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NEWS AND COMMENT

Desert Research Institute: A Formula for Growth

Reno, Nevada. "Why would anyone want to come to the University of Nevada to do research?" That was the question that meteorologist Wendell A. Mordy posed to university officials back in 1960 when they asked him to head their newly authorized Desert Research Institute (DRI). At the time, Mordy recalls, there seemed to be no very good answer to his question. The university had experienced a severe internal crisis in the 1950's. Although on the rebound, it still enjoyed only a middling reputation. Reno, the self-styled "Biggest Little City in the World," was known more for its gambling halls and divorce mills than for its intellectual climate. Moreover, there was widespread indifference—even hostility—to research among some of the state's political and educational leaders. "I couldn't imagine coming to Nevada," says Mordy. "I thought I would bury myself alive scientifically."

Nevertheless Mordy, an aggressive entrepreneur of science, was intrigued by the opportunity to build an institute from scratch and was encouraged by the likelihood of substantial support from the Nevada-based Max C. Fleischmann Foundation and other sources. He accepted the job, and over the past 8 years, operating on a few simple principles and in a rather freewheeling style, he has guided the DRI to worldwide prominence in certain fields of atmospheric and arid-lands research. The story of his success may prove encouraging for other small institutions that are trying to break into a research world that seems dominated by well-heeled, well-known organizations.

Though the DRI is still too young to have achieved unusual productivity, it is highly regarded by scientists familiar with its work. Walter Orr Roberts, director of the National Center for Atmospheric Research in Boulder, Colo., who is a trustee of the Fleischmann Foundation, told *Science* that Mordy has assembled "just about the strongest cloud physics group in the world today." The institute's prestigious 12-man national advisory board, which is headed by John R. Pierce of Bell Labs and which includes six members of the National Academy of Sciences,* reported last October that it was "astonished" at the institute's progress. The board congratulated the institute on "a success which could well be described as unparalleled." It judged "all the programs at the Desert Research Institute to be of high excellence," while noting that some had gained "an international reputation."

The principles on which the institute has been built are relatively simple. (i) Don't try to emulate Harvard or Berkeley. Instead, specialize in areas where a small institute can make a unique contribution, either because of outstanding personnel or because of natural advantages in the local environment. (ii) Go after the very best researchers available and offer them whatever is necessary to attract them. (iii) Give these scientists the best possible working conditions and the greatest possible freedom. ("I don't even know where they are half the time," boasts Mordy.)

Mordy's original plan for the institute envisioned five research programs that seemed appropriate to the desert environment and were not already being carried out by the university. The DRI has successfully initiated four of these programs—in atmospheric physics, desert biology, water resources, and anthropology—but has never been able to find quite the right man to head a program on the economics of desert regions. Meanwhile, programs outside the original plan have been added as unusual opportunities developed. Thus the DRI launched a program of medical research largely because it was able to attract George T. Smith, formerly an associate in pathology at Peter Bent Brigham Hospital and Harvard Medical School, as director. And it has conducted a small program of industrial research to take advantage of funds from local industry. All the programs emphasize studies related to the Nevada environment and there is considerable overlap in research interests—enough, Mordy feels, so that the programs, "knit together in a meaningful way."

Mordy believes three of DRI's laboratories have achieved "international visibility." These are the laboratory of atmospheric physics, the institute's largest component, which was built up by Mordy and is now headed by Patrick Squires, a highly regarded Australian cloud physicist; the laboratory of desert biology, headed by Frits W. Went, eminent Dutch-born plant physiologist; and the Center for Water Resources Research, headed by George B. Maxey, a noted hydrologist and geologist. The institute also claims to have one of the finest cardiac catheteri-

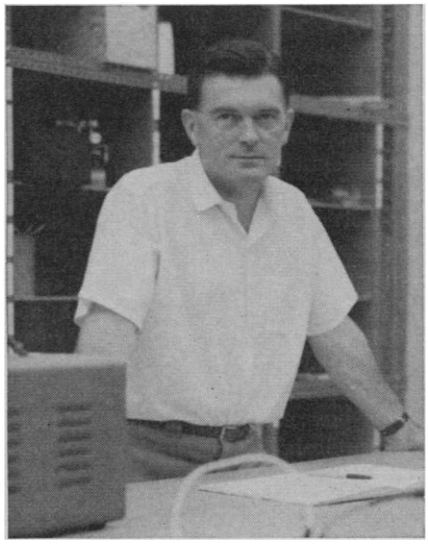
* Besides Pierce, the advisory board includes Wallace R. Brode, Barnes Engineering Co.; George Clyde, Woodward-Clyde-Sherard & Associates; Fred Eggan, University of Chicago; James E. Faulkner, M.I.T.; George E. Forsythe, Stanford University; Samuel Goudsmit, Brookhaven National Laboratory; Herbert Grier, Edgerton, Germeshausen & Grier; M. King Hubbert, U.S. Geological Survey; Vincent Schaefer, State University of New York at Albany; Per Scholander, Scripps Institute of Oceanography; and Lloyd Smith, Stanford Research Institute. Pierce, Brode, Eggan, Hubbert, Goudsmit, and Scholander are Academy members.

zation labs in the country, and has recently obtained what it calls "the most comprehensive library of Basque studies in the United States" to serve as the foundation for a study of the Basques of Nevada.

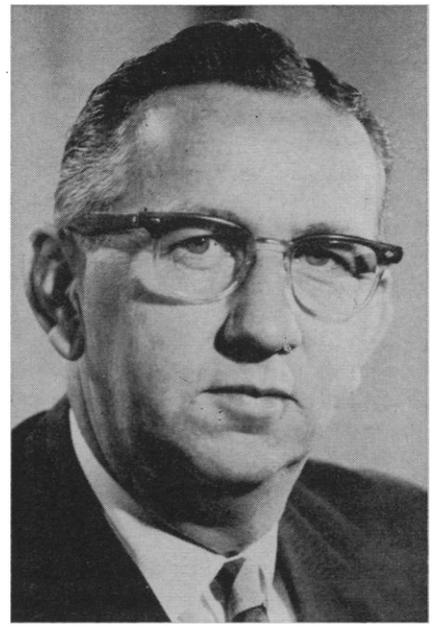
Most of DRI's labs have been launched on the "star system" (one outstanding man plus some assistants), but atmospheric physics, at least, has grown to the point where no one man is crucial to the program's success. Atmospheric physics accounted for 29 percent of DRI's fiscal 1967 expenditures, followed by water resources, 14 percent; medical, 11 percent; anthropology and other social sciences, 8 percent; desert biology, 5 percent; and industrial research, 2 percent.

In addition, the institute operates the data processing center for the Reno campus of the University of Nevada and an atmospherium-planetarium that has become a tourist attraction in the Reno area. "Every seat was filled for the Christmas program and that's quite an accomplishment in a community devoted to mindless pleasure," comments Eleanore Bushnell, chairman of the university's political science department.

Almost all observers agree that the key factor in the institute's success has been Mordy, a dynamic, mercurial 48-year-old who has served as a research meteorologist with the U.S. Weather Bureau in Hawaii (1947–49), head meteorologist for the Pineapple Research Institute of the Hawaiian Sugar Planters' Association (1950–56), research meteorologist at the International Institute of Meteorology in Sweden (1956–60), and lecturer and research associate at UCLA (1960).



Patrick Squires



Wendell A. Mordy

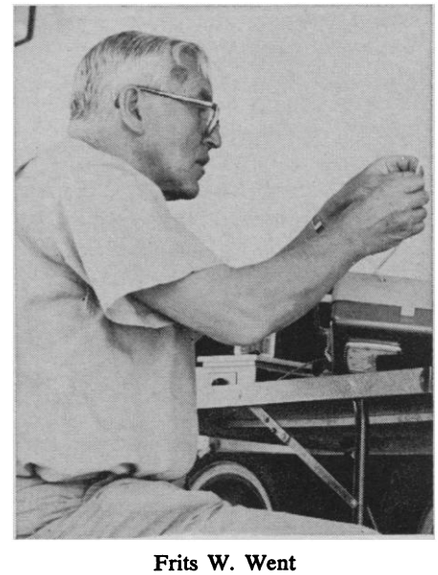
The scientists at DRI refer to Mordy as "a man who won't take 'no' for an answer." They insist he has an uncanny intelligence network which enables him to sense when a top-flight scientist at another institution is ready to leave his job, and a persuasive approach that enables him to convince such scientists that Nevada is where they want to be. Frits Went is said to have been snared during a moment of unhappiness with his previous position. Patrick Squires was snatched away from the National Center for Atmospheric Research in 1966 despite the fact that several years earlier, he recalls, "I took one look at Reno and told Mordy he must be out of his mind." But Squires laughingly remembers that "Mordy kept the pressure on. He kept asking 'When are you coming?' and I kept saying 'Like hell I'm coming,' and then finally I came." Squires was attracted by the "high calibre" of the scientific staff Mordy had assembled. "There is a remarkable absence of bores here," he comments.

Institute scientists cite diverse reasons for coming to Nevada. Some mention unusual research opportunities in the nearby desert or in the wave cloud formations on the east side of the Sierra; some cite the presence of talented colleagues; some like the recreational opportunities in the nearby mountains (Squaw Valley and Lake Tahoe are within easy driving distance), or the dry, relatively smog-free climate, or the informality and lack of congestion in small-town Nevada.

No one will admit to being lured by money, but money is at least no barrier. The institute's advisory board noted that first-rate men have been recruited "at salaries comparable to those prevailing in outstanding universities with great reputation and facilities." Several scientists with administrative responsibilities at the institute earn $25,000 to $28,000 a year, a fact which is said to have caused some resentment among lesser-paid professors of long service at Nevada's universities.

With a collection of first-rate researchers, DRI has been able to increase and diversify its sources of financial support—no mean achievement in a period when it is becoming more and more difficult for universities to get government money. The institute's dollar volume of research jumped from $1 million in fiscal year 1965 to $1.7 million in fiscal 1966, to $2.3 million in fiscal 1967, to $3.5 million in fiscal 1968, and Mordy expects the figure to increase slightly in fiscal 1969 despite the severe budget stringency in Washington.

In fiscal 1967 the institute received almost half its funds from federal agencies and about a third from private foundations and gifts. The state government has shown no great eagerness to support the institute, contributing only about 10 percent of the institute's funds in fiscal 1967, mostly to support the computer center which serves the university as well as DRI. Probably the most crucial financial backing has been more than $3.7 million provided by the Fleischmann Foundation, mostly in the form of flexible long-term grants. The institute is particularly proud at



Frits W. Went

NEWS IN BRIEF

● **ITALY JOINS 300-GEV:** The Italian government has announced its willingness to participate in the construction of the 300-Gev accelerator proposed by the European Organization for Nuclear Research (CERN). Italy, which contributes 11.4 percent of the CERN regular budget, is the fourth among CERN's nine member states to declare officially its willingness to participate in the 300-Gev project. The others are Austria, Belgium, and France. Earlier this year Great Britain stepped out of the project for financial reasons (see *Science*, 28 June). The German government, potentially the largest financial contributor, still is uncommitted.

● **TRANS-ACTION TRANSITION:** The 5-year-old social science journal *Trans-Action*, published by Washington University in St. Louis, has been purchased for $50,000 by a group comprised largely of professors in the social sciences. They include David Riesman of Harvard, Oscar Lewis of the University of Illinois, Howard Becker of Northwestern, Herbert Blumer and Nelson Polsby of the University of California, Jerome H. Skolnick of the University of Chicago, and Erving Goffman of the University of Pennsylvania. The publication is edited by Washington University sociology professor Louis Horowitz. The move by the consortium of professors prevented its sale to commercial publishers.

● **TOP FIVE:** The five universities drawing the most new Woodrow Wilson fellows this year are: University of California, Berkeley, 9; Columbia University, 9; Harvard University, 8; University of Michigan, 8; and University of Chicago, 6. Effective this fall, the number of full first-year graduate Woodrow Wilson fellowships has been reduced from 1000 to 100 following a decision by the Ford Foundation to cut back substantially its support of Wilson 1-year graduate fellowships.

● **NEW PUBLICATIONS:** *Report of the Bureau of Commercial Fisheries for the Calendar Year 1966*, a report on federal government fish and wildlife programs and research during 1966, may be obtained at no cost from the U.S. Government Printing Office, Washington, D.C. 20402.

having been selected as one of the first 50 centers of excellence to be developed by the Defense Department's Project Themis.

Some scientists grumble that the institute's personnel roster has grown more rapidly than its equipment, with the result that scientists must occasionally do without gear they regard as necessary or desirable. Nevertheless, the institute seems to have done remarkably well in acquiring worldly goods during its brief existence. Mordy reports DRI has acquired assets worth roughly $10 million including two abandoned Air Force buildings (one contains 120,000 square feet), a new water resources building, an atmospherium-planetarium, four big radars, three computers, two planes, mobile laboratories, and a lot of lesser equipment.

In an effort to gain public support for the institute in an environment he regarded as indifferent or hostile to research, Mordy has made himself and and the DRI a highly visible part of the Nevada scene. He writes a weekly column for seven Nevada newspapers in which he intersperses explanations of basic science ("Lightning Takes Many Forms") with plugs for the DRI ("Dr. Went's 'Blue Haze' Theory Reflects Credit to University").

Ample Press Coverage

Mordy and the DRI have received heavy coverage in the local press, and Mordy is not averse to planting an occasional news item with friendly reporters. When *Science* asked a Nevada supreme court justice what he thought of DRI, the first word he came up with was "controversial." Consider these headlines from Nevada newspapers over the past 18 months: "DRI Seeks More Control—Own Trustees Wanted"; "Desert Research Chief Protests Hamstring —Resignation Threatened by Mordy"; "Mordy Charged with Neglecting Finances"; Mordy Urges Regents: 'Fight for Research Funds.' "

Another means of gaining visibility —and some badly needed equipment— was an industrial research contract with a Nevada-based company. DRI developed a number of new products for the company, including quick tanning aids and a lip protector, before the project was terminated last year when a major national pharmaceutical company bought out the Nevada firm. Most of the publications resulting from the original contract were confidential reports to the company. Why did the young institute devote itself to developing better tanning aids for commercial use? Because, says Mordy, the assistance given local industry "cut a lot of ice with the state," the contract supported a man who had no other grants, it enabled the institute to acquire equipment worth about $70,000, and it gained the institute publicity in national ads. "We could make life in a test tube in this state and nobody would notice," says Mordy, "but if we make suntan lotion and our name gets mentioned in an advertisement in *Life*, that's something entirely different."

The institute has recently gained an enhanced status within Nevada's university system. Originally, it was subordinate to the University of Nevada, which had a main campus in Reno and a branch campus in Las Vegas. But in 1967 the fast-growing Las Vegas campus (known as Nevada Southern University) gained autonomy, and on 12 July, after some tense political infighting, the DRI managed to become a separate division of the state university system, independent of both campuses. The value of DRI to the universities can be seen in the fact that it became a sought-after prize in the political struggle, with Reno seeking to retain control and Las Vegas seeking to ensure "equal access" for itself.

N. Edd Miller, president of the Reno campus, told *Science* DRI has had "an enormous impact" on his university. He said DRI had stimulated all research activities on the campus by creating an atmosphere of respect for research and, more specifically, by using its overhead funds to provide seed grants for research by non-DRI faculty members (even in such areas as art and music). Miller said DRI's presence had stimulated the growth of graduate programs in hydrology and physics, had spurred serious consideration about the possibility of establishing a medical school, had made faculty recruiting easier, and had contributed to graduate and undergraduate teaching programs. DRI does not conduct a teaching program itself, but DRI scientists participate actively in the university-administered teaching program.

The DRI has clearly had a remarkable growth, but some observers believe it has now reached an important crossroads. The institute has developed several first-rate laboratories. The question now is whether it can keep up its momentum and become outstanding as a whole. Those who have watched the DRI's progress over the past 8 years are not about to bet against it.

—PHILIP M. BOFFEY