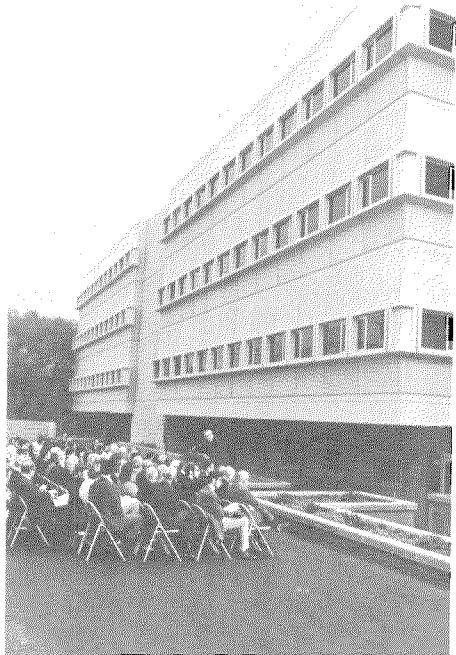


# Downs-Lauritsen Laboratory of Physics



The Downs-Lauritsen Laboratory of Physics, dedicated on January 23, relieves an overcrowded condition that has plagued Caltech physicists for years. The new facility consists of two connected buildings—the Charles Lauritsen Laboratory of High Energy Physics, on the east, funded by the Atomic Energy Commission; and the George Downs Laboratory of Physics, funded in part by the estate of Caltech alumnus George Downs and in part by the National Science Foundation.

The Lauritsen building is devoted to research in high-energy or elementary-particle physics. The occupants include six faculty engaged in experimental research and six doing theoretical research. The experimentalists design and construct equipment at Caltech, take it to one of the large accelerators operated by the AEC to run the experiments, then return with the data to Caltech. The very active theoretical staff, as division chairman Carl Anderson

explained at the dedication ceremony, uses "equipment consisting of heads, paper, pencils, and wastebaskets—the latter three items provided by the AEC."

The Downs Laboratory houses activities related primarily to space research, sponsored for the most part by NASA. The work includes studies in infrared, gamma-ray, and x-ray astronomy; solar physics; particles and fields in interstellar space; cosmic rays; and other areas of astrophysics. The facility houses eight faculty members. In both laboratories, postdoctoral fellows and graduate students also participate in the research activities.

The dedication ceremony included the tributes excerpted on these pages and remarks by AEC commissioner Theos Thompson and by Lloyd Herwig, staff associate of the NSF. The day's activities concluded with a performance of Bach keyboard music by concert pianist Rosalyn Tureck, the widow of George Downs.

## George Downs

*Excerpts from a tribute presented at the dedication by Howard Cary*

George Downs' interest in and love for Caltech and for science sprang, of course, from his two years' association with the Institute as an undergraduate student. He was here shortly after I was, and I know the excitement that a young man has at the California Institute in his first year or so, when he is introduced to this magnificent structure of human knowledge and he is oriented and becomes aware of the broad horizons of man's inheritance in science and in the humanities.

It's especially thrilling to experience it at an institution like Caltech, where one can rub elbows (in an intimate way) with those who are at the forefront of science. We were very fortunate in my time in having instructors like Ira Bowen, E. C. Watson, E. T. Bell, Clark Millikan, and many others. This is *so* exciting for a young man that it influences the rest of his life. It is very appropriate that George Downs was instrumental in making facilities available for the continuation of this same thing.

George had a very difficult time in his

early years because the Depression caught up with him in his second year at Caltech. He spent his period of time digging ditches for the late, lamented Works Progress Administration. Subsequently, he made connections with a very talented mechanical engineer named James Lansing, and very quickly mastered the fundamentals of acoustics. He had carried on intensive self-study, and he made advances in the development of acoustical devices—particularly loudspeakers and amplifiers for the then-budding sound movie business—which were far in advance in performance to anything then available.

But he encountered difficulties because he was a young man and he didn't have the academic credentials that others did. It was at this point that George Downs decided to grow his magnificent beard—at a time when very few beards were to be seen. On the campus at that time all I can recall is the Mephistophelian beard of Professor Martel in civil engineering. And, as nearly as I can recall, outside of Professor Merrill (who was part-time) in aeronautics, those were the only beards on campus. This set George apart and made him remembered by people he met, and he carried this through his life as, perhaps, a trademark.

Although I first became acquainted with George in 1937, it was not until 1946 that George and William Miller and I formed Applied Physics Corporation for the production of scientific instruments. At that point my association became a collaboration, and a very close one that continued for many years. It was a remarkable collaboration for me, and I learned enormously from it.

George did not work like other people. His methods were so totally different that sometimes they were difficult to understand. Primarily, he was the best consultant that I have ever encountered. He was going to do all the good he was going to do for you in the first hour that he encountered a problem. Until that problem changed in some material fashion, he might just as well go away and not come back. But his consulting was perfectly amazing.

I had the experience repeatedly, in the early days of Applied Physics, of struggling with a problem for a week or more, having George come by to make friendly conversation, and then asking me, of course, what I was doing. I would explain the problem I was working on, and then be amazed to have him say, "Well, I think you should do it like this." He would then outline a point of

view that was quite radical. Sometimes I would be a little miffed because, supposedly, I was an expert in spectroscopic instrumentation and George did not have much of a background in it. Here he was, after ten minutes of fill-in on a problem, telling me how it could be solved. Then I would have the experience of working for another week and coming to the conclusion that what he had said a week previously was how the problem should be solved.

Now, I'm not making a joke; I had this happen frequently, and I have heard others speak of this also. I can recall Professor Smythe, for example, telling me once of an encounter with George at Point Loma at the Underwater Sound Laboratory, being somewhat astonished by George's instant evaluation of Smythe's proposals on transducers, and being given advice on how the device would work when Smythe was struggling with field equations of the most complex form. George and I often discussed how he did this, how he could reach instantaneous conclusions. There were two or three reasons. One was that he had a very retentive memory. He also had a fine sense of analog—a problem in one area, in his mind, could be instantly translated to a problem in a totally different area. He told me that fundamentally he was an expert in solving one particular equation, namely, the equation of propagation of a wave motion, and that this had so many applications that he very often could find solutions in very strange circumstances.

Our collaboration continued for many years. Not only in engineering matters, but in business matters he lent a sense of judgment, of integrity, of an insistence on excellence that had a very strong influence on me and a very strong influence on our company.

One of George's outstanding characteristics was his love of people, his desire to associate with people to exchange ideas. He was one of the best conversationalists I've encountered, because he was retentive, interested, and very perceptive.

His many parties, where he functioned as a superb host, are well known. In the later years of his life George carried on simultaneously an astonishing number of activities. He was a director of many companies . . . and simultaneously was active here at Caltech as an associate in engineering, as a director of the Associates, and as a director of the Coleman Chamber Concerts. He was involved in various informal organizations like the Wine and Gluttony Society, the Electronic Club (a group of us oldtimers), and various discussion

groups. He was a remarkably versatile man, loved and admired by many people. It's a pleasure to see so many of his old friends here to join me in paying tribute to his memory.

### **Charles Lauritsen**

*Excerpts from a tribute presented at the dedication by Robert F. Bacher*

To give a proper account of Charles Lauritsen's contributions to science, to Caltech, and to our country would require a long recital of his many outstanding accomplishments and the many honors which came to him in acknowledgment. I'm sure that Charlie would not have liked me to do this, and I won't.

Charles Lauritsen was an excellent physicist, a moving spirit at Caltech, and a wise man. He started the work in nuclear physics at the Institute, and as head of the Kellogg Laboratory he created conditions unparalleled for graduate students and young postdoctoral fellows to learn about experimental physics. He had an extraordinary talent for mechanical design and ingenuity in its use in experimental physics. In addition, and most importantly, he had the scientific understanding and insight to recognize problems and devise ways of solving them. He was thus a rare combination, and a great inspiration to his younger colleagues and students.

Charles Lauritsen's contributions to Caltech are many and cover a wide range. He appreciated the importance of theoretical physics and encouraged Robert Oppenheimer, who became his close friend, to spend part of his time here in the period before World War II. Oppenheimer brought along many of his students, and their presence with him had a lasting impact on Caltech.

During the war Charlie directed the Caltech rocket project for the Navy. This project was extraordinarily successful in its rapid development of new ideas in that field. His ingenuity and insight soon made him an expert not only in the technical problems but also in many of the military problems.

After the war his advice on technical questions of great importance to the government was sought by many agencies and departments, and because of his broad understanding he became involved in many important questions of national policy. He recognized the importance of separation of classified research from educational activities and led the way in establishing such policies on this campus. He became deeply interested in arms limitation and control. His understanding of these was based on a strong technical

foundation as well as an appreciation of the difficult national and international policy problems involved. He felt that scientists ought to know more about this subject, and he was the moving spirit in establishing at Caltech a seminar on arms limitation and control which ran for many years, and in which he was a principal participant.

Charles Lauritsen's remarkable insight brought solutions to many difficult problems in science and in government. Because of the widespread recognition of that extraordinary talent, his impact on Caltech and on our nation is much more important than is commonly realized. He was a wise man—one of the few wise men it has been my privilege to know well. It was impressive to watch him survey a new problem, using his enormously varied background, and quickly bring to it some new point of view which was significant to its solution.

When I came to Caltech just over 20 years ago, I needed a great deal of help and counsel in beginning to guide the course of the division of physics, mathematics and astronomy. Charlie was always helpful. He was a person of great integrity, whose judgment could be relied upon to be objective. He was completely selfless in his dedication to the principles in which he believed, and he was indefatigable in their support.

Above all, Charlie was a great human being. Nothing made him happier than working with his colleagues and students. He taught easily, directly, and by his own example. No matter what the subject was, his standards were high. But he had his own particular and very relaxed manner in achieving them.

Twenty years ago, several of us were drawing up plans for the electron synchrotron constructed here in Pasadena under the sponsorship of the AEC. A new laboratory was being set up for this purpose in the building which had just been made available after the polishing of the 200-inch mirror for Palomar Mountain. Starting a new laboratory is always a difficult job, and the first work in building that accelerator was greatly helped by both the wise counsel and the active support of Charlie Lauritsen. Work in this area would surely not have been started without his encouragement and help. It is particularly appropriate that this fine new laboratory devoted to the study of high-energy physics should bear his name. And it is also appropriate that the Lauritsen and Downs Laboratories are so closely associated, because Charles Lauritsen and George Downs were friends who admired and respected each other, and both of them loved Caltech.