

The Fairchild Scholars Program

A program to promote scholarship through interaction is alive and well at Caltech. How does it work?

Fifteen Fairchild Scholars are now in residence at Caltech — two each in the divisions of Chemistry and Chemical Engineering and Geological and Planetary Sciences, three each in Engineering and Applied Science and Humanities and Social Sciences, and five in Physics, Mathematics and Astronomy. They bring to almost 170 the grand total of such guests of the Institute in the approximately eight years of the existence of the Sherman Fairchild Distinguished Scholars Program at Caltech.

This program was established back in 1973 by the gift of \$7.5 million from the Sherman Fairchild Foundation. It was named in honor of the founder of the Fairchild Camera and Instrument Corporation and of Fairchild Industries, a man who would himself have been an ideal Fairchild Scholar. He was a pioneer — and an indefatigable inventor — in the fields of photography, aviation, and sound engineering.

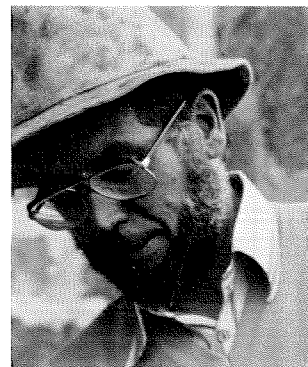
Under the terms of the grant, the money was to be used over a period of ten years to underwrite the costs of visits to the Caltech campus of distinguished scholars or of young persons of outstanding promise from the worlds of academia, industry, and government. The appointments were to be made for periods ranging from a term to a year. Francis Clauser, Clark Blanchard Millikan Professor of Engineering, Emeritus, who originally suggested the idea, pointed out how much the members of the Caltech community would benefit from the opportunity to interact with the world's intellectual leaders. And, of course, the sharing of wisdom and ideas would go both ways. Since the board of the Fairchild Foundation has recently renewed the grant for an additional five years, the program has obviously worked out. But how? A large amount of money and a considerable number of people have

been involved. Who has done what to make the whole thing so effective? What have been the necessary mechanics of the operation? Has it been useful to the participants on both sides?

Many people all over the Institute have been involved in making the program work — faculty, division chairmen, administrators, and staff — but the director from the first has been C. J. Pings, who is also vice provost, dean of graduate studies, and professor of chemical engineering and chemical physics. Working with him at the administrative level, Lea Sterrett, assistant provost, has maintained liaison with the Scholars between the academic preliminaries of nomination, approval, and invitation and the practical logistics of taking care of the visitors once they have arrived. And Carol Cooper, executive secretary in the office of the provost, has been keeper of the records and Jill-of-all-trades in the day-to-day operation.

With this as background, here is the scenario for the mechanics of the visit of a hypothetical Fairchild Scholar. We are using a male in this case, because most of the Scholars so far have been men, but distinguished women are also sought and welcomed. Albert E. Murray, PhD, DSc (several times), Thomas Hunt Feyn-Mann Professor of Theoretical Physics, is doing exciting research in his field at Bohr Institute of Technology. Several of his fellow scientists at CIT know about the work and the scientist and would like to know both better. At least, they'd like to exchange ideas with him over a longer period than an occasional professional meeting. They also hope he wouldn't be averse to spending a little time at Caltech, where he can interact with our people in the same field. After some informal discussion among those people, one of them presents Murray's name to the divisional committee charged with recommending Fairchild

Excerpts from letters written by some recent Fairchild Scholars about their stay at Caltech:



In the past I have been a visiting professor in many countries. I know about the problems arising at the beginning of a visit. One needs weeks to settle down, to take care of housing and transportation. The Fairchild Program is absolutely different. All is taken care of. You enter your house or apartment just like coming home from short vacations. You find a car in the garage and you can drive to the next supermarket to complete your half-filled refrigerator. And the next morning you can start your work at the Institute.

What does a Fairchild Scholar really do during his time at the Institute? Sometimes I heard this question. In my case I used the time being here intensively to do science without any restriction or obligation. I used the time to write a number of papers for publication, to discuss with colleagues and to participate in many seminars and research conferences. . . . The eight months as a Sherman Fairchild Distinguished Scholar at Caltech were so far the best months of my entire academic life.

HORST HOFFMANN
*Professor and Head of the Physics
Department
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Scholars. That committee discusses and evaluates Murray's name along with other divisional nominations.

Dr. Murray passes this first test with flying colors, and his name is sent along to the division chairman, who assembles all the relevant data he can find about Murray, fills out a nomination form, and sends the package to the Institute Administrative Council (IAC). At that point a ten-day-long countdown begins, and if no one has expressed objections to Murray's nomination at the end of that period, the nomination is considered approved. The division chairman is notified, and he is then free to write Murray a letter offering a Fairchild appointment.

A division chairman is always happy when that time comes, mostly because, as Harry Gray, chairman of the division of Chemistry and Chemical Engineering, says, "There's no way of overestimating the value of these visitors. The interaction between them and all members of our division is immediately enriching; the Scholars affect in a very positive way both our teaching and our research programs."

More specifically, Fairchild Scholars for the division of Humanities and Social Sciences are selected in part because of the extent to which their research interests in-

tersect the activities either under way or contemplated within the division. Because the disciplinary groups in Humanities and Social Sciences at Caltech are very small, a steady stream of visitors is an important source of information about activities in the profession at large and a significant increment to the number of colleagues with whom to consult and collaborate on research. This is especially true for graduate students, who during the normal four years of study at Caltech will have the opportunity to interact with as many Fairchild Scholars as there are permanent faculty in social sciences.

In addition, says Roger Noll, chairman of the division, "the Fairchild program has been invaluable to the social scientists in spreading the reputation of the Institute as a place where high-quality research in social science is taking place, and where first-rate graduate students are being trained. The Caltech social science program achieved national recognition very soon after it was introduced, in large part because a flow of outstanding scholars from major universities came through as Fairchild Scholars. Then, when they returned to their home institutions, they spread the word about the program. They have subsequently been instrumental in

For relatively short visits to institutions (a few months) I have found in the past that too much time is wasted on organizational matters. However, when these details are taken care of, as in the Fairchild program, I now know that a change of environment can be scientifically stimulating and personally rewarding.

LENNOX L. COWIE

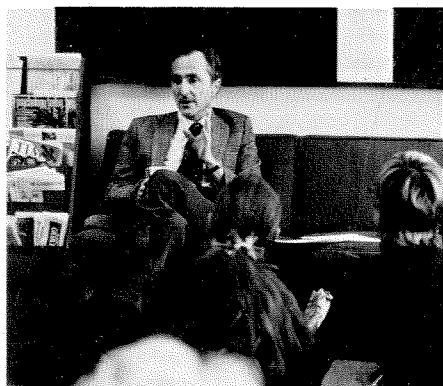
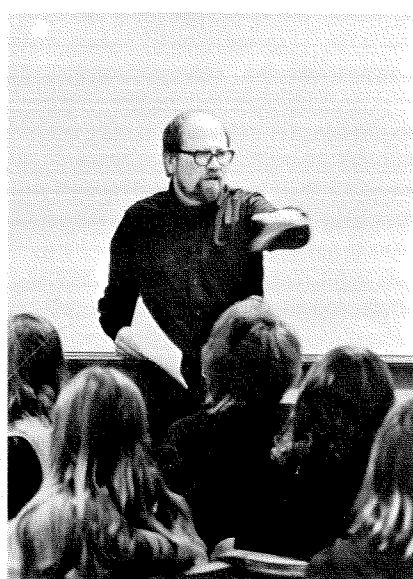
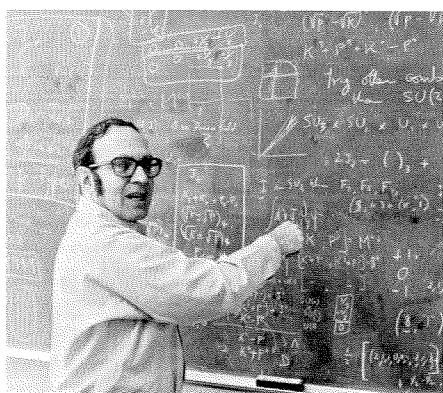
*Research Staff Member
Princeton University Observatory*



In looking back on the time I spent at Caltech, I regret that the pressure of other commitments made it impossible for me to stay longer, and that perhaps is the most appropriate measure of the value I put on my experience. The opportunity to interact with the Caltech faculty, the freedom from day-to-day routine cares, and the support level provided by the Institute, all combined to make my stay both profitable and enjoyable. For the record, I was able to complete a long review of the properties of water which I had not had the time or opportunity to think about deeply at the University of Chicago and which I had been trying to complete for a year. In addition, I believe I planted the seeds for collaborative work with Ahmed Zewail and with Professor Cohen in applied mathematics. It will take some time to determine if those seeds will germinate, but I think there is a good chance they will.

STUART A. RICE

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Three former Fairchild Scholars in interaction at Caltech: physicist Yuval Ne'eman (top left), who came to the Institute from Tel Aviv University; psychiatrist David Hamburg (bottom left), from Stanford University; and Norbert Bischof, a behavioral scientist from the Max Planck Institute at Seewiesen, Germany.

helping us place our graduate students in major research universities.”

Occasionally, of course, there are objections to a nomination, and this brings about a discussion and eventual resolution by the IAC. But everyone thinks Murray will make an excellent Fairchild Scholar, so all the division (in this case, Physics, Mathematics and Astronomy) has to do is figure out if and when it is going to have available office and/or lab space and secretarial help. Also, Murray is a busy man with many commitments, and his time is hard to come by. Getting final agreement on the exact dates, duration, and working conditions of his visit to the Institute will probably take several letters.

Once all this is worked out, Murray receives a letter inquiring what he will need in the way of other perquisites that may go with being a Fairchild Scholar — transportation to and from Pasadena, housing, stipend, and medical insurance, for example. Not everybody needs all of these things, but they are all available to some degree, and there's a sound philosophy behind providing them. “The needs of the Fairchild Scholars and their families are as diverse as the people themselves,” says Lea Sterrett. “Our job is to eliminate for them — as much as we possibly can — the frustrations of getting settled in a new place, so they can take advantage of their visits without delay and without distractions.”

Housing, for instance, is almost always needed, and every effort is made to make what is available acceptable to its temporary occupants. A number of houses and apartments of various sizes are leased and are completely furnished and kept for the Scholars. These include everything from a four-bedroom house on a large lot to a small apartment, and the supervision of these residences gives this part of the program a decidedly hotel-management aspect. Over the past seven years, never less than 18 units of housing at a time have been under the care of Lea Sterrett and Carol Cooper, aided by a single housecleaning person. This hotel-management service, incidentally, is provided at no cost to the Fairchild Program, being paid for by the Institute.

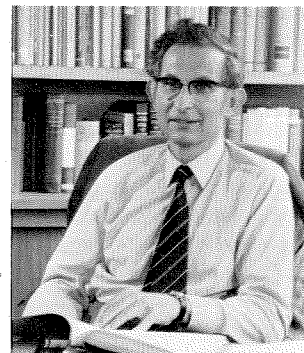
Murray informs Caltech that he doesn't care whether he has a house or an apartment as long as he doesn't have to do any gardening and that his family will need a minimum of two bedrooms. He wants to be within walking distance of the campus. These requests are filled — all the dwell-

ings on the housing list fit comfortably into these slots.

Bohr Tech allows professors on leave only 50 percent of their normal salaries, so Murray will need a stipend to make up the difference in his income. He will also need supplemental medical insurance. He recognizes that he is going to have to do some driving, and his wife may take some classes at UCLA, so a car should be rented or leased for him, preferably something compact. He would also like some help in getting his 12-year-old son enrolled in a nearby school.

Once all of these details have been settled, President Marvin Goldberger writes a formal letter of appointment to Dr. Murray and his name and the dates he is expected begin to appear on the list of appointees. This list is circulated regularly to key people on campus to let them know that these special guests will be here and that plans for taking advantage of the fact may be put in motion. The accounting department gets the list so it can get its books ready for a new name. And the board of the Fairchild Foundation gets the list as well, along with the supporting material on each new scholar.

Suppose Dr. and Mrs. Murray and their son are going to arrive next week. The apartment chosen for them will be cleaned and double-checked for having all the equipment the annual inventory shows that it has — sheets, towels, dishes, silver, pots and pans, vacuum cleaner, TV, working telephone, and the like. Airline reservations for getting the family to Los Angeles are made, as well as arrangements for them to be met and brought to Pasadena. Murray will be informed as soon as possible how to get to the campus, to his division, and to the Fairchild office, and also of his new residence address and telephone number. The division is where he will work, of course, and that is very important to him; but the Sterrett-Cooper area on the third floor of Millikan is very important too. That is where he will go for help with solving problems of daily living in Pasadena — to find out the name of a local dentist, for example, or how to get a plumber. Academically, Murray is in the hands of his division, and each division has its own way of welcoming visitors and fitting them into the life of the community. In Chemistry and Chemical Engineering, for example, selected members of the faculty make sure that the Scholar is introduced around the division and taken to lunch at



After years of living in Cambridge and working in London, it has been almost blissful to be able to walk to work in a few minutes and to lunch or dine or play tennis at the Athenaeum nearby.

The most important and profound effect that my year had and will continue to have on me is to reinforce my enthusiasm for science, and my belief that there is no substitute for first-rate science in any successful modern engineering project. The current emphasis on “relevant” and very applied work has, to my mind, already had serious ill-effects on the health of academic life in many parts of the world, and so it was most encouraging to witness a successful marriage of long-term fundamental objectives and useful consideration of short-term problems such as has been achieved at Caltech.

J. R. ANTHONY PEARSON
*Professor of Chemical Engineering
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I was in residence at Caltech from December 1978 to July 1979. This was one of the most productive periods of my professional life. During this period we used the presence of David Cass (also a Fairchild Scholar) and Lionel McKenzie (a visiting professor) and myself, as well as the Caltech faculty, to organize a seminar series that attracted scholars from all over the LA area. Even though the seminars were held at night, we had regular visitors from UCLA, USC, and UC Riverside. . . . I used my time to formulate and study the problem of self-fulfilling speculative bubbles that never burst even though the classical perfect information postulates of economic theory are satisfied. . . . Since

the Athenaeum. Very often the Scholars become involved in collaborative research with one or more groups in the division.

In Humanities and Social Sciences, the committee that operates the Fairchild program also selects the Scholars who are to be nominated for a Fairchild appointment. A necessary part of the nomination is that a member of the faculty of the division—usually the one proposing the Scholar—takes the responsibility of integrating him or her into the life of the division. There are no formal requirements for this because different Scholars have different interests and different amounts of prior contact with Caltech faculty. Usually the sponsoring faculty member will at a minimum invite the Scholar to relevant seminars and arrange early social events to make it possible for the Scholar's family to meet Caltech people.

Each Scholar has his own idea of what he wants to do here too, so it is difficult to generalize about what happens in the course of visits. Some Fairchild Scholars have become so deeply involved in what is going on in their part of Caltech's academic environment that it is hard to tell them from members of the faculty. (Recruitment, however, is definitely not a part of the program, although two former Scholars are now members of the Caltech-JPL family.) A few have used the period of the visit to disappear into an office or lab as much as possible to get work done that for various reasons would be impossible to accomplish in their home institutions—and have been reluctant to emerge. Most have found a comfortable niche somewhere between these two extremes.

Scholars also frequently cross disciplinary lines. For example, Rutherford Aris of the University of Minnesota is currently a Fairchild Scholar in chemical engineering at Caltech. But he also has an amateur interest in Latin paleography and is doing some research and writing in this area. In this connection he benefits greatly from contacts and discussions with John Benton and Eleanor Searle, who are notable historians and authorities on the Middle Ages.

During his stay here our man Murray gets a lot of research done. He and one of our physicists have a paper coming out in the prestigious *Journal of the American Association of Theoretical Physics*, and he has some ideas for new lines of research back at Bohr Tech. Some of our physicists have gotten some new research ideas from him too. One of the Caltech graduate students will be coming to him as a postdoc-



Rutherford Aris

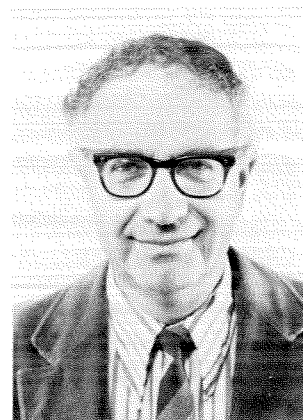
toral fellow as soon as he gets his PhD. Murray is an outgoing person as well as an outstanding scientist, so he lunches at the Athenaeum, gives seminars, makes a talk on the Watson Lecture series, and meets with students. By the time his visit is at an end, he is on a first-name basis with a lot of people at the Institute. And he enjoys spending a year in southern California; he considers a few days of smog a reasonable trade-off for the few days of snowstorms he is used to dealing with each year.

So, after a mutually profitable and pleasant year, the Murrays and Caltech officially part company. As a windup, he is asked by Pings to think about his experience a bit and then write a letter summing it up. The people involved in the visit, both at Caltech and at the Fairchild Foundation, really want to know what he did here and how he feels about it, so these letters are important. The actual letters received have varied considerably. There have been step-by-step summaries of research, bread-and-butter thanks for hospitality, lively reminiscences, and mixtures of all three.

Even laudatory and light-hearted verse has turned up, and at least one book has a dedication that is a result of the Fairchild Program: "To my friends at the California Institute of Technology, than whom there are no hosts more gracious nor colleagues more stimulating" appears in the front of a volume by Aris, who is obviously no mean practitioner of graciousness himself. Professor Murray hasn't sent in his letter yet, but more than 150 others have—all testifying to the value of promoting scholarship through interaction. □

"noise" in the data makes it extremely difficult to test historical episodes for the presence of bubbles, laboratory experiments are even more essential here than in other branches of economics. . . . Needless to say, having access to Caltech's group of experimental social scientists (the finest such group in the world) was essential for this part of my research.

WILLIAM A. BROCK
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University of Chicago



During the six-month period of my stay, I was able to accomplish several things. In the first place, as a small gesture of my gratitude for the appointment, I presented four regular seminar lectures during the spring quarter. I also persuaded several of the faculty of the chemistry and biology departments interested in membrane research to meet with their students at regular intervals for seminar-discussions. With regard to my own work, aside from the preparation and submission of some eight research publications that were in various states of disrepair at the time I arrived, my major achievement was the development of a new and comprehensive theory about the molecular mechanisms of cell-cell recognition in immune systems. I can confidently state that this work would never have been done during my regular activities at home, and was made possible only by the free and uninterrupted time I could spend on it as a Fairchild Scholar.

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