core. He proposed that

> "Beginning with the Class of 1988, every HMC student will be required to take a course in the life sciences. Courses that satisfy the requirement will be determined

> by the biological science faculty, subject to the approval of the curriculum committee."

He followed it up twelve days later with a sharp memo of "clarification," suggesting that some of the current requirements in the core were less meritorious than biology. On March 22, the Executive Committee responded favorably and forwarded an amended motion to the faculty at its regular meeting of March 29, 1983:

> "Beginning with the Class of 1988, every HMC student will be required to take a course in the life sciences."

The amended motion passed 23 to 5. At long last, biology had a place in the curricular sun, although what place was not clear, since the motion had nothing to say about what role it would play. Bill Purves had, however, successfully achieved a second step forward in securing a place in the core.

The unsettling question of how to carry out the requirement remained. At the beginning of the following academic year, Dean Tanenbaum asked for faculty guidance on the next step that needed to be taken. At the first faculty meeting of the year, Jack Alford moved that implementation of the new biology requirement be undertaken "with maximum flexibility given to academic departments." His motion was tabled as vague. Subsequently, the Faculty Executive Committee proposed that the tabled motion be reconsidered. However, the committee added the restrictions that (1) the 128 units required for graduation would remain unchanged, and that, (2) the biology requirement would be one course, Biology 52, or a choice of one among a small set of courses. At a special Faculty Meeting in October, the amended "Alford" motion was approved "overwhelmingly." Resolved:

> "That the faculty implement the new Biology requirement giving maximum flexibility to individual departments."

A third step had been achieved.

In early April of 1984, T. J. Mueller, acting for Bill Purves, who was on sabbatical, proposed that the biology requirement might be met by either Biology 52, or Biology 111, a course designed to be of special interest to engineering students. The Curriculum Committee accepted and adopted this proposal.[17]

The biologists had achieved another step forward, but the issue of the place of biology in the curriculum remained unresolved.

Limited as it was, the life sciences program proceeded successfully for nearly a decade. At the Saddle Rock meeting in the fall of 1987, Bill Purves

was sufficiently encouraged by the response he received to submit some of his ideas to the Faculty Executive Committee for discussion. With their encouragement, he prepared a discussion paper on a possible major entitled "First Draft Proposal for Biology at HMC."

At Sam Tanenbaum's suggestion, Bill also agreed to present his proposal to the trustee Educational Planning Committee, then chaired by trustee Trude Taylor. Bill reported that his plan called for a distinctive biology major that offered two tracks:

1. Cellular and molecular biology preparing students in bio-related fields
2. Brain and behavioral biology preparing students for animal and neurobiology

He also proposed close interaction with the Department of Engineering for those students interested in bioengineering. Resources needed for the full major program would require the addition of four full-time faculty and additional space. The report elicited brisk comments from members of the trustee committee and others who were present including alumnus Don Hawthorne '77, Professor Stavros Busenberg, and trustees Henry Mudd, Don Strauss, and Cliff Miller. The long meeting concluded with Dean Tanenbaum's statement that the faculty would probably vote on the plan toward the end of the semester.

Not explicitly stated in these academic plans, but implicit in the discussions over quite a period of time, was a clear need for additional academic space. In the fall of 1986, I asked Dean Tanenbaum to appoint an ad hoc committee on Academic Space Planning. The committee comprised Tad Beckman, Stavros Busenberg, T. J. Mueller, Sandy Sandmann, Sedat Serdengecti, Daniel Cohen (a visiting staff member from the Dean's Office), and later, Mits Kubota. Thus, all departments were represented. Larry Hartwick served as consultant. We informed the committee that we had made preliminary contacts with the F. W. Olin Foundation seeking funding for a building of approximately 50,000 gross square feet.[18] In early 1987, the Space Planning Committee issued a comprehensive report that included rough estimates of costs provided by architects.[19] The committee had studied two options; the first would include computer science, humanities and social sciences, mathematics, and some engineering in a new building; while the second would commit the entire building to engineering. The first version was recommended to the faculty.

On December 10, 1987, I reported to the board of trustees that, based on the committee's recommendation, we had submitted a formal proposal to the F. W. Olin Foundation for a multi-disciplinary building.[20]

These efforts came at a critical time. We had received an invitation from the Howard Hughes Medical Institute to participate in their major

initiative to improve undergraduate biology across the nation. Bill Purves was eager to submit a proposal, but the uncertainties on the campus placed him in a difficult position.

In the academic year 1987–88, the Faculty Executive Committee and the Department Chairs Committee, with strong leadership from Tad Beckman, renewed their discussions on the place of biology in the curriculum. After vigorous debate, the faculty adopted the following motion at a special meeting on April 21, 1988:

> "The faculty of Harvey Mudd College authorizes planning and expresses support for the development of a significantly expanded program in the biological sciences. Consideration shall be given to the development of a biology major, the changes in the core curriculum, the overall resources required, the allocation of existing and future resources, any increase in the size of the college, the relationship to other biology programs in Claremont, and other pertinent issues. Two fundamental principles will guide the planning process. First, the program in biological sciences must achieve the scope and excellence expected from a HMC program. Second, a biological sciences program must occur within the context of program and resource needs in all areas, and the planning process must outline mechanisms for a fair allocation of resources to all areas."

While the Third Decade Plus was rapidly coming to a close, the Olin Foundation chose not to make the grant we had sought. They explained, understandably, that although the need for such a building was clear, a new administration might want to plan its own configuration.

My tenure was over before we heard disappointing news from the Howard Hughes Medical Institute. However, with preliminary building plans in hand, space needs defined, fund raising proceeding, and active discussions of the major in biology underway, the outlook was promising.

CHAPTER 7

The Growth of Computer Science

THIS chapter presents the history of the development of computer science at Harvey Mudd College in three sections. A brief early history is followed by events early in the Third Decade Plus. The final section presents, in some detail, events in the later years of the decade.

Early History

An early, if not the earliest, reference to a computer science faculty member at Harvey Mudd College is found in the 1969–70 catalogue, where Dr. Fred Weingarten is listed as assistant professor of computer science. His name also appears in the following three years, but his professorial title is preceded by "Director of Computer Services for The Claremont Colleges," leading one to believe that his primary responsibility was management, and not teaching. The 1971–72 catalogue lists Paul Nahin, a Caltech Ph.D., as a computer science appointment in engineering. The 1972–73 catalogue lists Dr. Walter Brainerd, who came to Harvey Mudd College for one year from the Department of Information Statistics at Columbia University. According to Joe Platt, each was involved in early computational instruction, along with the tenure track faculty members Alden Pixley, Jim Monson, and Sedat Serdengecti.

The earliest record of a computer related course is a 1964–65 catalogue entry, "Introduction to Automatic Computing." It was an elective one-unit course offered by the Department of Engineering. The course introduced students to GOTRAN, FORTRAN, and the IBM 1620. Five years later, the catalogue added "Introduction to Computers and Data Processing," a two-unit course for students who were not majoring in science or engineering, but came from the other colleges in Claremont. In 1970–71 a four-course program is listed:

- CS 60 (later 160) Introduction to Computer Science
- CS 161 Machine Organization
- CS 162 Advanced Programming
- CS 169 Seminar in Computer Science

During these years, student interest in computer science was slowly, but steadily, growing. Early in 1973, the faculty asked Joe Platt to appoint a committee to serve as advisor to the president and dean for computer science matters. The original appointees to the "Computer Science Group as the committee soon became known, were Professors Walter Brainerd, Jim Monson, Paul Nahin, Alden Pixley, and Sedat Serdengecti, Chair. In March, the committee prepared a position paper setting forth its structure, purposes, and responsibilities. Excerpts from their paper follow:

> " 4. The HMC faculty shall establish a group of the faculty concerned with computer science as an academic discipline. The group shall consist of the faculty qualified to teach and develop courses in computer science. The members of the group, and its chair, shall first be appointed by the dean of faculty with the advice of the department chairmen; thereafter the advice of the group itself will also be sought.
> " 5. The chair of the group shall advise the dean, department chairmen, and/or the RPT Committee on appointments and RPT matters concerning members of the group.
> " 6. Courses in computer science will generally be staffed by members of existing departments.
>
> "The Computer Science Group of the faculty shall be charged with the following:
>
> - General administration of the courses in computer science, including course content and articulation of courses with departmental major requirements.
> - Advising departments on other curricular needs of students studying computer science.
> - Acting as advisors.
> - Advising the faculty on the needs of computer science, as an academic discipline at HMC.
> - In obtaining approval of courses in computer science, the chair of the group shall communicate directly with the HMC Curriculum Committee.

> "No later than two years after the establishment of the group, its performance shall be reviewed by the faculty, and its structure revised, as necessary."

As one of its earliest tasks, the Computer Science Group also prepared the following statement for publication in the college catalogue:

> "All Harvey Mudd students acquire basic competence in computing and information processing during the freshman year. Subsequent courses in engineering, science, and social sciences build on the principles developed there.
>
> "The college, believing in the priority of basic science and engineering, does not offer a degree in computer science. However, recognizing that an increasing number of students wish, while at Harvey Mudd College, to prepare for careers or graduate study in this rapidly expanding field, the college offers several courses in computer science. Instruction in these courses is conducted by the Group in Computer Science composed of some of the members of the mathematics and engineering faculty.
>
> "Besides these courses, the college offers a number of upper division courses in engineering and mathematics which form a desirable part of the curriculum for students interested in computing and information science." (A list of courses followed.)

These statements, written in 1973, included the faculty view of "computer science as an academic discipline," unwittingly touching off a controversy that would flair up often during my presidency.

In September of 1974, Wing Tam accepted a tenure track appointment as an assistant professor, with one-third of his time spent in engineering, and two-thirds in computer science. In 1975, he was reassigned as a full-time member of the engineering faculty with primary teaching duties in computer science. The engineering faculty assumed responsibility for staffing the four computer science courses in consultation with the Department of Mathematics.[1] Wing, who held a Ph.D. from UCLA in computer science, was the first Ph.D. computer scientist to receive a tenure appointment at the college. His research interests were in structured programming techniques, large-scale software development, database system design, and system modeling. He was a member of the IEEE Computer Society who, in 1977, received the Outstanding Young Man of America Award.


Dr. Wing Cheung Tam

A curious historical footnote is worth recording. In the spring semester of 1976, Joe Platt received an amazing paper written by an HMC

graduate, Bruce Nelson '74, then a computer science Ph.D. candidate at Stanford. The title of the paper was "Some Definitive Thoughts on the Computer Science Problem at Harvey Mudd College: A Curriculum Proposal." The twenty-two-page paper must have taken an enormous amount of energy and effort on Bruce's part. It was critical of the state of computer science at HMC and offered a proposed revision of the curriculum in computer science in the recommendation of the adoption of a major program. It also spoke, very briefly, to the hardware the college needed. The report came to my attention while I was researching the material for this chapter. I have not been able to find any reference to the paper in the historical records, faculty or otherwise, and it apparently received very little attention.[2] The fact that it arrived just before the transition in the presidency may explain its disappearance.

In the spring of the 1975–76 academic year, the Faculty Executive Committee appointed Professors Jack Alford, Alden Pixley, and Jerry Spanier (CGS) as an ad hoc committee to review the activities of the Computer Science Group, as called for in its original position paper. The ad hoc committee issued far-sighted findings to the Faculty Executive Committee on May 12, 1976. It found that the faculty's intent had been carried out; that the college should appoint one additional faculty member in computer science; that administrative arrangements were satisfactory; and that the introductory course should be an integral part of the freshman curriculum.

Computer Science Early in the Third Decade Plus

The report of the ad hoc committee received little or no attention until nearly two years later. In April of 1978 the Faculty Executive Committee noted that the recommended additional faculty member had not been appointed.[3] However, the committee went on to say that it "saw no obvious way" that such an appointment could be made and that the appointment would have to compete with all other desirable appointments in the college, an unusual caution.

In the following academic year, the Computer Science Group under the leadership of Wing Tam prepared a significant position paper on the status and future of computer science. The six-page memorandum entitled "The Harvey Mudd Computer Science Program" reviewed the history of computer science at the college and pointed out an urgent need for curricular updating. It proposed three options and recommended that the faculty consider them on February 20, 1980. Option one sought essential support for the current program in the form of a "very badly needed" additional faculty position in computer science. The new position, the report added, would make it possible to provide the computer literacy needed by all HMC students to function effectively in the then current environment of computer technology. Option two sought the addition of

a third computer scientist to make possible an HMC program meeting the minimum requirements of the IEEE Computer Science Education Committee curriculum. Option three specified that a high quality program required the expansion of the Clinic Program and the commitment of the existing academic departments to incorporate computer science applications in their courses.

On March 25, 1980, the faculty at a special meeting endorsed option one, but did not act on the additional options.

On April 10, the Faculty Executive Committee invited both the Life Sciences Group and the Computer Science Group to submit proposals to be debated by the faculty.[4] The Computer Science Group submitted two motions. The first noted that on March 25, 1980, the faculty had voted that an additional computer scientist be appointed. On April 22, 1980, at a special faculty meeting the faculty voted approval of the following supporting paragraph:

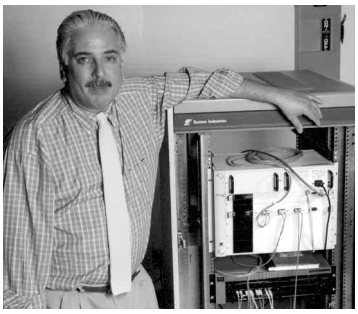
> "Because the college wants to attract the strongest possible candidates for the new position to further develop computer science education at HMC, the appointment will be made in the discipline of computer science, and outside any existing department."

The motion was approved.

The second Computer Science Group motion sought assurance that a further addition would be made in computer science within five years. The motion was tabled. Thus, the faculty reaffirmed its much earlier recommendation to add an additional computer scientist to the faculty, but made clear that the appointment should be in computer science and not in an existing department.

Wing Tam presented a progress report on these matters to trustees in April of 1980.[5] He reported that the faculty had approved option one, and that approval would make it possible to establish a basic program to provide enough courses to qualify an HMC student for admission to graduate programs in computer science. He reported the faculty had not acted on option two, and that they had tabled option three. Two trustees at the meeting spoke to the importance of computer science as a discipline. Gray Bell, the faculty representative on the trustee committee, raised the question of what an expansion of computer science offerings implied if the student body was limited in size.

I was disappointed that the faculty had not acted more boldly. I reported to the committee that although the recommendation to appoint an additional computer scientist was welcome, it was my growing conviction that the college must move its computer science program forward, and that ultimately, it must have a computer science major.


Dr. Michael A. Erlinger

The search for the second computer scientist extended through the academic year 1980–81. Effective in July of 1981, Michael Erlinger accepted the position of assistant professor of computer science. Mike had received his Ph.D. from UCLA and joined the faculty after considerable experience at Bell Telephone Laboratory and Hughes Aircraft. The academic year passed without further developments other than course restructuring. The next year, Wing Tam moved from engineering to a full-time position in computer science, thus reversing the action that had placed him full-time in engineering in 1975.

In accordance with the customary procedure of occasionally reviewing a departmental program at a faculty meeting, the Computer Science Group was invited by the faculty to report in January of 1983.[6] Mike Erlinger was the principal author, but individuals in the group played a strong editing role in preparing the report. It was a remarkable analysis. It began with a historical review and then moved to the curriculum, emphasizing areas of study that were not covered but needed to be. Finally, the report listed some major concerns, particularly understaffing, the lack of equipment and student help, the heavy load of off-campus, and the lack of budget. The concerns made me realize we were not providing the necessary support for the program already in place, an impression I carried to future debates and decisions.

At the same time, Mike Erlinger served as chair of the committee on Long-Range Computer Planning (Foley '69, Busenberg, Molinder, Mueller, Deifik '83). Their excellent report reached the faculty on February 1, 1983. At a special faculty meeting on February 7, the faculty adopted the committee's first recommendation in a lengthy resolution:

> "Resolved that the administration of Harvey Mudd College establish a position to be called 'Director of Academic Computing' and find a suitable individual to fill that post. It will be the responsibility of this individual to see that all academic computing needs are met within the limits of the resources available. This should include identifying the computing needs of the college; proposing hardware and software purchases and grant requests; allocating hardware and software to academic users; maintaining service contracts; managing hardware and software service personnel; facilitating software development and generally seeing to it that computing in all academic areas is well served. It is the intent of this resolution that this position be a resource to the college, relieving faculty of the task of managing computer operations while allowing maximum access to computing facilities for all members of the HMC academic community."

A second resolution followed:

> "Resolved that the president, trustees, and development officers undertake to raise sufficient funds to upgrade the computing facility at the college significantly."

The resolutions certainly followed the considerations and recommendations of the Long-Range Computer Planning Committee, but it was to be some time before we could implement the position of director of academic computing.

Professor Erlinger made a further report to the Faculty Executive Committee on March 28, 1983, and to trustees at the April 12, 1983, meeting of the trustee Educational Planning Committee. He again stressed the lack of resources. In both meetings, he raised the basic question, "What should HMC's position be with regard to undergraduate computer science?" Trustees at the meeting expressed strong vocal support for an appropriate computer science program.

In late April, Professor Borrelli made the surprising and unexpected proposal on behalf of the Department of Mathematics that faculty members in computer science be wrapped entirely into the Department of Mathematics and that the department be renamed the Department of Mathematical Sciences.[7] He referred his proposal to the faculty accompanied by a three-part recommendation for curricula in mathematics, engineering/computer science. Members of the Computer Science Group were not at all happy with the proposal. No subsequent action was taken.

During the academic year 1982–83, two special faculty searches promised some relief for HMC's overloaded computer scientists. The John D. MacArthur Foundation funded the first, a five-year appointment as an assistant professor in computer science. Richard Lorentz, CMC '75, filled the position September of 1983. He was awarded his Ph.D. at Washington State University in 1980 and had spent a two-year post-doctoral appointment at New Mexico State. Dr. Dean Gillette filled the second position, the Henry J. Luce Professorship of Information Technology and Society, a joint position with CMC.

Computer Science Late in The Third Decade Plus

The reports, resolutions, and appointments late in the 1982–83 academic year rekindled discussions as to the place of computer science at Harvey Mudd College. A faculty committee comprised of members of the freshman division and instructors in the sophomore technical core courses studied the efficiency of coverage of the material in the core and the possibility of including additional computer science and biology.

The Saddle Rock meeting in October of 1983 featured faculty presentations on the role of computer and biological sciences in the

curriculum. In my opening remarks at the meeting, I spoke of the growing influence of both sciences:

> "The college will turn its back to these driving forces at the risk of losing its fine reputation for curricular innovation, leadership, and quality."

In December of 1983, I expressed my optimistic view of the future of computer science in the college to trustees:

> "…(I am) convinced that Computer Science must play an increasingly important role in the future of the college. (I am) anxious to have the faculty address the issue this year and…intend to bring the matter before the board for its consideration…(I am) optimistic that the college could develop an attractive, original computer science program."[8]

These Saddle Rock discussions led Sam Tanenbaum and the Faculty Executive Committee to appoint an ad hoc committee to consider possible options for computer science.

The committee (Professors Mike Erlinger, Tom Helliwell, Mel Henriksen, John Molinder, and Wing Tam) issued an excellent and exhaustive report dated December 7, 1983, and entitled "Options for Computer Science at Harvey Mudd College." The report suggested five possibilities for the Faculty Executive Committee to consider:

1. Improve facilities and support for the existing programs.
2 Increase the faculty for the computer science program without changing its administrative status or increasing the student body size.
3. Add to computer science as in 2, but also increase the overall enrollment by about sixty students.
4. Add a computer science major and department without increasing the size of the student body.
5. Add a computer science major and department, but with an increase in the student body.

On January 23, 1984, the Executive Committee reviewed the report, announced that a faculty meeting would be held to discuss the options, and invited written opinion papers on the subject. The next day, a memorandum from Bob Borrelli and John Molinder, chairmen of mathematics and engineering respectively, proposed that two new appointments be made in computer science—one in mathematics and one in engineering.

Over the following two weeks, both the trustee Educational Planning Committee, and the faculty at its regular meeting, discussed the options without acting. In early February, the faculty executive committee formulated two motions for considerations at the next faculty meeting. They were as follows:

"1. We favor adding two new appointments in support of the computer science program, without introducing a computer science major.
"2. The two new positions should be in the Computer Science Group."

At the faculty meeting on February 14, student Dave Somers '87 presented the results of a survey he had taken among students on the issue. Although not as an extensive survey as one might wish, he reported that his findings were (in part):

- 76 percent of students would like to see a computer science department.
- 46 percent would like to see an independent computer science major.
- 23 percent were "interested" in majoring in computer science.

The Executive Committee then introduced its first motion seeking faculty approval for adding two new faculty members. On behalf of the engineering and mathematics departments, the chair of the Department of Engineering immediately offered an amendment supporting the addition of two computer science faculty members, but assigning one to each of the departments of engineering and mathematics.

In speaking against this amendment, members of the Computer Science Group argued that placing additional computer science faculty members in those departments would not strengthen, but would dilute computer science since there would then be three separate academic sites interested in furthering computer science. Others expressed concern for the Computer Science Group's continuing lack of administrative status. It was not a department and therefore had no place in faculty governance, and little or no influence on curricular or other faculty matters.

The amendment passed in a close vote of 28 to 24, possibly a result reflecting the numerical sizes of the two departments offering the amendment. The amended motion passed 25 to 19. The vote essentially made the second Executive committee motion moot and it was discarded.

The result of the vote clearly reflected the long-standing conviction of the engineering and mathematics faculty and some others that a co-operative effort in offering interdepartmental courses in computer

science was the best route to take. The close vote, however, revealed a sharp division in the faculty.

The faculty recommendation was now on my desk for action.

For over a week, I mulled over both the pros and cons of the faculty vote, the many debates over the years on how to strengthen computer science at the college, and weighed the future. I considered the central questions to be "How might we best improve the capability of the computer scientists to serve their students?" and "What next step should we take?"

I stated my position in a memorandum to the faculty in which I said that in order to strengthen computer science I would first seek

> "Funding to provide additional logistical support for the present Computer Science Group. This effort will assure (a) initial capital funds for hardware and software resources for the present computer science program; (b) a proper "Group" operational budget; and (c) due consideration of future capital needs including space."

It was my conviction that the first order of business was to shore up the existing "Group" in the expectation that they would serve students better. Further we would

> "…expand as soon as financially possible the present Computer Science Group (and the faculty) by the addition of a senior faculty tenure slot."

I was aware that this action would place me in an awkward spot. I was aware of the sensitivity of faculty to matters of curriculum, but I believed that the long-term future of computer science would be better served by adding resources to the computer scientists already on campus. I had concluded that the issue was more a question of allocation of resources and that an administrative decision was appropriate.

Most of all, I was concerned with the long-term excellence of the college's program. I am sure the faculty held a similar concern. However, the debates in the department chairmen's committee and in the faculty had convinced me that computer science would not be strengthened by assignments in multiple departments. Computer science had become a discipline in its own right, with theoretical underpinnings as well as experimental, particularly in languages, compilers, and operating systems. I strongly believed that if we were to remain a strong, competitive, science and engineering college we needed to develop an appropriate and excellent program. Historically, the college had developed programs of excellence by bringing in very good senior people and giving them considerable free

reign. Computer science needed such a person to lead the college to a major program.

On the other hand, the faculty in engineering and mathematics felt strongly that their long-held position that a program in which the computer scientists were placed in those departments was the preferred route to take. Apparently, Wing Tam's earlier placement as a computer scientist in the Department of Engineering had not been entirely satisfactory for either party.

The reaction by faculty members to my memorandum was not long in coming. Twenty-one members signed and forwarded a memorandum stating that I had "contravened the will of the faculty in a curricular matter." I met with this group the following day and made it clear that I was open to discussion and further consideration. In the interest of moving the issue forward, I said that I would submit both their position and mine to the trustee Educational Planning committee at its next meeting. At the regular meeting of the Faculty Executive Committee on February 27, I answered questions at length in a positive, if touchy, exchange.

The timing was such that in the following two weeks I was able to place a report of these events and the differing positions before the trustee Educational Planning committee and the board of trustees at their regular meetings.[9] The minutes of the latter meeting record that "a lively discussion ensued." Indeed, it did. It was lengthy in both groups. After a detailed review of both the faculty position and mine, the Educational Planning Committee voted a resolution calling for a "program of excellence" in computer science and moved to submit the resolution to the board of trustees. The board, in turn, voted that the campus undertake a serious study on how to best develop a program of excellence in computer science at the college, with all of the constituencies of the college participating.

In retrospect, this was the correct decision. The close faculty votes had revealed that the faculty was divided on the issue and uncertain about direction; on the other hand, possibly a majority was clearly uncomfortable with my proposed actions. The board's resolution forced further study.

In early March, discussion in the Faculty Executive Committee explored my earlier proposal to seek consensus on the meaning of a "superior undergraduate computer science program." I had suggested that a small faculty fact-finding committee visit appropriate campuses and laboratories to examine existing programs. During the discussion, it was pointed out that bringing visitors to the campus would provide much broader contact with faculty. Sentiment grew that such a course of action would be valuable. At the March 19 Executive Committee meeting, the committee proposed holding a symposium on campus on the subject of computer science and to assess the state of computer science at other institutions.[10] The faculty voted approval of the symposium on March 27.

To organize the symposium, the Faculty Executive committee recommended the formation of a "Computer Science Symposium Steering Committee," comprising five faculty members (Dick Olson '62, Courtney Coleman, Dean Gillette, Tom Helliwell, and Paul van Eikeren), trustee Malcolm Lewis '67, and ex officio, two administrators—Sam Tanenbaum and me—plus trustee Trude Taylor. Dick Olson was elected chair and took a strong leadership role in its deliberations. He was greatly aided by Tom Helliwell and Paul van Eikeren, who did much of the drafting of the committee's interim and final reports.

The committee invited a number of outside experts from both industry and academic institutions to make presentations and discuss various instructional models for computer science. The symposium was scheduled for the days immediately after graduation. Representatives from UC Riverside, Stanford, UCLA, MIT, Carnegie Mellon, USC, Hewlett Packard, Burroughs, ProLog, and IBM made presentations. Their views were diverse.[11] There was little doubt that symposium speakers from academe felt that computer science had achieved the stature of an academic discipline, but they did not agree on the best way to organize it in a college curriculum. Some felt that an undergraduate degree in computer science was unnecessary for graduate work in computer science. Others reported on the undergraduate program they had developed and the high demand for it. A number commented on the historical growth of computer science within engineering and/or mathematics. Some reported a growing pressure to separate computer science from those disciplines. Industry comments ranged from not needing computer science majors, per se, to comments from the IBM representative who was expecting to hire 4,000–5,000 undergraduates, and said he would be looking hard for a computer science background. Several expressed a need for broadly educated graduates who were not only flexible, but demonstrated leadership skills.

By September, the Steering Committee had identified three key questions: (1) Whether or not there should be a Department of Computer Science; (2) what the timing should be for a computer science major; (3) what implementation details should be addressed, e.g., the restructuring of the core curriculum, the size of the college, and financing.

In October, the board of trustees asked me about my goals in the process. I responded that I hoped for an outcome that would improve the status of the computer scientists already in the faculty, and would strengthen the computer science courses already in place. I also hoped that it would encourage the Department of Engineering to become more deeply involved in computers and computer-related course content. I indicated that my final goal was to avoid any action that would shut the door on the computer science major.

In November of 1984, the Steering Committee issued its recommendations in a report entitled "Policies and Recommendations for

Development of Computer Science at HMC." Faculty approved its recommendations by mail ballot. The principal recommendations were:

> " To support computer science at the college, resources should be sought to make three new appointments, including:
> " 1. An appointment in mathematics to support the areas of discrete mathematics and theoretical computer science
> " 2. An appointment in engineering to support the area of computer engineering
> " 3. A senior level appointment in computer science to further the development of computer science at the college.
> " It is understood that these appointments are intended to augment the current teaching staff of the college. It is also understood that the new positions will be sought while restricting the freshman class to an upper bound of 150 students, and that the positions will be funded by new sources of support."

A promising agreement had been reached. The proposal supported the faculty vote calling for a new faculty position in both mathematics and engineering. It met my call for a senior faculty in computer science. Although it deferred consideration of a computer science major, it did not close the door on its possibility. A freshmen class size was recommended that, over a period of four years, would maintain the current faculty/student ratio. The report recommended the establishment of an academic administrative unit composed of the departments of computer science and biology.

The trustee Educational Planning Committee asked for an implementation plan, and in February of 1985, Sam Tanenbaum outlined a comprehensive and carefully crafted plan entitled "Budgetary Goals for the Computer Science Program." It called for the following:

- $4.2 million in gifts and grants over the next three years for endowment, equipment, and facilities;
- An increase in the freshmen class from 140 to 150;
- Adding three faculty members, two technical support, and a half-time secretary;
- Modifying the faculty organization and the curriculum;
- Renewed efforts to plan a new academic building.

With my support, Trude Taylor, chair of the Educational Planning Committee, moved that both the faculty plan and the implementation plan be adopted at the board of trustees meeting on March 6, 1985. The trustees voted approval.

(I cannot leave this portion of our history without noting the extraordinary commitment of the faculty members of the Steering Committee. They made great efforts to keep everyone informed of their deliberations and thinking. I particularly note the patience and persistence of Dick Olson and Tom Helliwell.)

Dave Fisher, a computer scientist who was appointed to the Department of Mathematics in 1985–86, filled one of the new positions in the plan. George Cunningham, a computer scientist appointed to engineering in 1985–86, filled the second new position. The search for a senior scientist in computer science proved difficult—there were very few available. Happily, Bob Keller, former chair of computer science at UC Davis, joined our staff to chair computer science in 1991.

The historical record of faculty appointments in the two academic areas of biology and computer science is found in Table 7.1 (Appendix 7). The table shows the appointments in the "group" of biology and the "group" of computer science, the two coming together to form an academic administrative unit effective 1985–86.

CHAPTER 8

Computer Resources

IN 1955, the founding year of the college, the dramatic development of computing machines was well underway. To place campus events in context, I want to take a brief look at some off-campus advances that occurred before and during my time as president.

As early as 1944, Howard Aiken of Harvard University had proposed, and IBM engineers had built, the Aiken/IBM Mark 1 computer. It was known as the IBM Automatic Sequence Controlled Calculator (ASCC), and was a massive electromagnetic machine in use until it was retired in 1959. Professor Aiken also made a significant contribution to the world of computing by establishing computer science as a legitimate discipline in Harvard's curriculum and research.[1] However, because his machine was electromagnetic, it was very slow and ultimately gave way to faster electronic machines. ENIAC, (the Electronic Numerical Integrator And Calculator) which was designed and built in 1945 by Eckert and Mauchly at the University of Pennsylvania's Moore School of Electrical Engineering, was a massive, vacuum-tube-driven, prototype electronic machine.[2]

With the advent of transistors and solid-state circuitry, the original unwieldy electronic machines evolved in the 1960's into ever faster, but still physically large "mainframe" machines manufactured by IBM, UNIVAC, the Digital Equipment Corporation, and others. With their blinking lights, these mainframes were operated under tight centralized management onsite, often behind glass walls, which gave a strong impression of "Wow" and "Hands Off." Access for the general user was difficult and very limited. By the time I arrived at Harvey Mudd College, computing was slowly, but surely, moving away from limited-access mainframe machines to "time sharing computing" with remote terminals and wide access.

Two developments proved to be major influences in the decline of centralized control. In 1971, Intel Corporation engineers introduced their first microprocessor chip.[3] In 1975, these chips led to the first commercial desktop computer, the Altair 8800, which was available in kit form for under $400. (Altair is one of the twenty brightest stars in the sky and is also the star in "Forbidden Planet.") The Altair 8800 was a simple, very limited machine, in which commands were entered in binary code by throwing switches on its front panel. It had 256 bytes of memory. The processor in the Altair was the Intel 8080. It was for this processor in 1975 that Paul Allen and Bill Gates wrote their first software program. The development of the desktop computer was underway. Two years later, in 1977, Apple Computer introduced the Apple II, a desktop computer that combined a monitor, keyboard, and application program for the first time; it was a truly radical breakthrough. In 1981, IBM introduced the PC featuring industry specification standards agreements for the first time, and permitted manufacturing by others under license. In 1984 Apple introduced the Macintosh with the now popular mouse and graphical interface. It was not until 1985 that Windows, version 1, was issued for the PC.

The second development, the introduction of networks, brought direct communication between users. After Sputnik in 1957, the Department of Defense research group, ARPA (Advanced Research Projects Agency), was created as a civilian research group charged to study and counter Soviet scientific and engineering advances. In 1962, ARPA recruited an unknown psychologist, J. C. R. Licklider from MIT. Licklider had written a paper outlining how mainframes might interact with one another and with their operators. At ARPA, he decided that the way to further his ideas was to invest in research in major universities. In particular, he funded Project MAC at MIT, a project in which remote terminals were placed around the MIT campus and connected with a central mainframe, perhaps the first network. In 1963, Licklider suggested that all individual computers and time-sharing systems be connected in one network spanning the country.[4] Licklider's vision of interactive computers was furthered by Paul Baran, a RAND engineer who was working on the problem of survivable military communication networks and who, in 1964, had published a paper on breaking messages into "message-blocks" and sending them out over multiple connected "nodes." A Stanford Research Institute scientist, D. Englebart, contributed the concept of the mouse, on-screen windows, full-screen word processing, and other innovations. In 1972, ARPAnet was up and running—a network of multiple connections between any two computers in the network using a common message-delivering protocol.

To facilitate such connections, and for the purpose of network research, the National Science Foundation funded five supercomputer centers in the mid 1980's. ARPAnet seemed to be the logical partner in such a network, but it proved not to be, and the National Science

Foundation established its own network, NSFnet. It was not long before international and commercial interests joined to create the Internet.[5]

Computers in The Claremont Colleges

Since many of the dramatic developments described above took place largely during the Third Decade Plus, it is not surprising that changes on the campus seemed interminably slow to some, chaotic to a few, and almost overwhelming to others.

The dilemma of The Claremont Colleges, as a group, during these years was how to acquire and meet the rising demands for this rapidly changing technology. At HMC, we struggled with our own computer resource issues: how to best make use of aging central computers with very limited access; how to continually upgrade computing resources; how to meet the challenge of decentralizing computers; and how to best make computing resources widely available at minimum cost. These issues dominated our equipment needs. They were exacerbated by the additional special needs of a college of science and engineering to not only acquire computing machines, but to stay current with the teaching and research equipment so necessary for the college to carry out its traditional programs. The miracle of my tenure was that we were largely able to do both, thanks to grants and equipment acquired by faculty members, alumni, trustees, Development Office efforts, and particularly, by Dean Tanenbaum. Still, for Harvey Mudd College, the other Claremont Colleges, and Central Services, keeping abreast of evolving computer hardware and new, or modified, programming presented formidable challenges.

Two mainframes served the colleges prior to, and well into, the Third Decade Plus. Pomona College purchased an IBM 360/40 in 1964 (the year the IBM 360 was first produced) at a discounted price of $250,000 and installed it in Pomona's Millikan Laboratory. In 1965, a $143,600 Ford Foundation grant to Honnold Library, and in 1968, a National Science Foundation grant of $253,000 to Claremont University Center provided upgrades. These grants gave CUC a claim to part ownership, so each college in Claremont, in effect, owned a share.

The 360/40 was essentially an administrative computer. More than 50 percent of its operating time was devoted to the payroll, accounting, general ledger, student accounts, and other administrative needs of The Claremont Colleges, CUC, and Financial Services. It also provided academic applications, mostly for Pomona College. It operated by batch processing. Data flowed from paper, to document, to data entry, to disc, to the 360, to tape—an enormously tedious, time-consuming, error-prone process that required a user's data to be hand carried to the machine room and to be picked up later. By 1977, the 360 was hopelessly obsolete and provided no possibility of on-line access. In 1979, Pomona College resolved to replace it.

A second mainframe had arrived in 1971. In order to meet increasing demands for enhanced academic computing, the colleges (excluding Pomona) borrowed $542,000 to purchase a Digital Equipment Corporation DEC 10. The DEC 10 was a time-sharing, interactive machine assigned initially to academic processing, but the time-sharing feature soon attracted administrative users. It was housed in the basement of Scott Hall on the Pitzer campus, where it remained until its demise during the eighties. With an original configuration of some thirty remote terminals, the DEC 10 brought limited interactive computing to the campuses for the first time, but it introduced limited decentralized computing to all of the college campuses. It was operated by a separate organization known as IEC, the Institute for Educational Computing, an organization that the Council of Presidents decreed be a stand-alone profit center. (Pomona College was not a participant in the IEC.) Balanced DEC 10 operating budgets were actualized by revenue received from port rentals paid by individual Claremont colleges and from vigorously recruited off-campus organizations. (On average, about 40 percent of revenue came from the latter revenues.)

The physical separation of the two machines inhibited coordination of effort and required a costly duplication of operating personnel. By 1973, just two years after the installation of the DEC 10, the failure to amortize its capital debt forced the colleges to combine the management of the IBM 360/40 and the DEC 10 under a new organization named The Seaver Computer Center. George Clark was appointed director. The reorganization did not solve the debt problem. In 1977–78, HMC's share of the capital debt was $213,738.[6]

The only other computers in Claremont during this period were two IBM 1620's—one at HMC, the other at CMC. By the time I arrived, both had been declared obsolete and had disappeared.

Thus prior to my arrival, computing resources in Claremont had evolved into a complex web of debt, committees, central services, off-campus users, machinery, and personnel. There was muted competition between academic and administrative computing needs, but administrative computing fell to a low priority as demand for interactive academic computing burgeoned.

Academic Computing Resources

The year I arrived, the DEC 10 provided a theoretical maximum of forty-eight remote terminals for interactive computing; thirty-four were actually in use. HMC had six. CMC had five, Pomona, four, Claremont Graduate School, three, and Pitzer, two. Several terminals were reserved for system management use, and others were assigned to off-campus users, including Claremont High School, the Jet Propulsion Laboratory, Pepperdine University, and several others. Free computer accounts were granted to

Claremont High School students and teachers. In that year, the DEC 10 and the center were just barely meeting the demand for computing.

To gain access to the DEC 10, an account holder using one of the remote terminals connected by telephone-quality line would enter his or her password and PPN (Project Program Number) and request that the appropriate tape be manually mounted. The walls of the center were lined with these small DEC tapes. Unfortunately, both college and high school students used the machine heavily to play a popular game called "Adventure." Since neither color nor graphics were available, game playing was much different than today's. Adventure mysteriously appeared on the tapes of many users. Not so mysteriously, these users seemed to consume much log-on time to the despair and frustration of the system manager, who had the responsibility to see that each had fair access. In order to do so, limits had to be placed on the connect time of game players, and in some cases, games had to be purged from the disks.

In 1977, Antonie (Tony) Noe '74, who had earned his master's degree from Colorado State, returned to the campus as computer coordinator. His principal responsibility was to oversee the approximately ten students who served as student consultants to their fellow students. A seventh HMC terminal had been installed by that time in the Math Lab in Thomas-Garrett Hall. The terminals were text-only; the management terminals were teletypes and there were, of course, no desktops.

In 1979, Pomona College purchased an IBM 4331 and abandoned its share of the IBM 360. In December of 1980, it formally terminated its role in joint computer activity. It claimed, and kept, the name "Seaver Computer Center" and the remaining colleges named the new joint center the Claremont Computing Center.

Pomona's decision forced the remaining colleges to examine their goals for both academic and administrative computing. In 1979, the four "northern" colleges accepted an academic computing plan prepared by Dean Sam Tanenbaum. Aided by a sizeable CAUSE grant,[7] the four colleges[8] purchased a VAX 11-780 to be sited on the HMC campus. HMC and CMC each owned three-eighths; Pitzer and Scripps each owned one-eighth.

At the time, the 11-780 was a state-of-the-art DEC time-sharing mainframe that provided an initial thirty-two remote terminals. When it was installed in January of 1980, it was only the second VAX 11-780 to be installed in Southern California. It was a major equipment addition to the campuses and was to be used for academic computing by all four colleges. The administrative offices declared that, for security reasons, they would have no part of it.

The 11-780's specifications are interesting when compared with today's (2000) desktops:

- RAM - 2.3 Megabytes
- Hard drives - 3 external @ 67 MB each
- Tape drive - 1 @ 45 IPS (for back-up)
- Printer - 1 @ 300 LPM
- Multiplexers - provided 32 ports for remote terminals
- Languages: BASIC PLUS II, FORTRAN IV PLUS, Pascal

HMC and CMC each acquired twelve ports; Scripps and Pitzer each acquired four; all were connected by telephone cable to the 11-780. To use these ports, Harvey Mudd College purchased portable terminals, CRT terminals, and printers.

The installation of the VAX 11/780 was only the beginning. Less than a year later, we applied for, and received, a generous grant from the Keck Foundation and another from the National Science Foundation. These funds and gifts of equipment totaling $638,600 made it possible to build and equip the Keck Computing Laboratory on the ground floor of Parsons. The peripherals included a variety of hard copy printers (including Diablo, Centronix, Data Products, Versatek, and Texas Instrument printers) and several state-of-the-art Lear Siegler and Tektronix graphics terminals. These installations made a dramatic change in computing facilities in just one year.

The addition of five ports on the VAX 11/780 in 1981 made possible a slightly wider distribution of terminals in academic buildings. Faculty had priority on three terminals located in Parsons, one in Jacobs, and one in Kingston. Students, however, quickly became users. Some who were clearly more advanced than others were co-opted to serve officially (and extremely well) as student consultants, not only to other students, but to faculty as well.

The following year a major grant of $500,000 from the Fletcher Jones Foundation made possible the construction of the Jones Laboratory adjacent to the Keck Computer Laboratory in Parsons Hall and the purchase of a PRIME 750 computer to be used primarily for computer-assisted design (CAD). The PRIME provided state-of-the-art hardware and software. With RAM of 2MB and with two hard disks each of 300 megabytes, computing capability was nearly doubled. With the hardware came MEDUSA, a three-dimensional graphics and design software package, and FORTRAN and Pascal languages. Nineteen additional high- and low-speed printers and graphics terminals provided a variety of outputs from the central processor. Unfortunately, the Prime's operating system was not compatible with other computers on the campus, so it was never used to its potential.

An additional National Science Foundation grant followed the Jones grant and six manufacturers again provided gifts-in-kind. The total value of the grants and the gifts-in-kind was $1,037,000. Altogether the college had

invested an astounding $1,675,600 in academic facilities, computer equipment, and software in less than three years.

This steady increase in available academic computing produced a need for workshops dedicated both to the teaching of the BASIC language and to the use of available programs. An increasing number of faculty members sought access. Under Sam Tanenbaum's leadership, a number of faculty and staff summer workshops offered structured programming and applications.

The installation of the 11-780 produced a need for supervision of academic computing. In 1980 and 1981, budget increases provided the two new staff positions of manager of computing and assistant manager of computing. Mark Johnson '78 returned to the campus from the Honeywell Corporation as manager of computing but resigned in 1982 and returned to Honeywell. Andy Davenport replaced him as director of the Four-College Computer Center and the Jones Computer Laboratory effective July 26, 1982. Subsequently, those appointed assistant manager for Computer Services were

- Rhonda Bye, Scripps '82 1982–84
- Chandra Wahjudi, CMC '84 1984–85
- Ben Staat, Pomona '85 1985–87
- Chris Yoder, Pitzer '84 1987–88

And as systems programmer, Ned Freed '82, 1986–1988.

In May of 1982 the college had available 86 terminals of various types on the VAX 780 and the PRIME 750. They were as follows:

TEXT-ONLY CRTs
1- ADDFS, Consul 980
5- ADM, 3A
5- ADM, 3A+
5-DEC, VT100
3-DEC, VT100 ADV VIDEO
1-HAZELTINE 1500
1- HEATHKIT H19
1-HEWLETT-PACKARD 2640B
1-SOROC 1Q140

sub-total = 23

GRAPHICS CRTs
11-DEC VT100 W/RETROGRAPHICS
1-DEC GIGI COLOR DISPLAY
1-MEGATEK 7210
1-PRIME PW95 COLOR STATION

1-TEKTRONIX 4006
1-TEKTRONIX 4010
1-TEKTRONIX 4013
1-TEKTRONIX 4112
1-TEKTRONIX 4113
1-TEKTRONIX 4114 COLOR DISPLAY
1-EVANS & SUTHERLAND PS300

sub-total = 22

TEXT-ONLY PRINTERS
1-CENTRONICS 306
5-DEC, DECWRITER
2-DIABLO, 1640
1-MICROTEK, MT-80S
1-TEXAS INSTR. 810
3-TEXAS INSTR. 820

sub-total = 13

GRAPHICS PRINTERS
1-ANACOM, 150Z
1-DECWRITER II W/GRAPHICS II
1-VERSATEC D1200A

sub-total = 3

MINICOMPUTERS
7-DEC LSI-II TERMINALS AND PRINTERS
2-DATA GENERAL NOVA
2 APPLE II
3-COMMODORE PET
2-DATA GENERAL NOVA II
1-TEKTRONIX 8002A MICRO DEVELOPMENT SYSTEM
4-HP-85 MICROCOMPUTERS
1-HP-9845T MINICOMPUTER
3-BASIC-4 WORD PROCESSORS[9]

Sub-total = 25
Grand Total = 86

They were not enough.

Steps Toward Greater Distributive Computing

In 1983, Professor Erlinger reported[10] for the Long-Range Computer Planning Committee (Mike Erlinger, chair; Walt Foley '69, trustee; Professors Stavros Busenberg, John Molinder, and T. J. Mueller; Jeff Deifik '83, a student; and Dean Tanenbaum). This remarkable report stands as one of the key reports received by the faculty during the Third Decade Plus. It was detailed, thorough, and focused, emphasizing the critical need for sound management if computing hardware was to provide excellent service for users. Good management, the report stated, would assure adequate planning, excellent operations, current software, skilled technical support, and trained operators and programmers. Finally, proper management would lead to appropriate hardware acquisition.

The report gave me a much clearer understanding of the place and role of computing hardware in the college. For the first time I saw computer hardware as a unique need among equipment needs. Unlike laboratory equipment, computer equipment would be universally and continually in use by all faculty and students and therefore in constant need of tender loving care. Computer availability in networks or by time-sharing was a phenomenon that had no parallel in curricular or academic matters, as far as I could see, except perhaps in the operation of the college library.

Ironically, although the Planning Committee argued forcibly that securing adequate management was the first priority, it found itself caught in a dilemma—pressing needs could not be ignored. It found that the college lacked sufficient computer capacity to provide "even minimally adequate computer instruction" and that the PRIME was "not a useable system" because it lacked appropriate software. A discounted hardware offer by the Digital Equipment Corporation would place further pressure on the committee by proposing the acquisition of a minimum of five VAX 11/750's at very reasonable cost. The purchase price for the five, and the necessary peripherals, was $670,000, and the estimated monthly hardware and software maintenance contract for the five was $4,800. Since the committee had already agreed on a hardware system of clustered medium-sized machines networked with each other and the existing VAX 11/780, the offer was very attractive.

In June of 1983, seven VAX/750s were ordered for academic computing. They were to be delivered over the following six months.[11] Six were to be workstations and one a server. One workstation was to be dedicated to the NASA Structural Analysis project to relieve the pressure on the VAX/780. One each was to be assigned to the freshman computation program, the Computer Science Group (a UNIX machine), the Clinics, the HMC Department of Mathematics, the Pomona College mathematics department and to computer-assisted design (to replace the PRIME). Scheduled delivery dates were three units in July of 1983, a fourth in August, and the remaining three in January of 1984. During this period, the

Digital Equipment Corporation introduced Ethernet, a major breakthrough in what was to become universal networking. The new 750's were configured to provide this innovative connectivity.

Only two years later, in May of 1986, a major grant from the Keck Foundation to update (yet again) our computer capabilities made possible the acquisition of a VAX 8600. It provided 20 megabytes of RAM, 1300 megabytes of disk storage, used the VAX/VMS operating system, and provided FORTRAN, Pascal, BASIC, and LISP programming languages. IMSL, an extensive mathematical and statistical software package was also available. The 8600 was installed in a newly constructed machine room in the basement of Parsons. All students and faculty members were given a free account. The aging VAX 11/780, newly installed in January of 1980, was sold in the summer of 1986 to Scripps.

In the academic year 1986–87, we provided eight ports each on the VAX 8600 to CMC and Pitzer and two ports to Scripps. In the following year these were reduced to one Pitzer port.

In six hectic years we had moved from a three-eighths share of a single VAX 11/780 and only a very few on-line access terminals, to an academic computer inventory that in the fall semester of 1986–87 included

- The DEC VAX 8600
- Five DEC VAX 11/750s (one was assigned to administration)
- Three HP 9000s
- The PRIME 750
- Two micro VAXen

The VAX 8600 functioned as a primary or central computer networked with the five VAX 11/750s. Ethernet hardware, DECnet and TCP/IP software provided communication. The VAX 8600 was available from three terminal rooms, the Keck and Jones rooms in Parsons Hall and one in Jacobs Science. All three rooms were specifically built for computer terminals. The five VAX 11/750's were assigned one each to the departments of mathematics, computer science and engineering. One of the remaining two was operated for NASA and the other for Teledyne Corporation.

The VAX 8600

The engineering VAX 11/750 provided 5 megabytes of RAM and 120 megabytes of disk storage. Primarily used by engineering students and

faculty for projects related to advanced coursework and the Engineering Clinic Program, this VAX carried a substantial student load.

The VAX 11/750 assigned to the Department of Mathematics differed from the engineering machine with disk storage of 800 megabytes. It served as the site of MATHLIB, a large program written by faculty and students offering graphical, mathematical, and statistical packages.

The Computer Science Group acquired two machines. One a VAX 11/750 provided 5 megabytes of RAM and 700 megabytes of disk storage, but used UNIX as its operating system and provided four high-level languages: C, LISP, ADA and PROLOG, in addition to FORTAN and Pascal. The other, a Sequent 2100 Parallel Computer, comprised eight processors and a UNIX operating system.

The college also added two special purpose machines to its inventory. In 1984, the Department of Engineering received the first, a HP 9000 computer system (comparable to a VAX 11/750) valued at $111,000. The system included 3 MB of RAM, a hard disc of 132 MB, a tape drive, six HP 150 graphics terminals, a printer and a plotter. It was UNIX-based and featured Pascal, FORTRAN, and C languages and 3-D graphics. The second, acquired in 1985 with the aid of an NSF grant, enabled the Department of Physics to provide a HP 9000 for Prof. Sandy Sandmann to use at his Table Mountain telescope site. The college is indebted to Irv Hawley '64 and Pat Barrett '66 for their successful, continuing efforts to aid our academic programs through the acquisition of this and other Hewlett Packard equipment.

We had developed an academic computing system[12] that would have been admirable in any small college or in many universities.

The Campus Network

As early as 1982, we began to consider and plan the next development of academic computing on the campus. At the May meeting, 1982, of the Buildings and Grounds Committee, I raised for the first time the possibility of a master campus conduit system that would eventually wire the entire campus. The evidence even then was that networks were to be the ultimate connections for computers. The conduit would make possible the pulling of cables to reach each of the buildings. The project would necessarily dig up a considerable amount of the campus.

Until the summer of 1985 the prime movers and planners for the development of academic computer resources had been Dean of Faculty Sam Tanenbaum, aided by the computer scientists. However, the report of the Long-Range Computer Planning Committee made us realize that the planning, development, and oversight of increasingly complex academic computer configurations was too much of a burden for a very busy dean of faculty. In response, we added a part-time position of director of academic computing and planning to the staff and began a search. In

September of 1986, we were grateful that Professor Bob Wolf of the Department of Physics agreed to accept the post and begin a two-thirds time, two-year term.

Under Professor Wolf's leadership, we turned next to the possible networking of the entire campus. Because of our earlier work, much of the conduit required for pulling cable was in place. With the aid of trustees Benson and Taylor, we succeeded in securing a grant of $200,000 from the Fletcher Jones Foundation specifically for the creation of the network. On January 6, 1987, Bob Wolf reported to the trustee Educational Planning Committee. He, with the aid of four faculty members (Professors Dave Beeman, Fred Phelps, Wing Tam, and Hal Van Ryswyk), two staff members from Computing Services (Andy Davenport, Ned Freed '82) and two students (Marc Sugiyama '88/89 and Steve Roth '88) had developed goals for the network:

- connect terminals in all classrooms, laboratories, and staff offices to the network;
- provide for connecting terminals in student dormitory rooms and student terminal rooms to the network;
- provide for connecting terminals in the various administrative offices to the network.

He went on to propose five options for actually making the connections, with the preferred option providing for high-speed coaxial cable and fiber-optic standards utilizing Ethernet technology. A deadline for completion of the network was set as August 1988.

By the end of the first semester of 1987, the installation of an Ethernet network throughout the Libra complex was completed. It was followed by the installation of a fiber-optic cable from the computer center to Kingston Hall, the Campus Center, and all six dormitories thus producing the campus "backbone." Thus, the close of the Third Decade Plus would mark the beginning of the networking of the entire campus. This major undertaking was a natural extension of the significant growth in computing power and availability we had been able to sustain for over a decade. We had doubled the computing power available to students and faculty every 18 months over the Third Decade Plus. Under the leadership of Sam Tanenbaum, we had moved away from limited access, management-controlled academic computing, to widely distributed decentralized computing and had done so with controlled costs.

Furthermore, thanks to presentations by trustees Hubie Clark, Henry Mudd and Don Strauss, in mid-1983 Dr. and Mrs. Beckman made a gift of one million-dollars to establish the Beckman Faculty Research Fund. The gift was subject to the raising of a $250,000 matching amount for the fund. The primary purpose of the fund was to allow new faculty members to

purchase the equipment necessary to initiate their research. However, the Faculty Research Committee recommended that the first income from the fund be distributed in small grants to individual faculty members to reimburse them half the cost of a personal computer and accessories up to a maximum of $3,500 per person. The availability of these Beckman grants made personal desktop computing a reality for faculty. By the end of the Third Decade Plus, fifty faculty members—almost all—had personal computers on their desks.

Administrative Computing

Administrative computing applications divide naturally into two classifications: business applications, and non-business applications. Business applications include, for example, payroll, personnel, general ledger, student accounts payable, and financial reports. Non-business applications include student admissions and development functions such as gift recording and alumni records, among others.

Business application programs were installed on the IBM 360/40 just after its purchase in 1964. The programming language was PL1 or, at times, COBOL. Data was batch processed. Financial Services, a key central service, oversaw and maintained business applications using programming expertise in the Seaver Computer Center, the agency that operated the machines. Thus for years, Financial Services played a dominant role in administrative business computing. Individual college business offices of that period played a greatly reduced role in financial affairs when compared with their current operations.

Non-business applications were generally not computerized, although by 1976, demand for them was growing in all of the colleges.

In contrast to the explosive development in academic computing, changes in administrative computing were much more muted. The difference lay in the fact that administrative programs must be stable, reliable, and less subject to change; the payroll program, for example, had to print checks correctly, consistently, and in a timely manner. Demands for hardware changes were consequently less likely.

By 1976, administrative computing had reached a critical turning point. The IBM 360 was obsolete, and business application programs could not respond to new demands, a result of their long history, much tinkering, and a lack of documentation. In 1978, administrators, watching the dramatic increase in remote on-line access in academic computing, began to convert some administrative systems to the then supposedly academic DEC 10 using the data management language, System 1022. In February of 1979 when it was clear that Pomona College was going to abandon the IBM 360, the Council of Presidents charged the Committee on Administrative Computing to recommend a course of action. The committee's finding[13] was that not only was the IBM 360/40 obsolete but that much of the soft-

ware and the peripheral hardware were impossible to work with any longer. The report pointed out that academic on-line computing was a fact in the colleges and proposed that a similar system, consisting of a central processor and on-line terminals at individual colleges, was desirable for administrative computing.

The colleges as a group resolved to convert all administrative systems to the DEC 10, but left it to individual colleges to make the necessary changes. However, what about academic computing on the DEC 10? In January of 1980 the new VAX 11-780 was installed and dedicated to academic computing; the DEC 10 was therefore entirely available for administrative applications and on-line access.

Central Services, particularly Financial Services, by necessity required continuity in computer services in order to produce such important functions as payroll, general ledger and accounting. At the end of 1979, George Clark, Seaver Computer Center director, reported that the conversion of these high-priority programs to the DEC 10 had been successfully completed. In 1979, as we saw earlier, Pomona College had purchased an IBM 4331 with the aid of a $750,000 gift and earmarked it for enhanced academic computing at Pomona College. As the IBM 4331 was installed, the IBM 360 was dismantled. In December of 1980 Pomona formally abandoned the IBM 360 and terminated the agreement with the other colleges that had established the Seaver Computer Center. Pomona claimed the name "Seaver Computer Center" and the central computing management was renamed the Claremont Computing Center.

The unanswered question was how such a complex entity as The Claremont Colleges would carry out the conversion. There was no single answer. Pomona College, partnered with Central Services, undertook a two-year effort shared in part with Scripps[14] to convert business applications using Claremont Computing Center programmers. By 1981, Pomona, Scripps, Pitzer and the Claremont Graduate School had combined to author a Development program.

At HMC, development functions such as gift recording and production of mailing labels were carried out by Claremont Computer Center, but the desire for doing the work in-house was growing. An IBM System 6 word processor was acquired for the Development Office in 1978 and installed on the second floor of Kingston Hall. It consisted of one terminal and a printer and served to provide word processing, mailing labels, mail merges, and storage of all development information except gifts. The storage medium was IBM MAG cards. Liz Beddingfield and Nancy Mandala served as operators.

Tim Johnson was appointed director of Business Affairs in 1978 and led the development office conversion effort, ably supported by Susan Selhorst who was appointed consultant, Administrative Computing, in the spring of 1981. With system design help from personnel in the

Development Office, Tim wrote a gift and expectancy program in 1022 for the DEC 10. Later, Susan and Liz Beddingfield updated the program. An alumni program programmed by Liz, and cost effectiveness, calendar, and trustee directory systems programmed by Susan, followed this successful on-line effort, all of them in 1022. System 6 was abandoned in December 1980, and its functions turned over to the DEC 10.

During the 1982–83 year, at the urging of Duncan Murdoch, Ric Diaz programmed an admission inquiry system, student applications system, admission officer travel program, and eventually a financial aid system.

Non-business computer use was suddenly blooming.

By 1983, HMC was able to report[15] major advances in business applications. Tim Johnson, Susan Selhorst, and Karen Yoshino combined to write budgeting, personnel, and phone billing programs and more than a dozen general ledger reporting and maintenance programs. All were written in 1022. Other colleges were also involved in similar projects. Terminals on the DEC 10 soared from approximately thirty to, incredibly, more than a 100, far beyond the machine's design specification, with the inevitable result of ever-increasing response time and general dissatisfaction.

In October of 1983, the Council of Presidents established a "Task Force on Administrative Computing" comprising representatives from each college and from Central Financial Services. After two self-studies and an analysis by Peat, Marwick, Mitchell & Co., the task force offered three alternative approaches to administrative computing: (a) fully centralized computing; (b) fully distributed computing; and (c) a hybrid system with minicomputers clustered at CUC and connected in a network, but each serving just one college. The task force estimated that it would take three years to identify a new system and complete the migration to it.

At HMC secretarial stations, electric typewriters began to disappear to be replaced by CPT 8100 and 8150 Word Processors, minicomputers dedicated to word processing. The capital investment was substantial, amounting to approximately $20,000 per secretarial unit, but productivity, accuracy, and timeliness were greatly enhanced. These popular machines grew rapidly in number and their capability of serving as remote terminals to the DEC 10 was a very useful feature.

At the end of calendar year 1983, Susan Selhorst compiled a list of administrative computing resources at HMC:

- 4 DEC-10 ports
- 2 printers
- 10 CPT word processors; (six communicated with the DEC-10)
- 1 MAG Card word processor
- 2 HP plotters

The offices in which this equipment was installed included the Business Affairs Office, the Development Office, the Personnel Office, Admission, and Financial Aid. The information on System 6 was soon transferred to the DEC 10 and accessed through the CPT's.

In the summer of 1986, one of the VAX 11-750s, no longer needed by academic computing, was moved to the basement of Kingston Hall to become the administrative computer. The DEC 10 passed into history. Twenty HMC 11-750 administrative ports were installed initially, but the number soon grew to forty. The Third Decade Plus came to an end with the machine busily in use.

Both administrative and academic computing resources had come through an amazing decade-long transition.

CHAPTER 9

Physical Education, Intercollegiate Athletics, and Recreational Activities

THE group plan of The Claremont Colleges makes possible complex, and often intricate, interactions between the colleges to the benefit of all. Over time, the various combinations ebb and flow; a few become semi-permanent when joint interests are compelling and the value received significant. The changing nature of these alliances is well illustrated in the history of physical education, varsity sports, and recreational activities at Harvey Mudd College.

During its founding years HMC was completely dependent on CMC for admissions, classrooms and food service. In 1957, when Harvey Mudd College's first class entered, CMC, still a young and struggling college, had for a number of years shared physical education and sports with Pomona College. However, the relationship between CMC and Pomona had become troubling,[1] and in 1957 CMC President George Benson terminated the agreement. In its place, he appointed William Arce to the new position of director of athletics and chair of the Department of Physical Education and charged him to develop a joint program with Harvey Mudd College.

The establishment of the joint program anticipated the development of sports facilities, non-existent at the time. President Benson acquired the necessary land and constructed a gymnasium, playing fields, tennis courts, a swimming pool, and a stadium. He was greatly aided by a $100,000 gift from Henry Mudd who had resigned as trustee of CMC on the founding of HMC. In exchange for Henry's gift, HMC students were assured full use of the athletic facilities at CMC. The Bell Swimming Pool at HMC and the recreational field and outdoor basketball court behind the President's House provided some additional facilities. However, it is certain that CMC unselfishly provided all of the key facilities for the intercollegiate program

and continues to do so. We are grateful for their long-standing commitment to this lead role.

Bill Arce served as department chair from 1957 until he resigned in 1982–83 to accept a position in the Development Office at CMC. At his appointment he immediately devoted his efforts to convincing the faculties of the two colleges to establish a three-tiered[2] joint program consisting of physical education, intercollegiate varsity sports, and organized recreational activities. HMC and CMC were fortunate to have him as the architect of the diverse offerings in the department. His philosophy was that every student should have the opportunity to learn and compete at a level commensurate with his or her skill—whether at the most elementary learning level, at the intramural level, or at the intercollegiate level. From its outset in 1957, the program was remarkably successful, largely because of his strong leadership.

The physical education component of his program required students to take three semester courses in physical education and to pass a swimming test. The initial semester or survey course introduced students to physical conditioning through aerobics and weight training and to racket sports as a life-long activity. The remainder of the required semesters permitted students to elect instruction in activities of their choice.

Students with a more casual interest in sports found opportunities to participate in organized intramural activities. In 1976–77, 116 teams involving approximately 1,164 students participated in keen competition in softball, soccer, basketball, and volleyball leagues and playoffs.

Recreation covered the full spectrum, ranging from sky diving and white water rafting, to club sports or more mundane activities, like weightlifting or "pick-up" basketball games. Personal recreation on campus had to compete with all other activities for time and space in college facilities. Gymnasium hours were 8:00 a.m. to 9:00 p.m. on weekdays and 1:30 p.m. to 4:30 p.m. on weekends. Unfortunately, but understandably, the priorities of scheduled physical education classes, varsity intercollegiate team practices and intramural activities left few of the gymnasium's hours available for personal recreation. The shortage of space fueled demands for additional recreational space on campuses other than CMC.

Club sports made available personal recreation for a relatively small number of students who, at times, shared the activity with non-college participants. Clubs practiced once or twice a week and customarily played a game on the weekend. Leadership was sporadic and very rarely related to the department. Rugby and lacrosse are two examples of on-going club sports.

Physical Education, Recreation, and Athletics

The expansion of the program was under consideration in the 1975–76 academic year. Bill Arce and Gerry Lahanas, at the request of the

three presidents (Presidents Mark Curtis, Scripps; Joe Platt, HMC; and Jack Stark, CMC), outlined an enhanced program for women that would share all the facilities of the three colleges and carry a joint budget based on student enrollment. The budget for five intercollegiate women's teams in their first year, 1976–77, was estimated at $7,280. This budget was allocated to the colleges by the formula: five-sixths Scripps College (580 women students); one-twelfth CMC (59 women students); one-twelfth HMC (44 women students). The Arce-Lahanas report also recommended the creation of the new position of assistant athletic director—Women's Sports. In April of 1976, the three presidents signed an agreement accepting the recommendations of the report and establishing the joint three-college program. The partnership with Scripps assured that a sufficient number of women would be available to enable a wide range of women's intercollegiate sports, a fact of particular interest to CMC because of its on-going considerations of co-education, and to HMC because its small population of women students was slowly growing.

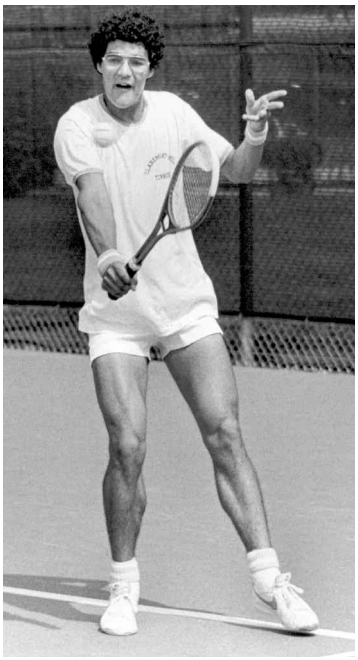
Bill Arce successfully adjusted the intercollegiate program to provide many more opportunities and activities for women. In the first year of the three-college program Bill cleared all of the necessary bureaucratic hurdles to legalize the women's intercollegiate athletic programs with the three athletic associations, the NAIA, the NCAA, and the SCIAA. Gerry Lahanas was appointed the first director of Women's Athletics. The pool, playing fields and tennis courts at Scripps became part of the facilities available for all. Gerry's budget for five women teams in the academic year 1977–78 was $6,000. For the following year, six women's teams (tennis, swimming and diving, track, cross-country, volleyball and basketball) were budgeted at $24,000. This provided for a trainer, travel expenses, and five part-time coaches (but no postseason play). Before joining the program, Scripps College had only one team, intercollegiate tennis. CMC and HMC had no women's teams. The increase, therefore, in women's intercollegiate activities was remarkable.

The department's three-part program continued, with each part playing its role, but with each under pressure to accommodate the increasing interest of women students in sports. Physical education, a curricular requirement of each college, was under the constant scrutiny, and sometimes subject to the criticism, of faculty and students. Recreation sponsored by the department, but conducted largely by students on work-study, continued to serve students through intramural activities. Facilities, however, became a major concern for intramural and recreation organizers as the number of students and activities doubled with the growth of the colleges and with the expansion of the program to include Scripps. Intercollegiate athletics—the showpieces of the joint colleges—continued as the high-visibility leg of the triad, but raised increasing concerns about costs. The number of intercollegiate teams grew to seventeen by the mid-

point of the Third Decade Plus, with major cost increases for coaches, travel, training support, insurance, maintenance of fields and buildings, and pre- and post-season activities. In one sense the increases could be seen as a bargain, with cost sharing making possible a truly attractive intercollegiate program. Moreover, the programs were successful, with a considerably more than satisfactory intercollegiate record. It was an investment both in high-quality students with special abilities and in good public relations for each college.

Minor frictions arose between the three colleges as the years passed, largely as a result of differing expectations and program goals. Budgets increased sharply in order to bring women's programs to a level equal to men's, as occurred at most colleges and universities in response to Title IX requirements. CMC had always wished to maintain highly regarded, fully competitive intercollegiate teams. HMC sought more intramural and recreational activities. Scripps sought additional women's activities. In partial response to these diverse needs, Kim King was appointed to the new position of three-college recreational sports coordinator in 1983.

Each year, HMC faculty and students made major contributions to varsity teams. Professors Gray Bell and Ted Stoddard provided continuing service to the varsity football team by filming games for the football coaches. Professor Hank Krieger of the Department of Mathematics served as tennis coach. In 1980 he hosted the NCAA Division III national tennis championship (held in Claremont for the first time). One of his team members, A. J. Shaka '80, carried off the Division III National Singles Championship as a freshman in 1977 and was runner up to the title on his home court in 1980.



Athan J. Shaka '80

Records, some of which are incomplete, yield the following list of HMC students on the rosters of intercollegiate varsity teams in the 1980–81 academic year. The list is typical of HMC participation each year during the Third Decade Plus:

BASEBALL—MEN
Kevin Tirko
Ziyad Durón
Joe Torti
Howard Gifford

BASKETBALL—MEN
Dave Molinaro
Matt Harley (JV)
Alan Middleton (JV)

BASKETBALL—WOMEN
Linda Miller

CROSS COUNTRY—MEN
Kris Barnett
Anthony Jacob
David Overoye
Joel Staudenmeir
Art Walker
Phillip Wolf

FOOTBALL
Todd Allman
David Bercovici
Andy O'Connor
Steve O'Connor
Mark Shaw

TENNIS—MEN
Bill Konya
A. J. Shaka
John Slosser

GOLF—MEN
Matt Harley

SOCCER—MEN
Jay Foster
Jason Gould
David Greenfied
Jeff Greenfield
Peter Higa
Karl Krentz
Fawzi Mhemedi
Don Person
Yegar Plam
Scot Wegner

TRACK—MEN
David Barnett
Jim Cummings
Doug Hathaway
Mike Leadbetter
Kent Mesplay
Fawzi Mhemedi
Robert Miyaoki
David Overoye
Fred Putzley
Joel Staudenmeir
Karl Steinhoff
Joel Voelzke
Phillip Wolf

SWIMMING & DIVING—MEN
Steve Blankley
Paul Breed
Scott Cook
Kirk Jones
Jim Martin
Lloyd Phraner

WATER POLO
Steve Blankley
Scott Cook
Kirk Jones
Len Pomrehn
Rich Sonner

VOLLEYBALL—WOMEN
Irina Curnucan
Nicole Sampson
Cami Brannan (JV)

WRESTLING
Chris Felix
Calvin Miles
Christopher Myrick
Dennis Ogawa

In 1983 the Department of Physical Education initiated an award for "HMC Athlete of the Year." Unfortunately, archives are not complete, but those that are available record the following:

HMC Athlete of the Year		
1984	James (Jay) Foster '84	Soccer
1985	Eric Ryba '87	Swimming
1987	David Lewis '87	Swimming (also voted All-American)
1988	Michael Scott '89	Cross Country/Track

Although HMC students were outstanding participants in varsity sports, most students showed greater interest in recreational activities. Consequently, continuing and persistent questions were raised on the campus about the appropriate balance in the program. In order to assess HMC student interests more accurately, the ASHMC Student Affairs Committee undertook a survey of student interests in the 1978–79 academic year. Approximately 250 students returned the survey questionnaire.[3] Highlights of the results follow:

6. Did you participate in intercollegiate team sports this year?
   Yes: 10% No: 90%
7. Did you participate as a spectator?
   Yes: 30% No: 70%
8. Did you participate in dorm (intramural) sports?
   Yes: 47% No: 53%
9. Did you participate in recreational activity sponsored by the Ski Club, Outdoor Program, Sailing Club or others?
   Yes: 24% No: 76%
10. Did you participate in personal recreational activity?
    Yes: 90% No: 10%

The survey produced a potpourri of responses, but clearly shows that HMC students preferred to participate in personal recreational activities, and to a lesser degree, in intramural sports. As a result, the ASHMC Student Affairs Committee recommended that a part-time position of recreational activities coordinator be created. The appointee would coordinate, organize, and promote new activities, as well as traditional dormitory, intramural, and club sports.

To follow up these student recommendations, I appointed[4] an ad hoc campus committee to review all physical education, athletic, and sports activity at HMC. The members of the committee were Professor Gray Bell, chair; Professors Harry Williams and John Zinda; students Alec Norton '80 and Doug Hathaway '80; trustee Hugo Riemer; and Dean of Students Bill Gann.

Alec Norton played a lead role in preparing the committee's report and in seeking comments and feedback from students. In its final report, dated April 10, 1980, the committee found that although students completed a required program in physical education and were provided opportunities for recreational activities, they were involved in far too little physical activity during their four years at HMC. The report went on to propose that, during the first three semesters, the goal should be to create a new student attitude toward physical activity that would carry into the last five semesters and to a lifetime of activity. To achieve this goal, the committee recommended a new emphasis on intramural and recreational activities in the freshman year and reiterated the earlier ASMHC recommendation that a new position of director of recreation be created. The committee also recommended changes in the required one-semester physical education course, a continued swimming requirement, and an emphasis on life-long fitness. Finally, the report suggested that recreational facilities, such as handball courts and Nautilus equipment, be located in the vicinity of the residence halls. Professor Bell, with the endorsement of the Department of Physical Education, reported his committee's findings to the trustee Academic Affairs Committee, which unanimously approved the recommendations.

The joint department implemented the recommended physical education program changes with considerable enthusiasm. The new program emphasized physical fitness. After an initial fitness test, endurance, strength, and flexibility activities were tailored to the individual. Healthy diets were recommended. At the end of the academic year, a final fitness test had to be passed.

In the fall of 1980, we funded the new position of director of recreation. Diana Cozzi, who had a degree in recreational leadership, became the first appointee. Her appointment provided the opportunity to point out to the board of trustees the great need for a recreational facility on the campus as the Bell committee had recommended.

Diana vigorously and ably arranged numerous recreational activities, among them racquetball round robins, aerobic classes, "Wednesday nighters," backpacking trips and "turkey trots"—all popular with students. When she resigned in July of 1983 to attend graduate school, we were sorry to see her leave.

Dean Gann restructured the position after Diana's resignation, expanding its responsibilities to include not only recreational and social activities, but also the housing of students. Diana's successor, Tom Mercadante, was appointed director of housing and activities in September of 1983. In March of 1984, student members of the ASHMC Student Affairs Committee took strong exception to the change in the position and, in a carefully restrained position paper, pointed out the inherent difficulties in combining the two responsibilities of the new position. Their report urged

in the strongest terms that the two responsibilities be separated and the job title of director of recreation be restored. Their plea confirmed the value to students of a staff member responsible for organizing recreational activities. Dean Gann, however, remained strongly convinced of the need for a person with housing responsibilities.

The recommendation of Professor Bell's committee to provide fitness facilities near the dormitories lay dormant until April and May of 1983, when Ben Simpson '83, the student representative on the trustee Educational Planning Committee, conducted another student survey on the issue of facilities. He reported to trustees that students felt strongly about the need for a recreation center.

After Bill Arce's resignation, John Zinda was appointed chair of the joint department effective September of the 1983–84 academic year. During that year, John participated in a new study of the required freshman course in physical education. In March of 1984 he and the members of an HMC Committee on Physical Fitness (Professors Gray Bell and Joe King, Deans Tom Mercadante and Gann, student representative Jim Smith '84) recommended a revised and greatly enriched physical fitness program and the creation of a fitness assessment center. The program would require the new facility recommended in earlier reports. Unfortunately, for the remainder of the Third Decade Plus, other priories prevailed and the cost of construction and maintenance were beyond our capabilities. Not until many years later (1998), did a recreation center become a reality.

Continuing fiscal concerns led to a special review of the program by the academic deans of the three colleges. Sam Tanenbaum wrote a comprehensive, exhaustive analysis of HMC's position, generally reflecting the views we have already examined here. The report caused the presidents of the three colleges involved to convene, in 1985, to examine the joint funding formula, to consider how to control the rising costs of added varsity sports, and how to limit the extent of post-season play. In January of 1986, I was able to inform trustees that the budget problems had been satisfactorily settled, with CMC President Stark agreeing to assume a larger share of the costs. In exchange, the remaining two presidents agreed that additional facilities would, in the future, be the responsibility of the individual colleges. This agreement influenced discussions on where to locate a recreation center that would meet the needs of HMC students.

The staff of the Department of Physical Education included full- and part-time coaches, trainers, equipment managers, field maintenance superintendents, and secretaries, all located at CMC. One member of the department, coach John Zinda, held a tenured position throughout my presidency. The others who held faculty positions are shown in Table 9.1 (Appendix 7).

CHAPTER 10

Students

HARVEY Mudd College awarded a total of 958 undergraduate degrees and thirty-one master's degrees in its first twenty years. During the twelve years I was president, an additional 1,285 bachelor's degrees and ninety-four master's degrees were awarded. For family members, faculty, and staff, each graduation ceremony reflected the satisfaction and joy of a task successfully accomplished.

It is impossible to record in just a few pages all of the talent, abilities, and wide-ranging interests these unusual students brought to the college. But here are my recollections of some memorable events.

Admission

The joint Harvey Mudd/Claremont Men's College Admission Office served the college extremely well from the founding of HMC until the termination of the office in 1982. Throughout these early years, CMC provided generous office space for the joint office on the second floor of Pitzer Hall. There, Emery R. Walker Jr., dean of admission and financial aid, Bob Rogers, assistant dean, and Denny Gamble, director of financial aid, admirably carried out their dual responsibilities. When I paid an early visit to their offices, the enthusiasm and high regard that the three admission officers and the members of their office staff had for Harvey Mudd College was quite evident. They reveled in their two-college role. Each member of the professional staff and the secretarial staff was particularly proud of the good work they had done in past years for Harvey Mudd College.

Emery Walker was the best-known admission officer in the nation and, at the time of his retirement, had served forty years in that role, seventeen of them at Brown University before coming to Claremont. At his retirement, the National College Entrance Examination board awarded him the

Edward S. Noyes Award for outstanding service, their highest honor. On May 16, 1982, the board of trustees unanimously voted a citation recognizing his long service.

His contribution to the early success of Harvey Mudd College is beyond measure. To seek out simultaneously the very best students for two colleges would appear to be an impossible task, particularly when one of them was so recently founded as to be relatively unknown. Emery's and Bob Rogers' broad and first-hand knowledge of high schools, counselors, and teachers was invaluable. The sensitivity of the Admission Office personnel to the needs of Harvey Mudd College, and their deep conviction of the strengths of The Claremont Colleges as a group, brought a stream of highly capable freshmen students to each of the two colleges.

In spite of these successes, the pending retirement of Walker, effective August 1982, revealed a growing feeling on the HMC campus that the time was approaching when the college should terminate the agreement to operate a joint admission office. The central, if muted, concern was whether a joint office housed at CMC could give equal consideration to both colleges. Some faculty members felt that it could not. In response to these concerns, I asked the faculty executive committee to appoint an ad hoc committee to examine the issues surrounding the Joint Admission Office. The committee comprised Professors Mack Gilkeson, Art Campbell, Dave Funder, Tom Helliwell and Mel Henriksen, chair. On March 9, 1981, the committee issued its report outlining the pros and cons of several options and recommending separation. On March 21, the faculty approved separation, and we so recommended to the board of trustees.

I had kept President Jack Stark at Claremont Men's College fully informed of our deliberation. He, with some sadness, concurred with our decision to cut the last formal link between his college and HMC, other than the joint physical education program. On September 8, 1981, I announced to the HMC community that effective July 1, 1982, the joint agreement would terminate. We would, however, continue the joint Financial Aid Office for at least one more year. CMC had played a major supportive role in the founding of HMC and in its success. With sincere and grateful thanks we took our leave.

In the fall and spring of 1981–82, a search committee of four faculty members, two alumni, and a student conducted a national search for a dean of admission and financial aid. We were fortunate in finding Duncan Murdoch, dean of admission at Rose-Hulman Institute of Technology in Indiana, who accepted our offer of appointment effective July 1, 1982. Within a week of his arrival, he had prepared a position paper outlining HMC marketing problems and opportunities, and what he needed for a "start up." His initial budget of $211,000 included salary and benefits for three professional admission officers, an office manager, two secretaries, printing, publications, postage, and travel. Capital expenditures beyond this

budget included two word processing stations, a computer terminal, and one automobile. Temporary office quarters were assigned in the Career Planning and Placement Office in the Platt Campus Center. Duncan quickly stepped in to recruit a new admission staff. By the end of summer, the Harvey Mudd College Admission Office was fully functional for the first time.

Junk Mail

For his first year of recruiting, Duncan introduced the acclaimed "Junk Mail," which, although controversial with some, ably served the college and its entering classes for a number of years. In his first year, a record number of applications were received and the quality of his first class, the Class of 1987, matched or exceeded that of any previous class.

We sought and received a $100,000 construction grant from the Irvine Foundation to move the Admission Office from its temporary quarters in Platt Campus Center to Kingston Hall. The change became possible with the construction of new faculty offices in Libra and the relocation of the Department of Mathematics from Kingston Hall. Half of the lower floor of Kingston Hall was renovated at a cost of just over $108,000, including the new word processing equipment necessary for the operation of the Admission Office. The renovation also provided an attractive lobby in the lower floor of Kingston Hall as a "front door" for the campus.

Duncan retained a talented staff and maintained an outstanding admission effort until his resignation, when he accepted the directorship of admission at the University of Southern California. We were indeed sorry to see him leave.

Attrition

All students admitted to HMC were believed to be fully qualified and expected to be successful. Yet students did leave without achieving graduation, generally for one or more of three reasons: academic (students failing and declared ineligible to register), transfers out (students not failing, but with changing academic goals or financial circumstances), or leave-of-absence (students withdrawing temporarily). Over the Third Decade Plus, the graduation rate averaged 72 percent, a rate higher than most colleges of science and technology, but not high enough to satisfy either the faculty or the admission officers who screened applicants and admitted them.

Attrition may be reported in various formats, and care is required to distinguish between them. In Appendix 7, there are three attrition data sets. The first, Table 10.1, is labeled "annual depletion." The data aggregate the number of students leaving the college, no matter what the reason. Division by the total undergraduate opening enrollment yields the overall percent losses, or "depletion," in a given year.

Factors related to student attrition are monitored by more than one segment of the college community. Faculty members in the Freshman Division quite naturally monitor student academic outcomes. The dean of students serves as a valuable source of student concerns and needs. Student dormitory proctors, specifically charged to seek out students who are in academic difficulty, provide a useful source of information. Admission officers provide useful background information. The gratifying decrease in the percentages in the right hand column of Table 10.1 (Appendix 7) reflects strong efforts by faculty and staff to understand why students leave.

The year of greatest losses is the freshman year. Table 10.2 (Appendix 7) presents data for first-year attrition, by class. The high rate of freshman attrition seen in the first five years of Table 10.2 became a pressing concern, particularly for faculty in the Freshman Division and the admission officers. Concern peaked at the conclusion of the first semester of the 1977–78 academic year, when faculty implemented significant course changes in the Freshmen Division. In May of 1978, Dean Bill Gann prepared an excellent and detailed study entitled "Final Report: Reaction of Freshmen to First Semester Studies." Compiled from interviews with students, it offered a course-by-course summary of student concerns. Bill drew no conclusions, but Professor Bob Wolf, director of the Freshmen Division, extended Dean Gann's work to issue a second paper, "Report on Attrition and the Freshman Year Program at Harvey Mudd College" (May 1978), recommending revisions of courses in the Freshman Division. Dean Tanenbaum presented a detailed summary of the report to the trustee Academic Policy Committee.[1]

The Wolf report also identified the special needs of students who entered the college with English as a second language and urged corrective actions in the form of a new course, English 11, to be taught in small sections. Professor Wolf's report also revealed a surprising fact. Contrary to expectations, the SAT scores of those students who had received an ITR showed very little difference from the average SAT score of all freshmen over a five-year period. In fact, the report acknowledged that of seventeen students who had enrolled in the previous five years with SAT verbal scores below 400, not one had been declared ITR. The conclusion was that SAT scores are not predictors of success or failure.

In response to these reports, the faculty immediately made adjustments in the freshman physics and computational courses. Additional student comments, offered after the conclusion of the second semester, brought modifications in the following year to the course in probability and statistics, and to natural philosophy.

The research undertaken and the conclusions reached were a tribute both to the earnest commitment of Bob Wolf and Bill Gann. The faculty's quick response to student interests reflects the strong and continuing faculty concern for student welfare.

At the conclusion of the 1978–79 academic year, Tom Helliwell, then director of the Freshman Division, noted the changes that had been made during the year and found that the revised freshman program was effective. He commented favorably on the high morale of freshmen students and the relative stability of the curriculum following recent major changes (a stability that was to continue with only minor changes until 1984).

Dean Gann continued his research during the academic years 1980–81 through 1983–84, asking freshmen each year to fill out a two-page questionnaire on their first-year experience. In the spring of 1984, Art Campbell, director of the Freshman Division, aided by Barbara Brown, admission counselor, prepared a detailed analysis of the surveys and presented the results to the faculty.[2] Their report included more than two dozen possible changes in the freshman program and resulted in the appointment of a committee to examine the freshman year. The committee—Professors Jim Monson, Dave Sanders, Al White, with Art Campbell, Tad Beckman, and Sam Tanenbaum serving ex officio—after some faculty debate about its charge, reported a year later.[3] Its recommendations focused on three areas:

1. Teaching and learning in the first year
2. Structure and administration of the Freshman Division
3. The first-year environment

The subsets of recommendations under each of these topics are remarkable for their minimal comments on curricular matters and their maximum attention to student affairs, even to the extent of recommending the redefinition of the director of the Freshman Division as the dean of freshmen. The new dean's responsibilities would include curriculum, instruction, and student affairs. Unfortunately, the recommendations reached the faculty at the same time as a major review of the curricular core and were apparently lost in the complexity of that debate.

I now turn to the third attrition data set (Appendix 7, Table 10.3) on "graduation rate," the ultimate measure of academic success. It is determined by taking the number in a given class who graduate in four years, adding the number who graduate later (usually within five years), and dividing by the original freshman enrollment. The better than 20 percent growth in the graduation rate over the Third Decade Plus is principally a tribute to the significant efforts of faculty and staff to make the freshman program responsive to student circumstances.

Student Governance

The Associated Students of Harvey Mudd College (ASHMC) consists of all the students enrolled at the college. The ASHMC Council is an executive and legislative council that is comprised of a president, secretary,

treasurer, the chairs of the Athletic, Campus Center, Social, and Student Affairs Committees, and the dormitory presidents. Non-voting members included the student representative to the alumni board and two students serving as representatives on board of trustees committees.

Preparation of the ASHMC annual budget is one of the principal responsibilities of the council. It is an irksome task since a large number of student activities annually seek annual funding for their programs. The ASHMC Council income derives from a fee levied on each student at registration. The board of trustees reserves the right to approve this fee each year, and declares it mandatory for all students. In so doing trustees have legal obligations, including responsibility for how the funds are spent, a responsibility met in part by an outside audit of ASHMC financial reports each year. The ASHMC councils throughout the my presidency had a very good record of maintaining a balanced budget, although, at times, auditors found their bookkeeping to be somewhat loose and haphazard.

In the 1977–78 academic year trustees realized that funds were being spent for dormitory or other parties at which intoxicating beverages were served. Legal counsel for the board, after learning of intoxication and the presence of underage partygoers, ruled that trustees must no longer approve funds for such activities. In November of 1977, the board ordered that mandatory student funds "shall not be used to purchase or serve alcoholic beverages."

The ASHMC councils were active and effective legislatures, serving both students and the college well. Their effectiveness was the result of generally excellent leadership by student presidents. They were as follows:

1976–77	Don Hawthorne '77
1977–78	Joe Burkholder '78
1978–79	Mark Muntean '79
1979–80	Ron Lloyd '80
1980–81	Jim Widergren '81/82
1981–82	Rich Kubota '82
1982–83	Ian McCutcheon '83
1983–84	Anthony Jacob '84
1984–85	Sam Israelit '85/86
1985–86	Dave Somers '87
1986–87	Jeff Hong '87, George Stevens '87/88
1987–88	Joyce Rutledge '88 (second woman president)

The student judiciary consisted of the Judiciary Board (the "J-Board") and after September 1984, the J-Board and the Disciplinary Board. The J-Board comprised two representatives from each class; the Disciplinary Board included two students from the J-Board, two faculty members, and one administration member.

Traditions, Pranks, Hi-jinks and Hazing

Fosters donut shop in Glendora (not an immediate neighbor to the campus by any means) was a favorite of students. Fosters donuts were reputed to be the absolute best and freshest donuts in California. Late in many evenings, or early in the morning, the cry "Donut run! Donut run!" would be heard in the dormitories. I am not sure that anyone actually ran the ten miles to Alosta Avenue where the shop was located, but large numbers of Fosters donuts added immensely to the caloric intake of many students.

Noisy Hours, a period exactly fifteen minutes, began each evening during examinations at precisely the same time, 11:00 p.m., as I recall. Tradition provided that during examination weeks, silence would prevail in and among the dormitories all evening and night except for "Noisy Hours." Then the noise from many unusual and innovative sources assaulted one's hearing, and the decibel level was dramatic. I am sure that for some students, and maybe for all, creating the hubbub provided stress relief. Certainly it burned off considerable excess energy. Most dramatic, however, was the contrast of the immediate and near absolute silence at the conclusion of the fifteen-minute period.

The Freshmen Run took place during Orientation Week. The Run began when orientation leaders would rudely, and with a great deal of noise, awaken unsuspecting freshmen at 1:30 or 2:00 a.m. and order them to line up outside of the dormitories. (Freshmen women were forewarned and therefore were dressed appropriately.) The Run suddenly introduced freshmen to many features of The Claremont Colleges, including dormitories on other campuses, Seal Pond at Scripps, and the CMC fountain. The Run concluded with a feast of cookies and hot chocolate that provided welcome relief on what was usually a chilly early morning in September.

The Soph-Frosh games, a long-standing tradition, continued, although new construction on the campuses made the location of the "Pit" more problematical each year. The search for a Pit became an adventure in itself.

Whirling, a form of gross activity in which a certain part of the anatomy of a chosen individual is brought into close contact with an important bathroom fixture, was a long-standing, but somewhat unfortunate, tradition. Actually the practice is a form of hazing, although some students would not and did not agree. One occurrence was to prove convincing. A student in the Class of '78, who had been the butt of the indecency, informed Dean Gann and asked that the perpetrators be disciplined. Since a code of silence prevailed, there was little the dean could do, much to the frustration of the victim. The victim decided his only recourse was to make a formal complaint to the commissioner of education of the State of California, asking that the state intervene and bring an end to hazing on the campus of Harvey Mudd College. Immediately after graduation he did so, and soon I was engaged in conversations with the commissioner. After investigation, he did in fact find that whirling was a form of hazing. The threat

to the college was very real, for if the college was shown to tolerate this form of hazing, the state could and would withdraw state scholarships awarded to all California students at the college.

Fortunately, we were able to show policies and directives that supported our position that whirling was hazing and not tolerated. I asked the faculty to take a position on the matter, and after a series of faculty visits to dormitory meetings, the faculty on December 9, 1980, unanimously voted the following resolution:

> "Recognizing that whirling may be a violation of state law, may threaten the personal rights and integrity of the individual, and may reflect on the reputation of the College, be it Resolved that the President continue to make public at all appropriate times the College's policy of disapproval of whirling and any hazing practice. Further be it Resolved that the ASHMC Judiciary Board be asked to prepare, and make public, specific procedures for the handling of any hazing cases."

At the December meeting of the board of trustees, trustees affirmed the faculty position.

To all appearances, at least, whirling stopped.

The first "annual" Four-Class Competition was held in 1985 with enthusiastic participation by faculty, staff, and some of their spouses. Scheduled for a Saturday, the program of some eighteen events was imaginative, the competition was always keen, and the participation eager. I recall the frustration of several class teams when they were unable to solve a complex slide-rule computation (to these generations of students, slide rules were obsolete). I also recall the hilarious event that required the imitation of favorite professors. Another competitive event egaged me as the target of expert and strong throwing arms that unceremoniously dumped me into a large tank of water, much to the delight of onlookers.

The Talent Show featured skits related to college life, individual artistic performances, and excellent multi-media shows. Mary Carpenter '81 planned the first annual show held in November of 1978. The second "annual" show was held in February of 1980. I still recall the very large quantity of cookies prepared by Mary, Brenda Dingus '82, and their friends in Vivian's kitchen in the President's House (now Garrett House). After the show, the cookies disappeared in the blink of an eye when they were set out in Galileo Foyer. The baking of cookies continued for a number of events thereafter, providing happy opportunities for Vivian to share our home with students.

The East Hall Christmas Party with Joe and Jean Platt and its surprise Santa Claus, a long tradition, was always a happy and emotional event for

all who shared in the joy and nostalgia of that holiday occasion.

Dormitory door decorating was a long-standing tradition at HMC and began unrestrained as soon as rooms were occupied. Postings on doors presumably expressed the multi-faceted views of the inhabitants of a room through clippings, cartoons, political comments, social observations, graduate school announcements, low-grade notices, and so on, ad infinitum. West Dorm usually presented the most strident and largest number of postings. At Christmastime, imaginative and colorful seasonal decorations appeared, replacing or covering the more mundane. Traditionally, the winner of the Christmas door decoration contest was East Dorm.

Two humorous events occurred in late 1979 and in 1986. In the earlier event, Mike Bruno '81/82 won the National Tiddlywinks Championship playing against fifty competitors and winning a play-off with a professional "winker." The event was featured one evening on television on NBC news.

In the second, Dave Somers '87 applied his considerable talents to win a Southern California scavenger hunt sponsored by Miller Beer and a local radio station. The goal of the hunt was to use clues, given over the radio station, to locate a carton of Miller Lite beer hidden somewhere in Southern California. Dave spent many of his lunch hours during his summer job at Teledyne Corporation searching out the clues. When he finally located the case, there was no beer, but a much more meaningful certificate for $10,000!

Pranks—Acceptable and Otherwise

In mid-winter 1980, we discovered in storage the various parts of *Motion Shield*, the freestanding sculpture donated to the college by Dr. and Mrs. Ronald Linde of Chicago. Henry Mudd, who served on Dr. Linde's board of directors, was a friend of Dr. Linde and may have played a role in the acquisition of the sculpture. Dr. Linde later became a member of the board of trustees, and he and his wife took a special interest in the college. The sculpture had been shipped in pieces and never assembled. Investigation revealed that it was the work of a well-known western sculptor, Barry Hunnicutt, who had created it as the final work in a series of eight smaller works, some of which were on display in public places in Arizona. Hunnicutt, a student of pre-Columbian art and architecture, was strongly influenced by Aztec hieroglyphs found on Mayan and Inca temples when he designed *Motion Shield*. He used Corten steel as the medium to add an appearance of strength to the work.

Early in 1981, I asked a small committee comprised of a Claremont sculptor and several faculty and staff members to consider locations for the sculpture on campus. Their recommendation was to place it on the lawn near Platt Campus Center, and in May, *Motion Shield* took its place there.

With such a central location, the sculpture was difficult to ignore. Students immediately named it the Great God "Rusto." Some suggested

that it was a tombstone "Rusting in Peace." Quickly it became the center of frequent pranks. It was once encased in aluminum foil, and from time to time other wrappings appeared. One weekend, students built a temporary block wall surrounding it. Another weekend, the "shield" was softened by a mattress fastened to its face. Soon Rusto mysteriously began to move from place to place on campus. Caltech students made at least one attempt to steal it, but were prevented by the intervention of Campus Security officers. Finally, its peregrinations ended when Larry Hartwick, director of campus maintenance, grew tired of chasing the sculpture and arranged to have it cemented in place with an explanatory plaque describing its origin.

Motion Shield was the first sculpture to be placed on the campus since the Venus sculpture was placed in Hixon Court. It was controversial. Some felt that it did not belong on the campus. Others felt that it was a valuable addition to the campus and that it was important to expose students to works of art, however, much one might disagree on the merit of the piece. Still others felt that *Motion Shield* demonstrated that art is a complex human activity with its roots in varied cultures as well in as science and technology. Others felt it was valuable because it was controversial.

Motion Shield

One memorable prank occurred in the winter of 1982. Crystal Gordon '86 returned to the dormitory to find that her room apparently had vanished. She found it, complete in all its details, on the quadrangle on view for all to see.

An unacceptable "prank" occurred in the spring of 1982 when an unknown perpetrator re-wired the controller in the elevator of Sprague Library to produce random and unexpected stops. Unfortunately, what I am sure was intended to be a hilarious experience for students trapped in the elevator turned out to be a truly frightening experience for one of the female employees of the college.

In October of 1984, with the site preparation well underway for the Case Residence Hall (known then as New New Dorm), the contractor asked to have the construction site declared off-limits, a reasonable request since legally the construction was not owned by the college. We announced the request in the Oct 17 issue of the "Wednesday Green Sheet." On October 23, seven students entered the site where the grading, survey work, and some cement work necessary for construction of the foundations of the building had been completed. Working with what must have been exquisite care over a period of some five hours, the students moved each of the five critical survey control stakes.

The construction work continued, and concrete foundations were poured, whereupon the seven students informed Larry Hartwick of the relocation of the stakes. Larry, the college's formal project overseer, was crushed. Over $200,000 had been expended for surveys, forms, concrete, and foundation steelwork. All further work had to be halted until an assessment could be made. Fortunately, a new survey revealed that four of

the new stakes were within limits, and that the building could proceed as originally planned. The fifth stake required some minor modifications in the foundation. Surveyors, the contractor, and Larry agreed that with appropriate fixes construction could proceed. The assessment and delay, however, were not trivial since the deadline for completion before the next academic year was very tight.

The problem at this juncture was how to settle this obvious non-academic disciplinary case. Was it purely fun, to be chuckled over? Or was it a notable violation of college regulations?

The seven students asked for a meeting, and I was somewhat surprised to find that four were student leaders. All four were well known to me and were outstanding young men. It was quite clear that they had acted without malice and had intended their actions to be remembered as a permanent prank. All seven admitted freely that they had made a considerable error in judgment.

Although concerned about the delay in construction and the possible failure to complete the project before the academic year was to begin, I was anxious to bring the episode to a conclusion and not have it interfere with the successful completion of the students' semester. The matter was settled out-of-court between Larry Hartwick and the students. I agreed to the terms, and Yeshwanth Subramanian '85/86, Judiciary Board chair, so announced them to the community on December 4.

The Honor Code

The highly respected and widely valued Honor Code remains one of the prime building blocks in the Harvey Mudd community. The code is embedded in the ASHMC Constitution. In two brief paragraphs, the Honor Code required students first to "be responsible for his (sic) integrity in all matters related to academics and college property" and second, to "report an Honor Code violation to the student Judiciary Board Chair or talk to the offender and obtain a satisfactory settlement." The Faculty Notebook records that "The faculty agrees to report all cases of suspected Honor Code violations to the (student) chair of the Judiciary Board." The Notebook goes on to state that faculty members are also "obligated to accept the recommendations of the Judiciary Board." The Honor Code is therefore, at its core, a powerful and concise covenant between students and faculty.

In practice, however, the Honor Code proved to have two bothersome anomalies. First, it provided no guidance on the relationship between the formal Student Rules and Regulations and the code. Second, faculty preferred to play a role only in academic matters, not in "matters related to…college property." They preferred to leave general disciplinary problems to administration.

Unfortunately, there was no similar clear covenant between students and administration as there was between faculty and students, which was

largely the result of the amorphous nature of the administration. The dean of students is in a singular situation; he (or she) serves often as counselor, sometimes as witness, sometimes as prosecutor, in non-academic cases, and, from time to time, has some considerable difficulty with these conflicting roles. The general maintenance staff understands that it has no role to play. The president, who serves as the final arbitrator or judge, must stand apart. Consequently, there is neither an "administration" entity, nor covenant, that functions in a manner similar to that of the faculty. By far, the majority of non-academic cases are relatively minor, and are usually settled by the dean of students with the concurrence of the Judiciary Board. The lack of a written covenant in these straightforward cases is not a problem. However, a troublesome and prolonged series of episodes was to produce a realization that clarification and changes were needed.

I believe the episodes began during the Freshmen Run in the fall of 1980–81. Not only freshmen, but the Claremont communities surrounding the college, were awakened in the very early hours of the morning by a series of loud explosions so intense that picture frames in the President's House rattled on the walls. Immediately, telephone calls were made to the campus by distraught and angry off-campus community residents. Their outrage was so unusual that Dean of Students Bill Gann asked the orientation chair and several of his leaders to visit with some of the local residents. The students, I was told, assured residents that no further incidents would occur.

Unfortunately, the explosions continued off and on throughout the 1980-81 academic year and into the next in spite of the efforts by Dean Gann to convince students that the explosions violated college rules and regulations. Published campus regulations were very clear on the matter:

> "Firearms, fireworks, and all forms of explosives must not be used or possessed in the dormitories or at any place on the campus. Students are reminded that California laws have stringent restrictions on these items."

When a student complained to Dean Gann, and subsequently to me, about safety, we learned that the explosions were being caused by acetylene gas expanding in a closed container. The student reported that he had narrowly avoided injury when an acetylene-filled balloon had drifted near his head and exploded. (The acetylene is produced by adding water to calcium carbide and requires some skill to get the proportions correct for a given container.) By keeping chemical materials in dormitory rooms, the students involved were violating college policy; and by experimenting with mixtures, they were running the risk of injuring themselves and others.

Dean Gann continued to try to communicate to students through the proctors, the Dormitory Affairs Committee, and to individual student

leaders, to no avail. I was concerned by what I saw as a failure of student leaders to bring this dangerous and annoying practice to a halt. I was also frustrated by our inability to reach students through normal channels, and I began to wonder about the efficacy of the Honor Code.

During noisy hours in the examination weeks of December 1981, explosions again rocked the campus. They had become intolerable. Late in the second examination week, community residents had had enough and called the Claremont police, the first time to my knowledge that police had ever intruded on the campus. The police presence had a chilling effect on the students, who had not yet left the campus for the semester break. The police intrusion indicated to me that we had failed to make clear the unacceptability of the actions of some of our fellow members of the college community.

The following week, during the semester break (1981–82), I again discussed the troublesome issue with staff members. We saw the possibility of acetylene present in closed dormitory rooms as a serious safety concern and a threat to the safety of the housekeeping staff cleaning the rooms. Without question, the presence of chemicals in dormitory rooms was a serious violation of college policy and regulations. The appearance of Claremont police on the campus convinced me that we had an emergency. My primary concern, however, was safety, and it led me to authorize Dean Gann, accompanied by a campus security officer, to visit a number of dormitory rooms, randomly selected, to see if a chemical odor could be detected. No personal effects were to be touched. The applicable Student Regulation supporting this action has already been quoted above. The College Safety Policy provided further direction:

> "It is the basic responsibility of all HMC faculty and staff to make the safety of other people their concern in all places."

Not only was safety everyone's responsibility, but ultimately it was mine, the president's.

No odors were detected in the few rooms opened, but in one room what appeared to be exploded plastic milk cartons hung plainly in sight. After the break, Dean Gann informed the students living in that room of the visit and counseled them. We thought the counseling and the earlier visit of Claremont police would end the troublesome events. It was not to be.

In January, during a meeting with the president of ASHMC, the Judiciary Board chair, a faculty member, and the dean of students, we did learn that approximately a dozen students were involved and that their attitude was that it was "great fun" and "something CMC students could not do." At the conclusion of the meeting, I asked student leaders to find a way to end the explosions.

When classes resumed after the break, a group of students took strong exception to Dean Gann's and the Campus Safety Officer's entry into the rooms, claiming that my decision to approve the inspection violated the following paragraph of the Statement of Student Rights and Responsibilities:

> "Investigation of Student Conduct:
> "Except in emergency situations or where there is probable cause to suspect serious violations of college standards of conduct, rules or regulations, on-campus premises occupied by students and the personal possessions of students shall not be searched. Whenever a student's room is searched, he shall be permitted to be present and shall be informed prior to the search of the reason for the search, except in emergencies. Authority to search shall be conferred by the President upon a designated person or persons who shall be made known to the students."

On reflection I agreed that on close reading of this statement, the decision to approve entry into student rooms had in part violated the policy of the paragraph. However, those involved were violating California law, as well as college regulations, and safety was an increasingly very deep concern.

In early March 1982, I invited all students to attend an open meeting to discuss not only college policy, but also pranks in general. The explosions did not cease.

On March 10, 1982, I sent a memorandum to John Shockley '82, chair of the Student Judiciary Board, Rich Kubota '82, president of ASHMC, and Professor Dave Sanders, chair of the Faculty Executive Committee. I explained that I intended to establish a small task force of faculty, students, and staff to examine the Honor Code and the role of the Student Judiciary Board. I asked for their suggestions, comments, and recommendations for the constitution of the task force.

Dave Sanders responded suggesting that "a study limited to the Honor Code will not get to the heart of the situation. We also need to examine the Statement of Student Rights and Responsibilities and the mechanisms that govern student life, especially the mechanisms of communication that have failed so notably." He also noted that the "the Judiciary Board is the proper authority to hear only charges of Honor Code violations. It should not hear charges of misconduct beyond the purview of the Honor Code."

Professor Sanders made sense, but the final sentences of his remarks reflect the faculty's position that the Honor Code applied only to academic matters.

Later in March, after another series of explosions during the early morning, I addressed a memorandum to all students, faculty, and staff

seeking their help in ending the explosions.[4] A week later in a second memorandum, I noted the inconsistencies in student policies and announced the establishment of a task force charged to examine, codify, and recommend changes to the Statement of Student Rights and Responsibilities, published Student Rules and Regulations, and, if needed, in the Honor Code.[5]

The task force comprised Professors Gerald Van Hecke '61 (chair) and John Molinder; students Stan Voynick '85, Geoff Kulick '83, Vince Tobin '83, and Brad Hinkel '84; alumnus Ludd Trozpek '71; and staff members Don Gross '61 and Mary Benzon. Two other students, Roselyn Pellicciotti and Greg Felton '85/86, served on the task force later. To simplify the task, a subcommittee undertook the review of The Standards of Student Conduct. Professor Mits Kubota, students Anthony Jacob '84 and Nicole Sampson '85, and Benzon served as members of the subcommittee.

The committee began its work during the summer of 1982. Each member of the task force reviewed published Student Affairs Policies and Procedures, Residence Hall Regulations/Procedures/Information, the Housing Agreement Form, the Statement of Student Rights and Responsibilities, and the Honor Code as found in the ASHMC Constitution. Over the academic year 1982–83, the committee met weekly; interviewed students, members of the faculty and administration; revised draft after draft; and held one Saturday meeting with the college's legal counsel.

On April 21, 1983, the task force made its final recommendations, stating that they had reviewed and updated the Standards of Student Conduct, The Honor System, and General Student Regulations (academic/non-academic). I quote from a letter to me from the task force:

> "In compiling this document, we reviewed all policies and regulations pertaining to student affairs from the following sources: the original draft you provided us last summer, the handbook for student/staff personnel; procedures from the Dean of Students; the catalog edition of the Bulletin; student handbooks; ASHMC regulations; various applicable Claremont College's regulations; and certain local, state, and federal laws and policies. We believe that we have resolved the major inconsistencies and conflicts in the existing regulations and that the accompanying documents present a consistent set of rules relating to student affairs."

The subcommittee of the task force studying the Standards of Student Conduct recommended that academic misconduct (cheating, plagiarism, lying, etc.) be treated separately from non-academic misconduct (stealing,

mischief, drunkenness, etc.). They further recommended that the Judiciary Board remain as an all-student panel adjudicating academic misconduct and that a separate board be set up to handle non-academic violations.

A year or more had passed without further explosions. In late October of 1983, however, a serious explosion caused a minor fire that brought the police and the county fire department to the campus. Two seniors, a sophomore, and a freshman admitted their involvement to the Claremont police. We needed to get the process of ratification of all documents moving, and student leaders urged us not to procrastinate.

On December 12, 1983, the Faculty Executive Committee, in a preliminary review of the committee's report, accepted the recommendations of the subcommittee of the task force and approved them for submission to the full faculty.

As the calendar year 1984 began, minor changes in the Standards of Student Conduct and the Academic Honor System were still under consideration. In January 1984, the Faculty Executive Committee completed its review of changes recommended in "Student Regulations," and then in February changes in "Student Rights and Responsibilities," and was ready to send its final recommendations to the faculty. On April 27, 1984, the new Appendix to the Statement of Student Rights and Responsibilities and the Standards of Student Conduct document received a majority approval of the full faculty. They also voted to appoint a faculty member to serve for a period of three years as liaison to the student Judiciary Board. I made it clear at that time that the Appendix and its amendments would supplement the original document of 1969 enacted by the trustees.

Final approval of the Appendix and amendments was given by the trustee Educational Planning Committee on May 2, 1984, and by the board of trustees on May 13, 1984, subject to approval by legal counsel. Additional non-substantive changes were proposed by counsel in September of 1984 and adopted by the full faculty on September 18, 1984. trustees approved on September 21. The new directives, as approved by the board of trustees, the faculty and the student body, were, by late October, in the hands of all students.

The entire review process had taken over two and one-half years. The approved changes were substantial in several areas, and the key paragraph on investigation of student conduct was narrowed to a statement on room access:

> "Residence Room Access:
> "Authorized persons are allowed to enter student rooms at reasonable times for the purpose of housekeeping or utility inspection, and repair.
> "On-campus premises occupied by students shall not be entered and the personal possessions of students shall not

> be searched except (1) where authorized by the President or his designee, who shall be made known directly to the students, upon probable cause a serious violation of College regulations has occurred, or (2) upon probable cause that immediate physical danger (to life or property) exists. The College shall not knowingly permit any device to be used secretly on campus to intercept or record speech or actions, unless under legal compulsion.
>
> "In the case of investigation of violations of College regulations, the student concerned must be permitted to be present and must be informed prior to the entry or search, of the reason and who is authorized to conduct the entry or search. In the case of immediate physical danger the student(s) shall be notified in writing after such entry as soon as possible."

The entire Harvey Mudd College community benefited from the hard work required over these years. The examination and review of all policies and regulations governing student affairs was a difficult, but educational, task. Everyone had an opportunity to express their thoughts, to work and communicate with each other, and to reflect on what made Harvey Mudd College special. I was greatly appreciative of the efforts of the community. At times we appeared to be taking one step forward and two back, but committed leadership by Professor Van Hecke and persistence on the part of the committee, faculty, students, administrators, and trustees made the final product one we could all live with and of which we could be proud.

Credit for the successful resolution of the issue goes in part to Bill Gann, dean of students who was in a difficult position between students and administration. Bill had come to Harvey Mudd College in 1971 at the request of Joe Platt. He served as dean for fourteen years before resigning in December of 1985 to pursue his interests in photography, exotic plants, and travel. Among Bill's notable achievements were the development of the student proctor system in the dormitories, the student leadership conferences at the beginning of each academic year, and the initiation and development of the Career Placement Center.

The Caltech Cannon Caper

On a Saturday morning in late February 1986, I returned to campus after an all-morning absence. Vivian greeted me at the door of the President's House with the news that there appeared to be an unusual uproar on the campus and perhaps I should check. Noise from the campus intensified as I walked north past the basketball court to East Dorm. When I turned the corner, chaos engulfed me. I saw what appeared to be several hundred students jumping and shouting with glee around a mammoth can-

non. I recognized it at once; I had seen it a number of times on the Caltech campus. Yes, it was the Caltech cannon—a prize pursued unsuccessfully a number of times by students of earlier classes. Meticulous planning and brilliant preparation by eleven students led by Dave Somers '87 and Jeff Hong '87, aided by an alumnus, made the daylight heist a success.

In addition to Dave and Jeff, Joe Agnese '87., Hernan Santos '87, Greg Felton '85/86, Mark Moeglein '87, and Chris Donnelly '87 pulled off the prank dressed as construction workers wearing hard hats and work shirts labeled "H & M Salvage Co." The alumnus, Bob De Pietro '69, played a key role by making available the large forklift necessary to lift the cannon. Three others—Eric Rosser '86, Steve Olson '87, and Tom Jedrzejewicz '87—played the role of Caltech students by playing frisbee as a diversion near the cannon. Byrne Sanford '86 served as photographer and used nearly a dozen rolls of film to record the event.

Caltech's cannon at HMC

Gathering first at 3:30 a.m. in Claremont, the group rendezvoused in Pasadena at 5:00 a.m. After reaching the Caltech campus at about 7 a.m., the "construction workers" consumed two hours of their precious time raising the three-ton cannon off the ground only to find the fork-lift mired in soft soil. A Caltech security officer came around to inquire about all the activity, and the "workers" referred him to "foreman" Joe Agnese, the most mature looking of the group (he had a bald head!). Joe showed a falsified work order to the officer and said that he had orders to move it "for refurbishing." Quite satisfied, the officer watched for a short while and then left.

With the forklift stuck in the mud, plans were changed. A rented 18-foot flatbed truck that was to transport the cannon was driven in off the street by Greg Felton and onto the lawn. Finally the cannon was secure. It was a clean getaway.

The celebration at Harvey Mudd College continued over the weekend and beyond. The media came and took pictures. As time passed more than a few unhappy Caltech students came to the campus to pay their respects and to let their displeasure be known. More than a few alumni traveled to the campus to view and marvel at the prize. "VICTORY!" The Muddraker proclaimed in a page-wide, bold headline.

The following Monday morning, I received a call from President Goldberg of Caltech, who politely asked for the return of his cannon—an

obvious impossibility given the growing excitement on campus and among alumni as the news spread. Several days later, I had a call from the headmaster of the Southwestern Academy in San Marino, who pointed out that the cannon belonged to his academy and was only on loan to Caltech. He also wanted it returned.

Rumors of Caltech retaliations were soon circulating on the campus, including imminent raids and a pick-up of the cannon by a U.S. Marine helicopter. Caught somewhere in the middle of all the hubbub was Bernie Santarsiero '75, who held the position of deputy master of student housing at Caltech. To say the least, his loyalties were divided. He did, however, play a central and valuable role in maintaining a reasonable level of dialog between the campuses and in calming the most strident voices.

Examination time was approaching. As the days passed, students gradually found the twenty-four hour surveillance required of the cannon to be an increasing burden. Larry Hartwick, director of campus services, was becoming more and more concerned about the increasing frequency of clashes between Mudders and Caltechers. The cannon was becoming something of a liability, although the enthusiasm generated by its capture was undiminished.

Dave Somers and I had several conversations about whether the cannon should be returned, and if it was to be returned, how best to do it. Finally we agreed that a formal request in writing from President Goldberg at Caltech would serve as a good basis for a discussion. President Goldberg was happy to provide the letter and did. Dave then suggested a student open forum on the cannon and a referendum on its return, both of which he organized and led. A majority of students voting in the referendum approved the return of the cannon.


The cannon goes home

The saga was not yet complete. Wanting to minimize any risk of injury, I stipulated that only Physical Plant personnel replace the cannon on a flatbed for transport. To the discomfiture of Larry Hartwick and his crew, and to the great amusement of students, the Physical Plant employees were unable to lift the cannon onto the truck. Finally students agreed to show them how. With the cannon safely on the truck, student planners decided to return it in style. In an all-night session, they constructed a huge box wrapped in white paper with black and gold crepe-paper ribbons. It was addressed "To Murph (Goldberg), with love, from Harvey Mudd," and signed by every Harvey Mudd College student. Sadly, on its way to Pasadena the truck was dangerously forced off the road by two cars driven by Caltech students and the box was destroyed. Fortunately no one

was injured. The truck and the cannon returned to Claremont to be picked up later by Caltech personnel.

One further incident cast a somewhat of a pall over the proceedings. Byrne Sanford, the photographer, processed his film in college darkrooms and left the pictures to fix. Rumor has it that an HMC student with a friend at Caltech let the word slip that the film was unguarded. In any case, they disappeared. Many, I understand, were returned later.

So ended the most audacious and clever prank known to me in my time in higher education. It was an incredible success. Mudders behaved at all times with pride and a great deal of class and maturity. Rightfully, the eleven conspirators have a special place in college history and 1986 is forever labeled "The Year We Got It!"

Some pranks may appear to be completely harmless, but have totally unanticipated consequences. Eleven seniors undertook such a prank on May 6, 1988. Mark Aagaard, Brett Barksdale, Jim Bates, Scott Boyd, Eric Johem, Montgomery Kosma, Michael Lodin, Dan Osterkamp, Joyce Rutledge, Dave Tanenbaum, and Matthew Todd entered offices, laboratories, workrooms, and classrooms in the Libra complex and removed all chairs. The chairs were taken to the fourth floor of Sprague Library and hidden away. What appeared to be a hilarious idea turned sour when the participants belatedly realized they had entered faculty and other offices where confidential documents or copies of examinations were undoubtedly filed or stored. The occupants of the offices were rather annoyed. The students publicly apologized and spent some time on community projects.

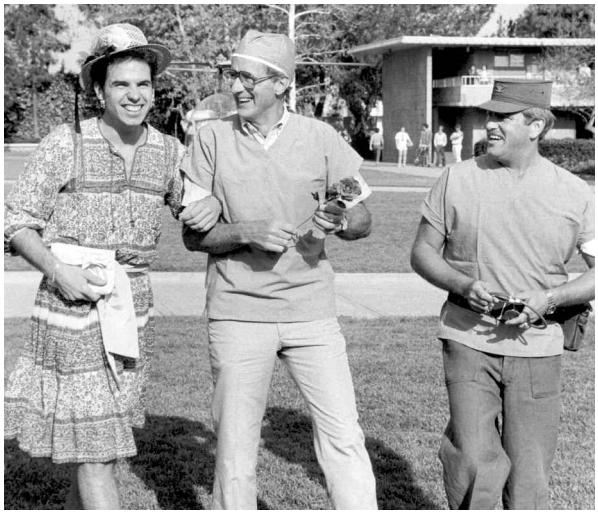
Tragedy

Tragic events are rare, but seemingly inevitable. Two cast heavy shadows on the community during my tenure. In early February of 1981, a 20-year-old male senior with a knife attacked a female senior in class. Professor Van Hecke and several students seized the attacker, but not before he inflicted severe wounds on his victim. Fortunately, the female student recovered and graduated with her class.

A second tragic event reminded students, faculty, and staff that the campus does not provide a haven from law enforcement agencies. In September 1986, drug agents arrested a male chemistry major, charging him with the possession of drug materials and the manufacture of drugs in his dormitory room. The student, a junior, allegedly manufactured large amounts of methamphetamine. The arrest of one of his "customers" enabled authorities to trace the illegal drug to the campus. Members of the Department of Chemistry were outraged, as were many others since the presence of chemicals and chemical equipment in a dormitory room is a serious violation of campus policies. Sadly, the promising future of a student was catastrophically lost.

Successes

There were also happier events. In the spring of 1980, ASHMC President Ron Lloyd '80 organized a very successful Parent's Day. The more than 300 parents who attended were informed and entertained by faculty lectures, student presentations, sports, and a cabaret session.



At the 1983 M*A*S*H party. Michael Magras '83, President Baker, and Glen Shatner, food service director.

For several years, the food service manager and students planned a "theme" dinner to celebrate the end of the academic year and to relieve the tensions of examination time. The most memorable theme dinner was the M*A*S*H dinner organized by Mike Magras '83 and Dean Bill Gann in April of 1983. A helicopter, stretchers, a Red Cross ambulance, jeeps, and costumes made the event a great success.

The Muddraker

One of the most notable student accomplishments in the Third Decade Plus was the organization and production of *The Muddraker*, the student newspaper. The first issue, volume 1, no. 1, was published on February 14, 1980. Publication continued and reached volume 17, no. 4 , in 1988. In its second semester of publication, the editors approached me seeking administrative and trustee support for what promised to become a vital and going concern. Their presentation outlined their goals and purpose:

"*The Muddraker* is a newspaper written and produced by and for Harvey Mudd College students and staff. All members are students enrolled here. Presently we have a staff of twenty-seven representing the junior, sophomore, and freshman classes.

"The purpose of *The Muddraker* is twofold. First, it exists to give students a chance to express their talents in writing, photography, and management. We are open to anyone and provide a professional atmosphere in which to learn. The second purpose of the paper is to provide a link of communication between students and staff at the college. We strive to cover stories which not all students are familiar with."

Their presentation also included a proposed budget for the academic year 1980-1981, reproduced here as I received it:

"TOTAL INCOME

ASHMC	$850.00
Trustees	125.00
Advirtisements (sic)	45.00
TOTAL INCOME	$1,020.00

Printing costs	
Per issue $101.31 / 11 issues	$1,114.41
Photography costs/year	
Veloxing (average 10 pictures per issue)	$110.00
Chemicals, paper, film	45.00
	$155.00
Equipment Costs	
For the year, not including $60 for a waxer (for layout) and a bulkloader (for film).	$30.00
TOTAL COST FOR THE YEAR	$1,299.41
TOTAL INCOME	$1,020.00
TOTAL COST MINUS INCOME	$279.41

"With $250 from the administration, it would leave us with

$29.41
60.00
$89.41 in the red.

"This will be acquired through advirtising (sic!) and subscriptions."

This detailed presentation convinced us that the cause was a worthy one, and we were happy to support the students who had prepared it. In the years that followed, *The Muddraker* flourished, but not without difficulties. Budgets were frequently a problem. At times, the unrelenting pressure of deadlines and the lack of a sufficient number of volunteers were almost fatal burdens. Its publication sometimes faltered, but never failed. Its editorials were often probing, its news reports welcome and always timely, and its cartoons frequently hilarious. I know that it was read by trustees and parents who subscribed to it, and I believe it was widely read on campus. I give great credit to every student who over the years spent a great deal of time laying out and publishing the paper.

Equal credit is extended to the dedicated students who each year planned and produced the annual edition of the college's yearbook, the *Spectrum*. Throughout the Third Decade Plus, the *Spectrum* continued to present an exceptionally high-quality photographic record of the people and activities at the college. No other record of the college stores the memories of friends made, the activities experienced, or the aura of the college as does the *Spectrum*.

Achievements

The compilation of a list of student achievements attained during my presidency is fraught with the possibility of significant omissions, particularly after the passing of many years. There were, however, certain prestigious awards that reflect the talents and capabilities of the extraordinary students at HMC.

National Science Foundation Fellowships

The NSF Fellowships are awarded annually to encourage students with exceptional academic records to proceed to graduate school and continue their major interest at the graduate level. The award is an annual stipend for each of three years of graduate study.

Carl W. Hardin '76	Physics (awarded in 1977)
F. Michael Christ '77	Mathematics
Ken Feldman '78	Chemistry
Charles Horowitz '78	Physics
Steven Rockey '78	Applied Mathematics
Lawrence Perez '79	Chemistry
Thomas Chappell '79	Physics
Phil Szuromi '80	Chemistry
Jean Haubrich '81	Chemistry
Jim Cline '82	Physics
Andrew Pineda '82	Chemistry
A. Alan Middleton '84	Mathematics/Physics
Nicole Sampson '85	Chemistry
Katherine Van Stone '85	Mathematics /Computer Science
Charles Pibel '86	Chemistry
Davis Chi-Ching Ho '86	Mathematics
Charles Cunningham '86	Physics
Michael Redmond '86	Physics
Stephen Cobb '87	Engineering
Mark McCleskey '87	Chemistry
Keith Saints '87	Mathematics/Physics
George Park '88	Physics
Jim Falconer '88	Physics

Rhodes Scholarships

Thirty-two Rhodes Scholarships are awarded annually in the United States by the Rhodes Scholarship Trust. A scholarship enables a student to pursue two or three years of study at Oxford University for an advanced degree.

A. J. Shaka '80	Physical Chemistry

Marshall Fellow

Thirty Marshall Fellowships are awarded annually by the British Government in honor of the contributions of General George C. Marshall to Britain during and after World War II. Each grant makes possible two or three years of study in Britain in any subject. Recipients are expected to combine high academic ability with the capacity to play an active part in the life of the British university they attend.

Alec Norton '80 Mathematics

Interestingly Alec and A. J. Shaka were roommates on the campus. A. J. is the college's first Rhodes scholar and Alec the only Marshall fellow.

Watson Fellows

The Watson Fellowship Program is a grant program of the Thomas J. Watson Foundation established by Mrs. Thomas J. Watson Sr. in honor of her husband, the founder of the IBM Corporation. The Watson Fellowship enables college graduates of unusual promise to study and travel anywhere abroad for a period of one year. Graduating seniors from fifty small private colleges and universities are eligible, and seventy fellowships are awarded each year (during the time I was president). The fellows are expected to plan and carry out a year's study in an area other than their major college interest. In at least one sense the award offers the opportunity of expanding an extracurricular activity into a full year of study.

1. 1977—Keith Woo '77 "Study and performance of the bass trombone in the United Kingdom"
2. 1981—David Abe '81 "To study folk fiddling in Ireland and the British Isles"
3. 1982—Jim Widergren '81/82 "The effects of rural electrification on rural Asian societies: the Philippines, Nepal, and Indonesia"
4. 1984—Clarence Wang '84 "To study circus family life in the United Kingdom and West Germany"
5. 1987—Sugi Sorensen '87 "Custom bicycle building and racing: France, Italy, and Russia"
6. 1987—David Somers '87 "Vegetarian lifestyles and animal rights in England, Nepal, and India"

Churchill Fellowships

Ten students are selected annually from thirty-six eligible colleges. Awards are for one to three years' study at Churchill College, Cambridge University, in mathematics, computer science, engineering, natural science, or chemistry.

1.	David Matsumoto '81	Chemistry, 1982–83
2.	Roger Oba '82	Mathematics, 1982–83
3.	Alan Middleton '84	Physics/Mathematics, 1984–85
4.	Michele Mathys '86	Engineering, 1986–87

Platt Prize

The Platt Prize was, and continues to be, awarded to the outstanding freshman or freshmen selected by faculty members in the Freshman Division.

1976-77 A. J. Shaka '80 (first recipient)
1977-78 Donald Holmgren '81
1978-79 James Cline '82 and Karen Kubow '82
1979-80 Leslie Kirby '83
1980-81 Lisa Duncan '84 and Marion Thalos '84
1981-82 Thomas D. Wang '85, Stanley Voynick '85, and Mark Terris '85
1982-83 Michele Mathys '86 and Keith Saints '87
1983-84 Christopher Hickie '87
1984-85 Marilyn Sameliss '88 and George Park '88
1985-86 Kenneth Easton '89
1986-87 Douglas Dunston '90 and Robert Knop '90
1987-88 Carol Wawrukiewicz '91

General Electric Graduate Fellowships

Bardia Pezeshki '87
Sam Osofsky '85

AROTC

We note with considerable pride the success of Michelle Darling '81/82 in her Army ROTC program. In May of 1981, Michelle was commissioned as a second lieutenant, U.S. Army. She was honored as the first female Harvey Mudd College student to be cited as a distinguished military graduate.

I close this chapter by recording two items of particular interest. The first is the college's connection with the space program. On Friday, April 13, 1984, George "Pinky" Nelson '72 returned to earth after an exciting space shuttle mission. Pinky had invited Vivian and me to attend the launch of his shuttle as VIPs. Since I was on the East Coast on business during the week of the launch, it was not difficult to travel to Florida. Vivian planned to meet me in Orlando, but due to an incredible mix-up in flights from California, she missed the launch, to her great disappointment. The launch was one of the most memorable experiences of my life. I am sure others who have witnessed a launch share my feelings of awe at the raw power and marvelous engineering displayed by the shuttle as it roars off of its pad. Pinky returned to campus to give public presentations on his experience, and we all listened, fascinated, to his stories of zero gravity, the space walk, and his wrestling match with an errant Solar Observatory outside the shuttle.

Finally, I note two unusual gifts to the college that occurred in the Third Decade Plus. In 1980, Dr. Bertrell E. Caswell of San Gabriel, California, donated a number of Japanese koi to be placed in the Venus fountain of Hixon Court. Dr. Caswell is the aunt of Charles Polk, who was a sophomore when the gift was made, and raising koi was her hobby. The koi has been bred and crossbred from common grey carp for at least a thousand years, and they have become one of the most beautiful freshwater fish in the world. Given continuing care, they will have a very long life in the fountain. Since their placement in the fountain, to my knowledge, only two were lost. One was speared with a stick. Another was thoughtlessly destroyed by chlorine when it was removed from the fountain and placed in the college swimming pool.

Michael G. Wilson '63 made the second gift. Over a number of years. he had assembled a collection of truly remarkable and rare scientific books. In March of 1986, he donated twenty-five volumes (and since then additional volumes) to the college as representative of the art of scientific book production during the first one hundred years of printing. The volumes are housed in the special rare book collection of Sprague Library, and I hope that every student will visit and examine these scientific treasures.

CHAPTER 11

Trustees

HARVEY Mudd College has been exceedingly fortunate in attracting trustees with a dedicated commitment to the college, to its community, and especially to the college's mission. It is remarkable that at the beginning of the Third Decade Plus, three of the twelve founding trustees—Henry T. Mudd, Dr. Norman F. Sprague Jr., and Robert Bernard—were still active in board affairs. Joe Platt was also an active trustee during my tenure. On May 17, 1981, the board of trustees awarded the degree of doctor of science, honoris causa, to Joe on his retirement from the presidency of Claremont University Center and to honor his long service to Harvey Mudd College.

Of all trustees at HMC during the Third Decade Plus, Henry Mudd stands apart. Henry had served as a trustee in The Claremont Colleges long before the founding of "our" college, as he was wont to say about HMC. He was a founding trustee of Claremont Men's College; he joined others in 1947 in pledging funds for the initial endowment of that college. He continued to serve actively as a CMC trustee until the founding of HMC. In 1965, when the board of trustees of CMC created the honorary title of "Life Trustee," Henry was honored as one of the first two so designated. He also followed his father's footsteps as trustee on the board of fellows of the Claremont University Center, where he was seen as a vocal and articulate advocate of the "Group" concept. At the founding of HMC, he continued his interest in the group serving as one of four HMC representatives to the board of fellows.

Vivian and I first met Henry during the interviews preceding my appointment. This 6-foot, 7-inch, gracious, considerate man was not only our principal trustee, but also became our friend. He was a mining engineer, a graduate of Stanford and the Massachusetts Institute of

Technology. After civilian and naval service in World War II, Henry joined his father's company, the Cyprus Mines Corporation,[1] and became chief executive officer when his father died. Henry was widely known in Los Angeles and San Francisco as a result of his participation as a director on numerous corporate and charitable boards. These affiliations served the college well at its founding and for many years.

Henry loved adventure. He took every opportunity to scuba dive in his frequent travels to various parts of the world. He loved nature and was a cataloguer of wild flowers. He was a man for all seasons.

The time arrived when Henry wished to step down from the Cyprus Mines Corporation. No member of either the Mudd or Sprague families had joined the corporation. Unfortunately, a tragic plane crash had taken the life of the future CEO that Henry was grooming as his replacement. Consequently, Henry and his board of directors decided to sell the corporation. The timing of the sale proved propitious with the corporate stock at peak value.

Henry served as chair of the board of trustees until November of 1981. We met regularly (almost every other week as our schedules permitted) to review college affairs and the college business to be presented to the board. These meetings took place in downtown Los Angeles in Henry's corporate office, surrounded by the artifacts and art pieces collected by Henry from around the world, especially from the island of Cyprus. Many may now be seen in the display cases on the fourth floor of Sprague Library. After the sale of the corporation, we met for lunch in the members' dining room of the California Club. Henry customarily sat at a corner table where he could view the entire room and its comings and goings. Invariably, he began his lunch with one small serving of Dry Sack sherry. It was, I soon learned, a ritual, and as far as I know his only aperitif. Our luncheon conversations ranged widely over topics as diverse as World War II and its influence on the island of Cyprus, science, philosophy, and psychology. At times Henry would talk about his family. I sensed a deep abiding love, and concern, for his children.

Henry was immensely proud of the college, and determined that it would succeed. His major interest was in finding individuals to serve the college well as trustees. Indeed, many trustee appointments were the result of his efforts. His second principal interest was the faculty and their curricular interests and priorities. Henry also took every opportunity to talk with students. He was an avid reader of *The Muddraker*, the student newspaper.

One small incident illustrates his good humor and lack of pretense. He regularly brought distinguished visitors and prospective board members to the campus, sometimes on very short notice. On these visits he loved to bring his guests to the President's House (now Garrett House) for lunch hosted by Vivian. On one occasion, Vivian had a previous engagement that simply could not be broken. What to do? She prepared a suitable casserole

and left instructions with our very capable part-time housekeeper, Evelyn. Unfortunately, to Evelyn's understandable dismay, the casserole exploded in the oven! In a desperate call to my office informing me of the disaster, she asked what might she do. I suggested we order sandwiches downtown and said that everything would be fine. Henry arrived with our guest, relished the tale, and accepted the situation with a hearty chuckle and his usual warm grace.

Very soon after my arrival on campus, I was astonished to learn of the central role played in the financial stability of the college by Henry and the Mudd family in general. I learned that Henry at fiscal year-end personally made up the deficit in the annual operating budget, at times a substantial amount. At the time of one of these year-end contributions, Henry took me aside and quietly told me that it was time to end this practice and time for the college to stand on its own financial feet. He would, of course, he said, continue to contribute to the college, but would prefer to have his gifts go to endowment since his contributions were literally from his own capital. From that time forward, our highest financial priority became a balanced annual budget.

In 1980, Henry spoke to me of the need for an orderly transfer of the board chair. He felt that as the years passed, he was losing his influence in downtown Los Angeles and that it would be better for him to step aside. At the board's May 1981 meeting, he informed the trustees of his intention to step down from the chair and appointed a search committee to seek a successor. The committee comprised Bob Miller, Cliff Miller, Malcolm Lewis '67, Bob Hastings, Joe Platt, and me, with Trude Taylor serving as chair. On July 28, 1981, in a letter to all trustees, Henry announced that Hubie Clark had been nominated by the committee and would be pleased to serve as chair if elected. A paragraph from the letter succinctly records Hubie's qualifications:

> "Hubie will bring to the position impeccable credentials: engineering degrees from Caltech, leadership of a spectacularly successful Fortune 500 company, long community service with the YMCA, and more than eleven years of HMC trusteeship. As the very effective chair of our Academic Affairs committee he sees clearly the opportunities for the college and has won the esteem of the faculty and staff."

On October 30, 1981, Hubie was elected chair at the Saddle Rock meeting of the board. At the board's meeting in January of 1982, Henry was voted "Chairman Emeritus for Life." Joe Platt was voted "President Emeritus for Life." Both votes were unanimous, enthusiastic, and without hesitation.

President Baker with Henry T. Mudd

During the last few months of Henry's chairmanship, we engaged a Los Angeles portraitist, Paul Clemens, to paint a portrait of Henry from a series of photographs. We were very pleased that the painting would be supported by a generous grant from the Caryll M. and Norman F. Sprague Foundation in recognition of Henry's years as chair. Henry didn't see the finished work until it was unveiled at the annual Saddle Rock meeting that marked the end of his tenure. The portrait hangs now in Kingston Hall beside the portraits of his father and mother, where one can see the quiet, humorous twinkle in Henry's eyes.

With Henry's resignation from the chair a fact, we asked the faculty and the board of trustees to honor Henry by awarding him an honorary degree. They responded with enthusiasm. On October 30, 1981, the board of trustees voted unanimously to approve the following resolution:

> "WHEREAS, Henry T. Mudd has stated his desire to retire as Chairman of the Board of Trustees of Harvey Mudd College, and
>
> "WHEREAS, Henry T. Mudd was a Founding Trustee, having signed the Articles of Incorporation on December 12, 1955, and was elected Chair on April 16, 1958, to succeed Mildred E. Mudd, and
>
> "WHEREAS, in the twenty-three and one-half years of his chairmanship, Harvey Mudd College has flourished and progressed from 49 students to 500, increased its assets from $2.6 million to $38.7 million, enlarged its faculty from 7 to 65, increased its buildings from one (plus a

swimming pool) to thirteen (plus a swimming pool), and graduated 1,432 students, who are distinguishing themselves in graduate schools and professional careers, and

"WHEREAS, the faculty has been consistently recognized for its excellence and innovation in undergraduate teaching, and

"WHEREAS, the college has consistently enrolled students from the top two percent of high school seniors, and

"WHEREAS, these accomplishments reflect the efforts of countless individuals orchestrated by the leadership of Henry Mudd;

"NOW THEREFORE BE IT RESOLVED, that the Board of Trustees of Harvey Mudd College accepts the retirement or Henry T. Mudd as Chairman, and

"RESOLVED FURTHER, that the Board expresses its deepest gratitude to Henry for his able, sensitive, and devoted leadership under which the college's educational accomplishments constitute a virtual miracle of educational enterprise, and

"RESOLVED FURTHER, that were it not for his continuation to a third generation of the Mudd family's dedication to the goals and ideals of The Claremont Colleges, Harvey Mudd College probably would not exist and certainly would not be of the stature it is, and

"FURTHERMORE, the Board looks forward to his continuing active participation in the affairs of the college."

At the commencement ceremony of May 16, 1982, the college granted its prime founder the degree of doctor of engineering. It was a moving moment. Another poignant moment occurred at the board of trustees meeting on that same day, when Dr. John Mudd, Henry's son, asked to speak, rose, and spoke movingly to offer congratulations to his father on the conferring of the honorary degree.[2] He said, in part:

"It is an honor richly deserved for your remarkable skill in selecting great people, and for twenty-five years of extraordinary achievement and effort which have built Harvey Mudd College into far and away the most successful new college in America, while at the same time maintaining a successful business career."

Later, Henry was to play a key role in, for him, a difficult and extremely important circumstance. At the founding of the college, Mrs.

Mildred Mudd, Henry's mother, established the Mildred E. and Harvey S. Mudd Foundation. The original directors were three lawyers who presumably had formalized the foundation. Henry and Mrs. Caryll Mudd Sprague replaced them as directors when the foundation became fully operative. They, in turn, invited Mrs. Virginia Coberly (at the time, Mrs. Henry Mudd), and Dr. Norman F. Sprague Jr. (Caryll's spouse) to expand the board to four directors. At Mrs. Sprague's untimely death, her directorship passed to Dr. Norman Sprague III, her son, as she had specified.[3]

Henry stoutly maintained that his mother, when establishing the foundation, intended that HMC, were it to survive and prosper, would be the sole benefactor of the foundation's funds. From the outset, the income from the funds was so distributed. However, as the years passed, the Sprague directors felt some of the foundation's assets should be used for other purposes, or at the very least, this possibility should be open. Records show that as early as 1969, the possibility of dividing the foundation's assets had been raised. The issue remained in the background for years, but it was the source of a rift among the four directors. Mrs. Coberly declared it an issue that should be resolved as soon as possible before it brought an irreversible estrangement between the families. For many years, Henry vigorously resisted any change, believing strongly in his mother's intention; Mrs. Coberly was adamant that a solution be found. Difficult negotiations ensued. Eventually, Henry compromised and the foundation's assets were divided in two parts, with a major share allocated to the college. Henry had asked me to be available on the critical final day of the negotiations, and when he emerged from the meeting, he was obviously very moved. With great emotion, he told me that the factor that contributed most to his agreement to the compromise was the declaration by the younger Dr. Sprague that he, Henry, should know that the Spragues also regarded HMC as "their" college and that they would continue their strong interest. The passage of time has certainly proven this the case!

A formal letter addressed to me closed the matter, and I reproduce it here in its entirety as one of the pivotal historical documents of the college.

May 28, 1986

Mr. D. Kenneth Baker
President
Harvey Mudd College
Claremont, California 91711

Dear President Baker:

The undersigned, as Trustees of the Mildred E. and Harvey S. Foundation, are very pleased to inform you that they have

unanimously decided that, if certain conditions are met, the Foundation will make a gift to Harvey Mudd College of:
(i) 100% of that amount of net income received by the Foundation during its fiscal year ending May 31, 1986, which has not previously been distributed to Harvey Mudd College, a portion of which is to be designated as Mildred E. and Harvey S. Mudd Matching Fund, with one-half of the remainder to be allocated to operating expenses and one-half of the remainder to be allocated to the Harvey and Mildred Mudd Endowment Fund.
(ii) 100% of the net income received by the Foundation during the month of June 1986, with one-half to be allocated to operating expenses and one-half to be allocated to the Harvey and Mildred Mudd Endowment Fund.
(iii) 60% of the assets (other than those representing undistributed net income for the fiscal ear ending May 31, 1986) which the Foundation holds on May 31, 1986.

The first condition is that the College agree that the entire gift as defined by (iii) above be added to the principal of the Harvey and Mildred Mudd Endowment Fund as true endowment, the income to be used for the general purposes of the College as determined by the College's Trustees. The second condition is that the Attorney General of the State of California not object to this gift. The third condition is that despite past practice, the College agrees that the Foundation has no obligation to make any further distributions to the College although the Foundation may do so in the future at its discretion.

If the first and third conditions are acceptable to Harvey Mudd College, please have a duly authorized representative of the College accept this gift and enter into the agreements required by those conditions by executing in duplicate original the following page, and return one of the originals to us. We would also like to have for our files a certified copy of the resolution of the Executive Committee of the board of trustees authorizing that representative to accept this gift and enter into the agreements required by the conditions to this gift.

(Signed, Co-Trustees)
Victoria N. Coberly
Henry T. Mudd
Norman F. Sprague III
Norman F. Sprague Jr.

On June 2, 1986, the Executive Committee of the board of trustees unanimously voted acceptance of the specified conditions and the gift, and authorized me to so inform the foundation. Henry and Mrs. Coberly, as agreed previously, resigned from the foundation board.

The key paragraph is paragraph (iii), assigning to the college 60 percent of the principal of the foundation's assets. The amount was $16,660,027. Its transfer to the college almost doubled the endowment, but operating income was essentially unchanged since we lost the annual grants from the foundation, but received an equivalent amount of additional endowment income.

I know that the stress of these negotiations was extremely difficult for Henry but it was soon behind him. He continued an active role on the Board Affairs Committee, the Personnel and Compensation Committee, and the Development Council.

George McKelvey and I spoke frequently to one another of the need to honor Henry in some fashion. Henry stoutly resisted all of our suggestions, particularly the possibilities of naming a building or a professorship after him, stating he wanted those reserved for donors. At a noontime lunch one day, I asked him if he would sit for a sculpture. After some hesitation, he said he would if we could agree on a sculptor. I consulted with several artists, in particular sculptor Aldo Casanova at Scripps College. They highly recommended a Los Angeles sculptor, Lewis Cohen. Henry agreed to a luncheon meeting with Lewis on the condition that unless there was a meeting of minds, nothing further would transpire. The two of them immediately found common interests and the work was begun. Henry rejected several first attempts, but accepted the bronze piece now found in the lobby of Galileo Hall. He insisted that the sculpture not be placed outside where as he said, "the birds would…on his nose." We dedicated the bust on April 21, 1988.

E. H. (Hubie) Clark Jr., appointed to the board in 1970, proved to be another key board member. When originally approached to accept trusteeship, Hubie declined. However, after several conversations with Joe Platt, he became convinced that the college's educational philosophy matched his own. He was particularly taken by the interpersonal relationships emphasized in the Clinic Program and by the humanistic elements represented by the curriculum's commitment to the humanities and social sciences. He agreed to serve as a trustee if he could undertake meaningful and significant assignments. His service to the college has turned out to be a marvelous meeting of interests, and Hubie has become one of the longest serving and most effective trustees on the board.

In retrospect, I believe his principal interest was in how well the college was living up to its mission statement. He was an unwavering advocate of a humanistic education for engineers, mathematicians, and scientists. He stoutly espoused the advantages of a small college, but regarded "small"

as a relative term to be defined by the circumstances surrounding the issue. He was concerned about the proper housing of students and the college's commitment to a residential experience. He sought evidence of the "value added" during a student's four years. He was a strong supporter of the faculty and a proponent of the Clinics and the experiences they provided. For many years, he chaired the key Academic Affairs Committee (later the Educational Planning Committee), and skillfully led the community through the lengthy debate on the size of the college. On all issues, he insisted on wide-ranging conversations and every meeting of his committee involved representatives of each constituency that had an interest in the matter at hand.

Elected the third chair of the board in October of 1981, Hubie was very effective, pleasant, often exuberant, and at times a tough taskmaster. He served as board chair throughout the remainder of the Third Decade Plus and beyond.

I very much enjoyed working with him. He and his wife, Patti, went far beyond the call of duty to be supportive of Vivian and me. As the highly successful CEO of his oil tool and service company, Baker International, he was deeply involved in a business in turmoil. Crude oil prices were skyrocketing and the entire world faced a crisis. He traveled a great deal but was always available when I needed him, and I don't recall him missing a board meeting. We met regularly at his office complex, at which times he gave me his complete and undivided attention in spite of buzzing telephones and busy secretaries. He had a marvelous ability to concentrate on the matter at hand.

Hubie's first undertaking as chair was to initiate a review of the committees of the board in January of 1982. His goals were to reduce the number of committees, to rotate the chairs, and to survey all trustees asking them to express their interests and how they would like to participate in board matters. The result was a restructuring of board committees to reflect changed assignments and responsibilities. New committees established included a Board Affairs Committee charged to recommend on trusteeship, and a Personnel Committee charged to monitor personnel policies and the welfare of all employees, but particularly faculty and staff.

Hubie had developed for his company a valuable technique for five-year budget planning and five-year production projections. The system enabled him and his chief officers to predict weekly the status of the company's operations. He introduced me to the details of the process over a period of several months and encouraged me to attempt to adapt them to the college. I thought the suggestion worthwhile; I had seen nothing like it in higher education. The bad news is that I was unable to carry over the ideas successfully to college operations in part, I believe, because management at all levels in a corporation plays a different role than does the largely consensus style management that prevails in the academic world. A second

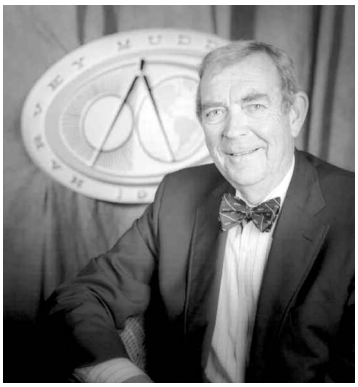
reason (or perhaps rationale) is that once launched, the academic year has a life and momentum of its own with little possibility of making en route adjustments. The good news is that the effort caused the members of my staff and me to gather a considerable amount of data about college operations which otherwise would not have been compiled. The data brought a much clearer understanding of all aspects of the college.

As chair of the board, he successfully negotiated settlement of a contentious issue with Scripps College, and led the effort to acquire the land west of Sprague Library. Among Hubie's many fund-raising efforts, his acquisition of the endowed Beckman Faculty Research Fund had by far the greatest impact on the faculty.

Hubie's dedication to the college was honored and recognized by a friend and fellow trustee, Carl W. Robertson, who established the E. H. Clark Jr. Scholars program with a generous gift to endowment. The recognition was well earned and will provide generous support for generations of Clark Scholars, one of whom perhaps will make a future contribution to the welfare of the college in measure equal to that made by Hubie.

It is impossible to write and note the contributions of all the other trustees who served during the Third Decade Plus, and a glance of the list at the conclusion of this chapter confirms the impossibility. However, a number provided particularly valuable and exemplary service and I select several as examples.

Trude Taylor is certainly one of these. First appointed in 1969, he has served as trustee continuously and actively since then. He has served as a member, vice-chair, or chair of nearly every trustee committee and played a lead role in several. Frequently he served as personal advisor to me. He followed Hubie Clark as chair of the key Educational Planning Committee at a time when the faculty were engaged in lengthy debates on the proper and future place of biology and computer science in the curriculum. With great skill and with substantial help from Dean Tanenbaum, Trude brought reasonable discourse to the debates. He also played a significant role in assisting the critical Computer Science Steering Committee. Toward the end of my term, he successfully undertook the chair of the trustee, faculty, alumni, student committee charged to find the third president of the college, a task that is the most important responsibility of a trustee.


Trude C. Taylor

The lengthy and meaningful service of Trude and his spouse, Joan, to the college was acknowledged and honored by the Board of Governors of the Alumni Association when the board elected both Joan and Trude "Honorary Alumni." Nothing could be more fitting, and the Taylors were genuinely moved by the honor. At a personal level, Trude and Joan became very good friends of both Vivian and me. We enjoyed and continue to enjoy their hospitality and the sharing of good times at both their beach house and mountain retreat. We are grateful.


Alexander and Adelaide Hixon

Alexander Hixon was another trustee worthy of note in this necessarily brief compilation of individual trustees. Alec served on many of the committees of the board and chaired a number. He did not miss a meeting and was always a contributor. Actually it was not just Alec, but the team of Alec and Adelaide Hixon, who served. Their names are prominently displayed on the campus as the donors who made possible the construction of Hixon Court in the front of Sprague Library.

During my tenure on the campus, they were unstintingly generous in hosting important college social functions at their gracious home in Pasadena. Alec's courtly manners, and Adelaide's sprightly and engaging humor, enlivened every event they hosted. The evenings introduced numerous important guests to the college. Also, at the Hixons' invitation, staff members and trustees frequently held daytime or early evening committee meetings at the Hixon residence, where business could be conducted quietly away from the busy life on the campus.

Beyond these valuable occasions, both Alec and Adelaide maintained an unwavering commitment to the humanities and social sciences at the college. Their experience in the U.S. Foreign Service had convinced them that, for the future good of the nation, students needed exposure to professors who would make them aware of the world, particularly the peoples and nations beyond the campus. So strong was their conviction that they endowed the Alexander and Adelaide Hixon Professorship in the Humanities. In May of 1983, Dr. Nathaniel Davis, a career Foreign Service officer, was announced as the first appointment to the professorship effective September 1983. He proved to have an enormous impact on generations of students as the Hixons had hoped.

The Hixons showed continuing interest in the personal welfare and life of the Bakers. We were occasionally guests at their summer residence, where we greatly enjoyed the relaxation, the conviviality, and especially the good humor of those times.


Dr. Joseph J. Jacobs

Dr. Joseph J. Jacobs was first appointed to the board of trustees in 1973 and still (as of 2002) serves actively. The Jacobs Science Center (originally the Science Building) carries his name in recognition of his many contributions to the college. A Ph.D. graduate of Brooklyn Polytechnic Institute in chemical engineering, he rose through vision, hard work, and skill to be chief executive officer of Jacobs Engineering Group Inc.

I believe it is fair to say that Joe is somewhat of an academician and rightly so. Consequently, from the date of his original appointment as trustee, he has exhibited an abiding interest in the faculty and the academic program of what was a struggling small college when he joined the board. However, he also understood the need of good laboratory space in engineering and science college buildings and hence his generosity in funding the renewal of those facilities. It was not his generosity and commitment alone. His lovely spouse, Vi, was a full partner in the

gift-giving decisions, and those decisions led not only to better laboratories and offices, but to endowment gifts, student scholarships, and matching funds for gifts received from alumni, faculty, and staff.

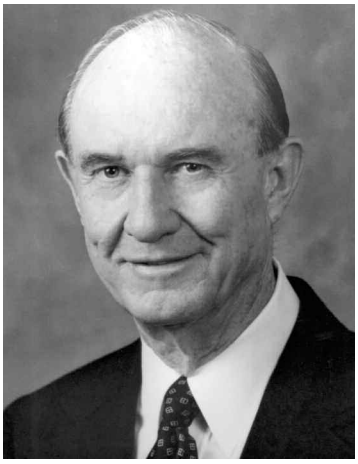
Joe's academic interests quite naturally led him to long-term service on the trustee Educational Planning Committee. At times his schedule prevented his travel to Claremont or Los Angeles for meetings, but he overcame that difficulty by hosting committee meetings in his boardroom in Pasadena. Problem solved! Harvey Mudd College was fortunate in attracting such a dedicated and loyal trustee.

Clifford Miller joined the board of trustees in 1974, but he had been active in college affairs for some time before. He served the Development Office and trustees as public relations consultant, and in that role became more or less the right hand of George McKelvey, vice president for development. Cliff's talent, vision, and skill did much to build the college's reputation for excellence. He insisted on careful analysis and reflection before action was taken; his recommendations were always carefully thought through. He was a strong believer in Joe Platt's "idea of a college" and did much to bring it into being. He was an active participant in the searches for appointees in the Development Office, providing pertinent and apt recommendations that served the college well.


Clifford A. Miller

Cliff's committee assignments naturally fell in the area of development, where he was a pillar of strength on the Development Council. He was the shaper of fund-raising campaigns, including the successful Campaign 25/32. The high regard in which he was he held by his fellow trustees was reflected in his appointment as the fourth chair of the board of trustees after Hubie Clark stepped down from that position.

Finally Dr. Norman F. Sprague Jr., a son-in-law of Mrs. Harvey Mudd, joined the board as a founding trustee in 1955. Joe Platt movingly describes him as a quiet, conservative individual and highlights his medical education and experiences in World War II.[4] He played a key early role in the history of the college as chair of the Buildings and Grounds Committee, where he insisted that a master plan for the campus be prepared with close attention to the architecture. He was instrumental in the securing of seed money for the construction of Kingston Hall and Thomas-Garrett Hall. The most significant contribution by Dr. Sprague and his spouse, Caryll, was the gift of funds for the design and construction of a library to be located in the heart of the academic area of the campus. The library was named in honor of Dr. Sprague's father, a distinguished physician.


Dr. Norman F. Sprague Jr.

Dr. Sprague continued his trusteeship during my tenure, providing leadership in the establishment of biology as a curricular offering at Harvey Mudd College. He was also chair of the important Investment Committee. His acceptance of such a wide range of tasks over the years reflects the dedication of this quiet, reflective trustee. His impact on the college cannot be overstated. In 1979, he was obviously pleased to know that his son, Dr.

Norman F. Sprague III, would join him as trustee to continue the long Sprague tradition of association with the college.

These trustees are only a small complement from among the whole but they are representative of the whole. There are others who contributed much time, talent, expertise and resources to Harvey Mudd College. Bob Hastings, Ken Julin, Fred Lindvall, Marian Garrett, Bob Miller, Bill Keck, Jim Kilroy, Ken Jonsson, Mo Benson, Don Strauss, and Bill Zimmerman are certainly among them. Without the commitment of these very special individuals, the college would not have thrived.

Alumni Trustees

Early during the Third Decade Plus, discussion in the trustee Board Affairs Committee raised the question of the proper process for the appointment of alumni to the board. Malcolm Lewis, an alumnus of the Class of '67, had joined the board in 1972 and served the college faithfully and well. Not until 1978 was a second alumnus, Thomas L. Carr '69, appointed.

Members of the Board Affairs Committee believed that the time had come for greater alumni involvement in the affairs of the college and deliberated at some length about how to go about selecting candidates. The committee was adamant in believing that alumni should not be considered mere representatives of alumni, but should be trustees in the fullest sense of the word. The committee also felt that alumni should be appointed on a three-year rotating basis in order to spread the trustee experience as widely as possible. All were welcome participants in the affairs of the board, with the understanding that any such trustee would be eligible for further appointment if a position was open and circumstances warranted the appointment. The committee consulted with Malcolm Lewis and the Harvey Mudd College Alumni Association to work out the details. In 1982, a series of three-year appointments began with Walter A. Foley '69 as the first in the series. Those following him were David Howell '61, 1983; Patrick J. Barrett '66, 1984; Beverly J. Orth '74, 1985; Donald B. Hawthorne '77, 1986; and Joseph S. Barrera Jr. '62, 1987. All brought the promise of great things to come.

Working with each and every one of the trustees was a special experience. They gave generously of their valuable time, made significant financial contributions at critical times, and drew on their associations and friends in their communities. The college's mission was strengthened through their service and they did much to assure the future of the college. It was a great privilege to share the Third Decade Plus with them.

Trustees

(Active in the Third Decade Plus, listed by order of appointment)

	Appointed	Retired/Deceased
MUDD, HENRY T. Chair & CEO, Cyprus Mines Corp.	1955	1990
SPRAGUE, NORMAN F., JR., M.D. (Honorary)	1955	1997
ATWOOD, J. LELAND (Lee) (Honorary) President/CEO, North American Rockwell Corp.	1956	1981
PLATT, DR. JOSEPH B. (Honorary) President, Claremont University Center	1956	1988
HASTINGS, ROBERT P.[5] (Honorary) Partner, Paul, Hastings, & Janofsky	1956	1985
DAVENPORT, JAMES F. (Honorary) Vice President., Southern California Edison Co.	1957	1980
COBERLY, WILLIAM B. JR. (Honorary) President, California Cotton Corp.	1957	1983
JULIN, KENNETH F. President, Leach Corp.	1960	1987
PECK, CLAIR L (Honorary) Chair, C. L. Peck, Contractor	1961	1978
HYLAND, LAWRENCE A. (Pat) (Honorary) Vice President and General Manager, Hughes Aircraft Co.	1961	1978
LINDVALL, DR. FRED (Honorary) Chair, Division of Civil, Electrical, Mechanical Engineering and Aeronautics, Caltech	1962	1988
LEE, CHARLES W. (Honorary) President, Western Steel Division, U.S. Steel Corp.	1963	1980

	Appointed	Retired/Deceased
GARRETT, MARIAN T.	1963	
KELLY, GERALD R.	1963	1980
(Honorary)		
Partner,		
Musick, Peeler and Garrett, Los Angeles		
CASE, GERALD R.	1965	1982
(Honorary)		
Founding Partner,		
Case, Hardy and Co., CPA		
RIEMER, HUGO	1966	1980
(Honorary)		
President,		
U. S. Borax & Chemical Corp.		
MUDD, SEELEY W., II, M. D.	1968	1983
BALLHAUS, WILLIAM F.	1969	1984
President, Beckmann Instruments, Inc.		
TAYLOR, TRUDE C.	1969	
Chair/President,		
Electronics, Memories, & Magnetics Corp.		
HIXON, ALEXANDER P.	1969	
Director, Midland Investment Co.		
BROWN, GEORGE W.	1970	1980
Founder, EDUCOM; Dean,		
Graduate School of Education, UC Irvine		
CLARK, E. H. (Hubie) JR.	1970	
President and CEO., Baker International Corp.		
MILLER, ROBERT P. JR.	1970	1991
(Honorary)		
President, SWECO, Inc.		
GIERSCH, CARLOTA BUSCH	1971	1982
CARTER, VICTOR M.	1971	1977
KECK, WILLIAM M. II	1972	
President, Coalinga Corporation		
BOOTH, OTIS JR.	1972	1986
President, Cap Tech Inc.		
LEWIS, DR. MALCOLM '67	1972	1984; 1985
President, Malcolm Lewis Associates/Engineers, Inc.		
BERGMAN, GUNNAR B.	1973	1978
Consultant		
BRAUN, HENRY A.	1973	1980
(Honorary)		
Vice President,		
C. F. Braun & Co.		

	Appointed	Retired/Deceased
HOUGH, GORDON L. President, Pacific Telephone and Telegraph Co.	1973	1982
JACOBS, DR. JOSEPH J. Chair, Jacobs Engineering Co.	1973	
JONSSON, KENNETH A. Vice President/Director, KRLD Corp.	1973	
LONG, EVERETT J. Chair/CEO, Everett Charles, Inc.	1982	1986
MERRITT, JOHN B. (Honorary) President, BJ-Hughes Inc.	1973	1985
ELDRIDGE, WILLIAM C. William Eldridge & Co.	1973	1980
MILLER, CLIFFORD A. President, C. F. Braun & Co.	1974	
FIELD, A. J. President, Global Marine Inc.	1974	
BENSON, E. M. (Mo) JR. Executive Vice President, ARCO Oil Company	1974	
LINDVALL, DR. FREDERICK C. Chair of the Division of Civil, Electrical, and Mechanical Engineering and Aeronautics, Caltech.	1974	1988
BARKAN, A. WILLIAM Executive Vice President, Wells Fargo Bank	1975	1979
McCONNELL, RICHARD E. Founder, McConnell & Miller Investments	1977	
PARKER, CHARLES F. (Honorary) Senior Vice President, UNOCAL	1977	1983
CARR, THOMAS L. '69 Public Affairs Coordinator, Bechtel Corp.	1978	1982
WRIGHT, H. DUDLEY Chair/President, Orbisphere Corp.	1979	
MUDD, JOHN W., M. D.	1979	1988
SPRAGUE, NORMAN F., III, M.D.	1979	
TYSON, GRAHAM	1979	1982
GIBSON, NELSON W. President, Nelson W. Gibson Associates	1980	1987
JOHNSON, LLOYD P. Vice President, Security Pacific National Bank	1980	1985

	Appointed	Retired/Deceased
KILROY, JOHN B. (Jim) (Honorary) Chair, Kilroy Industries	1980	1996
REYNOLDS, JAMES M. President, Reynolds Rentasign Co.	1980	1985
PAINE, THOMAS O. President/CEO, Northrop Corp.	1980	1983
STRAUSS, DONALD A. Vice President, Beckmann Instruments	1981	1995
FOLEY, WALTER A. '69 Vice President, Megatek Corp.	1982	
ROBERTSON, CARL W. Director, Bank of California	1982	1995
ZIMMERMAN, WILLIAM R. President, Zimmerman Holdings, Inc.	1982	
LANDRY, EDWARD A. Partner, Musick, Peeler & Garrett	1982	
BRYANT, G. H. (Jerry) President, Resource Exploration Mining, Inc	1982	1983
FULLERTON, JAMES D. Chair of the Board, Capital International	1983	1985
HOWELL, DR. DAVID W. '61, Owner/President, Alum-Alloy Co., Inc.	1983	1986
SCWARZENBACH, J. CHRISTOPHER President, Pascall International Corp.	1983	
MARAFINO, VINCENT N. Vice President, Lockheed Corp.	1984	1987
BARRETT, PATRICK J. '66 Managing Patent & Trademark Counsel, HP Corp.	1984	1987
WOOD, WILLIS B. President, Southern California Gas Co.	1984	
ORTH, BEVERLY J. '74 Associate, William T. Mercer, Inc.	1985	1988
MORPHY, MICHAEL President, California Portland Cement Co.	1985	1990
KAUPPILA, MARY MYERS President, Energy Investment Co.	1985	1996
CHAMBERLAIN, WILLARD T. Senior Vice President, ARCO	1986	1989
HAWTHORNE, DONALD B. '77 Chief Financial Officer, Genelabs, Inc.	1986	

	Appointed	Retired/Deceased
LEONHARD, WILLIAM E. Chair/CEO, Ralph M. Parsons Co.	1986	
LUKASIK, STEPHEN J. Corporate Vice President, Northrop Corp.	1987	
McGEE, GERALD D. Director, Ogilvy & Mather, Inc.	1987	1990
BARRERA, JOSEPH S. JR., '62 Founder/GM, Harris Microwave Semiconductors	1987	1990

CHAPTER 12

Campaign 25/32

IN 1975, with the resignation of Joe Platt pending, and his appointment to the presidency of Claremont University Center a certainty, trustees initiated discussions of a fund-raising effort.[1] In early 1976, prior to the appointment of the new president, the board announced Campaign 25, a major fund-raising effort with a goal of raising $25 million by the year 1980, the 25th anniversary year of the college's founding.[2] The trustee resolution stated that the purpose of the campaign was

> "to increase the endowment (amounting to $4.2 million on that date), to reduce debt, and to provide additional support for the academic program."

At the request of Henry Mudd, trustee Ken Julin accepted the leadership role as campaign chair. The members of his cabinet were as follows:

Campaign Vice Chair	Robert P. Miller
Special Gifts	Robert P. Hastings Henry T. Mudd Clair L. Peck Carlota Busch Giersch
Corporations	E. M. Benson Jr. Joseph J. Jacobs Trude C. Taylor

The Alumni Fund	Dennis F. Rich '66 Thomas L. Carr '69 Ludd A. Trozpek '71 Beverly J. Orth '74 Jude P. Laspa '65
Leonardo da Vinci Society	Alexander P. Hixon
The Galileo Society	Gilbert Hanke Robert McAlister
Parents Fund	Dr. & Mrs. D. R. Tompkins Mr. & Mrs. Ed F. Little
The Founding Friends	Dr. Norman F. Sprague Jr.
Public Relations	Clifford Miller
Research Grants	B. Samuel Tanenbaum

College staff member Mike Kearney from the Development Office was assigned as campaign director to provide on-going staff support for the cabinet.

The campaign theme chosen by the cabinet, "A Second Generation of Commitment," reflected the milestone the college was passing as its founding president stepped aside.

In 1976, two generous early gifts to the college gave the campaign a jump-start. The Parsons estate awarded $1 million to the college for the benefit of the Parsons Engineering Building, and Mrs. Stuart Mudd and her family pledged a very generous gift of $750,000 to fund the Stuart Mudd Professorship of Biology.

At the June 1977 meeting of the trustees, we were happy to announce that total gifts to-date amounted to $11,191,522 or approximately 45 percent of the goal. Just over a year later (July 1978), the total had reached $15,600,000, and on May 8, 1979, had reached $17,600,000. This was good news to report at the May 1979 meeting of the board of trustees. Additional good news was at hand—we had received a grant of $375,000 from the NEH (the National Endowment for the Humanities) as a challenge to raise sufficient funds for the endowment of two professorships in the humanities.

At this juncture, two events cast a cloud over the campaign. At the May 1979 meeting of the board of trustees, I had the unhappy assignment of reporting to the board that Mike Kearney, staff campaign director, had resigned to accept a position on the development staff at the University of California, Irvine. It was a career advancement for him, but a serious loss

for us; however, the campaign faltered only for a moment as George McKelvey picked up the load.

In July 26, 1979, Ken Julin was forced to resign his chair (but not his trusteeship) because of family reasons. It was a grievous loss since Ken's infectious enthusiasm and his frequent presence on the campus did much to spur on the effort. Our loss was greatly mitigated by Campaign Vice-Chair Bob Miller's immediate and willing acceptance of the chair.

At the meeting of the Executive Committee of the board of trustees on November 31, 1979, we reported that a total of $22,000,000 had been reached. However, many new demands had arisen on campus for dormitory space, renovation of the Graduate Wing in the Libra complex, and additional scholarship funds. In the light of the additional needs, and at Ken Julin's urging, the Executive Committee increased the goal of the campaign to $30,000,000. The committee extended the closing date of the campaign an additional year from June 1980 to June 30, 1981, an action ratified by the full board at its next meeting in December, 1979. Only three months later in March of 1980, the board increased the goal a second time, to $32,000,000! Campaign 25 had become Campaign 25/32!

Happily, fund raising efforts in fiscal year 1980–81 produced a near-record year. Over $7,000,000 in gifts and grants were recorded. At their regular meeting on June 23, 1981, trustees officially closed Campaign 32 with a total of $30,993,000 raised with "goals achieved for all areas of the campaign except funds to cover the indebtedness on Marks dormitory and the Libra Wing."

It was a remarkable effort for a small college, and although the revised goal was not quite reached, the original goal of $25 million had been overwhelmingly exceeded.

In a report to campus constituencies in December of 1981, we were pleased to report that because of the campaign, the endowment had tripled from $4.2 to $12.2 million. Major gifts to endowment provided the following:

Four endowed professorships:
- the Alexander and Adelaide Hixon Professorship of the Humanities
- the Louisa and Robert P. Miller Jr. Professorship of the Humanities
- the Oliver C. Field Professorship in Engineering
- the Stuart Mudd Professorship in Biological Science

Endowed funds for academic equipment, and
Endowed funds for scholarships

Three other aspects of Campaign 25/32 were particularly noteworthy. Under the leadership of trustee Bob Miller, the faculty and staff of the college responded magnificently to the campaign with a 92 percent participation rate, surely a reflection of their genuine commitment to the college.

Second, the alumni and alumnae were asked to increase their fund raising efforts significantly. They responded with an unbelievable 338 percent dollar increase, and a participation rate of 56 percent in the Alumni Fundd, a remarkable performance given the large proportion of alumni still in graduate school.

Third, and equally remarkable, was the astonishing support the young college received from foundations during and as extensions of the campaign, including:

Keck Foundation 1981	
—for land acquisition east of Mills Ave.	$609,000
Fletcher Jones Foundation 1981	
—for the Jones Computer lab	$500,000
Irvine Foundation 1982	
—for new Admission Office space	$100,000
Parson Foundation 1982	
—for a revolving student loan fund	$150,000
Steele Foundation 1982	
—for scholarships (four-times match)	$1,000,000
Keck Foundation 1983	
—for graduate wing	$1,000,000
Keck Foundation 1986	
—for VAX 8600	$450,000
Hewlett Packard 1986	
—for two computers	$150,000
National Science Foundation 1986	
—to the Chemistry Dept.	$200,000
Digital Equipment Corporation 1986	
—to the Physics Dept. for MicroVAX 11	$23,204
Fletcher Jones Foundation 1987	
—for networking the campus	$ 200,000

Clearly these major grants, all except two for physical plant or academic equipment, reflect the warm reception we received when approaching foundations for support of the college. Without the college's known academic excellence, magnificent trustee and alumni support, and bright prospects for the future, we would not have received a favorable response from these astute grant makers. The two exceptions, the Steele Foundation grant for scholarships and the Parson Foundation grant for loan funds, were equally important since they helped assure a continuing flow of highly capable students.

Although the campaign officially closed in June 1981, discussions were underway in Claremont as a whole on the need for the upgrading and modernization of Honnold Library, the central library of The Claremont

Colleges. In October of 1983, I informed the board of trustees that the Council of Presidents had agreed to go forward with the $8,000,000 project and that the college's fund-raising share was $321,000. Although we had just completed a major fund-raising effort, we successfully achieved this additional challenge.


George I. McKelvey

George McKelvey, vice president for development and planning, played a major role in this important, successful, fund-raising campaign. His philosophy was, first, to find individuals who had some interest in the college's programs; and second, to get them involved in the college in some meaningful way. It was his conviction that the rest—commitment and giving—would follow.

George had an acute sense of what HMC was all about. That sense, coupled with a fine mind and a marvelous grasp of the English language, made possible numerous, high-quality brochures and publicity pieces. They did much to develop the college's reputation for excellence. He and I made numerous fund-raising visits to corporate and foundation offices from coast-to-coast. George had an uncanny awareness of when the time was optimal for these visits. He was always prepared for meetings, and the materials on which he based our trips reflected the careful research he had done and the meticulous records his office maintained. His preparation proved to be invaluable.

In April of 1983, George underwent quadruple coronary bypass surgery after some chest discomfort early in the year. His otherwise remarkably good physical condition (he was a boxing coach at Ducey Gymnasium on the CMC campus) enabled a speedy recovery, and with characteristic dedication, he was back at fund-raising within several weeks.

George had discussed with me the possibility of this book shortly before his death in 1998, ten years after the close of the Third Decade Plus. We agreed to collaborate and he appeared eager to start. It was not to be, and the manuscript is consequently the poorer. For thirty-three years, George served the college well. His encyclopedic memory and flare for storytelling would have enriched any history of the college.

CHAPTER 13

The Investment Committee

EVERY college president, and, in fact, every member of a college community, wishes for an ever-increasing endowment. A growing endowment is the result of (1) gifts received from donors who specifically earmark them for endowment purposes; (2) allocations by the board of trustees for endowment; and (3) good investment strategy and sound financial control. The Investment Committee of the board of trustees plays a particularly important role related to these factors. The college's by-laws state that the Investment Committee's primary responsibility is to instruct the treasurer of the college in all matters regarding the investment, reinvestment, and conservation of the college's endowed funds. The by-laws give no direction as to how investments are to be made, leaving the committee to formulate an investment policy and investment procedures.

The endowment increased from a 1976 value of approximately $4 million to a 1988 value of over $50 million (Appendix 7, Chart 13-1). The growth was the result of gifts to the endowment and the investment committee's strategy and management. In this chapter, I briefly review the evolution of the Investment Committee's strategy and then turn to the factors which are influenced by investment management. In 1976 the trustee members of the investment committee were:

Dr. Norman F. Sprague Jr., Chair
Charles Parker
Otis Booth
William Balhaus
D. K. Baker
Victor Carter
Al Thomas
Alexander Hixon

At the first meeting I attended, newly appointed committee members asked for information on the policies and procedures that had guided the committee in prior years. In response Dr. Sprague expressed his conviction that "in recent years, inflation and over-extension of debt in both public and private sectors have created a very uncertain and vulnerable equity market environment." He urged "great caution" in further equity investments. The committee's goal, he stated, was first and foremost to preserve the capital of the endowment. He pointed out that committee deliberations in prior years had established three principles to guide the management of the equity portion of the portfolio:

- The committee determines the percentage of the portfolio invested in equities.
- A professional manager selects individual stocks. (The committee delegates to the manager the freedom to move quickly when opportunities or warning signals so indicate.)
- If a committee member believes that an individual stock holds promise, the member is free to follow the stock's progress jointly with the professional manager and make recommendations to the committee for acquisition.

These statements reflected Dr. Sprague's conservative view[1] of the state of the equity and bond markets. Dr. Sprague was a founding trustee. He was fiscally conservative in the strongest sense of the word. He and his family had played a significant role in the founding of the college, and he had a deep interest in the financial health of the fledgling institution.[2] He was very influential in setting these committee policies and implementing procedures.

Largely because of his direction, the asset allocations of the college's endowment funds[3] in 1976 were as follows:

Cash and cash equivalents	$2,266,423	(64%)
Equities	1,210,660	(36%)
	$3,477,083	

The equity portion included twenty-two stocks. The professional manager was Lionel D. Edie of Los Angeles. The cash allocation consisted of cash equivalents in the form of treasury bills and government bonds (maturity less than five years.) The latter provided ultimate safety and a flow of interest income supporting the annual college budget. The strategy at the time was to move these holdings to long term bonds if interest rates increased.

This investment strategy was risk aversive and, in retrospect, served the college well in the first twenty years when the college was struggling to achieve balanced budgets and income was badly needed. This conservative

position, in effect at the beginning of my presidency, continued. In July of 1977, the committee authorized the chair to commit an additional $500,000 to equities if the market seemed opportune. The authorization, however, was never executed. At fiscal year-end 1977, the portfolio totaling $4.2 million was 78 percent cash, or cash equivalents, and 22 percent equities.

Endowment Growth

Over the early years of the Third Decade Plus, the book value of the endowment grew steadily, accelerating in the middle years as Campaign 25/32 gifts were realized. In 1986 it surged upward when a major transfer and two major gifts to the endowment substantially augmented the more usual annual increases. (Chart 13-1 and Table 13.1 in Appendix 7 display this growth.)

The majority of this growth occurred as a result of gifts dedicated to the endowment by donors and gifts assigned to the endowment by trustee action.

Management of the Endowment

The overall growth data are pleasing to note. However, the data reveal very little about how well the endowment is managed. The measure of endowment management is how well the purchasing power of the endowment is maintained or increased. Maintenance of the purchasing power requires sound investment strategies and a carefully thought-out policy on the use of endowment income. In the paragraphs that follow, I examine first the factors that reduce the purchasing power of the endowment, then turn to factors that increase purchasing power. I discount gifts, although gifts produce overall growth and a major part of our development effort is devoted to them. We cannot manage gifts.

Leaving aside market fluctuations over which the college has no control, three factors reduce the purchasing power of the endowment; (1) inflation, (2) withdrawals, and (3) the "endowment spending rate." The first, inflation, is beyond our control yet continually erodes the endowment's purchasing power. The second, withdrawals, are withdrawn for specific purposes. They are usually proportionately small and very rare; we will not consider them further. The third, the endowment-spending rate, is the percentage of the endowment withdrawn annually and applied to the budget. We express these reductions as equaling Inflation Rate + Spending Rate.

The investment of the endowment produces earnings. The cumulative earnings in a year are known as the annual total return (ATR):

ATR = Dividends + Interest + Realized Capital Gains

To protect the purchasing power in a given year, the reductions should at least not exceed returns.

Dividends + Interest + Capital Gains = Inflation Rate + Spending Rate

This is an extremely important equation in the management of the college's financial affairs. Good strategy and fiscal health demand that at minimum this equation be satisfied. In good years the income may exceed the rate of inflation plus the spending rate. If so, as a first priority, the excess (or some of it) should be returned to the endowment to build for the inevitably more expansive and expensive future, or returned to cover prior years in which endowment spending and inflation exceeded earnings. If negatives exceed the positives, then we are not managing fiscal affairs at all well.

The left-hand side of the equation is, of course, subject to the fluctuations of the equity and bond markets, allocation strategies, and only partially in our control. On the right hand side of the equation, inflation is beyond our control. Only the spending rate is controllable.

Table 13.2 (Appendix 7) presents the numerical values of these factors during the Third Decade Plus. The fifth column of Table 13.2 dramatically shows that for the first half of my tenure, inflation (the consumer price index) was unusually high. Those high values, when added to a high spending rate during those years, resulted in a reduction in purchasing power far exceeding the annual total return earned by the endowment. The inescapable conclusion is that the endowment was losing purchasing power in these years. Our investment goal of protecting the purchasing power of the endowment was not attained.

The remainder of the Third Decade Plus was considerably more positive because inflation was low and investment returns high, except for two years when the annual return was very low.

A Second Method of Evaluating Management Performance

Beginning in 1973, each Claremont College agreed to report endowment in endowment units, to be updated quarterly, with the initial value of the unit as $100. Expressing the endowment in unit values negates the influence of gifts added to the endowment since additions simply buy additional units.

Comparisons of unit values for CMC and HMC are shown in Table 13.3 (Appendix 7). The table shows that in the years 1976 through 1982, we were, in effect, treading water since we were unable to prevent the unit value from declining. The unit values also showed that we were not managing our endowment well.

This was of great concern to me, particularly since CMC's record was outstanding. The good results at CMC led me to hold a number of discussions with President Jack Stark. I learned that a large percentage of his endowment (80 percent) was invested in equities. His trustee investment committee was made up of a number of graduates who were in the

industry. They were actively and aggressively managing the CMC endowment by investing in a series of mutual funds.

Changes in Investment Management Strategies

The committee continued its conservative policy on equities, and in December of 1979, the percentage of the endowment in equities was still only 25 percent. However, serious concerns about investment policies and procedures slowly began to emerge in the committee. In particular, doubt was growing that the performance of the professional manager, Lionel D. Edie of Los Angeles, was satisfactory. Furthermore, there was no clear consensus on how much of the endowment should be allocated each year to the annual budget (the endowment spending-rate). Finally, the assets in the recently achieved life-income trust funds were growing, but were without oversight.

At the December 1978 meeting of the Investment Committee, Dr. Sprague introduced Richard McConnell as a guest. Dick was a Wall Street investor and one of the founders of McConnell and Miller, a small (at that time) investment firm in New York City.[4] With Dr. Sprague's encouragement, in November of 1977, he accepted an invitation to join the board of trustees and the investment committee. He proved to be a major influence in slowly moving the committee to new investment policies.

In 1979, at a landmark meeting, the Investment Committee cancelled the contract with Lionel D. Edie and agreed in principle to invest a portion of the endowment with several managers in one or more mutual funds.[5] By July of 1979, the committee had placed $500,000 with the Sequoia Mutual Fund (on the quiet recommendation of Otis Booth), and $1,000,000 with McConnell and Miller. At the same time, the committee, in response to its responsibility for life-income trusts, engaged the firm of Van Deventer and Hoch of Pasadena to manage the $2.4 million which had accumulated in trusts. In early 1981, the committee allocated an additional $500,000 to Van Deventer and Hoch for equity investment separate from the trusts. An additional $500,000 was allocated to McConnell and Miller.

These new investments need to be seen in perspective. The calendar years 1979, 1980, and 1981 were key years in the fund-raising efforts of Campaign 25/32, and millions of dollars were flowing into the endowment and therefore into the purview of the Investment Committee. As these funds arrived on campus the committee slowly but surely continued to allocate them to several managers but the proportion in equities increased only slowly. At fiscal year-end June 30, 1982, still only 30 percent of the portfolio was invested in equities and 70 percent principally in U.S. Treasury bills. At the beginning of the 1983 calendar year, 75 percent of the endowment was in equities and 25 percent in government securities,[6] a radical departure from earlier years. In the following years, the proportion slowly decreased and a target allocation of 60 percent equities and 40

percent fixed income securities became the norm. Within this allocation, however, equity investments tended to be conservative rather than aggressive, thus providing some assurance of stability at the cost of greater returns. This HMC investment policy was still comparatively conservative and risk aversive when compared with the bolder 80/20 percent policy of CMC.

In addition to its concern for the portfolio mix, the committee undertook serious evaluations of manager performance, and from time-to-time, made substantial changes.

At the January meeting of 1980, the first extended discussion of annual spending-rate occurred. The discussions revealed the two sides of the issue. On the one hand, members of the committee firmly held, as we have already seen, that it was the committee's primary responsibility to protect the purchasing power of the endowment, particularly from the erosion caused by inflation. They argued that in order to do so, the annual spending rate should not exceed 5 percent, so that if inflation averaged 5 percent, an investment return of 10 percent would do much to protect the purchasing power. On the other hand, members of the trustee Budget and Finance Committee, members of the faculty budget committee, and members of the staff sought a higher spending rate. They had become used to a higher rate, and[7] they believed that the Investment Committee could do better than an average total return of 10 percent. In addition, they claimed a higher spending-rate would aid the annual budget and address some critical college needs. We were unable to agree on a method for determining the spending rate, and the issue continued to be controversial between the two committees with compromises reached each year.

In March of 1982, trustee Alec Hixon was appointed chair of the investment committee, and Dr. Sprague was recognized for his long and committed service on the committee. In September of 1982, Tim Johnson, treasurer, attended his final meeting of the committee, and in September 1983, Ray Miller, the newly appointed treasurer, attended his first meeting. These senior staff individuals diligently and thoughtfully supported the investment committee. Tim did much to computerize reports, and Ray Miller, aided by Karen Yoshino, spent untold hours preparing data and reports to make the case for change and for evaluating the results of those changes.

At the September 1984 committee meeting, we were pleased to report that the endowment had grown to $18.82 million and that 63 percent was invested with individual managers and in mutual funds, 13 percent in equities was held by the college, and 22 percent in cash and cash equivalents. An additional $3.9 million of trusts was still under the management of Van Deventer and Hoch. Table 13.3 (Appendix 7) shows that the unit value increased in the later years of Dr. Sprague's chairmanship and in the years beyond.

During the fiscal year 1985–86, Ray Miller studied a number of methods of determining spending rates and recommended the adoption of a useful technique known as the Stanford University Model. The objective of the model was to provide a predictable income stream to annual operations, and to insure long-term inflationary protection of the endowment, the two key factors. It also provided for using some endowment income each year for budget enhancement. This is exactly what we had been searching for. It required the assumption of an annual target payout value; we established a 5 percent rate. The formula developed in the Stanford Model is found in Appendix 8.

The process of moving from principally government securities to principally equity investments had been slow and cautious. In June of 1986, the college had the good fortune to receive the following three major additions to the endowment:

• The Mudd Foundation	$16,700,000
• The Bettingen Trust	5,000,000
• The Horsley Trust	565,000

Because the change in investment strategies had been successful, the committee was in a position to receive the large gifts and efficiently invest them. As the funds became available, $3.75 million was assigned to each of four managers, $2.5 million to each of two other managers, and $6.5 million was assigned to a Government Securities Fund. Happily, the diversified portfolio passed more or less successfully through a significant bear market in 1987, when the market indices dropped by 36 percent.

Distributions from Endowment

Not all of the annual endowment earnings were applied to the budget, or more accurately, to operations. The endowment is divided into two segments. The first is known as "true endowment," and distributions from it may only be used for the purpose designated by the donor. (For example, funds for an endowed faculty chair may only be used for that chair.) The second segment, known as "quasi-endowment," is under the oversight of trustees, and amounts paid out from this portion are customarily applied to general college purposes. (Typical distributions of endowment income over several years are shown in Table 13.4 and Chart 13-2 in Appendix 7). When these distributions are combined with other endowment transactions, the result is Total Endowment Activity for the fiscal year (Appendix 7, Table 13.5).

The Third Decade Plus concluded with quite a different endowment and investment picture from that at the beginning of the period. The endowment was ten times its 1976 value; it was contributing a great deal to operations. More important, the unit value, the true measure of our

success in managing the endowment, had turned robustly positive in 1985, although we still had far to go. We had solved the riddle of determining the spending rate. Finally, we had developed a very satisfactory, diversified, professional management structure. (See Appendix 7, Table 13.6 for the schedule of managers and their holdings at the conclusion of the Third Decade Plus. Holdings on campus included largely cash and cash equivalents invested for the short term, plus odd lots of stock certificates, real estate holdings, and other temporary items.)

Trustees members of the college's Investment Committee, especially Dr. Norman F. Sprague Jr., Alexander Hixon, Richard McConnell, and Dr. Norman F. Sprague III, along with staff treasurers Tim Johnson and Ray Miller, carried out this remarkable transformation. It was one of the most notable achievements of the Third Decade Plus.

CHAPTER 14

Outreach

SEVERAL outreach programs functioned on campus in the Third Decade Plus. Dean Sam Tanenbaum created the congenial climate in which they flourished, and he played a significant role in leading them. The programs were active on the HMC campus largely during the summer months, although several included extensive activities beyond that. Only one program, to my recollection, was tuition-based. All others were federally funded, state-funded, or in part privately funded. Depending on the summer, the number of programs ranged from two to five.

Upward Bound

The federally funded Upward Bound Program, the first and longest standing outreach program at the college, continued to flourish during the Third Decade Plus, serving as a wonderful model for other outreach programs. Directed during my tenure by Octavio Boubion, its goal was, and still is, to encourage promising, predominantly minority high school students from low-income families to enter college and choose science and engineering as a career. Typically groups of about twenty-five students spent the summer at locations such as Harvey Mudd College, UC San Diego, NASA Ames in San Jose, JPL, Cal State Sacramento, Yosemite National Park, or TRW. Half a day was spent studying science, mathematics, and English; during the other half, students essentially held half-time jobs and received compensation for working with a scientist or engineer on a project. After the summer, the program continued with a changed format. Typically 125–140 students participated from high schools in the Claremont area during the school year. Nearly all graduates of the program went on to four-year colleges, and a reasonable percentage chose majors in science and engineering.

MESA

The Mathematics, Engineering, Science Achievement program (MESA) was originally directed by engineering faculty member Professor Tom Woodson, later by Mack Gilkeson, and still later by Linda Halfon. The program provided summer SAT preparatory studies in mathematics, English, and computer programming at Harvey Mudd College for about fifteen Black, Hispanic, and Native American students per summer. The goal of the program was to prepare qualified minority high school students for college-level studies in science and engineering. MESA, although principally state funded, was aided in part by corporate grants. During the school year, over one hundred students in their own high schools continued activities that followed up on their summer study.

Pre-MESA

Pre-MESA was based on the significant success of the MESA program. Pre-Mesa involved minority students just entering high school in an attempt to encourage and develop very early an interest in science, mathematics, and engineering. The program emphasized algebra as a basis for further study in mathematics and science. The Department of Energy funded the program.

Additional summer programs beyond the minority programs were aimed at furthering scientific or mathematical education.

SSPA

The Summer Science Program in Astronomy was a long-standing summer program (23 years by 1981) physically located at the Thatcher School in Ojai,, but under the general supervision of Dean Tanenbaum. The goal of the program was to expand the science preparation of selected high school students. About thirty-five participated each year, and often several of them enrolled at Harvey Mudd College. The resident directors were David Pierce of El Camino College and George Abell from UCLA.

Pre-college Teacher Development Program

The Teacher Development Program was a six-week program for high school teachers with the goal of extending their competency in science. Professors John Rae, Bill Davenport, and Mel Henriksen developed the original program that included programming of hand-held calculators and social science.

URPP

The Undergraduate Research Participation Program was a National Science Foundation program that provides summer research opportunities in college scientific and mathematics departments for undergraduates all

across the country. At Harvey Mudd College, the Department of Chemistry typically engaged up to six college students in ten weeks of intensive participation in a faculty member's research.

CADCamp

CADCamp was funded by tuition and corporate grants, and presented a two-week intensive workshop for thirty high school students of exceptional ability who had completed their junior year. The camp's emphasis was on applied computing with computer assisted design software. In the first year, over 300 students applied for the thirty places in the program, which was directed by Professor Gary Evans. The success of the program can be measured by the fact that in 1986–87, sixteen of the prior year's participants became members of the freshman class at Harvey Mudd College.

Honors Workshop

The Honors Workshop was a six-week residential program for twenty high school teachers of mathematics, chemistry, and physics. The National Science Foundation and several private foundations sponsored it. Each participant undertook intensive study in his or her discipline, plus a course in PASCAL programming. Professors John Rae and John Greever served as directors, aided variously by Ken Lane, Scott Stieg, and Bert Corben.

In their totality, these programs offered a wide range of opportunities for the various participants who shared the activities and educational opportunities they provided. Some of the programs placed special emphasis on minorities and/or students from low economic backgrounds. Some served talented secondary school students; others served college undergraduates or secondary school teachers. All served their respective clientele, and the college, well. The emphasis on English, basic science, mathematics, and computers provided a glimpse of what science education was all about, encouraging many to give serious thought to a career in science. Undergraduates participating in research under the auspices of the National Science Foundation programs caught a glimpse of what graduate study in their field might be. Teachers enjoyed the opportunity for self-development and returned to their classrooms refreshed.

In supporting these programs, the college touched the lives of many young people and some of their teachers. All gained an appreciation for the science that would play such a major role in their own future and the future of the nation.

CHAPTER 15

Postscript

AT the end of each academic year of the Third Decade Plus, on average 110 happy undergraduates crossed the graduation platform and received their degrees. Harvey Mudd College was meeting its responsibility and doing it well. Making it possible to cross the platform, however, is only one facet of the college's responsibility. It is appropriate to ask how well the college met all of its responsibilities by 1988.

The Claremont Colleges: Harvey Mudd College and its sister colleges comprise The Claremont Colleges, a relationship that has received perhaps too little attention in this chronicle.

James Blaisdell, the president of Pomona College in the 1920s and 1930s, was the founder and developer of the "Group" concept in Claremont. At the time of his retirement in 1936, he believed that his colleagues in Claremont had failed to seize the opportunities to be found in the concept. However, he did not lose faith, and in 1953 wrote[1] "in Claremont we have the opportunity to create an educational institution of almost unbelievable consequence." Two short years, later the Committee on Future Colleges[2] recommended the establishment of "a college teaching engineering and science in a humanistic setting," and urged that it should be started without delay. The result was the founding of Harvey Mudd College. Although heavily dependent on its sister colleges early in its history, particularly CMC, Harvey Mudd College has since become a fully participating partner in the group, academically, administratively, in student life, and in the disciplinary interests of faculty. The college is far stronger than it might be otherwise, and as a result, the benefits for all students in Claremont are enormous.

How successful a partner have we been? Very. Is the group an institution of unbelievable consequence? Yes, and no. Each college is committed

to cooperation, but each has strong self-interests. Each competes with the other to a lesser or greater degree depending on the issue. The result is an ongoing, delicate, balancing act lacking the persuasive direction that Blaisdell's vision provides. I believe that the colleges, as yet, have an incomplete vision of what the group could be.

The Faculty: Great teachers are the heart and soul of an undergraduate college. Were we successful in attracting such individuals to our classrooms and laboratories? I believe there is no doubt about it.

In part it was the result of a strong tradition at HMC of great teachers. In part it was because of the strong leadership of an exceptional dean of faculty, Sam Tanenbaum. In part it was the reputation of the college and Claremont as a whole.

In large part it was the process by which department chairmen and department faculty members screened applicants. Professional competence was obviously a first consideration and the Ph.D. or its equivalent was seen as a minimum requirement. Interviews and visits with students provided insight on commitment to teaching and thoughtfulness; seminars reveal the quality of research undertaken and abilities as a teacher. This screening process, initiated in the first twenty years and continued throughout my tenure, assured the continuation of one of the principal features of the college—professors that teach, professors that are available to students, professors that care for students, professors actively involved in their academic discipline.

The Curriculum: I have already devoted much space to the college's curriculum and to the faculty's role in it. Suffice it to add that the curriculum's strength arises from the faculty's continuing curricular reviews. These reviews are invariably carried out in the framework of the mission statement. Balancing science and engineering education against studies in literature, history, psychology, philosophy, government, music, and drama is far from an easy task. The common core and the humanities and social science program achieve that balance. The faculty proposed and accepted dramatic changes in college requirements during the Third Decade Plus much of it inevitably leading to new majors in computer science and biology. The effectiveness of the curriculum was clearly reflected in the success achieved by students seeking access to graduate studies or specialized career positions.

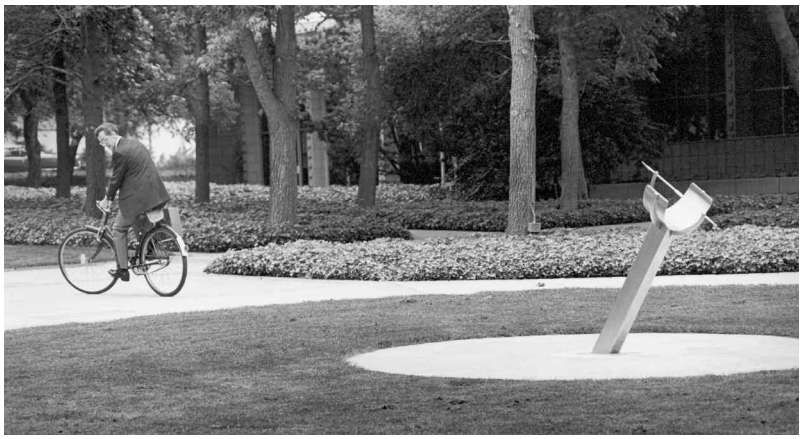
Students and Student Lives: The majority of students attending from 1976 to 1988 came from California and adjoining states. The remainder came from all parts of the continent and the Pacific Rim. They were highly talented, hard working, pragmatic, intelligent young people. Some carried unbelievable heavy academic loads, often registering for additional courses at the other Claremont Colleges. They maintained a successful student government. They published a campus newspaper. They participated in

intramural sports. They were often leaders on intercollegiate teams. They were airplane pilots, skiers, and hikers.

The student yearbook—*The Spectrum*—provides a lively record and assessment of the lives and experiences of these unusual young people during the duration of their four years at the college. Recorded there we find those who entered the college, but later left; the friends made; the camaraderie of dormitory life; the despair of "all-nighters"; the joy of challenging academic assignments successfully completed; the fun (and hangovers) of party week-ends; the sharing of team competitions; the relief and revitalization of off-campus breaks. There are the never-aging pictures of faculty, of staff, of friends; the interactions between HMC students and the students of other Claremont Colleges; the Senior pages, which attempt to crowd on one page, and often do, the major experiences of one's campus life. Each volume engagingly records the lives lived and the successes achieved. Our examination of these records assures us that the life of students was often stressful, but often full of great satisfaction, and in the end an invaluable period of their lives.

On to the Future: During my presidency, Harvey Mudd College provided the framework in which student lives were shaped and successes achieved. Guided by its widely accepted mission statement, the college emerged from the Third Decade Plus with an undiminished commitment to that mission. The campus had been consolidated and stood ready to incorporate the changes that would inevitably come. Endowment had grown tenfold from $5 million to $50 million, promising stability and opportunity for the near term and a solid basis for the long term. The college had taken a giant step forward in computing technology. An enlarged faculty provided an enriched academic program. Additional dormitory space gave substance to the claim, a residential college. A board of trustees of enduring strength assured the future.

Perhaps the greatest change during the Third Decade Plus and since the First Twenty Years is the shrinking of the earth we live on. Modern electronic technology has made instant world-wide communication possible. Modern transportation moves us within hours to any place on the globe. Modern medicine will soon be available to the entire globe with all the benefits that DNA technology is already providing. Modern food technology promises the end of hunger. Harvey Mudd College will continue to provide graduates ready to play an important role not only in each of these and other resource developments but also in their society.



APPENDIX I

The Statement of Purpose

Adopted by the board of trustees, 9/23/1975, and amended, 3/24/1977.

10 Mission

Harvey Mudd College will provide men and women with an educational opportunity to acquire the intellectual skills, understanding of society, and motivation necessary to develop and manage science and technology for the benefit of a free society and for the fulfillment of their personal goals. Integrity, a high level of personal ethics and a reverence for truth, shall guide both the teaching and learning processes.

20 Educational Purposes

21 The purpose of the academic environment of the College will be to promote excellent learning opportunities for superior students in an academic setting where students and faculty communicate in a personal as well as an academic context.

21.10 Harvey Mudd College shall be a small, primarily undergraduate college, with such cooperative graduate programs as will enhance the College's mission.

21.20 The College shall seek a very highly qualified coeducational student body with dedication to mathematical and scientific pursuits, and diversity of talents, backgrounds and goals.

21.21 No applicant for admission will be denied on the basis of race, color, creed or sex. The College shall strive to have a well-balanced student body.

21.22 The College shall endeavor to provide sufficient financial aid so that no qualified student shall be denied an education at Harvey Mudd College solely for financial reasons.

21.23 The College shall be primarily residential, so that the learning experiences of classroom, laboratory, dining hall and residence hall may support each other.

21.30 The College shall seek a very highly qualified faculty whose teaching effectiveness, professional activities and personal contacts with students will be encouraged by the College.

21.40 The College shall take advantage of and contribute to the educational assets of the Claremont cluster environment. The curricular and co-curricular activities of the College shall be explicitly cooperative wherever appropriate.

21.50 The College shall participate appropriately in the activities of the surrounding cities.

22 Studies shall be integrated in such a way as to produce engineers well versed in the sciences and scientists familiar with engineering and to provide both with sufficient background in the humanities and social sciences to fit them to assume leadership roles in their fields with a clear understanding of the relationship between their work and the well-being of society.

22.10 The curriculum shall be designed to give each student an excellent basic understanding of the facts and body of theory that relates them in chemistry, engineering, mathematics, and physics, a mastery of the basic means of acquiring such knowledge, and a working understanding of the powers and limitations of the various approaches.

22.15 The curriculum shall include appropriate opportunities for learning about living systems.

22.20 The curriculum shall promote the integration of the ideas, concerns, and methods of the humanities and social sciences with the study of engineering and natural sciences as part of the students' general and professional education.

22.30 Instruction in all fields shall consciously seek to increase students' oral and written communication skills and their ability to listen, to teach, to explain and to persuade.

22.40 The curriculum shall prepare students for technically sophisticated problem solving and creative work.

22.41 Students shall be assisted in developing skills of intelligent observation.

22.42 Students shall have experience in solving problems, which may have many answers, in which a "best" solution is sought.

22.43 Students shall be encouraged to take calculated risks in seeking best solutions to problems.

22.44 Students shall be assisted in developing the ability to identify and weigh social, economic, and political considerations in the definition and solution of problems

22.50 The undergraduate education shall be suitable preparation 1) for graduate study or immediate employment in chemistry, engineering, mathematics, or physics, 2) for appropriate other professional studies, and 3) for life-long personal appreciation and study in sciences, humanities and social sciences.

23 The purpose of the College's support of creative activity shall be to provide both students and faculty with the opportunity for intellectual, professional, and personal growth through research, scholarship, and new syntheses of existing knowledge.

24 The purpose of the College's personal development programs shall be to foster the development of leaders whose academic and nonacademic skills are balanced in well-rounded individuals.

24.10 The College shall promote the habit of self-examination, reevaluation, and resolution of personal and professional values.

24.20 The College shall provide opportunities for students to develop and exercise leadership abilities, to recognize and experience the needs and demands of interpersonal relationships, and to work with a group in examining priorities and in setting and accomplishing goals.

30 Supportive Purposes

31 The purposes of the development program shall be to protect Harvey Mudd College's quality of education by assuring both short term operation and long term stability.

32 Public Relations

33 Alumni relations

34 Publications

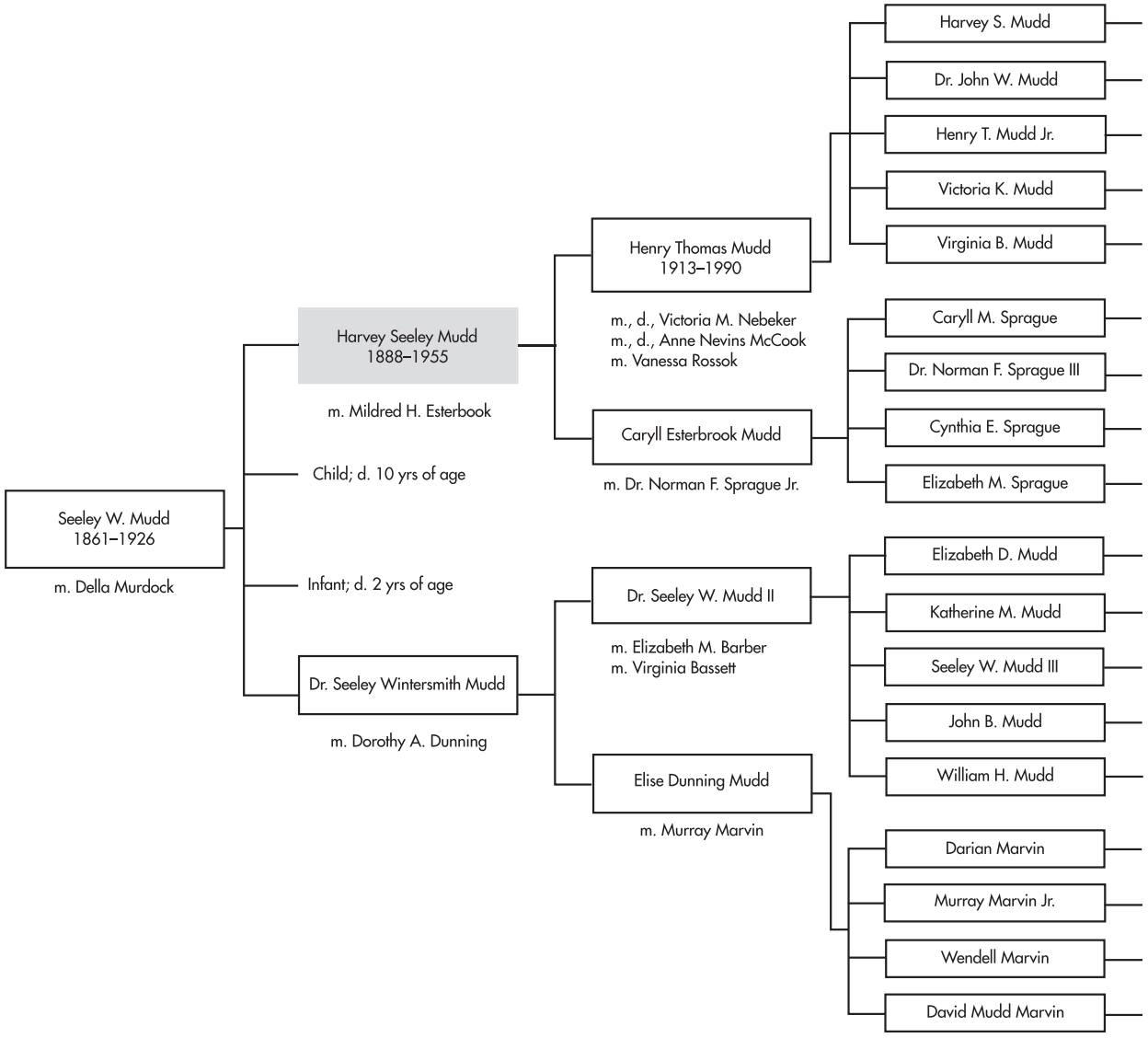
35 Budget and fiscal planning

36 Investment

37 Buildings and grounds

APPENDIX 2

Partial Genealogy of Harvey S. Mudd



APPENDIX 3

The Faculty Roster 1976–1988

THE list does not include temporary appointments, one-year appointments or part-time appointments. The dates of appointment follow the name, and no terminal date is given if the individual was still on the faculty in the 1987–88 academic year.

BIOLOGY

Mueller, T. J. 1981–. Assistant Professor of Biology. Associate Professor, 1987. B.S. (EE) Loyola University. Ph.D., University of Southern California. System Analyst, Clinical Laboratory Medical Group, Los Angeles; Teaching Assistant, USC; Consultant, Biostatistics.

Purves, William K. 1977–. Professor of Biology. Chair, Biology Group. B.S., California Institute of Technology. M.S., Ph.D., Yale University. NSF Postdoctoral Fellow, Tubingen, Germany; National Cancer Institute Postdoctoral Fellow, University of California, Los Angeles; Assistant Professor, Associate Professor, Full Professor of Botany, University of California, Santa Barbara and Chair, Department of Biological Sciences; NSF Senior Postdoctoral Fellow, Bedford College, University of London; Harvard University; Professor of Biology, University of Connecticut; Executive Officer (Head), Biological Sciences Group, University of Connecticut; Fellow, The American Association for the Advancement of Science.

Stomp, Anne-Marie. 1977–1980. Instructor in Biology. B. S., University of Connecticut. Technical Assistant, University of Connecticut.

CHEMISTRY

Campbell, J. Arthur. 1957–1987. Professor of Chemistry and Chair of the Department of Chemistry, 1963-1974. Seeley W. Mudd Professor of Chemistry 1969. Dean of faculty, 1974-75. A.B. Oberlin College; M.S., Purdue University; Ph.D., University of California; Research Scientist, Manhattan Project, University of California; Professor, Oberlin College; Fund for the Advancement of Education Fellow, Cambridge University; Program Director for Institutes, National Science Foundation; Director, Chemical Education Materials Study; Guggenheim Fellow, Kyoto University, Cambridge University; NSF Faculty Fellow, Harvard University; Visiting Professor: The Chinese University of Hong Kong, the University of California Berkeley, Ohio State University and Michigan State University.

Daub, G. William. 1978–. Assistant Professor of Chemistry. Associate Professor, 1984. Chair of the Department of Chemistry. B.A., Pomona College; Ph.D., Stanford University; Postdoctoral Fellow, Stanford University; Camille and Henry Dreyfus Teacher–Scholar; Visiting Professor, University of California, Irvine.

Karukstis, Kerry K. 1984–. Assistant Professor of Chemistry. Associate Professor, 1989. Professor, 1993. B. S., Ph.D., Duke University; National Institutes of Health Postdoctoral Fellow, University of California, Berkeley; Henry Dreyfus Teacher Scholar.

Kok, Gregory L. 1974–1981. Assistant Professor of Chemistry. Associate Professor of Chemistry, 1980. B.S., Calvin college; Ph.D., University of Michigan. Teaching Fellow, University of Michigan; Postdoctoral Research, University of Michigan.

Kubota, Mitsura. 1959–. Assistant Professor of Chemistry. Associate Professor, 1966. Professor, 1971. Donald A. Strauss Professor of Chemistry. B.A., University of Hawaii; Ph.D., University of Illinois. Research Fellow, Visiting Assistant Professor, University of Illinois; National Science Foundation Faculty Fellow, University of North Carolina; Fulbright Advanced Research Fellow, University of Sussex; National Institute of Health Special Fellow, California Institute of Technology; Visiting Scholar, Chevron research Company; National Science Foundation Faculty Fellow, University of California, Berkeley; Visiting Professor: University of Venice, and Cambridge University; Fellow, American Association for the Advancement of Science.

Myhre, Philip C. 1960–. Assistant Professor of Chemistry. Associate Professor, 1966. Professor, 1971. Seeley W. Mudd Professor of Chemistry. Chair of the Department of Chemistry. B.A., Pacific Lutheran College; Ph.D., University of Washington. Chemist, Stauffer Chemical Co.; National Science Foundation Postdoctoral Fellow, Nobel Institute of Chemistry (Stockholm); Visiting Associate, California Institute of Technology; Guest Professor, Swiss Federal Institute of Technology; Visiting Scientist, American

Chemical Society Award for Research in an Undergraduate Institution; Erskine Visiting Fellow, University of Canterbury, Christchurch, N.Z.

Sly, William G. 1958–. Associate Professor of Chemistry. Professor, 1966. Chair of the Department of Chemistry, 1976-77. B.S., San Diego State College; Ph.D., California Institute of Technology. Postdoctoral Fellow, Research Associate, Massachusetts Institute of Technology; Visiting Assistant Professor, University of California, Berkeley. NSF Senior Postdoctoral Fellow, Swiss Federal Institute of Technology, Zurich. Visiting Professor, Oregon State University.

Stieg, Scott W. 1981–1986. Assistant Professor of Chemistry. B.S., Purdue University. M.S., University of Illinois. Ph.D. University of Illinois. Postdoctoral Fellow, Imperial College, London.

van Eikeren, Paul. 1972–1987. Assistant Professor of Chemistry. Associate Professor, 1978. Professor, 1983. B.A., Columbia College; Ph.D., Massachusetts Institute of Technology. Dreyfus Instructor in Chemistry, MIT. Member of the Faculty of the Experimental Group, MIT.

Van Hecke, Gerald. 1970–. Assistant Professor of Chemistry. Associate Professor, 1974. Professor, 1980. B.S., Harvey Mudd College, 1961; M.A., Ph.D., Princeton University. Chemist, Shell Development Co; Visiting Research Associate, University of Lille, France; Visiting Research Associate, Boston University Medical school; NAS Exchange Scientist, Institute of Physical Chemistry, Warsaw; Institute for Electron Physics East Berlin; NASA/ASEE Faculty Fellow, Jet Propulsion Laboratory; University Guest Researcher, Osaka University; Camille and Henry Dreyfus Scholar; Certified Professional Chemist, National Certification Commission.

Van Ryswyk, Hal. 1986–. Assistant Professor of Chemistry. B.A., Carleton College; Ph.D., University of Wisconsin; Visiting Associate Professor, Massachusetts Institute of Technology.

Vaughn, Ronald J. 1971–1977. Assistant Professor of Chemistry. B.S., Duke University; Ph.D., Harvard University. Postdoctoral research, Harvard University.

COMPUTER SCIENCE

Erlinger, Michael. 1981–. John D. MacArthur Assistant Professor of Computer Science. Associate Professor, 1985. B.S., University of San Francisco. M.S., University of California, Los Angeles. Ph.D., University of California, Los Angeles. Consultant, Hughes Aircraft; Visiting Assistant Professor, UCLA; Senior Project Engineer, Hughes Aircraft; Member of the Technical Staff, Bell Telephone Laboratories.

Lorentz, Richard. 1983–1987. Assistant Professor of Computer Science. B.A., (Mathematics) Claremont McKenna College, Ph.D., (Computer Science) Washington State University. Postdoctoral Fellow, New Mexico State University. Assistant Professor, New Mexico State University. Assistant Professor, Claremont McKenna College.

Tam, Wing C. 1974–. Assistant Professor of Engineering. Associate Professor, 1978. Associate Professor of Computer Science, 1982. Professor, 1987. B.S., M.S., (Engineering), Ph.D. (Computer Science), University of California, Los Angeles. Postgraduate Research Engineer, University of California, Los Angeles; Assistant Professor, Wayne State University; Senior System Programmer, McDonnell Douglas Corporation.

ENGINEERING

Alford, Jack L. 1959–. Professor of Engineering. Director of the Engineering Clinic, 1965. James Howard Kindelberger Professor of Engineering, 1966. Chair of the Department of engineering, 1969-1972, 1974-1977. B.S., M.S., Ph.D., California Institute of Technology. Postdoctoral Research fellow, California Institute of Technology. Engineering Officer U.S. Navy; Research Engineer, Northrop Aircraft Co.; Supervisory Engineer, U.S. Naval Ordnance Test Station; Assistant to the Technical Director, Technicolor Corp.; Engineering specialist, Jet Propulsion Laboratory; Registered Professional Engineer, California.

Bright, Anthony. 1986–. Assistant Professor of Engineering. Associate Professor, 1987. Union Oil Fellow of Engineering, and Director of the Engineering Clinic. .B.Sc., University of Manchester, England; S.M., Massachusetts Institute of Technology; Ph.D., University of Bradford, England. Instrument Engineer, Kellogg International, England; Visiting Researcher, UKAEA, Harwell, England; Lecturer, Open University; Visiting Professor, University of Delaware; Lecturer, Teeside Polytechnic, England.

Cunningham, George. 1987–. Assistant Professor of Engineering. B.S., Case Institute of Technology. M.A., (Mathematics) University of Washington. Ph.D. (EE), University of Washington. Assistant Professor, University of North Florida; Senior Engineer, City of Seattle; Senior Systems Analyst, City of Seattle.

Durón, Ziyad H. 1987–. Assistant Professor of Engineering. B.S., Harvey Mudd College, 1981; M.S., Massachusetts Institute of Technology. Ph.D., California Institute of Technology. Engineer, ARCO Oil and Gas Company, NASA Dryden Flight Research Center; Member of the Technical Staff, The Aerospace Corporation; Visiting Research Associate, California Institute of Technology.

Francis, Benjamin. 1975–1978. Assistant Professor of Engineering. B.S., M.S., Stanford University; Ph.D., University of California, Berkeley. Technical Manager, MicroMetals, Inc.; Research Associate, Lawrence Berkeley Laboratory.

Gilkeson, Murray Mack, Jr. 1961–1985. Associate Professor of Engineering. Professor. Director of the Freshman Division of the Faculty, 1973-75. Director of the Intercollegiate Program in Public Policy Studies, 1973. B.E., University of Southern California; M.S., Kansas State University; M.S.E., Ph.D., University of Michigan. Ph.D. (Government)

Claremont Graduate School; Associate Professor, Tulane University; Engineering consultant, Chief of Party, USAID Project RITA-Paraiba, Brazil; Visiting Professor, NSF Design Seminar Indian Institute of Technology (Delhi) India; Engineering Consultant, USAID, India; Visiting Professor, Centro de Ciencias e Tecnologia (Campo Grande, Brazil.) Registered Professional Engineer, California.

Gillette, Dean. 1983–1988. Henry R. Luce Joint Professor of Engineering (with CMC). B.S., Oregon State University. M.S., Ph.D., University of California, Berkeley. Staff Member, Executive Director, Bell Telephone Laboratories.

Goldstein, Benjamin. 1982–. Assistant Professor of Engineering. Associate Professor, 1986. M.E., Universidad Simon Bolivar. Ph.D. University of Minnesota. Assistant Professor University of Minnesota; Fellow, National Council of Science and Technology, Caracus; Research Assistant, Israel Institute of Technology.

Hoole, S. Ratnajeevan H. 1987–. Associate Professor of Engineering. B.Sc. Engineering (Hons.), University of Ceylon; M.Sc. (Distinction), University of London. Ph.D., Carnegie Mellon University. D.Sc. (Engineering), University of London. Fellow of the IEEE; Engineer, Engineering Services and Management Consultants Pte. Ltd., Singapore; Senior Consulting Engineer, PA Consulting Services; Instructor, University of Sri Lanka; Lecturer, Ibadan Polytechnic, Nigeria; Assistant Professor, Drexel University; Senior Fellow, Centre National de la Recherche Scientifique, Ecole Nationale Superieure d'Ingenieurs Electriciens de Grenoble, France.

King, Joseph A. 1986 –. Associate Professor of Engineering. B.S., M.S., Ph.D., University of Oklahoma. Research and Teaching Assistant, University of Oklahoma; Production Metallurgist, Ladish Company and Cameron Iron Works; Consulting Engineer, Associated Metallurgists; Visiting Scientist, Southern California Edison Electrical Systems Research; Visiting Metallurgical Engineer, John Crane Belfab; Director, SCE/HMC Center for Excellence.

Molinder, John I. 1970–. Assistant Professor of Engineering. Associate Professor, 1975. Professor, 1980. Harvey S. Mudd Fellow in Engineering. B.S., University of Nebraska. M.S., Air Force Institution of Technology. Ph.D., California Institute of Technology. Project Officer, USAF; Senior Engineer, Jet Propulsion Laboratory; Member of the Technical Staff, Jet Propulsion Laboratory; Visiting Professor, California Institute of Technology; Registered Professional Engineer, California.

Monson, James E. 1961–. Assistant Professor of Engineering. Associate Professor, 1966. Professor, 1973. Harvey S. Mudd Fellow in Engineering, 1966. Robert C. Sabini Professor of Engineering. B.S., M.S., Ph.D., Stanford University. Technical Staff Member, Bell Telephone Laboratories, Hewlett-Packard Co.; Ford Foundation Resident in Engineering Practice,

Western Electric Co.; Visiting Professor, Trinity College, Dublin; Fulbright Research Grantee and Senior Lecturer, University Velko Vlahovich, Yugoslavia; Japan Society for the Promotion of Science Fellow, Tokyo University, Japan; Visiting Scientist, Tokyo Research Laboratory, IBM Japan, Ltd; Registered Professional Engineer, California.

Njoku, Eni. 1984–1986. Associate Professor of Engineering. B.A., Cambridge University. S.M., Ph.D., Massachusetts Institute of Technology. Senior Lecturer, Institute of Management and Technology, Nigeria; Technical Staff Member, Jet Propulsion Laboratory.

Phelps, Frederick W. 1979–1987. Associate Professor of Engineering. Professor, 1982. B.A., Colgate University. M.E.E. Rensselaer Polytechnic Institute. Ph.D., The Johns Hopkins University. Assistant, Associate, Professor of Electrical Engineering, Case Institute of Technology. The Carl F. Wittke Award for Excellence in Teaching. ASEE Fellow, NASAS-Lewis; Hughes Aircraft Fellow, Ground Systems Division; Consultant, Education Development Center.

Phillips, John Richard. 1966–. Assistant Professor of Engineering. Associate Professor, 1969. Professor, 1974. C. F. Braun Fellow in Engineering, 1969. James Howard Kindelberger Professor of Engineering. Director of the Engineering Clinic 1977 — B.S., University of California, Berkeley; M.E., D.E., Yale University. Chemical Engineer, Stanford Research Institute; Staff Officer, U.S. Army CBR Combat Development Agency; Research Engineer, Chevron Research Co.; Visiting Professor, University of Edinburg, Scotland, ESIEE, Paris, Naval Postgraduate School, Monterey, California, Polytechnic University, San Luis Obispo; Visiting Scientist, Southern California Edison Co.; Visiting Scholar, Cambridge University; Registered Professional Engineer, California.

Reddy, Gopal. 1978–79. Assistant Professor of Engineering. B.S. (EE), Osmania University, India. M.S.(EE), West Virginia University. Ph.D. University of Connecticut. Senior Engineer, Halliburton Company, Oklahoma.

Remer, Donald S. 1975–. Associate Professor of Engineering. Professor, 1980. Oliver C. Field Professor of Engineering, 1975. B.S., University of Michigan; M.S., Ph.D., California Institute of Technology; Economic Analyst, Senior Project and Process Engineer, Task Force Manager, Exxon Chemical Co.; Case Study Editor, The Engineering Economist; Member of the Technical Staff, Manager of Planning Analysis, Jet Propulsion Laboratory; Registered Professional Engineer, California.

Sengupta, Prabir K. 1979–1985. Assistant Professor of Engineering. B.S. (Engineering), M.S. (Engineering), Indian Institute of Technology. Ph.D., University of Windsor, Canada.

Serdengecti, Sedat. 1961–. Assistant Professor of Engineering. Associate Professor, 1965. Professor, 1971. B.S., Syracuse University; M.S., Ph.D., California Institute of Technology. Research Engineer, Chevron Oil Field Research Co.

Sigman, Elliot. 1974–1977. Assistant Professor of Engineering. B.S., Wayne State University. M.S., Ph.D. University of Michigan; National Science Foundation Fellow; Technical Staff Member, Hughes Aircraft Co.

Tanenbaum, B. Samuel. 1975–. Dean of the Faculty and Professor of Engineering. Norman F. Sprague Jr. Professor of Life Sciences and Professor of Engineering, 1993. B.S., Brown University; M.S., Ph.D., Yale University (Senior Sterling Fellow); Assistant, Associate, Professor, Case Western Reserve University; Director, Minority Engineers Industrial Opportunity Program and Coordinator, Energy-related Research, Case Western Reserve University; Visiting Researcher, Beckman Laser Institute; Visiting Associate Professor, Northwestern University; Visiting Scientist, Cornell University Center for Radio-Physics and Space Research, Arecibo, Puerto Rico; Advanced Development Laboratory, Raytheon Company.

Williams, Harry E. 1960–. Assistant Professor of Engineering. Associate Professor, 1965. Professor, 1971. C. F. Braun Fellow in Engineering. B.M.E., University of Santa Clara; M.S., Ph.D. California Institute of Technology. Research Engineer, Manchester University, England, Jet Propulsion Laboratory, California Institute of Technology; Liaison Scientist, Office of Naval Research; Visiting Professor, University of Sussex, England.

Woodson, Thomas T. 1969–. Robert C. Sabini Professor of Engineering. Chair of the Department of Engineering, 1972–1974. Director of the Engineering Clinic, 1972. B.S. (EE), Purdue University. M.S. (EE), Ohio State University. Research Laboratory, Major Appliance Division, General Electric Co., Manager of Engineering, Waste King Corporation; Senior Lecturer, University of California, Los Angeles; Industrial Development Officer, USAID, India; Team Leader, National Science Foundation Seminar, India.

HUMANITIES AND SOCIAL SCIENCES

Allen, William B. 1972–. Assistant Professor of Government. Associate Professor, 1976. Professor, 1983. B.A., Pepperdine College; M.A., Ph.D., Claremont Graduate School. Lecturer, Université de Rouen, France; Assistant Professor, School of Government and Public Administration, The American University.

Barron, Hal S. 1979–. Assistant Professor of History. Associate Professor, 1985. A.B., Oberlin College. M.A., Ph.D., University of Pennsylvania. Postgraduate Research Historian, University of California, Riverside; Visiting Assistant Professor, Waseda University, Tokyo, Japan; Vernon Carstensen Award; Graves Award; NEH Summer fellow; Huntington Library-Haynes Fellow; NEH Senior Fellow.

Beckman, Tad A. 1961–. Assistant Professor of Chemistry. Associate Professor and Lecturer in Philosophy, 1967. Associate Professor of Philosophy, 1970. Professor, 1981. B.A., Northwestern University. Ph.D., University of California, Berkeley. Chair, Department of Humanities and Social Sciences. Postdoctoral Research Fellow, Molecular Spectroscopy Laboratory, University of Minnesota; NSF Science Faculty Fellow, London School of Economics; Visiting Scholar, Department of Philosophy, University of California, Los Angeles; Consultant, Association of American Colleges, Engineering Education Project.

Blackmore, John T. 1972–1976. Assistant Professor of History. B.A., University of New Mexico. Ph.D. University of California, Los Angeles. NSF Research Fellow. Preceptor, University of Santa Cruz; Assistant Professor, San Fernando State College.

Davis, Nathaniel. 1983–. Alexander and Adelaide Hixon Professor of Humanities. A.B., Brown University; M.A. Ph.D., The Fletcher School of Law and Diplomacy. L.L.D. (honorary), Brown University. Instructor: Tufts College; University Branch, Centro Venezolano-Americano; Howard University. U.S. Foreign Office: Third Secretary, Prague, Czechoslovakia; Vice Consul, Florence, Italy; Second Secretary, Moscow, USSR; Soviet Desk Officer, U.S.S.R. Affairs; First Secretary, Caracas, Venezuela; Peace Corps Director, Santiago, Chile; Special Assistant to the Director, Deputy Associate Director, The Peace Corps; U.S. Minister to Bulgaria; Senior Staff, National Security Council; U.S. Ambassador to Guatemala, Chile and Switzerland; Director General, U.S. Foreign Service; Assistant Secretary of State for African Affairs; Chester H. Nimitz Chair, Naval War College.

Evans, Gary. 1981–. Assistant Professor of Economics. Associate Professor, 1987. B.A., California State University, Fresno. M.S., Ph.D., University of California, Riverside. Lecturer, University of California, Riverside.

Freeland, Rebecca. 1986–. Assistant Professor of Psychology. B. A. (Chemistry) Carnegie-Mellon University. Ph.D., Carnegie-Mellon University. Postdoctoral Fellow, University of Massachusetts.

Funder, David C. 1979–1982. Assistant Professor of Psychology. A.B., University of California.

George, Ronald J. 1970–1976. Assistant Professor of Psychology. B.A., M.A., California State College, Long Beach. Ph.D., Claremont Graduate School. Chief, Product Evaluation, Hunt Wesson Foods; Technical Staff Member, Autonetics Division of North American Rockwell.

Hounshell, David A. 1977–1979. B.S. (EE), Southern Methodist University. Ph.D., University of Delaware. Smithsonian Fellow.

Hunter Susan. 1982–. Instructor in Rhetoric. Assistant Professor, 1987. B.A., Northwestern University. M.A., University of California, Riverside. Ph.D., University of California, Riverside. Lecturer, California State Polytechnic University, Pomona; California State University, Fullerton.

Lieren, Bjorn D. 1977–1979. Assistant Professor of Psychology. B.A., M.A., California State University, Los Angeles. Ph.D., Simon Fraser University, Canada. Personnel Analyst, County of Los Angeles. Lecturer, Simon Fraser University.

Meginniss, James R. 1977–1981. Assistant Professor of Economics (joint with Claremont Graduate School). B.S., (Engineering) Johns Hopkins University. M.S., (Engineering) Massachusetts Institute of Technology. Ph.D., University of Chicago. Associate in Business, Columbia University.

Olson, Richard. 1976–. Assistant Professor of History. Associate Professor, 1978. Professor, 1983. Willard W. Keith, Jr. Fellow in the Humanities. B.S., Harvey Mudd College, 1962. A.M., Ph.D., Harvard University. Instructor, Tufts University; Chair, History Board of Studies, University of California, Santa Cruz; Woodrow Wilson Fellow; National Endowment for the Humanities Fellow; Lois and Arnold Graves Fellow; Haynes Fellow.

Sanders, David S. 1959–1970; 1973–1989. Associate Professor of English. Professor, 1969. Chair of the Department of Humanities and Social Sciences, 1973. B.A., M.A., Ph.D., University of California, Los Angeles. Instructor, University of Maryland; Fulbright Lecturer, University of Salamanca; Instructor of English and Chair, Department of Humanities, Clarkson College of Technology.

Sellery, J'nan M. 1970–. Assistant Professor of Literature. Associate Professor, 1976. Professor, 1980. B.A., M.A., Ph.D., University of California, Riverside. NDEA Fellow; Visiting Associate Professor, University of California, Riverside; NEH Summer Fellow, Yale University; Visiting Fellow, University of Calgary, Canada.

Seven, Michael John. 1965–1985. Lecturer in Psychology. Assistant Professor, 1966. Associate Professor, 1967, Associate Professor of Engineering and Psychology, 1970. Professor of Engineering and Psychology, 1974. B.S., University of Illinois. Ph.D., Claremont Graduate

School. Aviation Psychology Laboratory, University of Illinois; Social Scientist, RAND Corporation; Consulting Analyst, General Electric Computer Department; Senior Scientist, Hughes Aircraft Co., Ground Systems Group.

Spacapan, Shirlynn. 1984–1995. Assistant Professor of Psychology. Associate Professor, 1989. B.A., University of Tulsa. M.A., Ph.D., University of Oregon.

Stern, Michael 1976–1979. Assistant Professor of English. B.A., Columbia University. M.A., Cambridge University. Ph.D. Yale University. Kellett Fellow, Cambridge University; Whiting Fellow, Yale University; School of Criticism and Theory, University of California, Irvine.

Waldman, Theodore. 1963 –. Associate Professor of Philosophy. Professor, 1970. B.A., M.A., Washington University. M.A., Ph.D., University of California. Pre -doctoral Instructor, University of Michigan; Assistant Professor, State University of Iowa; Associate Professor, Arizona State University; Visiting Associate Professor, University of California, Berkeley; Visiting Tutor, St. John's College, Santa Fe, New Mexico.

MATHEMATICS

Borrelli, Robert L. 1964–. Assistant Professor of Mathematics. Associate Professor, 1967. Professor, 1973. Chair, Department of Mathematics and Director, Mathematics Clinics. B.S., M.S., Stanford University; Ph.D., University of California, Berkeley. Assistant Professor of Mathematics, U.S. Naval Postgraduate School; Senior Engineering Specialist, Philco Corporation; National Science Foundation Faculty fellow, Massachusetts Institute of Technology, University of Bonn, Germany.

Coleman, Courtney S. 1959–. Associate Professor of Mathematics. Professor, 1966. Chair, Department of Mathematics. R. Stanton Avery Fellow in Mathematics. B.A., University of California, Berkeley. M.A., Ph.D., Princeton University; Assistant Professor of Mathematics, Wesleyan University; Research Mathematician, Visiting Scientist, Research Institute for Advanced Study; NSF Science Faculty Fellow, Visiting Professor, Mathematical Institute, Oxford University; Visiting Professor, Tecnopolis, Italy.

Busenberg, Stavros Nicholas. 1968–. Assistant Professor of Mathematics. Associate Professor, 1974. Professor, 1979. B.M.E., Cooper Union; M.S., Ph.D., Illinois Institute of Technology. Instructor, Loyola University; Postdoctoral Fellow, Science Center of North American Rockwell.

Fisher, David C. 1985–1988. Assistant Professor of Mathematics. B.S., Harvey Mudd College, 1980. Ph.D., University of Maryland. Assistant Professor, University of Colorado.

Greever, John. 1961–. Assistant Professor of Mathematics. Associate Professor, 1965. Professor, 1970. Chair, Department of Mathematics 1972-

74. Director, Undergraduate Summer Research Mathematics Program. B.S., University of Richmond; M.A., Ph.D., University of Virginia. Assistant Professor of Mathematics, Florida State University; Visiting Professor, Research Institute for Mathematical Sciences, Kyoto, Japan; Research Associate, University of California, Riverside.

Henriksen, Melvin. 1969–. Professor of Mathematics and Chair, Department of Mathematics 1969–72. B.S., City College, New York. M.S., Ph.D., University of Wisconsin. Assistant Professor, University of Wisconsin, University of Alabama; Assistant Professor, Associate Professor, Professor, Purdue University; Department Head, Case Institute of Technology; Visiting Professor: University of California, Berkeley; University of Manitoba; Wayne State University; Wesleyan University.

Ives, Robert T. 1958–. Assistant Professor of Mathematics. Associate Professor, 1964. Professor. B.S., Haverford College. Ph.D. University of Washington. Instructor in Mathematics, University of Virginia.

Krieger, Henry A. 1968–. Assistant Professor of Mathematics. Associate Professor, 1971. Professor, 1983. B.A., Rensselaer Polytechnical Institute. Ph.D., Brown University. Bateman Research Fellow; Assistant Professor, California Institute of Technology; Visiting Professor, Technion-Israel Institute of Technology.

Orland, George F. 1967–1983. Visiting Associate Professor of Mathematics. Associate Professor, 1969. Professor. B.E.E., City College of New York. M.S., University of Chicago. Ph.D., University of California, Berkeley. Mathematician, Institute for Systems Research, Chicago; Assistant Professor, University of Illinois; Assistant Professor, Wesleyan University.

Pixley, Alden F. 1962–. Assistant Professor of Mathematics. Associate Professor, 1966. Professor, 1972. B.A., M.A., Ph.D., University of California, Berkeley. Technical Sales Coordinator, International Business Machine Corp.; Consultant, Burroughs Corp; Visiting Associate Professor: University of California, Berkeley, University of British Columbia; Visiting Professor: Technical University, Darmstadt, Technical University, Vienna; NSF Science Faculty Fellow, University of California, Berkeley.

White, Alvin M. 1962–. Assistant Professor of Mathematics. Associate Professor, 1966. Professor, 1981. B.A., Columbia University. M.A., University of California, Los Angeles. Ph.D., Stanford University. Assistant Professor, University of Santa Clara; Member of the Mathematics Research Center, University of Wisconsin; Visiting Scholar, Stanford University; Visiting Associate Professor, Division for Study and Research in Education, Massachusetts Institute of Technology; Danforth Faculty Fellow.

PHYSICS

Beeman, David M., Jr. 1969–. Assistant Professor of Physics. Associate Professor, 1975. Professor, 1981. B.S., Stanford University. M.A., Ph.D., University of California, Los Angeles. Theoretical Physics Division, Atomic Energy Research Establishment, Harwell, England.

Bell, Graydon D. 1957–1988. Associate Professor of Physics. Professor, 1965. Chair, Department of Physics, 1971–1988. B.S., University of Kentucky. M.S., Ph.D., California Institute of Technology. Instructor, University of Kentucky; Assistant Professor, Roberts College (Istanbul); Physicist, National Bureau of Standards; NSF Faculty Fellow, National Research Council of Canada.

Domb, Ellen R. 1976–1979. Assistant Professor of Physics. B.S., Massachusetts Institute of Technology. M.A., University of Pennsylvania. Ph.D., Temple University, Research Associate, University of Nebraska.

Eckert, James C. 1980–. Assistant Professor of Physics. Associate Professor, 1988. B.S., M.A., Ph.D., University of Southern California. Instructor, Loyola University; Visiting Associate Professor, University of Minnesota.

Haskell, Richard C. 1980–. Assistant Professor of Physics. Associate Professor, 1984. Chair of the Faculty. B.S., Lehigh University. Ph.D., The Johns Hopkins University. NIH Postdoctoral Fellow; Muscular Dystrophy Postdoctoral Fellow; Associate Research Scientist, The Johns Hopkins University.

Helliwell, Thomas M. 1962–. Assistant Professor of Physics. Associate Professor, 1967. Professor, 1973. Burton Bettingen Professor of Physics; Chair, Department of Physics. B.A., Pomona College. Ph.D., California Institute of Technology. Consultant, Jet Propulsion Laboratory; NSF Science Faculty Fellow, University of Maryland; Research Institute of Astronomy, Cambridge, England; Visiting Professor, Queen Mary College, University of London.

Petersen, Daniel C. 1974–. Assistant Professor of Physics. Associate Professor, 1980. Professor, 1986. B.A., St. Olaf College. M.A., Ph.D., Harvard University. Danforth Fellow; NIH Postdoctoral Research Fellow, The Johns Hopkins University; Visiting Research Physicist, California College of Medicine, University of California, Irvine; Visiting Professor, University of California School of Medicine, San Francisco; NASA Faculty Fellow, Jet Propulsion Laboratory; Visiting Senior Research Scientist, University of Oxford.

Sandman, William H. 1963–. Assistant Professor of Physics. Associate Professor, 1966. Professor, 1973. Assistant Dean of the Faculty, 1969. B.A., Reed College. Ph.D., University of Utah. Instructor, University of Utah; Assistant Professor, Grinnell College; Visiting Scholar, University of Texas, Austin.

Stoddard, Alonzo E. 1960–1987. Associate Professor of Physics. Professor, 1967. B.S., M.S., Ph.D., University of Michigan. Physicist: California Research and Development Co.; California Research Corporation; U.S. Geological Survey.

Townsend, John S. 1975–. Assistant Professor of Physics. Associate Professor, 1980. Professor, 1985. B.S., Duke University. M.A., Ph.D. The Johns Hopkins University. NSF Graduate Fellow; Research Associate, Linear Accelerator Center, Stanford University; Visiting Associate, California Institute of Technology; Visiting Fellow, University of Southampton, England; Science Fellow, Center for International Security and Arms Control, Stanford University;Visiting Professor, Duke University.

Tubbs, Eldred F. 1963–1979. Assistant Professor of Physics. Associate Professor, 1966. Professor, 1972. B.S., Carnegie Institute of Technology. Ph.D., The Johns Hopkins University. Senior Physicist, American Optical Co.; Advanced Research Physicist, General Telephone and Electronics Laboratory, Inc.;Visiting Research Associate, Harvard College Observatory.

Waggoner, Jack H., Jr. 1961–. Assistant Professor of Physics. Associate Professor, 1965. B.S., Ph.D., Ohio State University. Assistant Professor: Ohio State University; University of California, Riverside. Visiting Associate in Physics, California Institute of Technology.

Wolf, Robert P. 1963–. Assistant Professor of Physics. Associate Professor, 1968. Professor, 1974. B.S., Ph.D., Massachusetts Institute of Technology. National Science Foundation Faculty Fellow, Clarendon Laboratory, Oxford University, England; Visiting Scientist: Massachusetts Institute of Technology; University of Toronto; University of Hawaii; Stanford University; ESIEE, Paris.

PHYSICAL EDUCATION (Joint with CMC, Scripps)

Arce, William B. 1958–1983. Associate Professor of Physical Education and Director of Athletics. Professor, 1964. B.A., M.A., Ed.D., Stanford University. Baseball Coach, Menlo College; Director of Athletics, Capuchino High School; Assistant baseball Coach, Stanford University; Assistant Professor of Physical Education, Pomona College and Claremont Men's College; Program Director and coach, Royal Dutch Baseball Association (Amsterdam); Program director and Coach, Italian National Baseball Team.

Burton, Jodie R. 1979–. Instructor in Physical Education. Assistant Professor. Associate Professor, 1985. B.S., M.S., California State Polytechnic College, Pomona. Teacher-Coach, Polytechnic School, Pasadena.

Fontenette, Pamella 1983–1987. Instructor in Physical Education. M.A., University of La Verne.

Goldhammer, John S. 1984–. Assistant Professor of Physical Education. B.A., University of California. Santa Barbara. M.A., California State University, Los Angeles. Instructor and Track and Field Coach, Santa Barbara City College; Assistant Women's Track Coach and Men's Field Events Coach, University of California, Santa Barbara.

Grall, Thomas. 1974–78. Assistant Professor of Physical Education. B.S., Springfield College; M.Ed., Westfield State College.

Hopkins, Gayle. 1975–1983. Assistant Professor of Physical Education. Associate Professor, 1979. B.A., University of Arizona. M.A., San Francisco State University. Member, U.S. Olympic Track and Field Team (Tokyo); Instructor: University of Arizona; Pasadena United School District; Palo Alto United School District; San Francisco State University.

Howell, Jerry. 1978–1981. Assistant Professor of Physical Education. Football Coach.

King, Kim. 1983–. Instructor in Physical Education. B.S., Texas A & M University. M. S., West Texas State University. Teaching Professional–tennis.

Korpitz, ___. 1980–1984.

Lord, Michael. 1983–1985. Instructor in Physical Education. B.S., University of California, Riverside.

Lahanas, Gerry. 1980–1983 .

Maunakea, Pam. 1987–.

Maynard, Michael. 1984–. Instructor in Physical Education. B.S., Illinois Wesleyan University. Coach, Assistant Athletic Director, Eastern Oregon State College.

Murphy, Patrick. 1985–. Head Coach, Baseball; Assistant Coach, Football. B.H.S., M.Ed., Florida Atlanta University.

Remillard, Page. 1977–1979. Assistant Professor of Physical Education. Coach of Swimming and Water Polo. B.S., California State Polytechnic University. M.Ed., La Verne College. Coach, Claremont, Montclair High Schools. Lifeguard, Training Instructor, Los Angeles County.

Sutton, Michael L. 1979–. Assistant Professor of Physical Education. Associate Professor, 1985. B.A., Claremont McKenna College. M.S., U.S. Sports Academy. Swimming Coach, Mt. Baldy Aquatics; Instructor Pomona College Swim School; Head Coach, San Clemente Aquatics; Teacher and Coach, San Clemente High School; Team Leader, U.S. Olympics Water Polo Team; 1983 NCAA Division III Swimming Coach of the Year.

Town, Randall G. 1987–. Instructor of Physical Education. B.A., M.A., California State University, Stanislaus; Pitching Coach, Cincinnati Reds Organization; Instructor and Coach, California State University, Stanislaus.

Wells, David L. 1972–. Assistant Professor of Physical Education. Associate Professor, 1980. Professor, 1985. Chair, Department of Physical Education and Athletics. A.B., Claremont Men's College. M.A., California

State Polytechnic University, Pomona. Instructor, Eva D. Edwards Jr. High School, Covina; Basketball Coach.

Zinda, John. 1968–. Assistant Professor of Physical Education. Associate Professor. Professor. B.A., M.A., California State University, Los Angeles. Chair, Department of Physical Education/Athletics, 1983. Football Coach, CMC-HMC; Assistant Track Coach, Claremont High School; Instructor and Track Coach, Royal Oak High School.

Zorbas, LynAnn. 1981–1983. Instructor. B.A., California State University, Los Angeles. M. S., Washington State University.

THE BATES AERONAUTICS PROGRAM

Critchell, Iris C. 1962–. Program Director and Chief Flight Instructor. B.A., University of Southern California. Instructor, Stockton Junior College; Instructor, University of Southern California College of Aeronautics; FAA Certified Flight Instructor.

Critchell, Howard. 1962–1979. Instructor and Program Director.

Orloff, Kennneth L. 1976–77. Instructor in Aeronautics; B.S. Harvey Mudd College, 1966. M.S., UC Santa Barbara. Ph.D., UC Santa Barbara. On loan from NASA.

Clary, George R. 1979–1980. Instructor in Aeronautics. B.S., M.A. (Engineering), Harvey Mudd College, 1972/73. Aerodynamicist, Rohr Corporation; Program Director, Sierra Nevada Corporation.

Butler, Rhett. 1980–81. Instructor in Aeronautics.

Shelly, Frank. 1981–82. Instructor in Aeronautics.

Baker, Gene. 1982–86. Instructor in Aeronautics. B. S., Pennsylvania State University. M.A.T. University of the South.

Jensen, Duane. 1986–. Instructor in Aeronautics. B.S., Auburn University; Instructor, U.S. Naval Training Command; US Postgraduate School; U.S. Naval War College; Marine Corp Command.

APPENDIX 4

Academic Support Staff 1976–1988

	AUDIO/VISUAL AIDS	
Audio-Visual Technician	Dennis Bradford	1976–81
Manager	Mike Morgan	1983–84
	Byrne Sanford	1984–86
	Roger Klemm	1986–87
	Deborah Conow	1987–88
	COPY CENTER	
Operator	Sherlene Davis	1979–85
	Margaret Smith	1985–86
	Dorothy Bedell	1986–
	BATES AERONAUTICS PROGRAM	
Director/Instructor	Iris Critchell	1976–88
Secretary	Gwen Ketchum	1978–80
	Hassie Parzi	1980–81
	Elizabeth Gamble	1981–82
	Beverly Murray	1982–83
	Diane Klingensmith	1984–85
Administrative Assistant	Anita Bennett	1985–88
Director, Bates Foundation	Howard Critchell	1976–86

BIOLOGY/COMPUTER SCIENCE

Secretary, Computer Science	Sue Cook	1982–84
	Nancy Mandala	1984–88
Technical Assistant/Biology	Anne Marie Stomp	1977–80
	Robert Pimental	1980–81
	Anne Merten	1981–88
	James Sonner	1981–82
	Richard Sonner	1982–83

CHEMISTRY

Secretary	Marcia Myers	1976–84
	Karen Johanson	1984–85
	Gloria Autrey	1985–86
	Carol Evans	1986–88
Stockroom Curator	Earl Thornton	1976–82
	James Patrick	1982–88
Technical Assistant	Joyce Nuttal	1979–81
	Ruth Hathaway	1981–82
	Melonee Jackson	1982–85
	Ray Andrzejewski	1985–86
	Chi Pham	1986–88
Research Assistant	Patricia Hansen	1985–86
	Don Westmoreland	1986–87

COMPUTING SERVICES

Director, Academic Computing	Robert Wolf	1987–88
Secretary	Jane McDowell	1979–80
	June Charles	1980–81
	Jean Grace	1981–82
	Kathleen Morrison	1982–88
Computing Coordinator	Tony Noe	1976–78
Manager	Mark Johnson	1980–82
Director	Andy Davenport	1982–88
Assistant Director	Rhonda Bye	1982–84
	Chandra Wahjudi	1984–86
	Benjamin Staat	1985–87
	Ned Freed	1986–88
	Chris Yoder	1987–88

ENGINEERING		
Secretary	Theresa Grogan	1976–86
	Robin Zivelonghi	1986–88
	Mary Neu	1987–88
Senior Technician	Mark Sbertole	1986–88
Stockroom Curator	John Torcivia	1976–88
Administrative Assistant to the Clinic Director	Peggy Morrison	1976–88
Clinic Support Technician	Beverly Murray	1984–88
Secretary, Clinic	Betty Clutters	1979–80
	Holly Hauck	1980–83
	Beverly Murray	1983–84
	Sharon Birch	1984–88
FRESHMAN DIVISION		
Secretary	Barbara Graham	1976–88
HUMANITIES AND SOCIAL SCIENCES		
Secretary	Kathy Christofano	1976–80
	Diane Sanchez	1980–86
	Barbara Chrisan	1986–87
	Fay Hicks	1987–88
MATHEMATICS		
Secretary	Marion Snyder	1976–78
	Sue Swanlund	1978–80
	Sue Nylund	1980–82
	Sue Cook	1982–88
MATHEMATICS CLINIC		
Admin Assistant	Reta Borton	1978–79
Secretary	Teri Williams	1979–80
	Jose Garza	1985–86
PHYSICS		
Secretary	Helen White	1976–
Stockroom Curator	William Hoesen	1976–80
	William Cobham	1980–81
	Carol Davis	1981–82
	William Mumbleau	1982–87
	Annie Atiyeh	1987–

PHYSICAL EDUCATION AND ATHLETICS

Office Supervisor	Virginia Brady	1976–83
Secretary	Norma Mitchem	1980–81
	Kathy Blackwell	1981–82
	Doreen Mladenoff	1982–88
Receptionist/Secretary	Jean Grace	1985–86
	Vina Clink	1986–88
Director, Sports Information	Grayle Howlett	1983–88
Trainer	James Roush	1979–84
	Barbara Johannsen	1984–88
Equipment Manager	Ted Tedford	1980–81
	Mike Haas	1981–83
	Charles Duncan	1983–84
	Chris Roy	1984–88
Building Attendant	Duane Liss	1983–85
	Fran Escanuelas	1985–88

TECHNICAL SUPPORT SERVICES

Supervisor Machine Shop	Edward Stubblefield	1976–88
Supervisor Electronics Shop	Edward Newton	1976–82
Senior Electronics Technician	Kenneth Worley	1982–87
	Jovannie Chang	1987–88
Electronics Technician	Kenneth Worley	1976–80
	Rex Hafer	1980–86
	Lance McGee	1981–85
	Anh Le	1985–88

SPRAGUE LIBRARY

Librarian	David Kuhner	1976–86
	Nancy Waldman	1986–88
Circulation Supervisor	Joanne McCandless	1976–81
	Joan Zidek	1981–86
Reference Librarian	Marion Peters	1976–78
	Margaret Hinshaw	1978–79
	Margaret Osborn	1979–81
	Beverly McCracken	1981–83
	Beverly Ryan	1983–85
Assistant to the Librarian	Teri Krajecki	1986–88
Library Assistant	Kathleen Lindsay	1976–80
	Marian Asai	1980–88

APPENDIX 5

Other Program Support 1976–1988

	MESA	
Director	Thomas Woodson	1978–80
	Mac Gilkeson	1980–81
	Thomas Woodson	1981–88
Coordinator	Linda Halfon	1979–85
	Linda Dell'Osso	1985–88
Secretary	Jean Grace	1982–83
	Betty Farris	1983–88
	UPWARD BOUND	
Director	Octavio Boubion	1976–88
Associate Director	Raymond Stupin	1976–80
	Jim Cunningham	1981–88
Program Director	Jim Cunningham	1978–81
Coordinator	Charlene Bolton	1984–86
Secretary	Maria Torcivia	1977–88
	STARS PROJECT	
Research Assistants	Ali Ahmadi	1987–88
	David Brock	1987–88
	Shafril Ibrahim	1987–88
Secretary	Nancy Mandala	1987–88
	SUMMER SCIENCE PROGRAM IN ASTRONOMY (FROM 1958)	
Overseer	B. Samuel Tanenbaum	
Directors	David Pierce	
	George Abe	

APPENDIX 6

Administration 1976–1988

PRESIDENT'S OFFICE

President	D. Kenneth Baker	1976–88
Admin Assistant to President	Mary Benzon	1982–85
Secretary to the President	Mary Benzon	1977–82
	Mary Neu	1988–88
Senior Secretary	Virginia Blackwell	1976–79
Secretary	Alice Reidenbach	1979–80
	Lora Aynes	1980–81
	Linda Lamp	1981–82
	Nancy Mandala	1982–84
	Rosemary Richter	1984–88
Assistant to the President	Eleanor Johnston	1976–77
	Christy Weygandt	1985–88

DEAN OF FACULTY

Dean	B. S. Tanenbaum	1976–88
Senior Secretary	Mary Benzon	1976–77
	Marion (Snyder) Traver	1977–87
	Lois Wilde	1987–
Assistant to the Dean	Kristi Dillon	1976–77
	Georgeann Freeman	1978–79
	Margaret Bloch	1979–80
	Mary Scherr	1980–81
	Jim Stevens	1981–82
	Karen Stobart	1982–84
	Laura Duhan	1984–85
	Jill Tronvig	1985–86

Assistant to the Dean (continued)	Janet Jakobsen	1986–87
	Elisabeth Duran	1987–88

DEAN OF STUDENTS

Dean	William Gann	1976–86
	Michael Cappeto	1986–88
Senior Secretary	Marian Sawyer	1976–88
	Linda Weisel	1986–88
Assistant Dean	Steve Dominques	1986–87
	Robert Bell	1987–88
Director, Recreation	Diana Cozzi	1980–83
Director, Activities/Housing:	Tom Mercandante	1983–86
Director, Student Activities	Regina Mooney	1986–88
Assistant to Dean	Andrew Berner	1976–77
	Carl Brodt	1976–77
	Steve Domingues	1978–80

PLACEMENT OFFICE

Placement Counselor	Hilda Larson	1976–88

DEVELOPMENT AND PLANNING

Vice President	George I. McKelvey	1976–88
Assistant Vice President	Dorothy Harris	1976–88
Senior Secretary	Bobbye Trotter	1978–84
	Virginia Blackwell	1979–82
	Sophie McDonald	1984–86
	Nancy Strickland	1986–88
Assistant to the Vice President	Miriam Gandell	1985–88
Director, Campaign 25/32	Michael Kearney	1976–79
Director, Life Income Trusts	Thornton Hamlin Jr.	1976–83
	Daniel Wood	1985–88
Director, Public Relations	John Crowe	1977–79
Director, Corporate Relations	John Crowe	1979–82
	Donald Gross	1983–85
	Andrew Farrand	1985–88
Director, Development	John Crowe	1982–85
Director, Foundation Relations	Ronald Bowes	1979–80
	Ron Korvas	1984–88
Alumni Secretary	Deborah Tapley	1976–79
Director, Alumni Relations	Nancy S. Gamer	1979–

Assistant Director	Joeseph Holmes	1976–79
	Leonard Crowley	1976–77
	Robert Weisberg	1976–77
	Ronald Bowes	1978 -79
	Richard London	1978–79
Clinics Liaison Officer	Joseph Holmes	1979–81
	Donald Gross	1981–84
	Carl Baumgaertner	1985–88
Operations Supervisor	Wilma Henderson	1976–86
Gift Accountant	Shirley Butterick	1976–88
Secretary	Beverly Bolnik	1976–77
	Cheryl Coursey	1976–83
	Sally Short	1976–80
	Maryolyn Robinson	1976–
	Nancy Gamer	1978–79
	Carol Vaughn	1978–77
	Mary Flewelling	1978–83
	Nancy Mandala	1979–82
	Kathy Carver	1979–82
	Adeline McCabe	1980–81
	LaVerne Higgs	1981–82
	Judith Medford	1982–83
	Vicki Sharp	1982–84
	Judith Clark	1982–83
	Mary Pfeiffer	1983–84
	Mariam Gandell	1984–85
	Nohemy Barragan	1984–88
	Shelly Elabdallah	1983–85
	Joan Pfeiffer	1984–88
	Pamela Merritt	1985–88
	Marilyn Mehaffi	1987–88
	Janet Ottoson	1987–88
	Elizabeth Beddingfield	1978–79
Recorder/Secretary	Elizabeth Beddingfield	1979–83
Development Assistant	Elizabeth Beddingfield	1983–85
Development Assist/Computing	Shelly Elabdallah	1985–87
Research Assistant	May Weiser	1976–81
	Judith Medford	1981–82
	Bea Faust	1983–88

NEWS BUREAU AND PUBLIC RELATIONS

Director	Donald Zita	1976–77
	John Crowe	1978–79
	Richard Puz	1980–81
	Jim Groth	1983–88
Secretary	Cheryl Coursey	1978–79
	Cheryl Coursey	1980–83
	Ann Foster	1983–84
	Linda MacLean	1984–85
	Elaine Kluter	1985–86
	Deborah Johnson	1987–88

BUSINESS AFFAIRS

Vice President, Treasurer, and Director		
	William Radley	1976–77
	Edward Ryder	1977–78
	Timothy Johnson	1978–83
	Raymond J. Miller	1983–88
Senior Secretary	Sandra Deleon	1976–80
	Sandra Goodman	1980–82
	Marlene Gardener	1980–84
	Sharon Stoeppelmann	1987–88
Business Administrator	Edward Speich	1976–80
Associate Director	Marilea (Irby) Price	1982–83
Assistant Director	Marilea (Irby) Price	1980–82
	Michael Bever	1981–82
	Karen Yoshino	1982–83
Assistant to the Director	Patti Petry	1980–82
	Donald Harris	1980–81
Secretary	Elaine Beenings	1980–81
	Clair Humphreys	1981–85
	April Allsup	1982–85
	April Ramirez	1984–85
	Robin Zivelonghi	1985–86
	Sharon Glass	1986–87
Secretarial Services	Betty Clutters	1976–78
	Sue Archer	1976–78
	Margaret Schroth	1976–78
	Gloria Martinez	1976–77
	Sue Swanlund	1976–78
	Sherlene Davis	1977–79
	Jane McDowell	1977–79
	My Nguyen	1977–79

Personnel	Marilea (Irby) Price	1976–80
	Debra (Belzer) Heavenston	1987–88
Director of Business Services	Karen Yoshino	1984–88
Budget Analyst	Karen Yoshino	1983–84
Director of Campus Services	Ralph Kemmerer	1976–78
	Allen Holden	1978–80
	Larry Hartwick	1983–88
Staff Accountant	Debra (Belzer) Heavenston	1984–87
Student Accounts Director	Marge Mendoza	1987–88
Conference Coordinator	Claire Humphreys	1985–88
Maintenance Supervisor	James Litzsinger	1976–79
	Valentino Orosco	1979–82
	John Kelderhouse	1982–88
Lead Building Attendant	Robert Lanza	1976–80
	Esteban Garcia	1978–82
	Esteban Sandoval	1982–88
Residence Halls Manager	Ursula Stolle	1976–85
	Sherlene Davis	1985–88
Lead Gardener	Josef Lorincz	1976–78
	Juan Artidiello	1978–86
	Alvero Martins	1986–88
Director Food Services	Rodney McDonald	1976–77
	Sal Trujilla	1978–79
	Evelyn Witherspoon	1980–81
Computing Services Consultant	Susan Selhorst	1983–87
Director, Admin. Computing	Susan Selhorst	1987–88
Programmer	Shelley Elabdallah	1987–88
Copy Center Manager	Sherlene Davis	1979–85
	Margaret Smith	1985–86
	Dorothy Bedel	1986–88

REGISTRAR'S OFFICE

Registrar	Norma (Kruger) Mann	1976–88
Assistant to the Registrar	Betty Lumpkin	1976–88
Records Clerk:	Connie Leiva	1976–88

ADMISSION AND FINANCIAL AID

Dean of Admission & Fin. Aid	Emery Walker	1976–82
	Duncan Murdoch	1982–88
Associate Dean, Adm. & Fin. Aid	Robert Rogers	1976–82
Associate Dean, Adm. & Fin Aid	Leonard Dickey	1980–84
Associate Dean, Financial Aid	Denman Gambill	1976–83
Assistant Dean, Adm. & Fin Aid	Leonard Dickey	1978–80
Director, Financial Aid	Ann Draper	1984–88

Associate Director	Richard Diaz	1983–85
Assistant Director	Richard Diaz	1981–83
	Barbara Brown	1983–85
	Lee Kay	1985–88
	Jean (Rutherford) Wall	1986–88
Admission Counselor	Richard Diaz	1978–81
	Cheryl Murray	1978–81
	Robert Robertson	1981–82
	Barbara Brown	1982–83
	Jean Rutherford	1985–86
Assistant Director, Fin. Aid	Evelyn Desjarlais	1976–83
Admission Assistant	Herta Erdoes	1976–77
	Carroll Nageottte	1978–82
	Kathy (Carver) Morrison	1982–85
	Elizabeth Beddingfield	1985–86
Financial Aid Specialist	Virginia Diaz	1985–87
Financial Aid Assistant	Marge Mendoza	1985–86
Student Accounts Assistant	Marge Mendoza	1986–87
Operations Supervisor/Fin. Aid	Elizabeth Beddingfield	1986–88
Admission Secretary	Lillian Albanese	1976–82
	Alberta Parisi	1976–80
	Becky Bender	1976–77
	Joyce Hurst	1976–77
	Carrol Nageotte	1976–78
	Beth Bell	1978–80
	Hanna Kronenberg	1978–79
	Maryolyn Robinson	1979–83
	Debra Ortiz	1980–81
	Ruthie Cephas	1981–82
	Sylvia Elias	1981–82
	Janet Bartholomae	1982–83
	Susanne Behrens	1983–85
	Lynn Straube	1983–86
	Kris Rippey	1985–88
	Deborah Johnson	1986–87
Financial Aid Secretary	Louise Hargrove	1977–81
	Alice Teague	1981–82
	Charlene Moore	1982–84
	Suzanne Fight	1982–83
	Marge Mendoza	1984–85
	Elodie Silva	1986–88
	Virginia Diaz	1986–87
Receptionist	Madeline Cappitelli	1978–79
	Roberta Dixon	1979–88
	Beth Bell	1980–83

APPENDIX 7

Tables, Charts, and Graphs

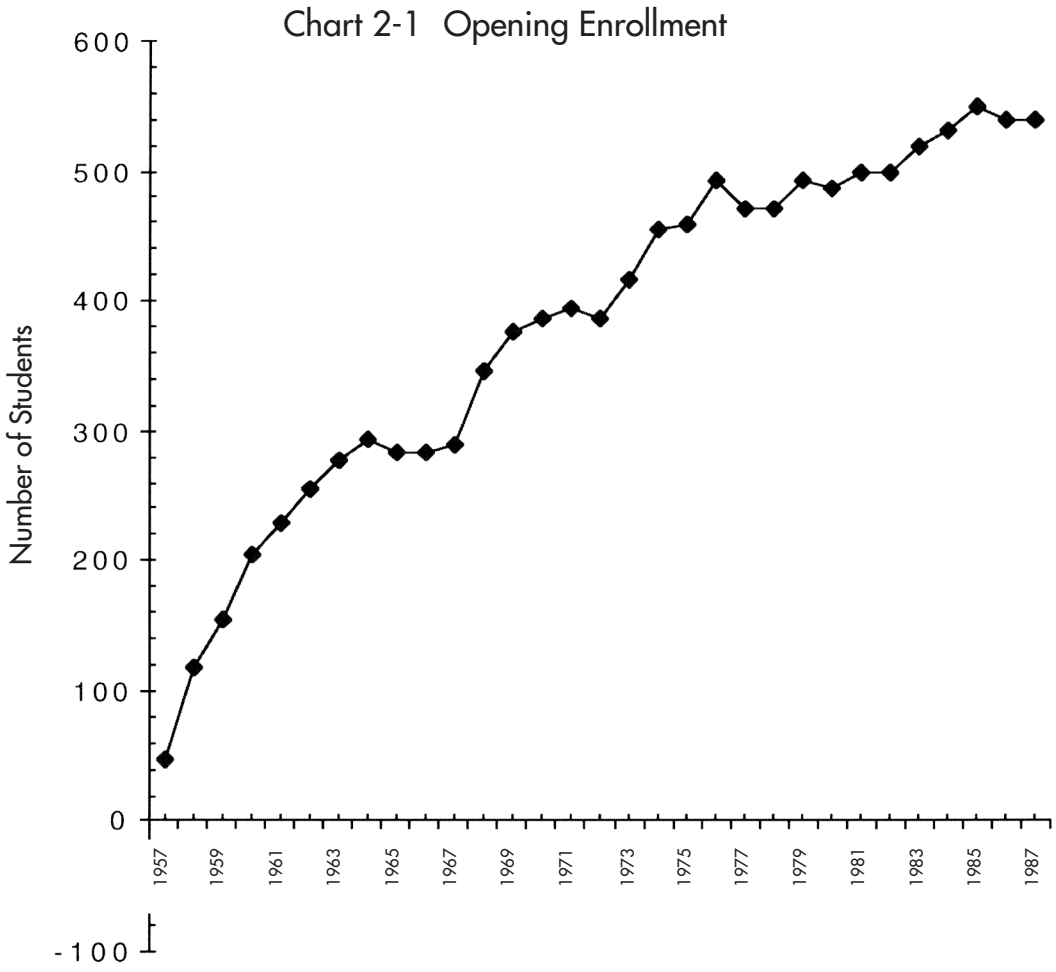


Table 4.1 TENURED PLUS TENURE-TRACK FACULTY

Academic Year	Bio/CS	Chem	Eng	H/SS	Math	Phys	Total
1976–77	0	8	11	10	10	11	50
1987–88	5	8	13	12	10	11	59

Table 4.2 FULL-TIME EQUIVALENT FACULTY

Academic Year	Bio/CS	Chem	Eng	H/SS	Math	Phys	Others	Total
1976–77	0	10	12.5	11.2	11.7	11.5	3.3	60.2
1987–88	5	10	16.3	14.7	11.2	11.7	6	74.9

Table 4.3 STUDENT-TO-FACULTY RATIOS

Academic Year	# of students (average)	# of faculty (ten/tt)	# of FTE faculty	Student-to-faculty ratio (ten/tt)	Student-to-faculty ratio (FTE)
1976–77	476	50	60.2	9.5	7.9
1987–88	529	59	74.9	9.0	7.1

Table 4.4 DEPARTMENT CHAIR APPOINTMENTS

Department	Chair of the Department	Appointment Term (Sept of: through June of:)
Chemistry	Art Campbell	1957–1981
	Phil Myhre	1981–1985
	Mits Kubota	1985–1986
	Phil Myhre	1986–1988
Engineering	Jack Alford	1974–1979
	Jim Monson	1979–1983
	John Molinder	1983–1988
Humanities and Social Sciences	Dave Sanders	1973–1977
	Mike Seven	1977–1978
	Ted Waldman	1978–1982
	Dick Olson	1982–1985
	Tad Beckman	1985–1988
Mathematics	Bob Borrelli	1975–1977
	Courtney Coleman	1977–1979
	Alden Pixley	1979–1981
	Bob Borrelli	1981–1984
	Courtney Coleman	1984–1985
	Bob Borrelli	1985–1988
Physics	Gray Bell	1971–1978
	Ted Stoddard	1978–1979
	Gray Bell	1979–1981
	Tom Helliwell	1981–1982
	John Townsend	1982–1983
	Tom Helliwell	1983–1988
CS Group	Wing Tam	1981–1984
	Mike Erlinger	1984–1988
Biology Group	Bill Purves	1977–1983
	T.J. Mueller	1983–1984
	Bill Purves	1984–1988

Table 4.5 CHANGES IN TENURE AND TENURE-TRACK FACULTY
Department of Chemistry

Academic Year	Positions Approved	Position #5	Position #6	Position #7	Position #8	Position #9
1976–77	8 (5+3+0)	CAMPBELL TP	VAN EIKEREN ttap	KOK ttap	VAUGHAN ttap fy	
1977–78	8 (5+3+0)	TP	ttap	ttap	MORRISON ttap fy	
1978–79	8 (6+2+0)	TP	TAP	ttap	DAUB ttap	
1979–80	8 (6+2+0)	TP	TAP	ttap	ttap	
1980–81	8 (7+1+0)	TP	TAP	TAP fy	ttap	
1981–82	8 (6+2+0)	TP	TAP	STIEG ttap	ttap	
1982–83	8 (6+2+0)	TP	TAP	ttap	ttap	
1983–84	8 (6+2+0)	TP	TP	ttap	ttap	
1984–85	9 (7+2+0)	TP pt*	TP	ttap	TAP	KARUKSTIS ttap
1985–86	9 (7+2+0)	TP pt	TP	ttap fy	TAP	ttap
1986–87	9 (7+2+0)	TPpt fy	TP fy	VAN RYSWYK ttap	TAP	ttap
1987–88	8 (5+2+1)	—**	…	ttap	TAP	ttap

Notes:
TP = Tenured Professor
TAP = Tenured Associate Professor
ttap = tenure-track assistant professor
pt = part time
fy = final year
… = tenure/tenure-track position not filled
—** = position terminated
* = Campbell elects partial early retirement

Table 4.6 CHANGES IN TENURE AND TENURE-TRACK FACULTY
Department of Physics

Academic Year	Positions Approved	Position #7	Position #8	Position #9	Position #10	Position #11
1976–77	11 (8+3+0)	STODDARD TP	PETERSEN ttap	TOWNSEND ttap	TUBBS TP	DOMB ttap
1977–78	11 (8+3+0)	TP	ttap	ttap	TP	ttap
1978–79	11 (8+3+0)	TP	ttap	ttap	TP fy	ttap fy
1979–80	11 (7+2+2)	TP	ttap	ttap	…	…
1980–81	11 (9+2+0)	TP	TAP	TAP	HASKELL ttap	ECKERT ttap
1981–82	11 (9+2+0)	TP	TAP	TAP	ttap	ttap
1982–83	11 (9+2+0)	TP	TAP	TAP	ttap	ttap
1983–84	11 (9+2+0)	TP	TAP	TAP	ttap	ttap
1984–85	11 (10+1+0)	TP	TAP	TAP	ttap	ttap
1985–86	11 (11+0+0)	TP fy	TAP	TP	TAP	TAP
1986–87	11 (10+0+1)	…	TP	TP	TAP	TAP
1987–88	11 (10+0+1)	…	TP	TP	TAP	TAP

Table 4.7 CHANGES IN TENURE AND TENURE-TRACK FACULTY
Department of Engineering

Academic Year	Positions Approved	Position #7	Position #8	Position #9	Position #10	Position #11	Position #12	Position #13
1976–77	11 (7+4+0)	GILKESON TP	TAM ttap	REMER ttap	FRANCIS ttap fy	SIGMAN ttap		
1977–78	11 (7+3+1)	TP	ttap	ttap	ttap fy	…		
1978–79	11 (8+2+1)	TP	TAP	ttap	REDDY ttap fy	…		
1979–80	11 (9+2+0)	TP	TAP	TAP	SENGUPTA ttap	PHELPS Visiting AP		
1980–81	11 (10+1+0)	TP	TAP fy (to CS)	TP	ttap	TAP		
1981–82	11 (9+1+1)	TP	…	TP	ttap	TAP		
1982–83	11 (9+1+1)	TP	GOLDSTEIN ttap	TP	ttap	TP		
1983–84	11 (9+2+0)	TP	ttap	TP	ttap	TP		
1984–85	12 (10+2+0)	TP fy	ttap	TP	ttap fy	TP	NJOKU ttAP	
1985–86	12 (8+3+1)	—	ttap	TP	…	TP	ttAP fy	
1986–87	12 (9+3+0)	BRIGHT ttap	TAP	TP	KING ttap	TP fy	…	
1987–88	13 (8+5+0)	ttap	TAP	TP	ttap	DURON ttap	HOOLE ttAP	CUNNINGHAM ttap

Note:
Tom Woodson and Pat Lewis held non-tenure track positions through the Third Decade Plus. Dean Gillette served five years in the department as the Henry R. Luce Joint Professor, joint with CMC.

Table 4.8 CHANGES IN TENURE AND TENURE-TRACK FACULTY
Department of Humanities and Social Sciences

Academic Year	Positions Approved	Position #6	Position #7	Position #8	Position #9	Position #10	Position #11	Position #12
1976–77	9 (6+3+0)	OLSON ttap	SEVEN TAP	STERN ttap	GEORGE ttap fy			
1977–78	10.5 (6+4.5+0)	ttap	TP	ttap	LEIREN ttap	HOUNSHELL ttap	MEGINNISS *ttap (1/2)	
1978–79	10.5 (7+3.5+0)	TAP	TP	ttap	ttap fy	ttap fy	*ttap (1/2)	
1979–80	10.5 (7+3.5+0)	TAP	TP	ttap fy	FUNDER ttap	BARRON tt-Instr	*ttap (1/2)	
1980–81	10.5 (7+3.5+0)	TAP	TP	…	ttap	ttap	*ttap (1/2) fy	
1981–82	11 (7+3+1)	TAP	TP	…	ttap fy	ttap	EVANS ttap	
1982–83	11 (7+2+2)	TAP	TP	…	…	ttap	ttap	
1983–84	11 (7+3+1)	TP	TP	DAVIS ttP	…	ttap	ttap	
1984–85	11 (8+3+0)	TP	TP fy	TP	SPACAPAN ttap	ttap	ttap	
1985–86	11 (9+2+1)	TP	FREELAND ttap loa	TP	ttap	TAP	ttap	
1986–87	11 (9+3+0)	TP	ttap	TP	ttap	TAP	ttap	
1987–88	12 (9+3+0)	TP	ttap	TP	ttap	TAP	TAP	HUNTER ttap

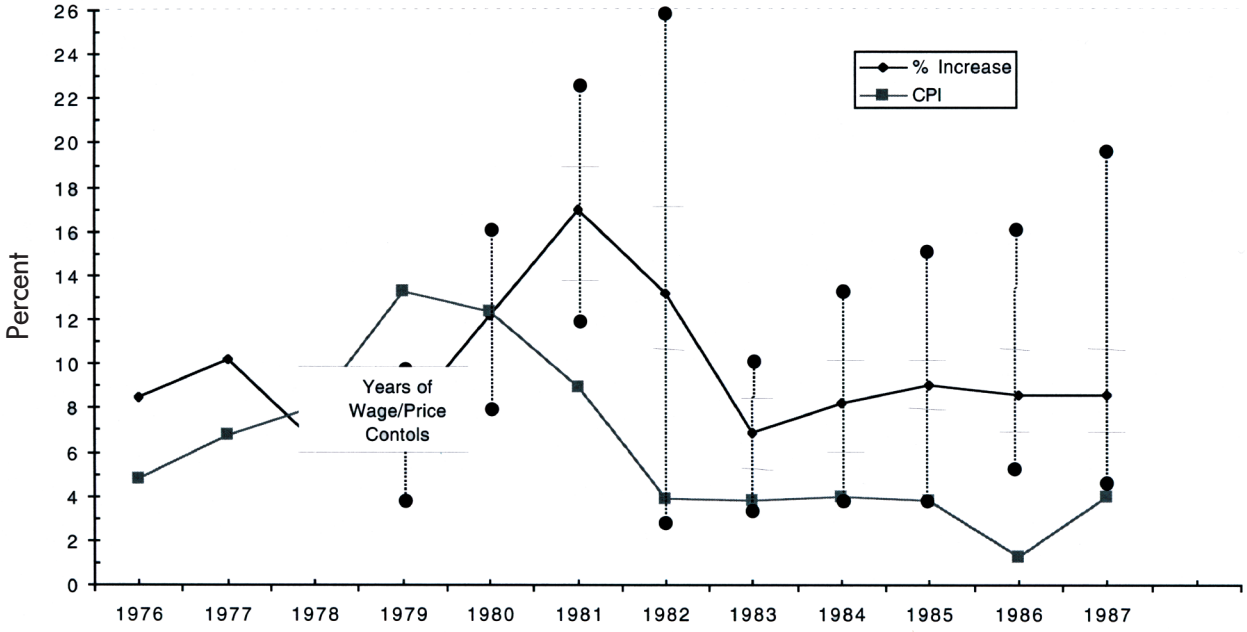
Notes:
1. Dave Sanders was appointed the first Louisa and Robert Miller Professor in the Humanities.
2. Nat Davis was appointed the first Adelaide and Alexander Hixon Chair in the Humanities in 1983–84.
3. *Joint appointment with CGS.

Table 4.9 CHANGES IN TENURE AND TENURE-TRACK FACULTY
Department of Mathematics

Academic Year	Positions Approved	Position #9	Position #10
1976–77	10 (10+0+0)	HENRICKSEN TP	ORLAND TP
1977–78	10 (10+0+0)	TP	TP
1978–79	10 (10+0+0)	TP	TP
1979–80	10 (10+0+0)	TP	TP
1980–81	10 (10+0+0)	TP	TP
1981–82	10 (10+0+0)	TP	TP
1982–83	10 (10+0+0)	TP	TAP fy
1983–84	10 (9+0+1)	TP	…
1984–85	10 (9+0+1)	TP	…
1985–86	10 (9+1+0)	TP	FISHER ttap
1986–87	10 (9+1+0)	TP	ttap
1987–88	10 (8.5+1+0)	TP 1/2	ttap

Chart 4-1 Percent Faculty Salary Increases vs Percent Change in CPI

(effective September of the year shown)



Note:
Vertical lines represent the total spread in the salary increases of individuals in a given year. The horizontal bars indicate the range in which 50 percent of individuals received increases in a given year.

Table 5.1 COMPARISON OF REQUIREMENTS BEFORE AND AFTER 1986

	Required Before 1986 (units)	Required After 1986 (units)	Electives After 1986 (units)
IN THE CORE:			
Biology	3	0	3 (Intro)
Chemistry	10.5	8	3 (P-Chem or Organic)
Computer Science	3	2	3 (Intro)
Engineering	3	3	3 (Elective)
Freshman Project	2	0	0
Mathematics	13	13	3 (Discrete)
Physics	11.5	10	3 (Modern)
Humanities and Social Sciences	8	4	3 (Hum/SocSci)
THE HUM/SOC PROGRAM	33	33	0
TOTAL REQUIREMENT	87	73	9 (Required from 21 above)

Table 5.2 THE FRESHMAN-YEAR PROGRAM
In course credit hours (1961 base year; changes effective Sept. 1970, 1977, 1986)

	1961 Fall/Spring		1970 Fall/Spring		1977 Fall/Spring		1986 Fall/Spring	
Chemistry	4	4	4[1]	4[1]	5	2.5	4	4
Hum/Social Sciences	3	3	6[2]	6[2]	4	4	4	3
Mathematics	4	4	4	4	4	4	4	3
Engineering	2	2	—	—	—	1	—	—
Physics	4	4	4[1]	4	2.5	5	2	4
Computer Science	—	—	—[3]	—	2	—	2	—
Physical Education	0.5[4]	0.5[4]	—	—	—	—	—	—
Natural Philosophy	———					1[5]	——	
Core Elective	———							3[6]
Per Semester	17	17	18	18	17.5	17.5	16	17
Per Year		35		36		35		33

Notes:
1. Natural Philosophy: (see Physics) offered 1970–1975
2. Quest for Commonwealth—offered 1970 through 1975
3. In Mathematics
4. Physical Education shows credit hours but were not recorded on transcript.
5. This was a different Natural Philosophy (required for two years only).
6. One freshman core elective: either Biology, Computer Science, Discrete Mathematics, Engineering or Humanities and Social Sciences

Table 5.3 TYPICAL STUDENT LOAD—
THE NUMBER OF FRESHMAN-YEAR COURSES
per semester and year
(not counting Physical Education or overloads)

	1961 Fall/Spring		1970 Fall/Spring		1977 Fall/Spring		1986 Fall/Spring	
# Per Semester	5	5	7	7	7	10	6	7
# Per Year		10		14		17		13[1]

Note: Laboratories are counted as a full course.

Table 5.4 PERCENTAGE DISTRIBUTION OF MAJORS
Fall Semester—Juniors and Seniors

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
CHEM	17	17	12	13	15	14	11	11	10	9	11	12
ENG	37	43	51	51	52	49	57	58	58	53	57	47
MATH	18	19	14	13	14	12	10	12	13	16	13	16
PHYS	25	19	20	19	17	23	20	17	18	19	17	21
IPS	4	2	3	5	3	3	1	2	1	2	2	4

Chart 5-1 Percentage Distribution of Majors

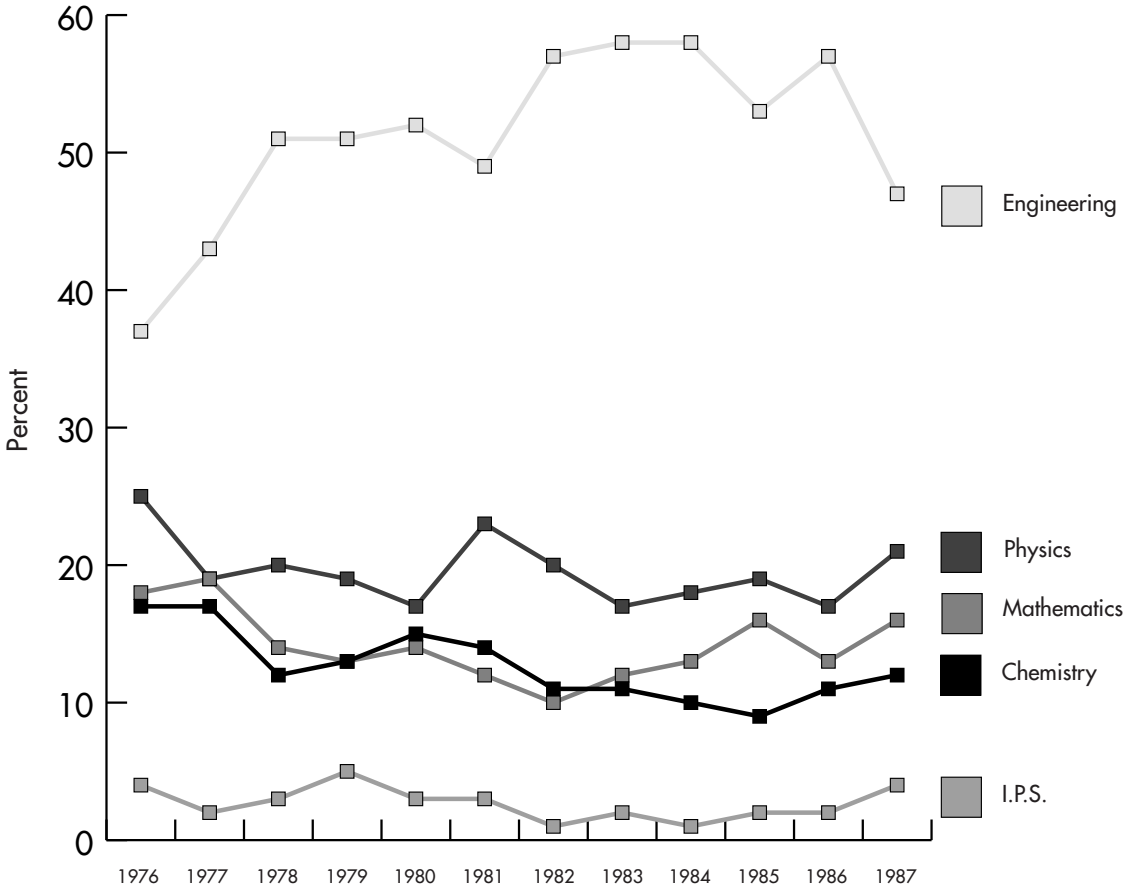


Table 7.1 CHANGES IN TENURE AND TENURE-TRACK FACULTY
Biology and Computer Science Groups

		Biology			Computer Science		
Academic Year	Positions Approved	Position #1	Position #2		Position #1	Position #2	Position #3
1976–77	0 (0+0+0)						
1977–78	1 (0+1+0)	PURVES ttP					
1978–79	1 (0+1+0)	ttP					
1979–80	1 (1+0+0)	TP					
1980–81	1 (1+0+0)	TP					
1981–82	3 (1+2+0)	TP	MUELLER ttap		ERLINGER ttap		
1982–83	4 (2+2+0)	TP	ttap		ttap	TAM TAP	
1983–84	5 (2+3+0)	TP	ttap		ttap	TAP	LORENTZ ttap
1984–85	5 (2+3+0)	TP	ttap		ttap	TAP	ttap
1985–86*	5 (3+2+0)	TP	ttap	*	TAP	TAP	ttap
1986–87	5 (3+2+0)	TP	ttap		TAP	TP	ttap
1987–88	5 (3+2+0)	TP	TAP		TAP	TP	tap fy

Note:
* The two groups were combined to form a single administrative unit.

Table 9.1 CHANGES IN TENURE AND CONTRACT FACULTY
Department of Physical Education, Intercollegiate Sports and Recreation

Academic Year	Positions Approved	Position #2	Position #3	Position #4	Position #5	Position #6*	Position #7	Position #8	Position #9
1976–77	5 (2+3+0)	ARCE TP	HOPKINS ttap	WELLS ttap	GRALL ttap fy	**			
1977–78	5 (2+3+0)	TP	ttap	ttap	REMILLARD ttap				
1978–79	6 (2+4+0)	TP	ttap	ttap	ttap	HOWELL ttap			
1979–80	7 (3+4+0)	TP	TAP	ttap	SUTTON ttap	ttap fy	BURTON ttap		
1980–81 **	8 (4+3+1)	TP	TAP	TAP	ttap	KORPITZ Contract	ttap	LAHANAS ttap	
1981–82	9 (5+2+2)	TP	TAP	TAP	ttap	Con	ttap	T	ZORBAS Contract
1982–83	9 (5+2+2)	TP fy	TP fy	TAP	ttap	Con	ttap	T fy	Con fy
1983–84	9 (2+2+5)	BARNES Contract	LORD Contract	TAP	ttap	Con fy	ttap	FONTENETTE Contract	KING Contract
1984–85	9 (2+2+5)	GOLDHAMMER Contract	Con fy	TAP	ttap	MAYNARD Contract	ttap	Con	Con
1985–86	9 (4+0+5)	Con	MURPHY Contract	TP	TAP	Con	TAP	Con	Con
1986–87	9 (4+0+5)	Con	Con fy	TP	TAP	Con	TAP	Con fy	Con
1987–88	9 (4+0+5)	Con	TOWN Contract	TP	TAP	Con	TAP	MAUNAKEA Contract	Con

Notes:
* The football coach was primarily funded by CMC.
** The time of individuals to the left of the double line were allocated $^1/_3$ to HMC for FTE purposes. Those to the right were allocated to other colleges.
** After the 1978–79 academic year all new appointments were contract appointments.

Table 10.1 ANNUAL DEPLETION
Students Leaving for All Reasons

Academic Year	# Students Enrolled	# ITR	# Transfer	# LOA, WD + Other	Total # Lost	Depletion Rate %
1976–77	493	24	23	41	88	17.8
1977–78	470	13	27	40	80	17.0
1978–79	471	31	11	21	63	13.4
1979–80	493	20	18	25	63	12.7
1980–81	488	16	21	22	59	12.1
1981–82	500	13	11	19	43	8.6
1982–83	500	23	13	26	62	12.4
1983–84	520	17	14	27	58	11.2
1984–85	532	16	7	17	40	10.4
1985–86	550	23	9	25	57	10.4
1986–87	540	21	11	29	61	11.3
1987–88	529	23	10	15	48	8.9

Table 10.2 LOSS OF STUDENTS in the FRESHMAN YEAR

Academic Year	Freshman Class of	Freshman Enrollment	# of Freshman Leaving	Freshman Attrition %
1976–77	’80	155	16	7.9
1977–78	’81	129	22	10.7
1978–79	’82	153	12	14.8
1979–80	’83	134	29	8.3
1980–81	’84	149	15	18.8
1981–82	’85	147	12	10.6
1982–83	’86	141	26	8.2
1983–84	’87	154	26	17.5
1984–85	’88	144	25	19.4
1985–86	’89	149	30	16.3
1986–87	’90	150	30	23.3
1987–88	’91	152	30	19.4

Table 10.3 THE GRADUATION RATE

Academic Year	Freshman Class of	Freshman Enrollment	# Graduated in 4 Years	# Graduated Later	Graduation Rate %
1976–77	’80	155	90	8	63
1977–78	’81	129	69	13	64
1978–79	’82	153	98	14	73
1979–80	’83	134	80	11	68
1980–81	’84	149	83	17	71
1981–82	’85	147	94	21	78
1982–83	’86	141	94	17	79
1983–84	’87	154	94	12	71
1984–85	’88	144	101	10	78
1985–86	’89	149	95	12	72
1986–87	’90	150	103	13	77
1987–88	’91	152	104	14	77

Chart 13-1 Endowment Growth—Third Decade Plus

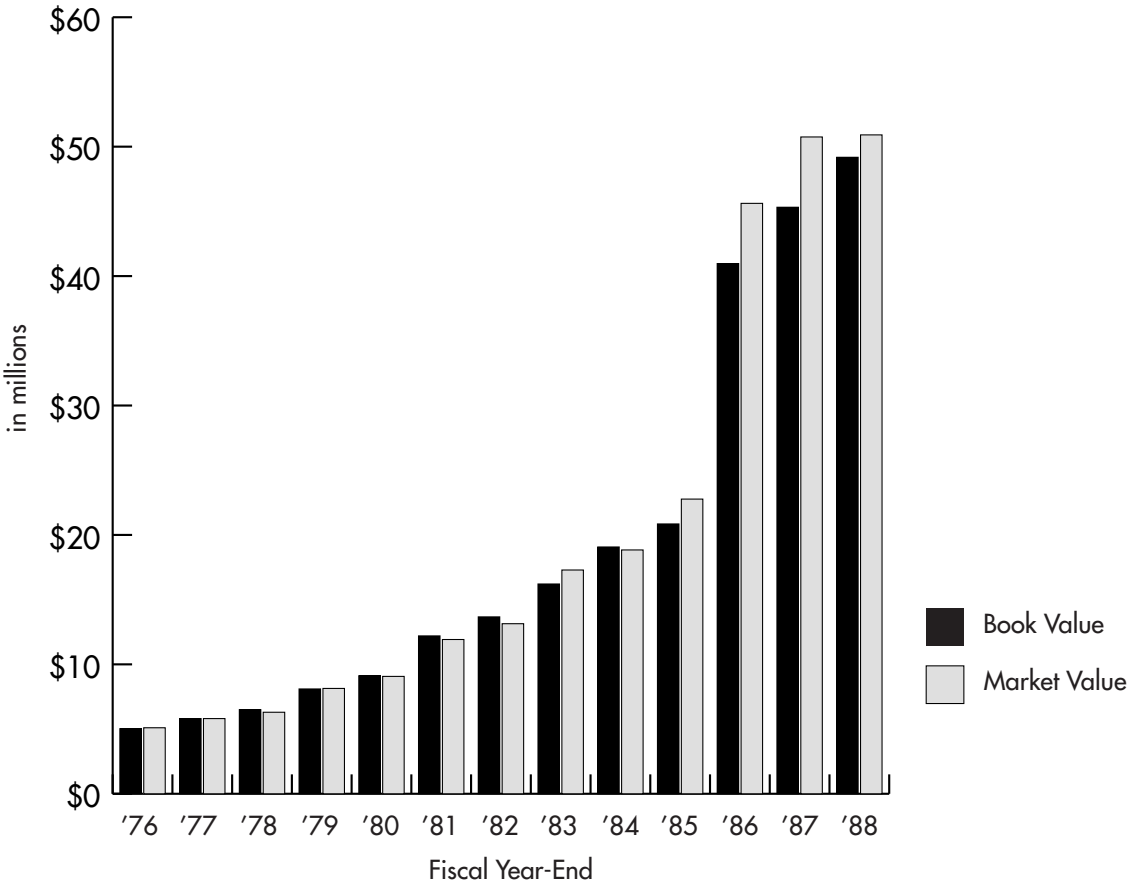


Table 13.1 ENDOWMENT GROWTH		
Fiscal Year-End	Book Value (Millions)	Market Value (Millions)
1976	$5.03	$5.10
1977	5.81	5.81
1978	6.50	6.30
1979	8.10	8.14
1980	9.12	9.07
1981	12.20	11.92
1982	13.67	13.14
1983	16.21	17.29
1984	19.07	18.84
1985	20.85	22.77
1986	40.97	45.62
1987	45.32	50.75
1988	49.18	50.91

Table 13.2 FACTORS IMPACTING THE ENDOWMENT

Fiscal Year-End	Annual Total Return (ATR)	Spending Rate	CPI* (Prior June 30 to June 30)	Spending Rate + CPI
1976–77	5.03%	4.77%	6.8%	11.6%
1977–78	1.17	5.85	7.7	13.6
1978–79	8.57	6.62	11.3	17.9
1979–80	7.57	8.05	13.1	21.2
1980–81	8.77	9.38	10.8	20.2
1981–82	10.28	10.74	7.1	17.8
1982–83	24.98	8.04	2.5	10.6
1983–84	0.20	7.03	4.2	11.2
1984–85	24.60	6.51	3.6	10.1
1985–86	23.60	5.95	1.6	7.6
1986–87	12.58	5.42	3.9	9.3
1987–88	(2.29)	5.20	4.1	9.3

Note:
* The CPI data are reported on the basis of 1967 = 100.

Table 13.3 UNIT VALUES		
JUNE of	CMC	HMC
1976	96.02	93.3
1977	96.61	93.56
1978	98.13	89.19
1979	107.61	90.73
1980	121.18	89.91
1981	143.03	89.17
1982	128.35	88.22
1983	167.41	102.49
1984	157.75	95.61
1985	181.86	112.40
1986	221.42	131.51
1987	242.69	140.42
1988	221.08	129.83

Table 13.4 ANNUAL ENDOWMENT DISTRIBUTIONS

Fiscal Year-End	Restricted : to Return to Endowment	Restricted : to Current Operations	Restricted : to Physical Plant	Unrestricted : to Current Operations
1976–77	$ 44,597	$112,356	$34,043	$105,609
1977–78	52,773	172,125	37,490	130,204
1978–79	41,277	211,556	39,372	163,467
1979–80	54,850	272,981	48,148	298,860
1980–81	76,907	416,323	67,302	414,510
1981–82	149,473	535,121	80,221	550,195

Chart 13-2 Typical Endowment Income Distributions

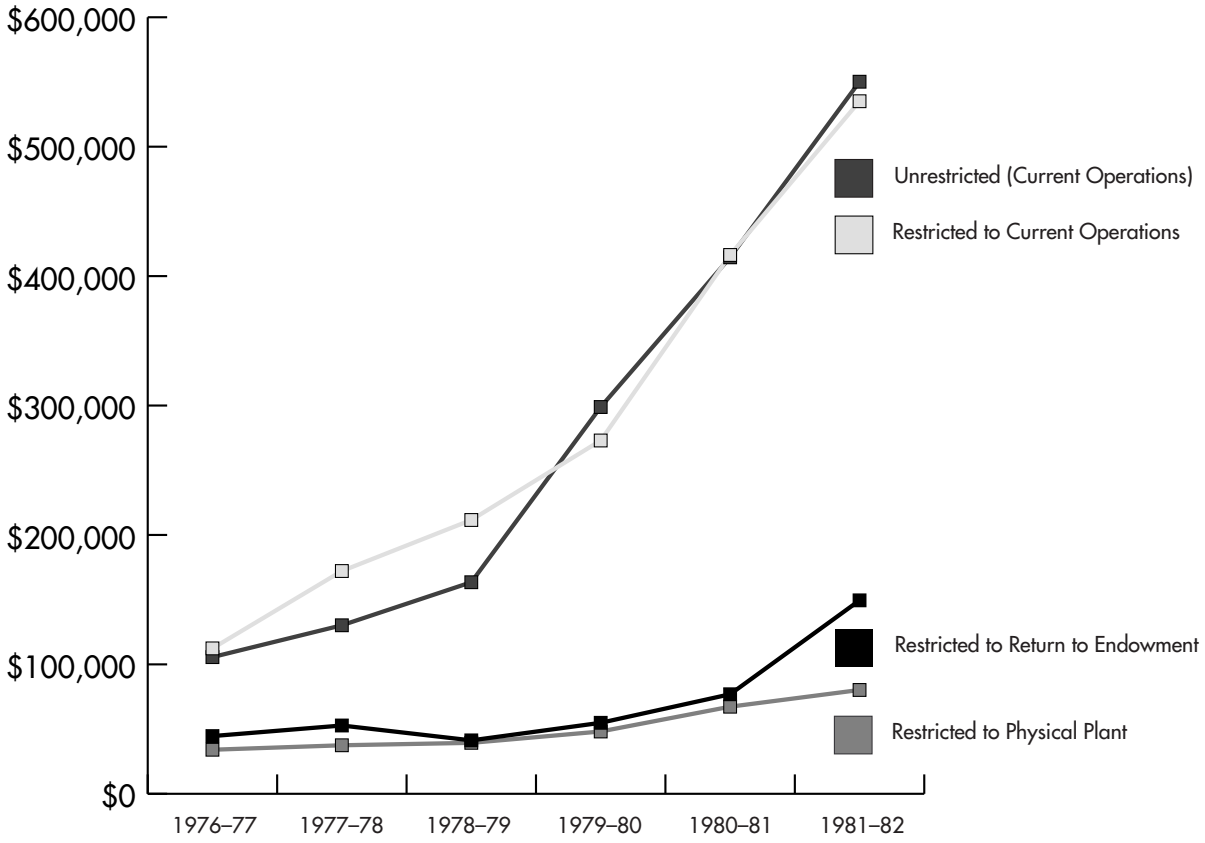


Table 13.5 TOTAL ENDOWMENT ACTIVITY FISCAL YEAR 1987–88	
Book Value @ 6/30/87	$45,321,331
New Gifts to Endowment	624,028
Investment Income Returned to Endowment	82,769
Realized Gains on Investments	1,256,759
Transfers to (from) Endowment	3,250,435
Gains Appropriated to Annual Operations	(1,351,094)
Net Increase in Book Value	3,862,897
Book Value @ 6/30/88	$49,184,228

Table 13.6 INVESTMENT SCHEDULE

Managers	Market Value 6/30/88
Sound Shore Management	$10,427,088
Sequoia Fund	9,406,705
Pacific Financial Research	8,683,342
Tukman Capital Management	7,367,591
Aster Management	3,431,848
Benham T-Note Trust	4,496,072
Southwest Venture Partners	564,540
Holdings on Campus*	7,786,844
Total Endowment Invested	$52,164,130

* Holdings on campus included largely cash and cash equivalents invested for the short term, plus odd lots of stock certificates, real estate holdings, and other temporary items.

Appendix Table 7.1 TOTAL DEBT (in thousands)			
On 6/30 of:	Notes Payable	Bonds Payable	Total Payable
1977	1,618	625	2,243
1978	1,258	610	1,868
1979	1,008	595	1,603
1980	653	580	1,233
1981	0	6,565	6,565
1982	0	6,518	6,518
1983	0	6,444	6,443
1984	0	6,368	6,368
1985	235*	7,938	8,173
1986	247*	7,833	8,080
1987	94*	7,273	7,367
1988	58*	7,195	7,253

The required annual payments to service the college's debt.

Appendix Table 7.2 ANNUAL DEBT PAYMENTS (in thousands)			
Fiscal Year	Principal Paid	Interest Paid	Total Paid
1976–77	$330	$159	$489
1977–78	396	146	542
1978–79	302	144	437
1979–80	684	101	785
1980–81	682	69	751
1981–82	63	764	827
1982–83	92	550	642
1983–84	94	544	638
1984–85	101	613	714
1985–86	363	767	1,130
1986–87	615	679	1,294

APPENDIX 8

The Stanford University "Payout" Formula

THE objective of the model is to provide reasonable income for the annual budget, as well as to insure long-term inflationary protection for the endowment. It is a conservative approach and produces a payout of the order of 5 percent; a percentage considered optimal given an average 10 percent total return from the endowment.

The equation for the payout is:

$$\text{Payout} = 30\%\left[(TP)\left(\frac{MV}{\text{Endowment}}\right)\right] + 70\%\left[(1 + CPIp + EF)\left(\frac{\text{Prior Year}}{\text{Payout}}\right)\right]$$

where TP = target payout
MV = market value
CPIp = projected Consumer Price Index
EF = program enhancement factor

Thus the payout is weighted, or driven, 30 percent by the endowment market value and 70 percent by an increased value of the prior year distribution. A hypothetical sample calculation assumes the following:

TP = target payout = 5%
MV Endowment = market value = $50,000,000
CPIp = Consumer Price Index projected = 4%
EF = program enhancement factor = 2%
Prior year payout = $2,300,000

Calculated payout for the following year: TP = $2,456,600, or 4.91 percent of the market value of the endowment.

APPENDIX 9

The Campus Master Plan

A Report to the Select Panel of the Board of Fellows
November 16, 1983

[Note to reader: The following script was prepared for an oral presentation accompanied by a set of slides specifically prepared to illustrate and clarify much of the argument presented here. Without the slides the original is incomplete. This is an edited version of the original to adjust in part for the absence of slides.]

This report consists of three sections, reviewing in turn,

- The historical events that influenced the original layout of the HMC campus;
- The development of the college's academic programs;
- The master plan.

Twenty-eight Years of Cooperative Campus Planning

The development of Harvey Mudd College's campus has been guided from the outset by four major agreements or covenants between the Board of Fellows of The Claremont Colleges, Scripps College, and eventually Harvey Mudd College. Each covenant led to a central feature of the Harvey Mudd campus. Each covenant has been fully honored by the college.

A number of key events dated prior to and after the founding of Harvey Mudd College mark the establishment of the covenants.

At the founding of Scripps College in 1928, the Board of Fellows of CUC granted land to establish the Scripps campus. The parcel extended south from Foothill Boulevard. CUC reserved the right to approve any

construction or landscaping in the parcel, a reservation that would be honored by Harvey Mudd College during its development.

Much later, in mid-1954, the board of fellows debated at length the location of common science facilities for the colleges as a whole. The board agreed to locate such facilities in the northern portion of the campuses west of what was then Scripps College. The decision led Pomona College to develop its own science facilities.

In late 1954, in response to a request from CMC and CGS, the board of fellows reserved a parcel in the vicinity of Twelfth St and Dartmouth for common science facilities. The board also voted to use CUC funds to build Baxter Laboratories on the site as the first common science facility.

The following year, 1955, the board of fellows approved the founding of Harvey Mudd College and sited the new college east of Scripps with a north-south axis. Thus, HMC was separated from the site of the prospective laboratories by Scripps College. The board also set aside an additional parcel north of Twelfth St. for common science facilities.[1] The report of the board's committee is clear:

> "(CUC) reserves, in the two (city) blocks lying north of Eleventh St. and between Dartmouth and Columbia,… space for… scientific facilities."

The First Covenant

By voting this commitment, the board of fellows, without giving up the title to the parcel, provided land for both laboratories and for a science and engineering college. The first covenant was in place. CUC would provide the land, and Harvey Mudd College would agree to build its laboratories there and serve all of the colleges. The board of fellows reaffirmed its position on October 23, 1956:

> "Voted as a statement of policy, (CUC) gives assurance to HMC that the common science facilities for the… college…will be located…(as above)."

This confirmation of the earlier commitment cleared the way for HMC to construct its first science building. It also set the course for all future HMC master planning. The academic center of the college would be in this location.

The long-term impact of this agreement cannot be overstated, but it had an immediate short-term impact as well. It led to the realignment of Scripps and Harvey Mudd College colleges.

The Second Covenant

In July of 1957, the boards of Scripps and Harvey Mudd colleges exchanged land to realign the two colleges on east-west axes so that Harvey Mudd students would have direct access to the science buildings. HMC bore the full cost of the square-foot-by-square-foot land exchange. Although CUC released HMC from the parcel's restriction on construction and landscaping, the college agreed to maintain the landscaping already developed by Scripps. HMC regards this understanding as the second covenant. The result is the present Braun Liquidambar Mall, a key element in the beauty of the HMC campus.

The Third Covenant

On September 26, 1967, a decade later, the board of fellows again confirmed, by vote, that CUC has designated the area between Dartmouth and Columbia and between Twelfth and Foothill Boulevard for use of facilities in mathematics, the natural sciences and engineering.

Harvey Mudd College was about to undertake the construction of the Libra complex, and needed to hold title to the land in order to secure a government loan. CUC granted title, but in exchange asked for agreement on ten specific, restrictive conditions. Harvey Mudd was to agree that all buildings would be regarded as "common," open to use by other colleges and to all students in Claremont. The board of fellows further required that no building would be constructed in the area occupied, at that time, by Columbia Avenue and that all colleges would agree to a landscape plan for Columbia to be developed by Brinkerhoff. The ten restrictions and the restriction on the space occupied by Columbia Avenue were agreed to by HMC: thus, the third major covenant.

One year later, HMC had removed the pavement of Columbia Avenue and landscaped the entire area as it is found today. The CUC Brinkerhoff Plan for landscaping all of Columbia Avenue was unfortunately never completed by the colleges south of HMC.

The Fourth Covenant

Much later, in 1980, Harvey Mudd College offered to purchase twenty acres of CUC land at its eastern boundary. At the time, CUC insisted that the entire parcel be purchased in order to prevent small parcels of the property from being rendered useless. We reached an agreement with our neighboring colleges and made the purchase. However, we agreed to the restriction that we would not place a building on the centerline of the Pitzer campus—the fourth covenant.

Conclusions

The extent of these covenants is, we believe, unusual for any one college in Claremont. No other college has such internal/external

restrictions on construction. The negative effects of the restrictions are a reduction in space available for construction of more than 5.5 acres and limitations on master planning. The positive effect is the grouping together of science buildings according to a plan long established by the board of fellows. We conclude that the land at issue west of Sprague Library is part of that plan, and that Harvey Mudd has a prior claim on it.

We need the land west of Sprague Library to make possible the completion of our academic plan and our campus, or we need assurance of continued reservation of the parcel without title, but with access for placing new academic buildings. On November 11, 1982, I wrote to President Maguire, the new president of CUC, to make him aware of our position:

> "It seems clear to me from these (CUC) records that it was the intention and the decision of the members of the board of fellows in each and every review to reserve the land now occupied by the (graduate) parking lot for science activities. I believe this was a wise and farsighted decision, and it is my view that we should continue to reserve this land for future science activities."

This concludes our brief presentation of historical facts. We cannot leave it however, without pointing out the key role played by the board of fellows throughout the history of the college. In part because of the board's decisions, Harvey Mudd College is a modular campus with residences grouped together, academic buildings grouped together, and activity buildings separating the two. The board of fellows' actions that led to this configuration has never previously been questioned. We ask today that the commitments continue and that the assignment of the land to Harvey Mudd College be affirmed.

Academic Needs and Planning

Mr. William Clary, at the founding of HMC in November 1955, announced the new college as "the liberal arts college of engineering and science" in Claremont. Early academic planning called first for the development of academic departments in the physical sciences and mathematics in order to provide the necessary strong base for engineering. The Department of Humanities and Social Sciences grew as a supporting department for all majors and to provide an unmistakable emphasis on the liberal arts. In the decade of the seventies, engineering came to full flower and presently claims by far the majority of students. These early academic developments made Harvey Mudd College an impressive institution. We attract high-quality students because we are academically strong in the current sciences. One year ago, our Department of Chemistry was recognized as the best undergraduate chemistry department in the nation.

Harvey Mudd College's entering students continue to demonstrate that we enroll the very best. We are, in fact, recognized nationally as one of the very finest undergraduate engineering and science colleges in the nation. Sound early academic planning made us strong in our own right, and a strong Harvey Mudd College adds immeasurably to the strength of The Claremont Colleges.

The present decade has brought strong, exogenous societal forces to bear on the college including the following:

- The growth in the significance of technology in all human activities: the arrival, if you like, of the hi-tech society.
- The increased need to educate young people well-prepared in technology, but also well-suited, through in-depth studies in humanities and social sciences, to assume leadership roles in society—the liberal arts scientist, mathematician, or engineer.

Equally important to note is our expanding commitment to the life sciences and our considerations of the place of computer science in the curriculum. Increasing numbers of entering students are indicating interest in these two scientific areas and the faculty is responding. In 1972, the faculty voted "to initiate courses in the life sciences," and, in 1980, "that by 1985, Harvey Mudd College should establish a strong core program in computer science."

These actions have been the basis for our academic master planning over the past decade. In careful, board-approved steps, we have added five new faculty members in these areas of expertise: two in biological sciences and three in computer science. In the same period, 1972–82, student enrollment has grown from 400 to 505.

Academic discussions are proceeding now in faculty committees and in the trustee Educational Planning Committee. The implications of possible major programs in computer science and in the life sciences are under review. One hurdle was cleared recently by a vote of the faculty requiring one course in life sciences of every student before graduation.

The expansion of the computer science program, or the life sciences program, to the status of a major will require an expansion of the student body as well as an expansion of the faculty. A first estimate suggests that an increase of thirty students in each year of a four-year period will bring about a reasonable number of majors in new departments. Total enrollment would then grow to over 600 in a four-year period.

The growth in three other important academic activities has placed heavy new demands on space.

First, we have reached out to the industrial and business community through the Engineering Clinic Program. This year we have thirty-two such clinics. Participating industries are not donors, but active clients—on

a semi-contractual basis. Sufficient academic space is an absolute requirement for such a large and active laboratory program.

Second, we sense a growing interest for applied research of all kinds at Harvey Mudd College. Corporations and industries are approaching us asking for interactive programs that would aid them in their own research and development efforts and strengthen the college as well. A newly formed trustee committee has the responsibility for discussing the future of research at the college and for considering the possibilities for an applied research institute, a concept long under discussion at the college. Such an institute would require space in our planned expansion of buildings.

Third, we sense an emergent new responsibility in Claremont for the growing number of liberal arts students who are seeking introductory and advanced computer science courses. Fifty percent of our enrollments in computer science are from the other Claremont Colleges.

As you might expect, these activities and the expanding programs create an urgent need for new space and library resources. Recently, reaccrediting teams have commented on the need for Harvey Mudd College to develop significantly improved collections in engineering and the added sciences. The present building, we are told by the librarian, will ultimately need additional space.

Our interim responses to these new academic interests have not been achieved without temporary and painful adjustments in present academic space. We have taken space from the Department of Chemistry to accommodate biology; taken space from engineering to accommodate two new computing centers; and relegated computer scientists to offices in the chemistry wing. The purchase and reacquisition of the Graduate Wing two years ago made possible the first of several key short-term moves to accommodate our ultimate needs, and we have under committee consideration a long-term plan for the reallocation of academic space in academic buildings.

Campus Master Plan

The Harvey Mudd campus is a classical, formal architectural design with institutional buildings placed along both sides of a strong central mall. Academic science laboratories and library are located to the west, activity buildings in the center, and residence and playing areas to the east. The campus plan is based on the original early work of Edward Stone and Tommy Church.

To carry Stone's successful early work forward, the board of trustees appointed the architectural firm of Gale Kober and Associates, Los Angeles. The firm was assigned the task of coordinating our academic and campus plans, and was charged to produce a long-term campus master plan that would keep open the option of growth by the year 2000 to an ultimate enrollment of 800 students. Their preliminary assessments can be summarized as follows:

1. Past sound planning produced the present effective and beautiful campus; therefore, the general features of the plan should be maintained.
2. After examination of alternatives for academic expansion, student residence expansion, athletic fields and fitness facilities, and for additional dining space, the architects are convinced that the present modular plan should be maintained.

Their report has made clear that for an option of 800 students, space on the campus is extremely limited. In their view, the expansion is possible only if both the parcel under question is allocated to Harvey Mudd College and if a reasonable agreement can be reached with Pitzer College on the border between Pitzer and HMC. These assessments led the architects to the first "ultimate campus plan."

Of particular importance for this discussion is their analysis of academic space needs. It is their judgment that it would be both unwise and certainly undesirable to propose that the needed academic space be constructed on the eastern end of the campus. Laboratories placed there would violate the modular concept so long under development, and space there would be completely disconnected from the present laboratories and library in the west. Faculty members in such a building would be totally isolated from their colleagues, and classes would be scattered. In short, it is inconceivable, they state, to plan academic facilities in the east, and we agree.

Finally, in the view of the architects, utilization by HMC of the parcel under question is not only logical based on academic needs, but also good architecture calls for natural development of the site. It is of the utmost importance, they state, to avoid the conflict that would be caused by an architectural theme incompatible with existent HMC buildings.

We now consider two aspects of the master plan that provide a more detailed view of proposed changes.Phase I—East

First, plans for the proposed expansion of residence halls are well underway. We call the expansion "Phase I—East." Plans call for completed construction of a new dormitory and playing field at the eastern end of the campus by September of next academic year. Phase II—West

Second, the option for expansion from the current enrollment of 500 students to a maximum of 800 will require an additional 120,000 square feet of academic facilities in the critical parcel to the west. An estimated 100,000 square feet would be developed in the parcel under question. These new facilities would provide space for the new sciences, relocation of existent departmental offices, a library expansion, and additional parking for staff and faculty. In the southern portion of the parcel, a possible two-story parking garage would replace parking currently used by off-campus personnel. The design and location of these facilities is entirely compatible with the present buildings; space for mechanical utilities and

delivery access is located so they are screened from adjacent properties and are functionally well-located. Completion of landscaping along Foothill, Dartmouth, and Twelfth Street will set the theme for the northern gateway to The Claremont Colleges. This "Phase II—West" academic expansion could be realized in a five-year time frame.

In conclusion, to maintain our strengths and the strengths of Claremont, Harvey Mudd must respond now to the forces acting on the college. Our needs are specific and demanding: space to accommodate present engineering out-reach programs; new space for computer science; new library space; space for a developing life-science bioengineering program; and space to serve as the agent in Claremont for upper-level programs in the current sciences.

Let me emphasize the benefits to Claremont of an aggressive, vibrant, and forward-looking academic program at Harvey Mudd. Our responsibility to remain an outstanding small college of engineering, science, and mathematics cannot be met properly without space for new activities.

We respectfully ask the board of fellows to allocate the land west of Sprague Library to Harvey Mudd College.

APPENDIX 10

Saddle Rock

IN *The First Twenty Years*,[1] Joe Platt records in detail the discussions held at eight daylong Saddle Rock meetings at the Mudd ranch in Malibu. Officially they were board of trustee meetings, but typically the attendees included about two dozen trustees, a fewer number of faculty and staff, and several students and alumni. The first was held in January of 1958 shortly after the opening of the college. Each meeting focused on present and future needs or plans. Joe's accounts of these meetings provides valuable insight into the important role played by trustees early in the college's history. The meetings were expanded in 1964 to include a Friday evening session for trustees and staff only.

My first Saddle Rock meeting was held in February of 1977. The theme of the Saturday sessions was "The Second Generation of Teaching and Learning," a title borrowed from Campaign 25, the major fund-raising campaign, already underway. Not surprisingly, the Friday evening session was devoted to a discussion of fund raising. On Saturday, faculty panels reviewed developments in the life sciences program and the recently revised humanities and social science program. Dr. William Purves shared the podium in what was his first appearance after his appointment to the faculty. In the afternoon session, six alumni presented retrospective views of their academic experience at the college as seen from their professional situations. Each of the alumni reflected their strong satisfaction with their undergraduate experience. We concluded the meeting with great anticipation for the advent of the life sciences in the curriculum and a revised format for the humanities and social sciences program.

In mid-1977, the Mudd family sold the ranch, and shortly thereafter, a brush fire destroyed the buildings. No meeting was held in the following two academic years. The Mudd ranch had provided a beautiful

environment, accessible and free. After the two-year hiatus, we sought a new location where the amenities would at least approximate those of the ranch. After a considerable search, the Rancho Santa Fe Inn was chosen as the site of the 1979–80 meeting. Since the inn provided accommodations for overnight stays, we were able to plan changes in the format of the meeting and to include spouses as participants. A trustee meeting Friday, December 7, 1979, preceded dinner. Dinner, followed by an after-dinner speaker, established a format which continued throughout the Third Decade Plus. Dr. Paul Saltman, Department of Biology, University of California, San Diego, the first speaker in this series, spoke on "The Future of Biology." On Saturday morning, a bus from Claremont arrived early to bring the bulk of faculty and student attendees. The Saturday meetings began with a faculty member from each academic department reviewing the goals and needs of their department under the theme "Curricula for the Eighties." A student panel followed with four students offering student goals for the '80s. The remainder of the morning session followed the long-standing tradition of breaking up into small discussion sessions. Following a substantial lunch, two presentations, the first on student research and a second on the newly arrived computer system, the meeting concluded with adjournment at 3:00 p.m. Approximately twenty-five trustees, thirty-five faculty, twenty spouses, twenty students, ten staff members, and six alumni shared the Saturday sessions.

Although comfortable, the commercial nature of the inn did not provide the intimate environment we had learned to appreciate at the Mudd ranch. The discussion groups found the comings and goings of the inn's other guests distracting. Altogether we concluded that we should find another site for future years.

George McKelvey suggested Smoke Tree Ranch, a private ranch in Palm Springs, as a possibility, and I asked him to investigate. He found that the Ranch was willing to host our meeting in 1980–81 if a time in early November, prior to their official opening for the winter season, could be agreed on. A mutually agreeable time was reached, and in so doing established the now traditional late October early November date.

The 1980–81 meeting broke into discussion groups immediately after a presentation by Dr. H. K. Linstone, director of the Futures Research Laboratory at Portland State University, who discussed management of the transitions that were to come in the next twenty-five years. The small groups examined influences that would impact the college in the next quarter of a century and came together with Dr. Linstone in the afternoon to share discussions. The conclusions were that technological changes would have a major impact on the college and that graduates would need more than ever the flexibility and creativity of a broad technical and humanistic learning experience.

Meetings in the following years were wide-ranging. Often they focused on academic needs, particularly the needs for faculty, for long-term curricular planning, for facilities, and for laboratories. Several sessions centered on trustees, their role and their involvement in college affairs. Reference was made a number of times of the need for greater diversity in the board. The shifting trends in the choice of major by students and the policies guiding the admission of students, particularly under the new Admission Office, came under scrutiny.

Trustees asked that for the 1982–83 meeting a greater number of students be invited for the entire meeting, rather than for Saturday's sessions, and suggested that they would be willing to share in funding their attendance. We also agreed to invite approximately one-third of the faculty each year and their spouses. With the additions of some alumni, this roster proved to be enduring. The tradition of transporting by bus any faculty member or staff member who might wish to attend on Saturday continued.

If any one topic resurfaced as critical to the college time and time again at the Saddle Rock meetings, it was excellence: excellence in students admitted; an excellent faculty committed first to teaching and equally to research; excellence in physical facilities; trustees committed to assuring excellence in all aspects of the college. The need for strategic planning was also a recurring theme, with the 1986–87 meeting entirely devoted to that topic.

The Saddle Rock conferences more than accomplished their goals in the Third Decade Plus. They provided unmatched opportunities for communication, for conversation, and for listening. As always, Saddle Rock meetings were not decision-making opportunities. They were places and times for open and frank discussion.

ACADEMIC YEAR	DATE and LOCATION	THEME
1976–77	2/12/77 Saddle Rock Ranch	"The Second Generation of Teaching and Learning: Prospects in the Life and Humanities and Social Sciences"
1977–78	No meeting Mudd ranch sold and destroyed by fire.	
1978–79	No meeting	
1979–80	12/7–12/8/79 Rancho Santa Fe	"Tenth in the Nation. How to Move Up!" Dinner Program: Dr. Paul Saltman
1980–81	10/24–10/25/80 Smoke Tree Ranch	"The Next Twenty-Five Years" Dinner Program: Prof. Emeritus Bill Davenport
1981–82	10/30–10/31/81 Smoke Tree Ranch	"How Shall We Plan for the Future?" Dinner program: Professor Jack Dunbar, CMC
1982–83	10/29–10/31/82 Smoke Tree Ranch	"Changes and the Challenges" Dinner Program: Prof & Mrs. Art Campbell
1983–84	10/21–10/23/83 Smoke Tree Ranch	"Planning for…?" Dinner Program: Professor Nathaniel Davis
1984–85	11/2–11/4/84 Smoke Tree Ranch	"Maintaining Excellence at Harvey Mudd College"
1985–86	11/1–11/3/85 Smoke Tree Ranch	"Back to the Future" Dinner Program: Dr. Joseph Platt
1986–87	10/31–11/2/86 Smoke Tree Ranch	"5-year Projections—Getting Ahead vs. Getting By" Dinner Program: Sir Philip Richardson
1987–88	10/23–10/25/87 Smoke Tree Ranch	"Options for the Future: The Freshman Experience, Biology, and the WASC Report on Minorities"

Foreword

1. Minutes of the board of trustees, 12/17/75, 314.
2. Platt, *The First Twenty Years*, 23.
3. Minutes of the Executive Committee, 9/19/75.

Chapter 1: An Expanding Campus

1. Minutes of the board of trustees, 6/5/77.
2. It is interesting to note that much earlier, Seeley Mudd (Appendix 2) had purchased the major portion of the parcel, which at that time was platted in home building lots. Seeley deeded the property to Claremont University Center for the benefit of the colleges with the restriction that it be used only for educational purposes. His purchase was made many years before the founding of Harvey Mudd College. It was a restricted gift that would greatly benefit the as yet undreamed-of Harvey Mudd College.
3. Science Building is its original name. It was remodeled as part of Project Libra, reoccupied in September 1971, and named Jacobs Science Center on September 13, 1977, recognizing the renovation gift made by trustee Dr. Joseph Jacobs and his wife, Vi, both long-time supporters of the college.
4. Minutes of the board of trustees, 3/15/77, 362.
5. Ibid., 9/27/77, 12/13/77, and 2/15/78.
6. Minutes of the Building and Grounds Subcommittee of the Board of Fellows, 1/3/78.
7. For further details, see Chapter 3.
8. The board of fellows is the oversight board of The Claremont Colleges.

9. An old motel CUC converted to graduate housing. It was later used for HMC student housing.
10. Minutes of the Executive Committee, HMC, 7/22/80.
11. Ibid., HMC, 5/16/80.
12. Ibid., 7/22/80, 549.
13. Platt, *The First Twenty Years*, 38.
14. Ibid., 154.
15. Ibid., 154–155.
16. Minutes of the board of trustees, 5/15/83.
17. Dated February 23, 1987.
18. Platt, *The First Twenty Years*, 154.
19. Appendix B, minutes of the board of trustees, 5/15/83. See also Appendix A, minutes of the board of trustees, 3/6,/85.

Chapter 2: The Size of the College

1. Platt, *The First Twenty Years*, 145.
2. Ibid., 154.
3. The paper is restated as Exhibit C of the Matrix Committee report of 5/24/76.
4. Final report, Matrix Committee on the Size of the College, 5/24/76.
5. One member of the Long-Range Planning Committee objected to the Matrix Committee procedure of setting goals since such a committee could not commit the college's financial resources. See Long-Range Planning Committee minutes, 11/12/75, 2.
6. Minutes of the Executive Committee, 9/14/76, 344.
7. Minutes of the Academic Affairs Committee, 5/26/77.
8. Ibid., 9/14/77, 4.
9. Minutes of the board of trustees, 10/5/77.
10. Minutes of the Long-Range Planning Committee, 4/26/78.

Chapter 3: Residence Halls

1. Minutes of the board of trustees, 9/23/75.
2. In 1960 the boards of Scripps College and Harvey Mudd College adopted identical resolutions that granted HMC the right to use twenty-five rooms in Kimberly Hall, then under construction at Scripps. In exchange HMC was to pay $200,000 toward the cost of construction and pay annual interest of 5 percent on any unpaid balance. HMC made an initial capital payment of $50,000 toward the principal and the interest was paid annually. No further payments of principal were made.
3. Minutes of the board of trustees, 12/16/76, 35.

4. Actually, six alternatives were considered, but only three were serious possibilities. See minutes of the Building and Grounds Committee, 2/12/80.
5. The minutes of the board of trustees meeting of 9/27/77 record that "east of the HMC campus…land HMC needed for future student residences and sports would be available."
6. Platt, *The First Twenty Years*, 157.
7. Also see Chapter 1.
8. Minutes of the board of trustees, 5/17/81, 582.
9. R. Murray, Lee Atwood—Dean of Aerospace (National Management Assoc.), 1980.
10. Minutes of the Executive Committee, 10/4/82, 636.
11. Settlement Agreement, 8/1/83.
12. Minutes of the Executive Committee, 8/4/83.
13. Shawn W. Smith letter dated 7/21/84.
14. Memo to the Executive Committee, June 1, 1984, from D. K. Baker.

Chapter 4: The Faculty

1. The several self studies and accreditation reports prepared by the dean of faculty and the faculty for the Western Association of Schools and Colleges (WASC) accreditation proved useful research material for this chapter.
2. A faculty member occupying a tenure "slot" might be on sabbatical leave or on leave-of-absence in a given year. Sabbatical leaves were not covered by interim appointments; leaves-of-absences were. The number actually teaching therefore may differ from these numbers. Part-time or adjunct replacements added to the total.
3. Platt, *The First Twenty Years*, 60.
4. Chapter 5.
5. Platt, *The First Twenty Years*, 201–207.
6. B. S. Tanenbaum, "HMC and the Ethnic Studies Centers," 9/1/78.
7. Memorandum of Howard Brooks, provost, 8/20/76.
8. Report of the Ad Hoc Committee on Ethnic Studies and HMC, 1/31/79.
9. The AIEC was a loose and informal federation of colleges and universities, including Caltech, Carnegie Mellon University, Case Institute of Technology, Clarkson College, Cooper Union, Drexel University, Harvey Mudd College, Illinois Institute of Technology, Lehigh, MIT, Polytechnic Institute of New York, Rensselaer Polytechnic Institute, Rice, Rose-Hulman Institute of Technology, Stevens Institute, and Worcester Polytechnical Institute. The group is now known as the Association of Independent Technical Universities.

10. Discussion paper on faculty compensation, 1/12/84.
11. Minutes of the regular faculty meeting, 9/25/84.
12. Minutes of the board of trustees, 3/6/85.

Chapter 5: An Evolving Curriculum

1. WASC Reaffirmation of Accreditation, 3/2–4/77; and 2/3–5/87.
2. Platt, *The First Twenty Years*, 163.
3. Ibid., 220.
4. Ibid., 221–223.
5. Approved at the regular faculty meeting of 3/1/77. A unit is one credit hour.
6. Discussion paper for the department retreat, R. Olson, 10/26/76.
7. Memorandum to the Curriculum Committee, 1/17/76.
8. Minutes of the Faculty Executive Committee, 2/26/79.
9. Ibid., 4/23/84.
10. Minutes of the Executive Committee, 11/27/84.
11. Final report to Faculty Executive Committee, 4/16/85.
12. Report of the CSS Committee, 10/26/84.
13. 1976–1977 Catalogue, 44.
14. Platt, *The First Twenty Years*, 22.
15. Ibid., 133.
16. Private communication from Iris Critchell.
17. Memorandum, DKB to Faculty Executive Committee, 12/19/83.
18. Minutes of the Faculty Executive Committee, 9/11/84; faculty meeting minutes, 10/13/84.
19. Ibid., 5/7/84; faculty meeting minutes, 9/25/84.

Chapter 6: The Evolution of Biology

1. Minutes, Long Range Planning Committee, 11/1/76, attachment 1.
2. Ibid., attachment 1.
3. Platt, *The First Twenty Years*, 188.
4. Minutes of the Matrix Committee on the Life Sciences, 5/25/1976.
5. Ibid., 2.
6. I had the great pleasure to visit with Dr. Mudd in her home in Haverford, Penn., and a second visit later at the University of Pennsylvania. She was a charming lady and a pioneering faculty member at the University of Pennsylvania. She was deeply interested in the college. Vivian and I later had the privilege of hosting her and her family on the campus when the professorship was announced.
7. Minutes of the Executive Committee, 3/15/77.
8. Minutes of the Faculty Executive Committee, 9/26/77.
9. Memorandum to J. Monson, 11/15/77.
10. Memorandum to the faculty, Wing Tam, 2/27/78.

11. Minutes of the special faculty meeting, 3/14/78.
12. Dean of faculty memo, 3/31/78.
13. Minutes of the Faculty Executive Committee, 10/7/81.
14. Purves, memo to the Executive Committee, 4/30/82.
15. Report to the Academic Planning Committee, Jan. 18, 1983.
16. Memo to the Executive Committee, 2/26/83.
17. Minutes of the Faculty Executive Committee, 4/10/84.
18. In two visits to the F.W. Olin Foundation directors, we introduced them to the space needs of the growing biology and computer science programs.
19. Memorandum of the Space Planning Committee, 2/23/87.
20. Minutes of the board of trustees, 2/10/87.

Chapter 7: The Growth of Computer Science

1. Memorandum, B. S. Tanenbaum to the Computer Science Committee, 9/5/75.
2. Professor Mike Erlinger, in a private communication, has since informed me that at the time of his appointment, he had received a copy from Bruce. On May 4, 1984, Bruce was a Stauffer Coffee Speaker on the campus.
3. Minutes of the Faculty Executive Committee, 4/10/78.
4. Ibid., 4/7/80.
5. Academic Affairs Committee, 4/30/80.
6. Minutes of the regular faculty meeting, 1/18/83, 3.
7. Memorandum, President Baker/Borrelli, 4/22/83.
8. Minutes of the Educational Planning Committee, 12/1/83.
9. Minutes of the board of trustees, 2/29/84.
10. At this meeting the Executive Committee received, but did not act on, a memorandum from a group of faculty: Professors Bell, Borrelli, Erlinger, Evans, Lorentz, Olson, Platt, Seven, Tam, van Eikeren, Wolf, and Tanenbaum, recommending that over a period of five years, one computer science position be added to each of the mathematics and engineering departments; sufficient faculty be added in computer science to form a department and develop a major; enrollment be increased to 600; and that a new residence hall and a new academic building be added to the campus.
11. I am indebted to George McKelvey and his handwritten notes, taken at the symposium, for these recollections.

Chapter 8: Computer Resources

1. *Invention & Technology*, vol. 14, no. 4 (spring 1999), 56.
2. Campbell-Kelly and Aspray, Computer (Basic Books, 1996), 80.
3. *Electronics Magazine*, 1972, 143.
4. *Forbes ASAP*, November 27, 2000, 106.

5. For a lively history of the origin of the Internet, see John Naughton, *A Brief History of the Future* (New York: Overlook Press).
6. Appendix I, report of the Ad Hoc Committee on Administrative Computing, February 1979.
7. College and University Science Education (CAUSE) grant from the National Science Foundation.
8. Harvey Mudd, Claremont McKenna, Pitzer, and Scripps colleges.
9. The Department of Engineering provided these word processors for student use in writing reports—the first, I believe, in the college's history.
10. Memo to the Faculty Executive Committee, 1/23/83.
11. Tanenbaum, memo to faculty, 5/2/83 and 7/12/83.
12. WASC Accreditation Report, fall 1986, 66.
13. Report of the Ad Hoc Committee on Administrative Computing, February 1979.
14. Memorandum status report by Sarah Johnson, May 7, 1982.
15. Questionnaire—administrative computing, Benzon to Moon, 12/23/83.

Chapter 9: Recreation

1. Claremont McKenna College, *The First Fifty Years*, 100.
2. Ibid., 104.
3. Report to the board of trustees, the Student Affairs Committee, 5/2/79.
4. Memorandum, Baker to Committee, 1/18/80.

Chapter 10: Students

1. AAF Committee minutes, 5/2/78.
2. Minutes of the faculty, 4/17/84.
3. Memorandum to the HMC Faculty Executive Committee, 4/16/85.
4. Memorandum of March 17, 1982, addressed to faculty and students.
5. Memo to the college community, 3/24/82.

Chapter 11: Trustees

1. David Lavender, *The Story of Cyprus Mines Corporation*, (The Huntington Library, 1962).
2. Minutes of the board of trustees, 5/16/81.

3. The portraits of Dr. and Mrs. Sprague on view in the boardroom of Sprague Library were dedicated on May 14, 1979. The four Sprague children and their spouses—Dr. Norman F. Sprague III and Marianne, Tally and Bill Mingst, Cindy and Tom Holliday, Betty and Kirk Day—shared the event with trustees and college personnel.
4. Platt, *The First Twenty Years*, 30.
5. Minutes of the board of trustees, 5/19/85.

Chapter 12: Campaign 25/32

1. For a review of the thinking leading up to the campaign, see minutes of the board of trustees, 12/5/78.
2. Minutes, board of trustees, 3/16/76.

Chapter 13: The Investment Committee

1. Readers familiar with the stock market will certainly understand this view if you recall that in 1974 and 1975, the market suffered a long and severe decline with market indicators falling 45 percent. At the beginning of the Third Decade Plus, memories of that dramatic decline were still very vivid in the investment community and were reflected in Dr. Sprague's remarks.
2. Platt, *The First Twenty Years*, 30.
3. Minutes of the Investment Committee, 10/20/76.
4. Dick was also related to the Mudd family and at one time had worked for Cyprus Mines Corporation. He was a cousin of Harvey Mudd.
5. Minutes of the Investment Committee, 3/5/79.
6. Ibid., 1/12/83.
7. Ibid., 2/26/86.

Chapter 15: Postscript

1. W. W. Clary, *The Claremont Colleges*, 277.
2. Ibid., 133.

Appendix 9

1. For details on the siting and funding of HMC's first science building, see W. W. Clary, *The Claremont Colleges*, 141–144.

Appendix 10

1. Platt, *The First Twenty Years*, Chapter 8.

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The Third Decade Plus
1976 – 1988

Under the leadership of founding president Joseph B. Platt, Harvey Mudd College was established in 1955 as the first private college of science, mathematics, and engineering since 1900. However, as Platt stepped down 20 years later, the college faced the challenge of whether it could continue and grow under new leadership. Into this uncertain time stepped Ken Baker in 1976.

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D. Kenneth Baker earned his Ph.D. from the University of Pennsylvania in physics. He taught at Union College, served as director of university relations for the General Electric Company, was program leader for a USAID project in India and, at the time of his appointment to Harvey Mudd College, was vice president, dean, and acting president of St. Lawrence College.

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