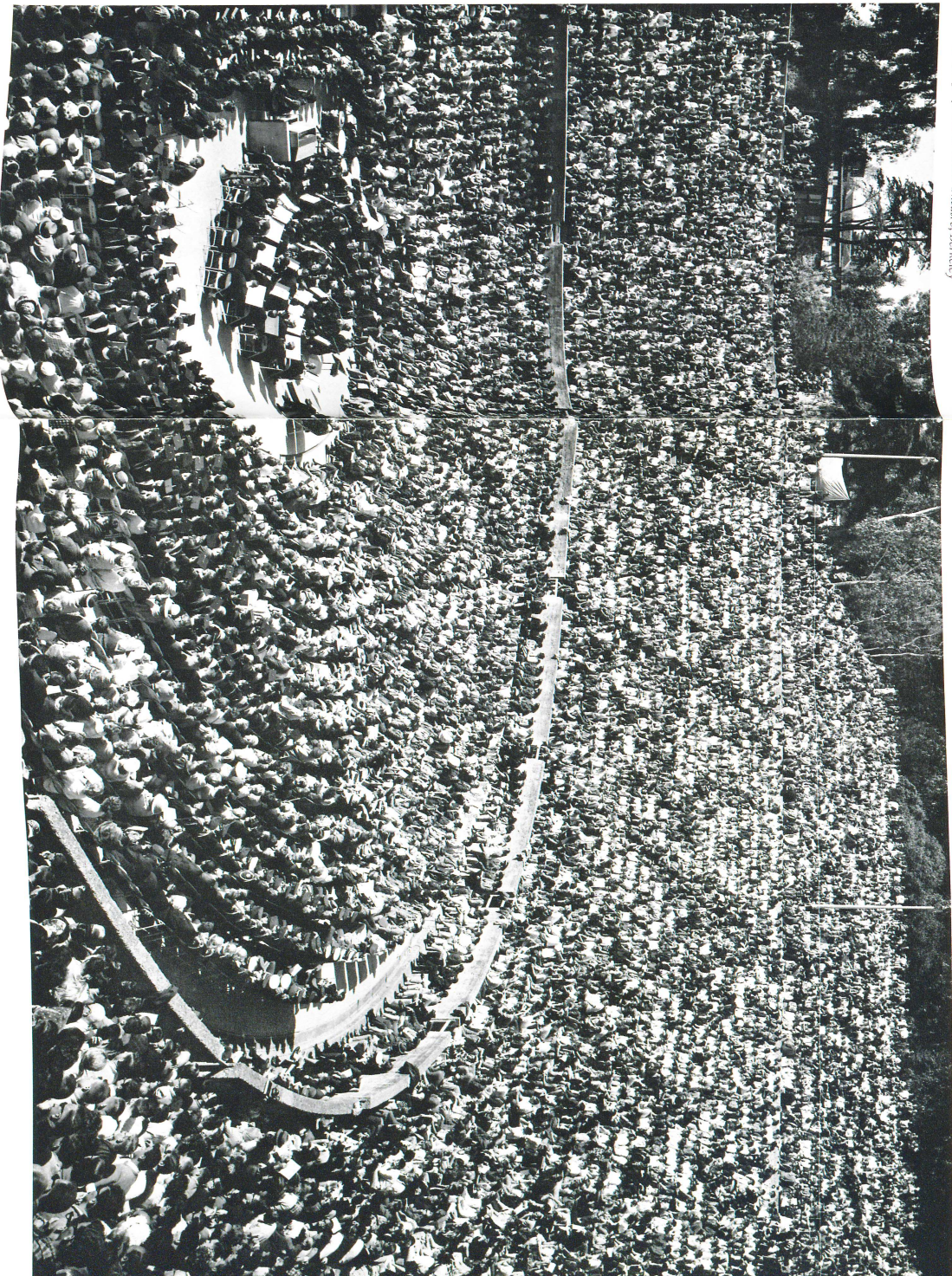


FIAT LUX

THE UNIVERSITY OF CALIFORNIA

DEDICATED TO THOSE WHO WILL MAKE THE FUTURE

Charter Day, 1964, Hearst Greek Theatre, Berkeley



FIAT LUX: THE UNIVERSITY OF CALIFORNIA

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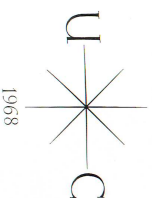
FIAT LUX

ANSEL ADAMS

NANCY NEWHALL

THE UNIVERSITY OF CALIFORNIA

1868



1968

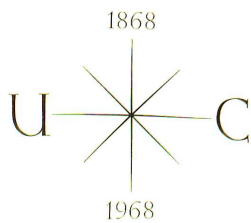
A CENTENNIAL PUBLICATION OF THE UNIVERSITY OF CALIFORNIA

MCGRAW-HILL BOOK COMPANY
NEW YORK TORONTO LONDON SYDNEY

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The Pleiades. Photograph by Lick Observatory, University of California

INTRODUCTION

To look at the University of California is to look at California itself—its land, its people, and their problems—into the civilization rushing toward us from the future. There are few aspects of California, or of this civilization, whose first shapes are already sharply visible against still nebulous but galactic potentials, with which the University is not concerned.

When Clark Kerr, then president of the University, asked us to undertake this survey in words and photographs for the University's centennial, he challenged us to project, as far as possible, "the next hundred years." Literally impossible, of course, because you cannot—as yet!—photograph a thought beginning to stir in the minds of a hundred, or a thousand, or a million different men, nor will any responsible scholar allow premature publication of his ideas and theories.

Nevertheless, we took Kerr's challenge as our general directive. Conceivably, there have been or will be more arduous periods in which to photograph the University; this period was difficult enough. On many campuses, the University was being torn down, rebuilt and expanded at a rate unbelievable, perhaps, except by eyewitnesses. Buildings were being demolished and carted away. Bulldozers were excavating new sites and roads, and carving out new landscapes. Cranes were lifting up girders and swinging shapes of precast concrete into place. Saplings were being staked up, and new plantings soaked by sprinklers. In 1964, when we made our first panoramic tour, there was nothing at Irvine but a few skeletal piers, nothing at San Diego but a building and a half, while at Santa Cruz the Chancellor had set up office in an old cookhouse. Visually, the University was in metamorphosis.

Internally, perhaps, there has never been a more illuminating period through which to view the University. The excitement of seeing so many plans, hopes and ideas materializing simultaneously embraced not only the University, from Regents to freshmen, but also the surrounding communities.

In the course of creating this comprehensive survey of the total University and its effect on the people and the land of California, we made many visits to each of the nine campuses and the major scientific and agricultural experiment stations. We wish it were possible to thank individually the hundreds of people who have helped in our search for understanding and the often elusive essential image—the chancellors and information officers of each campus, the deans of the many schools and colleges and of extension, the directors of the great scientific laboratories, the farm advisors of several counties, the professors and students who patiently endured the insistent camera eye and answered innumerable questions.

To penetrate to the central concept expressive of a place or a project was often exceedingly difficult, and finally achieved only after several trials. Neither the contrived, exotic situation nor

the careless "candid" snapshot are compatible with a truthful statement. Most laboratories, no matter how world-shaking their achievements, contain much the same hardware or glassware; classrooms, with a few exceptions, are alike everywhere; conferences and colloquia resemble each other interchangeably. One quickly runs out of visual variety. Yet there is no limit to the depth of human qualities of both faculty and students; the interactions and events are, to each individual, unique and very important. Our problem was to create some semblance of the total effect, the symbol rather than the enumeration.

During the last three years, thousands of subjects were encountered and studied, many hundreds photographed, reams of text written and rewritten. Many sequences and combinations of text and photographs were considered, and rejected as too detailed or too long. A favored photograph or passage of text would often be given up in deference to a more explicit image-and-word statement.

It is not possible to compress the University of California into 192 pages—to depict all aspects of student life, or to record all the popular buildings and vistas! Everyone who has been concerned in the making of this book will regret the inevitable omissions—and none more than the authors. So when you look upon a certain professor or student and wonder, perhaps, why x was chosen instead of y , remember that x , in this book, represents y and perhaps a thousand more, all equally deserving of representation in these pages.

The entire photographic archive will be deposited in the Bancroft Library at Berkeley, where it will serve not only as a record of the University at this period but as a source for future publications and other uses by the University. The present selection represents, to the best intentions and abilities of the authors, a brief outline of what we have seen and understood of the scope, grandeur and quality of the University of California.

To list all those to whom we are indebted would require something on the scope of the University directory; our profound gratitude to you all. To those most intimately and enduringly concerned, our appreciation goes first to Verne A. Stadtman, Centennial Editor, and his patient and efficient staff, who have checked facts, illuminated approaches, typed and retyped text, and forwarded it, with celerity, to the authorities concerned, for comment and correction; to Liliane De Cock, for staunch and steadfast assistance in every phase of this project, including the making of three dummies; to Charles R. Wood and his associates for their meticulous care with the printing; and to Adrian Wilson, typographer and printer, whose skill and perception have helped immeasurably in the design and production of this book.

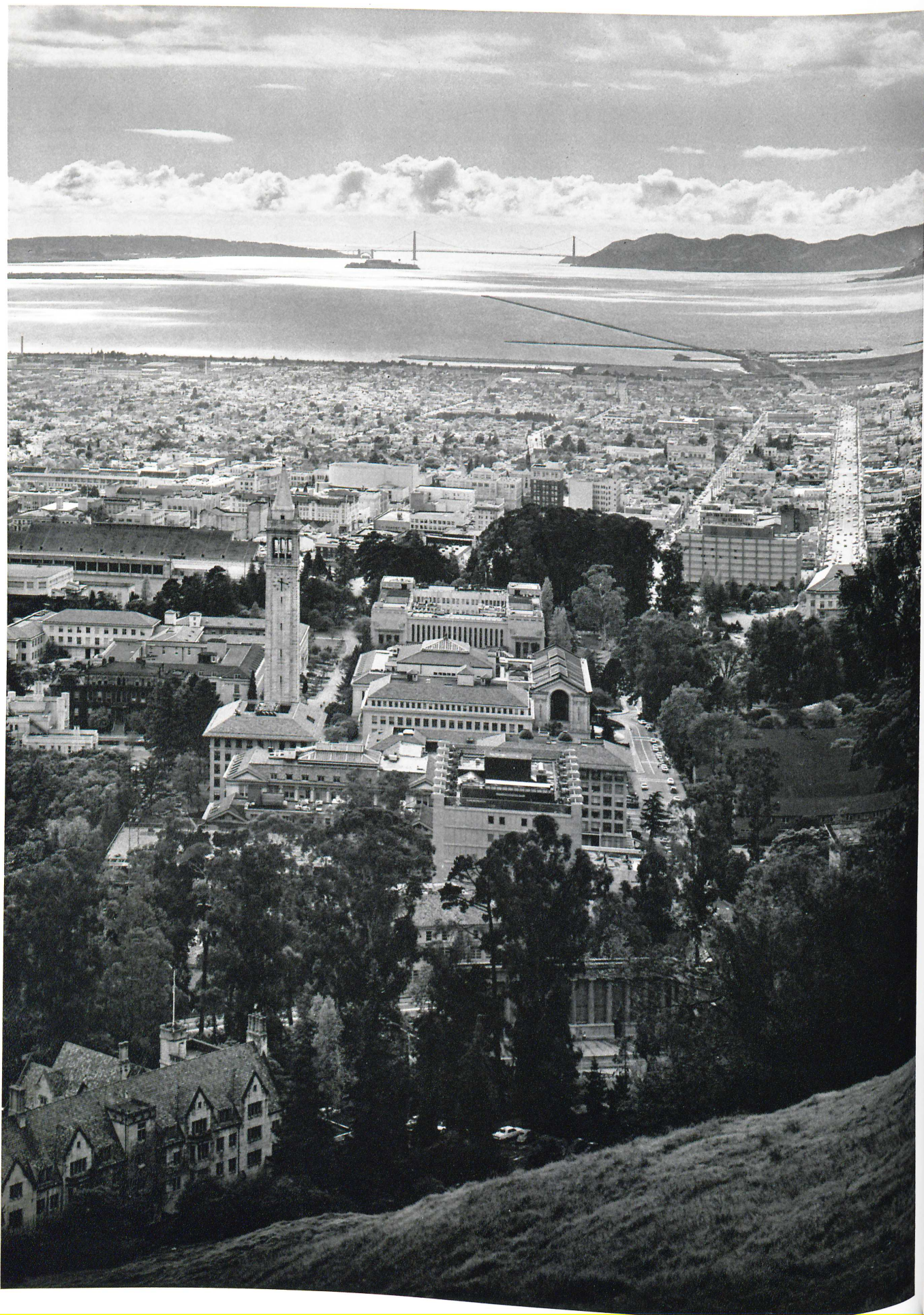
ANSEL ADAMS
NANCY NEWHALL



Multidimensional Model Illustrating Population Dynamics,
Hastings Natural History Reservation

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I THE CHALLENGE

In 1849, the year of the Gold Rush, thousands of people were converging on the huge, wild, still scarcely mapped territory of California. Many died on the way, in the mountains and the deserts, in the swamps of the Isthmus, and in the storms and shipwrecks of the long sea voyage around Cape Horn. Nevertheless, the population was growing by leaps and bounds; in spite of its remoteness, half a continent away from the rest of the nation, California would soon be a state. It was in chaos and confusion. The Constitutional Convention, meeting in Monterey, declared: "We are without a dollar belonging to the people, nor can we raise one without levying taxes, which no population was ever in a worse condition to bear. . . the laborers have abandoned their ranches and gone to the mines. Hence the owners of property are nearly ruined. . . , the vast majority of people have no property to be taxed except the gold they dig out of the earth. . . ."

Anticipating, even in the midst of such destitution, the founding of a state university, "with such branches as the public convenience may demand, for the promotion of literature, the arts and sciences," the Convention made provision to protect and improve such lands or funds as might "be granted or reserved by the United States or any person or persons" for its support. "If we have the means here," said one delegate with an optimism destined to become characteristic of California, "we can procure the necessary talent; we can bring the president of the Oxford University here by offering a sufficient salary." They petitioned Congress for public lands, but the two townships eventually granted did not yield sufficient funds.

Meanwhile a few private academies and colleges were established. In Oakland, a group of Congregationalists and Presbyterians, led by the Reverend Samuel H. Willey and the Reverend Henry Durant, founded the Contra Costa Academy, which opened in 1853 in a rented *fandango* house. Two years later it was incorporated as the College of California; it had buildings and a campus of sorts, but its trustees began hunting for a larger, permanent site more in keeping with its

aspirations for the future. Eventually they decided on a hillside, some miles north of Oakland, which looked down on the glittering Bay of San Francisco, across to the city on its many hills, and out through the Golden Gate to the Pacific. Here, one day in 1866, on an outcropping of rock at the base of steep hills, they were watching two ships stand out toward the Golden Gate when one of them quoted the famous lines by the philosopher, Berkeley:

"Westward the course of empire takes its way;
The four first acts already past.
A fifth shall close the drama with the day;
Time's noblest offspring is the last."

The proposal was made that they should call the site *Berkeley*.

Fund-raising was difficult, due to the instabilities and anxieties of the times, first the Vigilantes in San Francisco and then the Civil War and its aftermath throughout the nation. Willey went East on fund-raising tours; Durant went begging to the new tycoons across the bay, and sometimes despaired. "Individuality is carried to an extreme in California. . . idealism seems lost from the mass of the people. They are sensualists and materialists. . . ."

In 1862, Abraham Lincoln signed the Morrill Land Grant Act, which offered public lands to any state which would found "a college of agriculture and the mechanical arts." California's share would be 150,000 acres. The legislature in 1866 voted to establish a College of Agriculture, Mining and the Mechanical Arts. The College of California then made a remarkable offer: to transfer its buildings and lands to the state on condition that a new institution, "a complete university," be established, in which the arts and sciences should be taught as well as agriculture, mining and engineering. The legislature accepted. The Organic Act creating the University of California was signed by the governor on March 23, 1868, a date celebrated ever since as Charter Day.

The motto chosen for the new University was:
Let There Be Light—FIAT LUX.

"First it is a university, and not a high school, or a college, nor an academy of sciences, nor an industrial school which we are charged to build. Some of these features may indeed be included...but the university means more than any or all of them. The university is the most comprehensive term which can be employed to indicate a foundation for the promotion and diffusion of knowledge—a group of agencies organized to advance the arts and sciences of every sort, and train young men as scholars for all the intellectual callings of life..."

"It is not the University of Berlin, nor of New Haven, which we are to copy...it is the University of this State. It must be adapted to this people, to their public and private schools, to their peculiar geographical position, to the requirements of their new society and their undeveloped resources..."

"Science is the mother of California. Give us more and not less science; encourage the most thorough and prolonged search for the truth which is to be found in the rocks, the sea, the soil and air, the sun and the stars; in light and heat and magnetic forces; in plants and animals, and in the human frame; but let us also learn the lessons which are embodied in language and literature, in laws and institutions, in doctrines and opinions, in historical progress..."

DANIEL COIT GILMAN

Second President of the University, 1872–1875
Inaugural Address

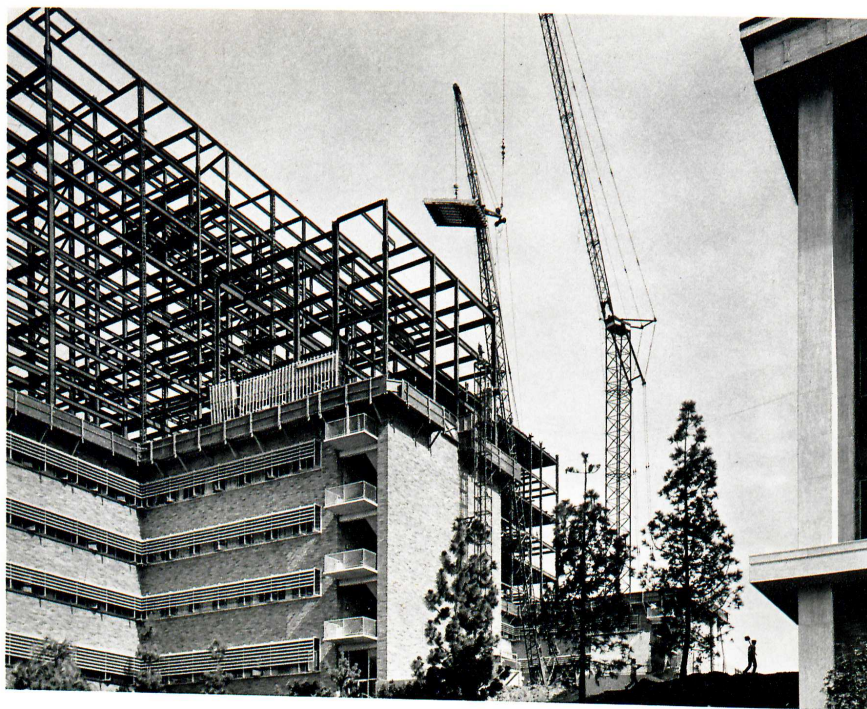
In the fall of 1869, the little University opened, still in Oakland, with forty students and a faculty of ten. Three months later its Regents abolished tuition. Thenceforth every qualified student who was a resident of California could enter the University free—an opportunity that, beyond question, contributed to the phenomenal growth of both California and its University. The quality of the education may be judged by the members of its first four-year graduating class, 1873, soon known as "the Twelve Apostles," who were to include a governor of the state, a mayor of Alameda, an engineer, a professor of mathematics, two lawyers, and a bank president; three of them were to serve as Regents.

The first years were turbulent. The income from the land grant funds and other endowments was insufficient; biennially the Regents had to appeal to the legislature for funds. Then a strong agricultural bloc, which had no use for the classical college or the notion that pure science had an important role to play in the future, and wanted immediate, practical results, raised a storm of criticism that threatened to abolish the Board of Regents and extinguish the University except for the Colleges of Agriculture, Mining, and Mechanic Arts. They also charged mismanagement of the land grant funds. The legislature, investigating, returned a clean ledger. The Regents, an able and powerful group of leading citizens, regained control. But dissension over the University's purpose and criticism of its administration lingered. In 1876, the legislature, after passionate debate and by a very narrow margin, defeated a move to detach the College of Agriculture from the University. Further attempts to alter the organic structure of the University by statute were ended in 1879 when a new state constitution, approved by the people of California, declared the University "a public trust... it shall be entirely independent of all political or sectarian influences, and kept free therefrom in the appointment of its regents and the administration of its affairs."

In spite of recurring storms, the University grew, decade by decade, college after college and station after station. In the 1870's, on the initiative of private donors, the University acquired a college of medicine and another of law in San Francisco, and the first United States Agricultural Experiment Station and a college of agriculture that would soon have few peers in the world were developed in Berkeley. In the 1880's the University's first great scientific station, Lick Observatory, was built. In the 1890's the college of mines attracted some of the University's first foreign students, and the University began reaching people throughout the state through Agricultural Extension and the University Extension. Toward the end of the 19th century, a halcyon period set in, an era of constructive competition with the new Stanford University at Palo Alto, and of splendid donations, including sponsorship of a comprehensive architectural design for the Berkeley campus. In the

The Sather Gate, Berkeley





Additions to the Health Sciences Center, Los Angeles

1900's, came the University Farm at Davis, the Citrus Experiment Station at Riverside, and at La Jolla the beginning of the University's second great station, now known as the Scripps Institution of Oceanography. In 1910, Abraham Flexner, in his report on American education, listed the University of California as one of the leading universities in the country.

After World War I, and its aftermath, which shook the universities like the rest of the world, growth continued again. A "southern branch" of the University was established in Los Angeles. At Berkeley the already famous College of Engineering was being consulted on the planning and testing of such huge structures as the Golden Gate and Bay Bridges, and the Hoover and Shasta Dams. The invention of the cyclotron by Ernest O. Lawrence, a young physics professor at Berkeley, opened the Atomic Age and its world-shaking discoveries in high energy nuclear physics, chemistry, medicine, biology, industry, and warfare. Lawrence became the first of thirteen University faculty members who have won the Nobel Prize. In 1934, Berkeley was rated second in distinction only to Harvard. During World War II, some of its most brilliant and creative scientists and engineers were drafted into the vast, secret Manhattan Project, the most crucial of whose objectives was solving, before the Nazis did, the

problems of the atom bomb. In 1943 the United States asked the University of California to administer the first nuclear weapons plant; the site chosen was Los Alamos, New Mexico.

After World War II, population in California boomed as never before. The thousands of workers in the aircraft and shipyard industries, the thousands of servicemen stationed here briefly on their way to the Pacific, could not forget what they had glimpsed of life in California. They returned with their families to settle here. Veterans coming to finish their education under the G. I. Bill of Rights and high school students, whose numbers were growing almost geometrically, deluged the campuses. Along with the population explosion came the knowledge explosion: science was growing exponentially and so was industry. More people needed more knowledge than ever before. To University administrators it seemed as if a whole generation at once was clamoring at the gates for higher education.

The University, even in the middle of World War II, had begun planning to meet these problems. In 1944 President Robert Gordon Sproul called an All-University Faculty conference at Davis, where delegates talked for three days of the discoveries and developments made during the intensive research projects of wartime—many of course were still secret

and could not be discussed—and what they would entail for the University when the tide of veterans came back again. Specialized laboratories, new classrooms and auditoriums, new research institutes—it took time to plan, fund and build such facilities. War surplus barracks could temporarily serve such purposes, but even permanent construction programs on the existing campuses would prove to be only stopgaps. What was needed was not only new campuses, but entire new faculties and new approaches to education in a rapidly changing society.

“We are just now perceiving that the University’s invisible product, knowledge, may be the most powerful single element in our culture, affecting the rise and fall of professions, and even of social classes, of regions and even of nations... Knowledge is now central to society. It is wanted, even demanded, by more people and institutions than ever before... Knowledge, today, is for everybody’s sake.”

CLARK KERR

President of the University, 1958–1967
from *The Uses of the University*, 1963



Old Medical Building, now
demolished, San Francisco



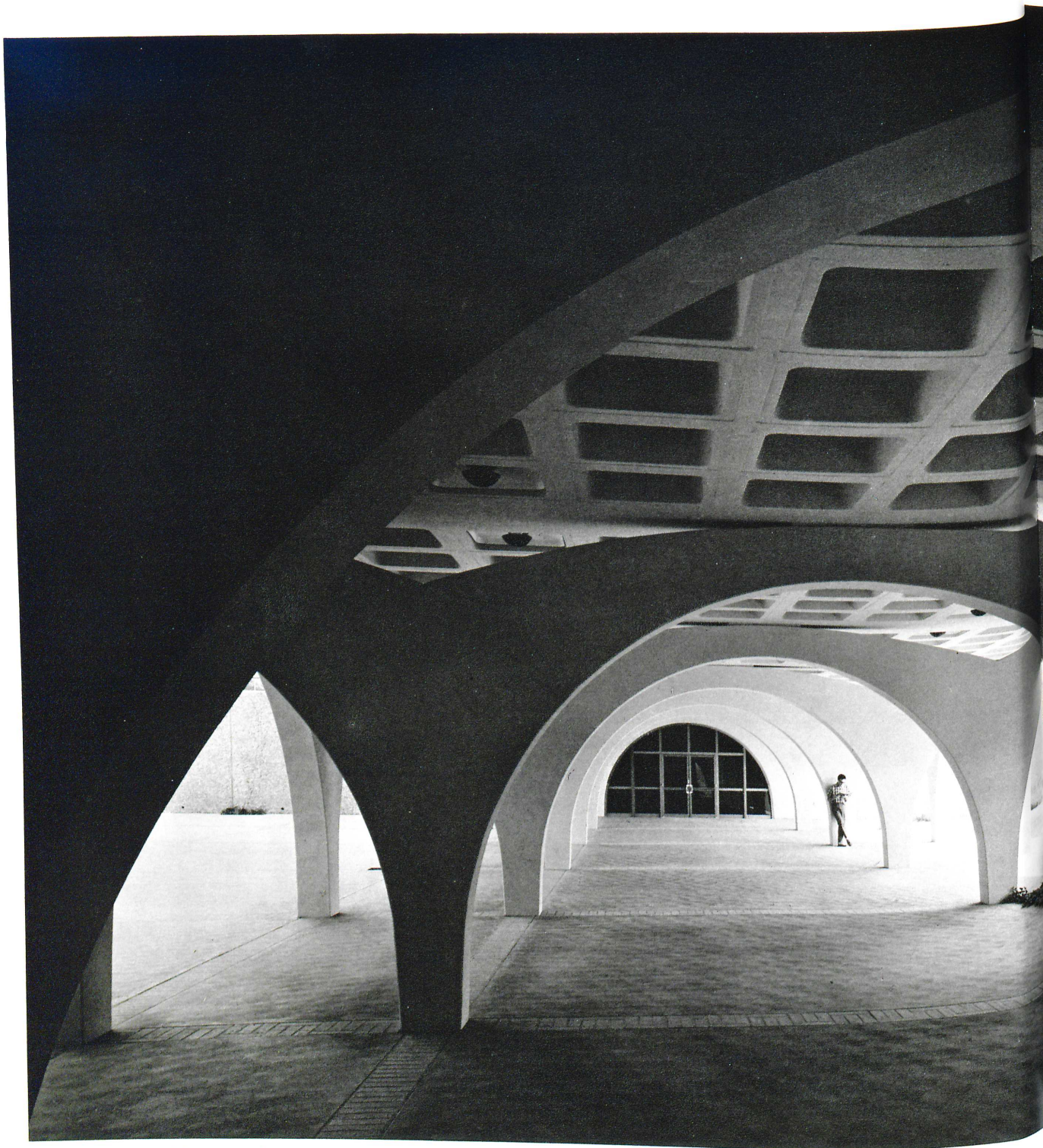
Class Change, Riverside

Riverside

The Citrus Experiment Station, set on the mountain slopes above Riverside in 1907 by the University to help the young citrus industry, was world-famous, visited by hundreds of scientists, and receiving graduate and postdoctoral students from many nations, when in 1948 the University decided to build “an ideal small college of liberal arts” on one of its flanking slopes—not, as at Davis, an undergraduate College of Agriculture to which the station could extend its profound knowledge of citrus and of arid lands, but, illogically, a little college that wanted nothing more than friendly relations and an occasional lecture. In fact, the cadre of distinguished scholars and administrators who were organizing it, each of whom had been “minutely trained in a single academic discipline for the degree of Doctor of Philosophy,” were deliberately avoiding specialization. “Perhaps,” said the first provost, Gordon S. Watkins, a Welsh-born economist who had recently resigned as dean of letters and science at Los Angeles because he longed to get back to research and teaching, “it was because we were so familiar with the cultural limitations of specialization that we were so eager to escape its narrowing effects.”

“The ideal small college of liberal arts,” proposed by Robert Gordon Sproul, dynamic and persuasive president of the University for nearly thirty years, was one of the University’s early attempts to solve the problems of specialization. Most great universities during the fractionalization of knowledge, had become a babel of scholarly and scientific languages often incomprehensible, even to full professors in other fields, and totally bewildering to the undergraduate wandering down below these muezzin voices. The desire for coherence, the need for unity, felt throughout the world in the arts of sciences, led professors and administrators to examine anew what were the educational needs of any individual in the complex contemporary world. As one answer, educators were recommending a broad cultural foundation and believing it best acquired in small colleges.

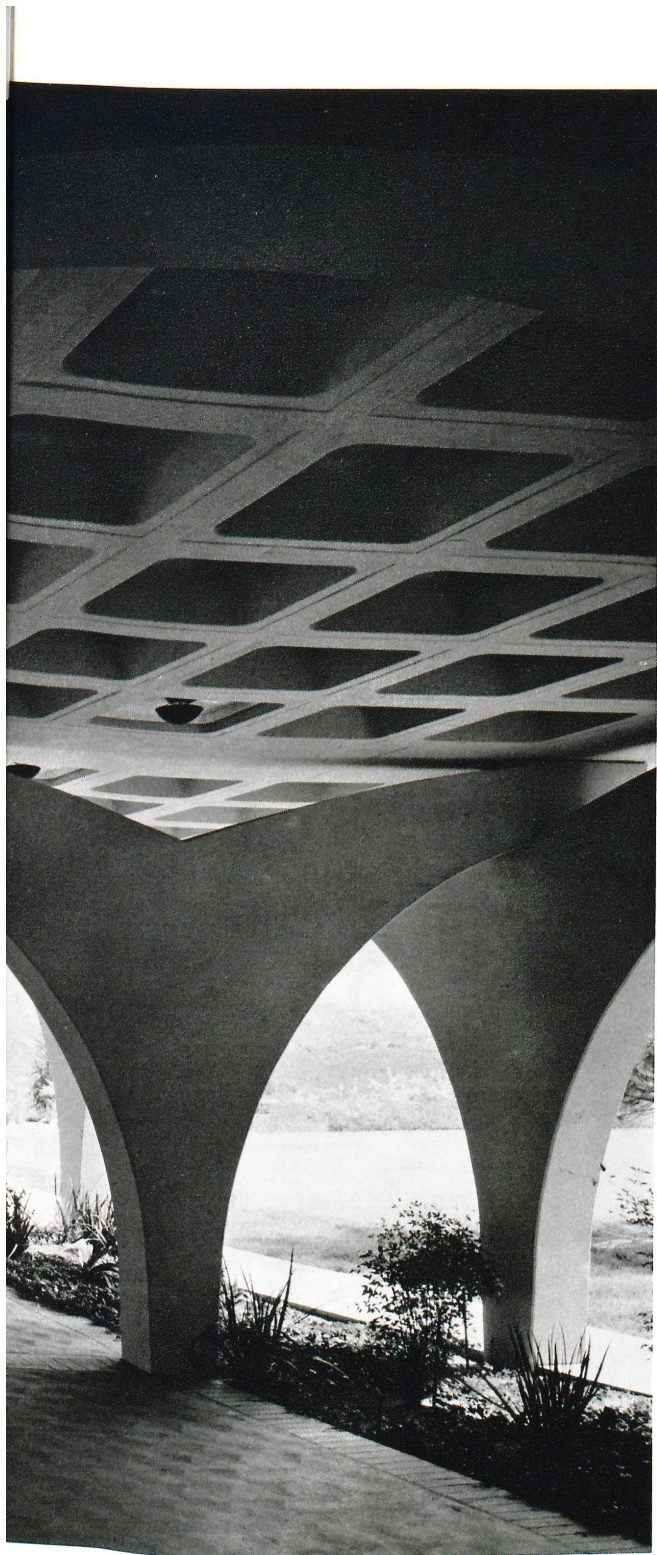




Arches, Humanities Building, Riverside

But universities, like glaciers, accumulate enormous force from the past, and shape through sheer weight the submerged intellectual landscape. To change the course of a glacier or a university requires a powerful obstacle, or a change of climate. "The ideal small college" was an attempt to change the climate.

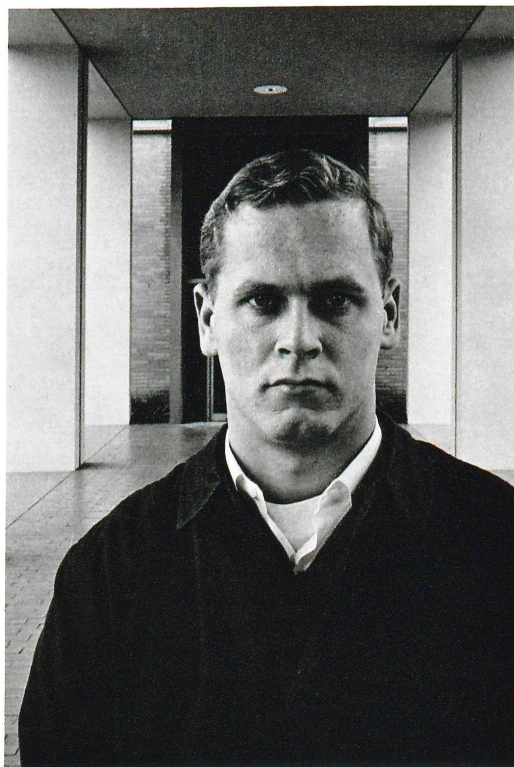
The Korean War delayed construction at Riverside. When finally the college opened, in a downpour, in February, 1954, there were four broad divisions: humanities, life sciences, physical sciences, and social sciences.



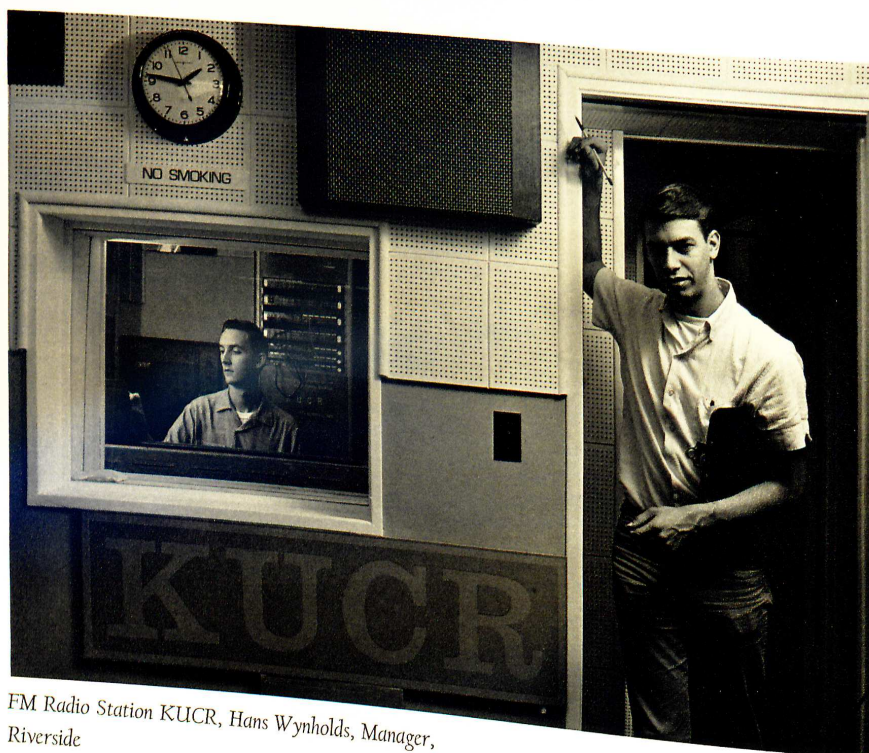
Within four years, because of its high standards and the superior students it attracted, Riverside became known as "the Amherst of the West." But it could not remain small; the pressures of increasing population from without, and the desire of both faculty and students to pursue graduate work from within, forced

it to expand. In 1959, the Regents announced that Riverside must now become a general campus of the University "continuing its undergraduate and Citrus Experiment Station functions, and expanding when appropriate into other areas that are within the sphere of the University, including graduate, professional, and organized research work." The idea of a small college within a university persisted, to emerge most strikingly in the academic plans for Santa Cruz and San Diego. At Riverside itself, the tradition of excellence in education continued as it added departments, and its graduate division, one eighth of whose students came from foreign countries, increased annually about twenty-four percent.

Its august neighbor up the hill also expanded; renamed by the Regents the Citrus Research Center and Agricultural Experiment Station, it has become the headquarters and center of the University-wide Division of Agricultural Sciences for Southern California. A college of Agriculture was established in 1961. At Riverside, now a united campus, there were founded the nationally important Air Pollution Research Center and the Dry Lands Research Institute international in scope, with the unique Philip L. Boyd Desert Research Center in nearby Deep Canyon.



Physics Major, Riverside



FM Radio Station KUCR, Hans Wynholds, Manager,
Riverside

When KUCR went on the air for the first time, on Sunday, October 2, 1966, at 2:00 P.M., it was the climatic moment of nearly two years' hard work. Only three of the original band of student enthusiasts remained; the rest had graduated. Cooperation from the students, faculty, and administration of UCR had throughout been instant and generous: the Associated Students promised an annual operating budget; the Regents contributed ten thousand dollars to build and equip the station; Chancellor Ivan Hinderaker and the business manager, Chuck O'Neil, helped find the station a home—in half of a married student's duplex, out of which two soundproofed and air-conditioned studios were made; the city of Riverside donated a sixty-foot steel tower for the antennae; visits to local professional stations as well as other university-operated stations, such as KAL at Berkeley, KCSB at Santa Barbara, and KZSU at Stanford, led to improvements in knowledge and acquisitions of equipment which might need a little work, but was well worth it. The delays came from the FCC, which kept putting off granting the license and construction permit for nearly a year. And the call letters, KUCR, appeared to belong to a ship radio station of a banana freighter in the Caribbean. Research on the history of this ship eventually revealed that having been sold to another nation, she was now using a different call signal. So KUCR could go on the air identifiably and appropriately as a station owned by the Regents of the University of California and operated by the students of the University at Riverside.

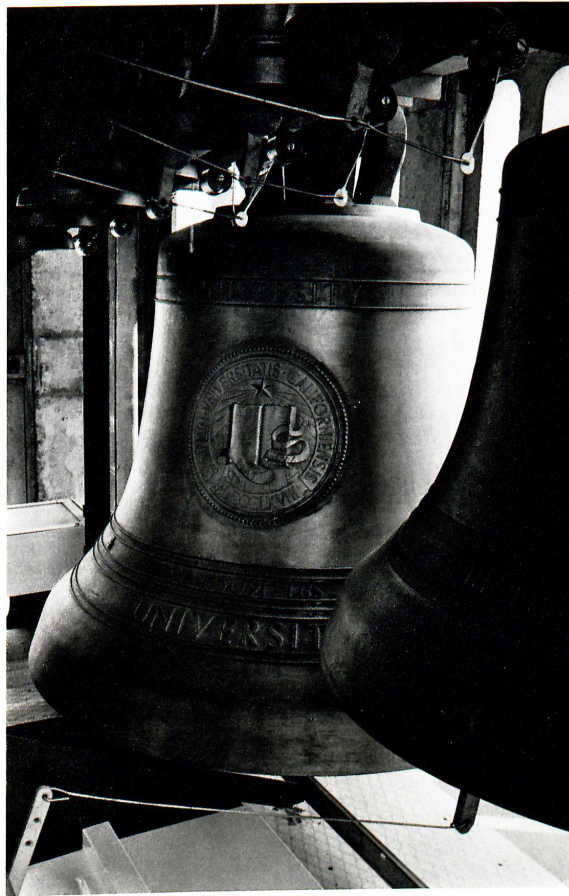
KUCR serves as an educational facility enhancing communication between UCR and the community of Riverside, and stations operated by students at other campuses. Arts, languages, events, forums, and special talents of faculty, students, and visitors are integral to its programs, live or taped. Music of widely varying types not broadcast by nearby stations is, of course, its mainstay, and each disc jockey is responsible for the selection he lends or borrows; the station hopes to acquire eventually an outstanding collection of records. The major presentation on KUCR's first broadcast was the dedication ceremony and first concert of the great carillon bell tower.

"The student was our central focus. It was not enough, we believed, to develop and sharpen the average mind and provide a wide latitude of freedom for the exceptional mind; we desired, also, to turn out men and women of refined manners, possessing compulsive urges to creative living, conscious of the need for constructive service to the nation and mankind, and sensitive to the imperative necessity for moral and spiritual values in a confused, disorganized and belligerent civilization."

GORDON S. WATKINS
Provost Emeritus, Riverside

The Carillon, Riverside

A magnificent musical instrument and one capable of great versatility, the carillon serves as a symbol at the heart of student life much as does the campanile with its chime of twelve bells at Berkeley. Cast in France by a family who have been bell-founders for six generations, and tuned with exquisite precision, the forty-eight bells cover a range of four chromatic octaves, from the Bourdon, pitch C¹, weight 5,091 pounds, to No. 48, C⁵, weight 28 pounds. The Bourdon, which bears the University seal, is known as the Centennial Bell.



History Class, Riverside

Robert V. Hine, Associate Professor of History and Chairman of the Department, conducts an undergraduate class in *The American West* in his living room.



Citrus Research Center and Agricultural Experiment Station, Riverside

The Citrus Experiment Station was established in 1907 to meet the research needs of growers trying to raise oranges, lemons, and grapefruit in semi-arid southern California. From the slopes of Mount Rubidoux, the first small research laboratory looked down on arid plains and hills where one good rain brought forth a quickening green and, almost overnight, thousands of flowers. University scientists were faced with many problems: how to get enough water to soak the ground deeply in the spring, and when and how to use it around the year; how to control pests and guard against frosts; what to add to the rich desert soil to encourage the growth of more and better fruit; how to pack the glowing harvest for long journeys; and what to do with the small, but delicious, culls.

University and other scientists searched Egypt, Palestine, Italy, Greece, and other countries to find the noblest strains of what the Greeks knew as the golden apples of the Hesperides. None of the citrus station's many attempts to improve these great natural mutant oranges has as yet resulted in a finer fruit, although other citrus varieties have been improved by hybridization.

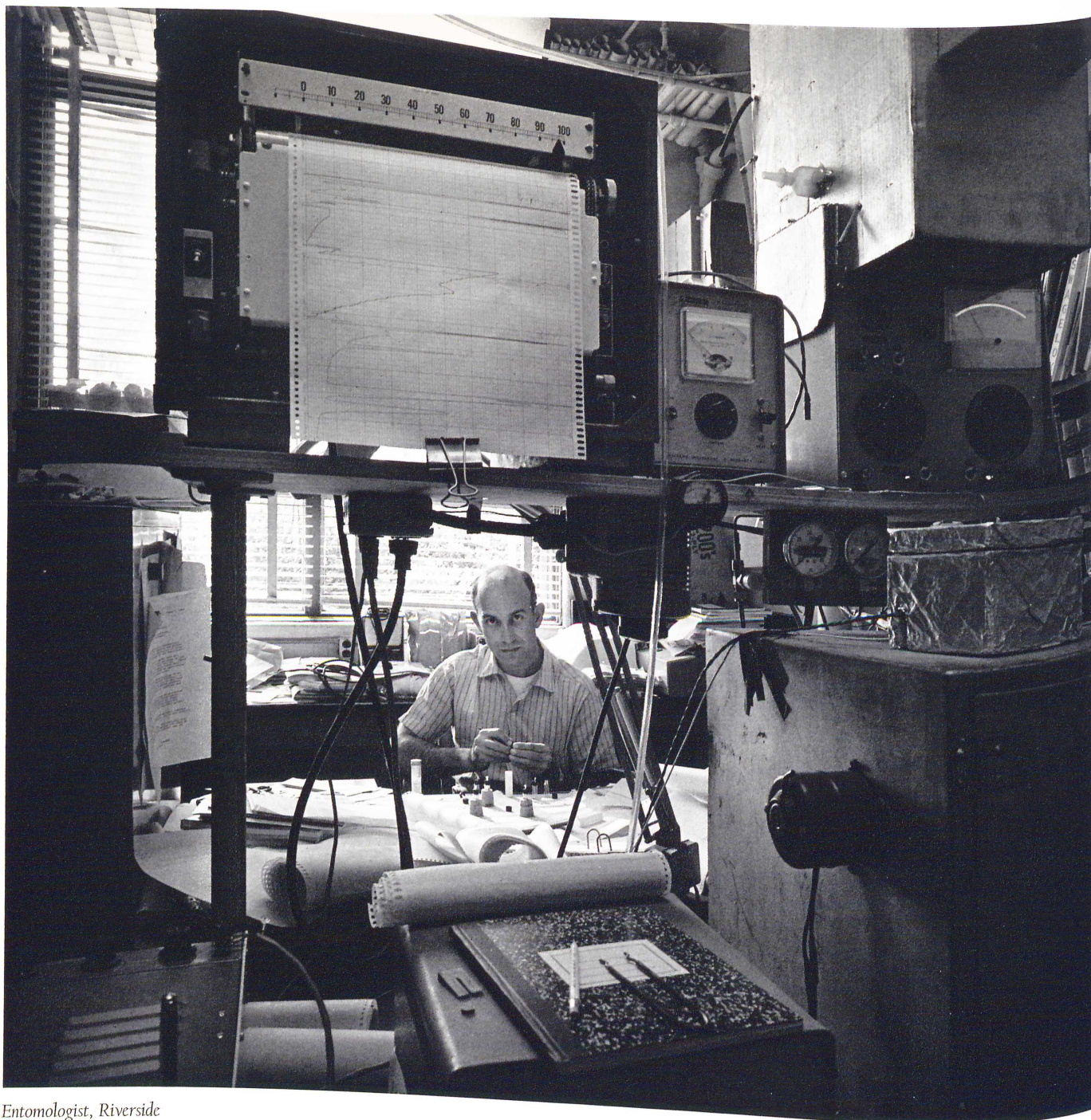
The University, in learning how to grow citrus and other fruits, such as avocados and peaches, under California conditions, found itself involved in entomology and biological pest control, in pesticides and agronomy, in hydrology and hydroponics, and, in the 1940's, in air pollution research. Berkeley, Davis, and Riverside have become world-famous centers for agricultural research and innovations. They have been such magnets for students and scientists that, in many of the developing nations of the world, the highest agricultural officials hold post-graduate degrees from the University of California.



New Citrus Orchards, near Riverside

A vast acreage planned by the Church of Latter Day Saints, these orchards were planted with strains of citrus and methods of irrigation and fertilization recommended by University specialists at Riverside.





Entomologist, Riverside

Lyle Gaston, assistant chemist, is working on problems of chemical communication among insects.

Biological Controls, Riverside

Into the endlessly fascinating sub-world of insects, experts in biological or chemical control must often enter, waging war. Large plantings of some species of fruit, vegetable, or forage, hitherto rare in the ecology, invite some otherwise inoffensive insect to multiply into devastating hordes. Stagnant water from irrigation is perfect for breeding midges and mosquitoes. Every large disturbance of the ecology causes turmoil among insects. When birds, other insects, and insect diseases can no longer keep an economic balance, entomologists then study the troubling insect with even more intensity than before. What are its natural enemies? Is there somewhere another insect, or life in any form, which preys on this insect and *no other*? University scientists range the world over, looking for such prey-predator relationships. When they think they have found a possible parasite or predator, they bring it back, breed it, and investigate its efficiency and whatever side effects it might have on other aspects of life. They do not release it for general use until they are sure that the newcomer itself cannot become as devastating as its prey.

Such biological controls, often as simple as importing a certain ladybug to eat aphids, are most effective in areas where cooperating farmers agree on their usefulness and protect them as much as possible; healthy orchards have been thus achieved without insecticides. But in other areas, and against the majority of pests, insecticides still play an important role. University scientists work to make them safer, more selective, and more efficient; the scientists also analyze their occasionally appalling side effects, including contaminated soil, water, wildlife, and birds as remote as Antarctic penguins. Even man may become a victim, if he mishandles insecticides.

Discovering ways of decreasing pests by means other than poison or predators also interests the researchers. For instance, by synthesizing the sex signals and allures—pheromones—of certain moths, the male can be trapped to prevent mating. Another means of control is by management: for example, the lygus bug



Ph.D. in Entomology, Riverside

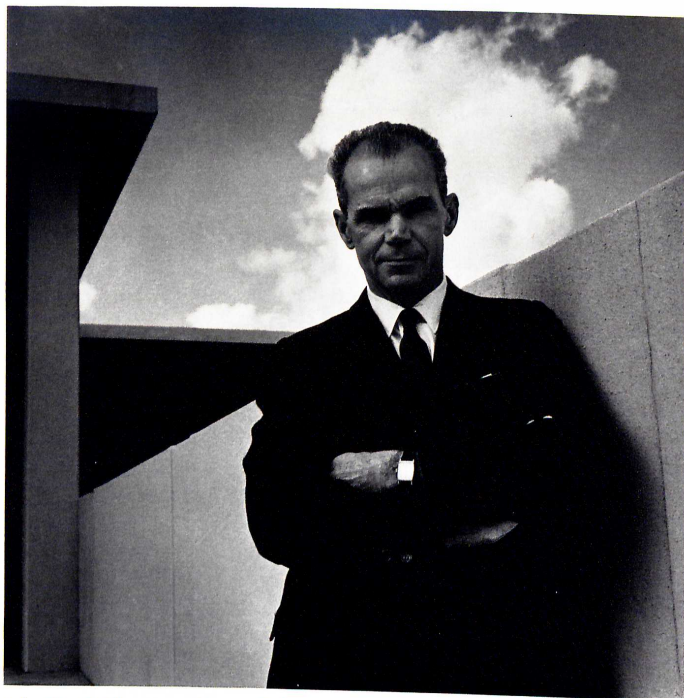
Sudha Rho received her degree for research in problems of biological control vital to her native India. She has already returned to apply her knowledge toward solving her country's food shortages.

breeds in the foothills, and, when those surroundings grow hot, moves to greener pastures, with a preference for alfalfa. In the alfalfa fields, these pests are at home with their natural enemies, who keep them to a reasonable balance. But when the alfalfa is cut, they move on to the cotton fields, where they do enormous damage. A simple solution was suggested by University researchers: cut alfalfa in strips at different times; these insects, who do not damage the alfalfa crop, shift from the cut strip to the standing strip, and never move on to the cotton.



Technician, Riverside

Paintbrushes prove more delicate than tweezers in handling small forms of life.



John T. Middleton, professor of plant pathology at Riverside

Former director of the University's Statewide Air Pollution Research Center, Middleton is now on leave serving as director of the new National Center for Air Pollution Control, a branch of the United States Department of Health, Education and Welfare, Washington, D.C.

Statewide Air Pollution Research Center, Riverside

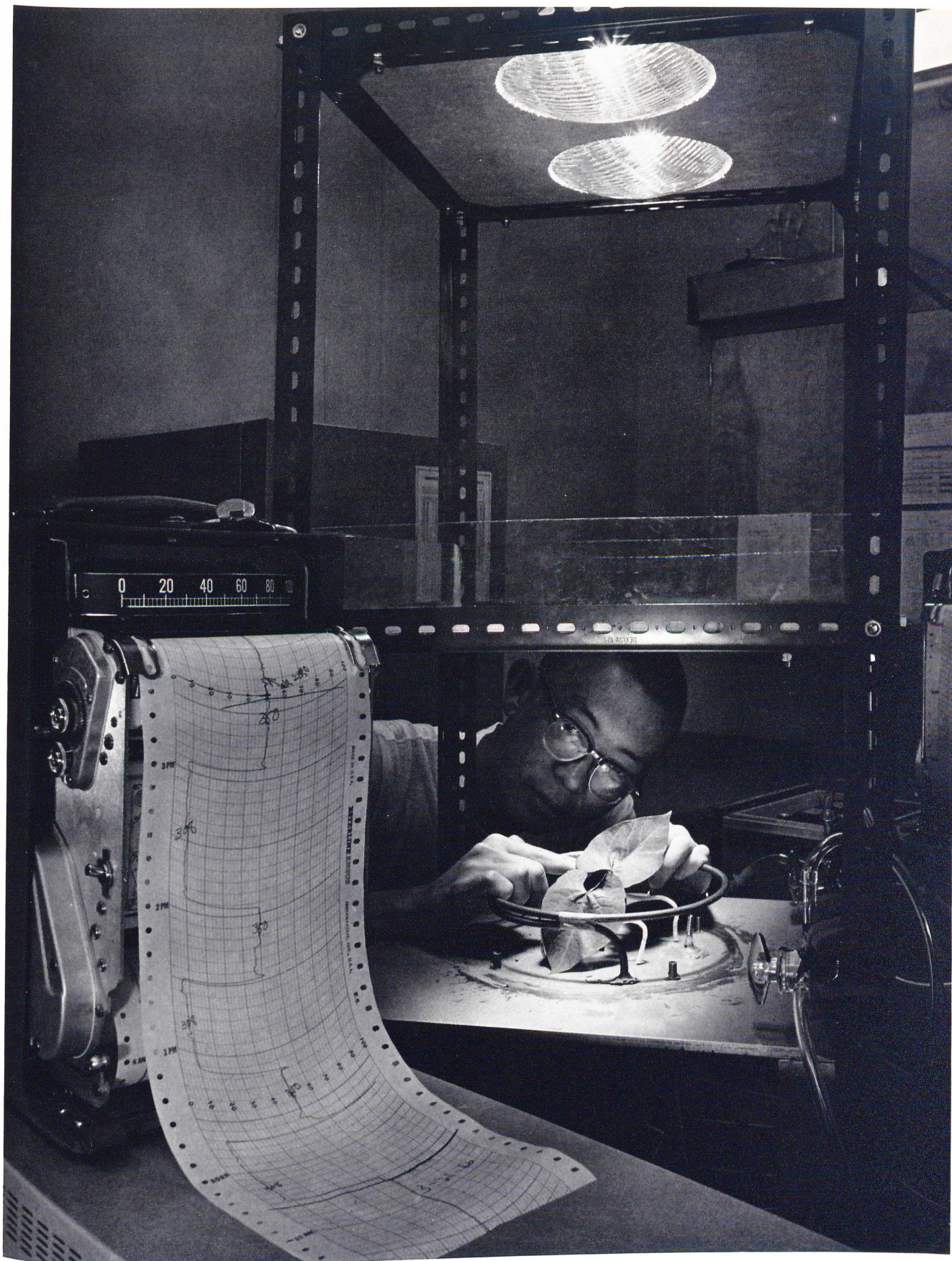
John T. Middleton, former director of the Statewide Air Pollution Research Center and professor of plant pathology at Riverside, was the first to discover that smog was damaging crops in southern California. Following this discovery in 1944, a research program was developed at Riverside. In the laboratories and greenhouses, Middleton and his associates analyzed the components of smog, and tested the effects of each, alone or in combination, at varying densities during night and day. But as smog increased, so did

the scope of its damage. Middleton warned that the air has become "a malfunctioning sewer.... The time has come for us to conserve our air resources as we do water, forests and game."

Smog now threatens every urbanized and industrialized area in the world. In mild attacks, it may merely irritate eyes and lungs; in serious attacks, it can kill.

The sources of pollution are many and complex—motor vehicles, jet planes, industry, power plants, domestic heating, and agricultural burning. Atmospheric inversion trapping fumes from these sources between mountain barriers or within other natural "airshed" basins intensifies the problem. The automobile, of course, is a chief offender; the effects of auto smog controls are being offset by increasing numbers of cars and continually denser traffic. Controls much more strict and effective must be devised, and new, non-polluting sources of energy must be developed to replace the fossil fuels. Economically feasible ways for industries to reclaim waste fumes and gases must be found. If the cost of pollution control appears enormous, it must be seen in perspective against the incalculable costs of uncontrolled pollution—soiling and damaging of buildings, agricultural crop loss, rotting of fabrics, and damage to man's health. New social, economic, and governmental tools are needed to cope with what is already a regional menace, seeping down coasts, creeping through mountain passes. The wind does not stop at city or state or national boundaries.

To bring to bear on these appallingly complex problems the full force of the University's faculty and research resources, the Statewide Air Pollution Research Center was established in 1961 at Riverside. The center serves as a central agency to stimulate, solicit, support, and coordinate research in critical areas; sponsor and encourage graduate and post-doctoral participation; and present timely information through all media of communication. Many of the statewide staff serve as advisors to institutions and industries, as well as city, county, state, federal, and international organizations. Air pollution is an evil and unexpected consequence of an urban and mechanized society, and only society itself can control and eliminate it.



Statewide Air Pollution Research Center, Riverside
Measuring the effect of cement dust on photosynthesis.



UCLA volunteers meet their tutees in a Watts home

Student Volunteers in Community Service

As a national movement, and one distinct from earlier and more traditional forms of community service, the student tutorial programs stem from the southern civil rights movement of the early 1960's, when undergraduates, many for the first time, came face to face with the desperate plight of the very poor, especially among racial minority groups. Illiterate, bewildered, deprived, and defenseless, these people needed constant, personal help in their day-to-day struggles against enormous handicaps. Again and again, students were told by people of their own age and even younger, "It's too late for me. Start with the kids." Demonstrations began to look like superficial gestures, useful now and then, perhaps, but the real human need was here, basic, beyond politics.

Back on campus, students sought ways to help in the Negro ghettos, the Mexican migrant worker camps, the Indian reservations. Often they had to find their own contacts and pay the costs of their projects out of their own lean pockets. Then, as the projects proved their value and students of all kinds of backgrounds and political beliefs began volunteering by the hundreds, support came in from the associated students' unions, from school systems, and from community and federal agencies such as the Office of

Economic Opportunity. At Berkeley, the volunteers could work through the University YWCA and Stiles Hall, the student YMCA. Stiles sponsors many programs, such as SWOP, Student West Oakland Project, which is designed to raise the academic level of minority group children in the schools. In 1965, SWOP had eighty volunteers; in 1966, six hundred. Through Stiles, a dozen upperclassmen and graduate students, often working toward degrees in law, criminology, psychology, and public health, go two or three times a week to San Quentin Prison, where they teach classes ranging from the functionally illiterate to potential college students. From Stiles, too, bilingual students go to Yuba City in the great heat of summer, to tutor Mexican children who have had to drop out of school again and again to follow their parents as they picked and canned fruit crops here and there throughout the state. Another group goes to Union City every week the year around, tutoring whole families; often the father and the children have only a smattering of English and the mother none at all.

At Riverside, in two years, student volunteers working as tutors and as assistants to teachers in the classrooms built such warm and strong relationships

between minority group parents and the teachers that they effected the complete integration of all the schools in the district. At Riverside too, some thirty volunteers run a "hangout" on one of the streets where Negroes and Mexicans feel free to stand and talk. The hangout has three parts: the office, where there is accurate and current information available on welfare, medical aid, legal counsel, employment, housing, voting, and education; the "living room," open to the whole community, where there are always coffee and magazines, and occasionally lectures and movies, and courses in Negro and Mexican history; and the "game room," with ping-pong, checkers, chess, and a record player for teen-agers who never had a place to go before. At UCLA, the Tutorial Project, backed by the Associated Students Union, did such magnificent work along the slum canals of Venice that the teachers of Los Angeles gave them an award for "Service to Youth in Education." At San Francisco, medical students, under faculty inspiration and supervision, go forth in Mobile Clinics to areas where no doctor or dentist has ever practiced; people who come may never have had a medical examination.

Every campus sponsors a summer camp for underprivileged children, and students raise funds through such events as, at Berkeley, for Cal Camp, the Ugly Man Contest and the Big C Sirkus, and, at UCLA, for Uni-Camp, the Mardi Gras festival. Students serve as counselors, frequently on a twenty-four-hour-a-day basis, for excited children out of the urban slums for the first time. At Uni-Camp there is a special ten-day session for blind children and another for diabetics.



Riverside student, senior in anthropology, with her tutee, a Navaho, at the Sherman Indian Institute

In 1966, there were at the University of California more than eight thousand student volunteers, working at problems as various as their own gifts, backgrounds, and future careers. They work with the mentally retarded, the emotionally disturbed, the drop-outs and delinquents, as well as with school children and their parents and teachers. To tap hidden potentials, they organize art, music, and drama groups; to enliven community life, they also organize sports, dances, and picnics. Foreign students help too, lecturing on their native lands and displaying their costumes and dances. Many students take their vacations for work and study in other countries, showing little communities in Mexico how to build a school or a hospital, for example. The University of California has sent more graduates into the Peace Corps than any other university.

Most exciting of all to the volunteers is the University's own new goal of reflecting in its racial representation the total society. Urged by Clark Kerr, the Regents have made possible "a talent hunt" wherein students and graduate students, counseling various groups, watch for the brilliant but disadvantaged young—a Negro girl with an I.Q. of 140, who writes plays for her own delight and is a natural director, a Negro boy from Richmond who has an astonishing gift at movie-making and the warmth to go back to Richmond and urge the other kids to work for college, a Chinese girl who is trilingual and makes and plays ancient musical instruments. Not to find such people would be society's loss. The University not only seeks them, but helps them enter the University and stay there.



Berkeley student with her Mexican tutee in Golden Gate Park

Epilogue

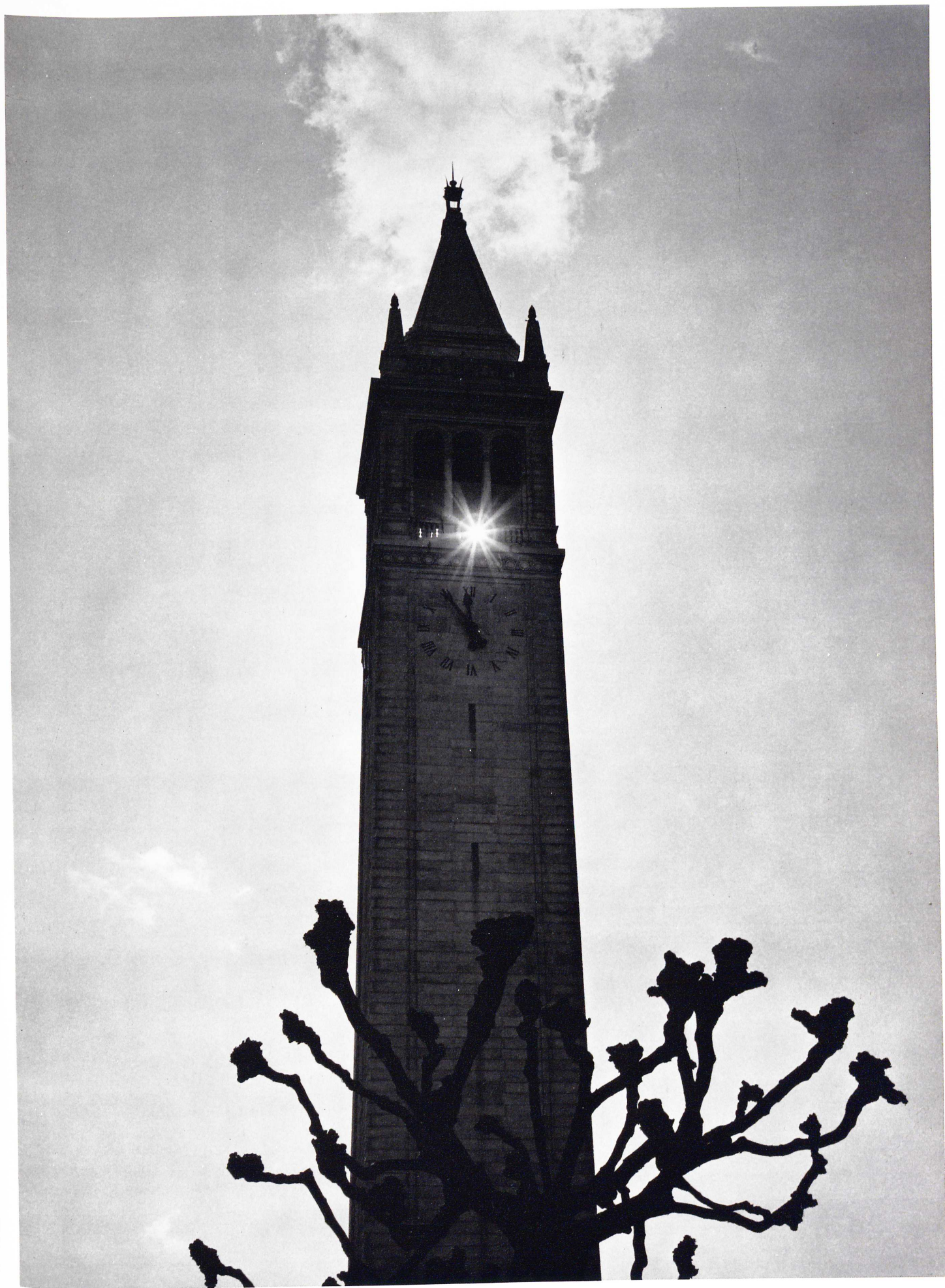
On March 23, 1968, the University of California will enter its second century. Through eras of turbulence and eras of serene growth, it has gone on bringing the light of knowledge to all the concerns of mankind and the mysteries of the universe, for the benefit of its state and its people, the nation and the world.

Now it faces still greater challenges. As the focal point of knowledge in the most populous state in this nation, it is already applying its powers toward solving the manifold problems which now confront California and may soon confront the entire world in the new civilization fast shaping the future.

At a convocation in Berkeley in 1967, Chief Justice Earl Warren summarized the importance of the University to its state: "The University from its beginning planted its seed in every aspect of life in California, and today its roots are deep and pervasive in the economic, political and social structure of the state.... The state needs this University functioning at its highest potential, as it has been doing for nearly a hundred years...."

"Californians, this is the time for us to do our utmost for the University because it has done its utmost for us. It is a time to encourage our distinguished faculty to pursue truth and knowledge into the darkest corners. It is a time to encourage them to teach the truth as they discover it. It is a time to give all the young people of our state the very best education we can afford."

To those who question the importance and the cost of supporting such education, the President's Commission on Higher Education answers: "It is an investment in free men. It is an investment in social welfare, better living standards, better health and less crime. It is an investment in a bulwark against garbled information, half-truths and untruths; against ignorance and intolerance. It is an investment in human talent, better human relationships, democracy, and peace."



Notes on the Photography

Throughout the project, natural light was used in every possible situation. Many exteriors demanded filters such as the Wratten #12 (minus Blue), the 23A (Orange-Red), and, occasionally, the #38 or #47 (Bluish) to increase the effect of atmospheric haze. The polarizer was used when lower sky values (and a slight reduction of haze effect) were desired—but without darkening of near shadow values.

The world exists in the light with which we see it; the intrusion of additional lighting may have questionable aesthetic effect. However, the limitations of the sensitive emulsions must be taken into account and it is quite proper to employ additional lighting to simulate the visual effect. The use of delicate fill-in illumination (such as reflected from a white umbrella or screen) will support the visual qualities of shadow areas which might otherwise fall beyond the range of the negative when the high values are properly rendered. Much fill-in illumination was provided by directing flashlight into the white umbrella; this gives a smooth distribution of soft light without obvious highlights or shadow edges. For this, the Guide Number of the flash is about two-thirds that for an equivalent distance for direct flash. However, as the fill-in light is about one-half or one-fourth the full exposure for the subject under flash illumination alone, calculations must first consider the direct-light Guide Number for the particular shadow value desired. When working with daylight, the shadows have some illumination to begin with; the flash merely augments the shadow values.

Indoors, the problems are somewhat different. Many laboratories, etc. are illuminated by diffused fluorescent light, broad and shadowless, and this results in flat and somewhat textureless qualities, especially in the high-value areas. The addition of some directional light is helpful in such situations. There is always the temptation to contrive lighting situations and effects, and the results may be more dramatic than authentic. First, we

begin with the existing light, and then apply additional light with restraint; we should work towards an effect which would be logical to the subject and to the area. Whenever possible, reflected light was used; direct flash or tungsten light was occasionally used, and "flash-in-the-pan" (flashlight at the camera) was used only occasionally with the small camera, under contrasty daylight conditions.

The many adjustments of the Sinar camera (view-camera type) were invaluable with architectural subjects, or with general subjects where great depth-of-field was required. The greater part of the work was done with the Hasselblad 500C camera, and quite a few pictures were made with the Zeiss Ikon Contarex camera. Type 55 P/N 4x5 Polaroid Land film was used with the 4x5 back on the Sinar camera.

In the majority of the pictures, contrast control was achieved by appropriate exposure and development of the negative (following my Zone System techniques). Many of the reproduction prints for this book were made on Du Pont Varigam with the Ferrante Codelight source instead of the conventional variable-contrast filters. Other prints were made on Kodabromide and Brovira. The prints for reproduction were scaled for the gravure printing process.

Finally, the general approach was intentionally forthright; the character of the subject did not favor highly stylized or forced images. The complex character of the University, its environment and its people, demanded a certain emphasis on reality. Also, the need for a unified book design and image quality required consistency throughout.

Appreciation is due many individuals and firms who gave most helpful advice on the many problems involved in this project.

A. A.

PRINCIPAL TECHNICAL DATA

CAMERAS 5x7 Sinar, with 4x5 reducing back.
5x7 sheet-film holders and 4x5 filmpack adapters (the 4x5 filmpack adapters were marked Normal, Normal-Plus, Normal-Minus, and Special. This simplified development procedures).
4x5 Polaroid film pack adapter.
Lenses: 12" Voigtländer Apo-Collinear; 9¼" Goerz Artar; 8" Kodak Ektar; 121mm and 90mm Schneider Super-Angulons.
Hasselblad 500 C, with 50mm, 80mm, 120mm, 150mm, 250mm, and 500mm lenses (and appropriate accessories). Five 12-exp. magazines were used for various films and development methods.
Hasselblad Super-Wide, with 38mm lens.
Zeiss Ikon Contarex, with 21mm, 35mm, 85mm, and 135mm lenses, appropriate accessories.

LIGHTING EQUIPMENT Graflex Strobolash (2 units)
Mecablitz 163
Colortran quartz-lamp system (2 units)
White reflecting umbrella

EXPOSURE METERS S.E.I. Exposure photometer
Weston Ranger IX Exposure Meter (with Ansel Adams' Zone System Dial)

ACCESSORIES Levels; small industrial Mirror (for setting lenses in crowded situations); Polarizers; Filters (3-inch gel for the larger lenses, and optical flats for the Hasselblad and Contarex cameras)

NEGATIVE MATERIAL Kodak Tri-X in 5x7 sheet film
4x5 film pack
120 and 35mm rolls
Kodak Pan-X in 5x7 sheet film
120 and 35mm rolls
Kodak Plus-X in 4x5 filmpacks
120 and 35mm rolls
Polaroid Land Type 55 P/N film packets (4x5)

NEGATIVE DEVELOPER Edwal FG 7 in various dilutions with water (sometimes with 9% sodium sulfite) and in conjunction with the alternate-waterbath process.

Colophon

This book has been designed by Nancy Newhall and Adrian Wilson.

The type is the University of California Old Style designed by Frederic W. Goudy especially for the University and set by the University of California Printing Department.

The printing has been executed by the Cardinal Company, San Francisco, under the supervision of Charles R. Wood.

Two processes are employed: photogravure for the plates, with varnish blocks, and photolithography for the type.

The paper is Warren's Lustru Dull and the binding cloth is Columbia Mills' Bradford Lincn.

The image shows the front cover of a book. The cover is dark, possibly black or very dark blue, with a textured surface. In the upper left quadrant, there is a bright, multi-pointed starburst light effect, resembling a star or a sunburst. The text is printed in a white, serif font. The title 'FIAT LUX' is at the top, followed by 'THE UNIVERSITY OF' and 'CALIFORNIA' on the next two lines. At the bottom, the authors' names 'ANSEL ADAMS & NANCY NEWHALL' are printed.

FIAT LUX

THE UNIVERSITY OF
CALIFORNIA

ANSEL ADAMS & NANCY NEWHALL

FIAT LUX

THE UNIVERSITY OF CALIFORNIA

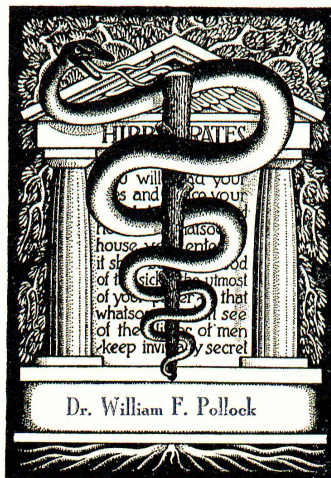
By Ansel Adams and Nancy Newhall

Commissioned in observance of the one hundredth anniversary of the establishment of the University of California, *Fiat Lux* celebrates that event with a perceptive, artistic statement about the University itself, and about its reach into the lives and surroundings of the people it serves.

The creators of this distinguished volume are well known to those who love and admire fine photography. Californians and conservationists are particularly familiar with them because of their successful collaboration on such books as *Death Valley*, 1954; *The Pageant of History in Northern California*, 1954; *Yosemite Valley*, 1959; and *This is the American Earth*, 1960.

ANSEL ADAMS, master photographer, is one half of this remarkable partnership. Created by other men, pictures may speak 1,000 words; by Ansel Adams they sing songs. That may be no accident, for, in his youth, Adams studied the piano and aspired to a concert career. But his interest in photography, begun at the age of 14, trained under the tutelage of a San Francisco photo-finisher, and inspired by a warm acquaintance with famous California artists, poets, and photographers, eventually won out as the dominant pursuit in his career. Another life-long interest, mountaineering and conservation, gave his photography much of its characteristic subject matter and point of view. A portfolio on *Parmelian Prints of the High Sierras*, launched his career as a photographer in 1927 and has been followed by an imposing list of exhibitions, books, and portfolios that have appeared with regularity to the present time. His "straight" or pure photography techniques are shared with other photographers in his own books on the art and in classes and lectures throughout the country. He founded the first department of photography in the California School of Fine Arts, now the San Francisco Art Institute, affiliated with the University of California. He has been a consultant to Polaroid Corporation since 1949, and in 1966 was elected a Fellow of the American Academy of Arts and Sciences. He received honorary degrees from the University of California in 1961, and Occidental College in 1967.

Continued on back flap



NANCY NEWHALL, trained as a painter, became interested in photography and photographers after her marriage to Beaumont Newhall in 1936. After two years of research for a biography of Alfred Stieglitz in 1941-42, and three more as acting curator of photography at the Museum of Modern Art in New York, she became aware of the new dimension that could be achieved when words and images are, in her words, "conceived together in synesthetic sequence" for books and exhibits. She concluded that selection, arrangement, and textual amplification of photographs, while influenced by the artist whose work is presented, constitute creative expression of a form that is undoubtedly an art in itself. With this insight, she has collaborated with Ansel Adams, Paul Strand, Edward Weston and other photographers, to produce memorable volumes.

When Mrs. Newhall is not writing books with photographers, she is writing books or articles about them and their art. She applies the same principles evident in her work on books to exhibitions which have included *The Art of Photography from 1839-1961*, on permanent display at George Eastman House of Photography; *A Nation of Nations*, including photographs, works of art, and folkart from leading American collections, commissioned by the United States Information Agency for display in Berlin and Tokyo; and *The Eloquent Light*, a retrospective exhibit of the photographs of Ansel Adams at the DeYoung Museum in San Francisco in 1963. Since 1959, she has been exhibition consultant to the George Eastman House of Photography.

ADRIAN WILSON, designer and typographer, entered the graphic arts through the stage door, printing extraordinary posters and programs for San Francisco's post-war theaters. Limited editions of fine books soon followed, as well as commissions for book designs from the University of California Press. In 1958 he wrote, printed and published his widely acclaimed *Printing for Theater*. After a year's sojourn in Europe studying the work and methods of leading designers and printers, he established his Tuscany Alley book design studio on Telegraph Hill in San Francisco. From it have emerged award-winning pictorial and art books, scholarly texts, cookbooks, corporate reports, bibliophile editions, etc. He has also taught at the University of California School of Librarianship and at the San Francisco Art Institute. This year *The Design of Books* will appear, authored and, of course, designed by Adrian Wilson.

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1968

