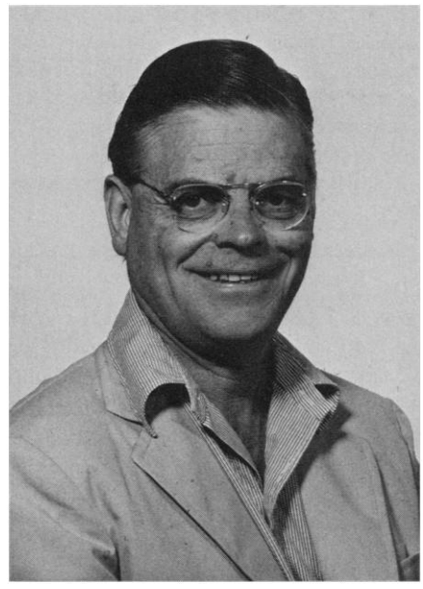
sculptor by avocation, he was at one point reportedly offered a joint appointment in physics and architecture by Cornell University.

After he took over the directorship of what was then called the National Accelerator Laboratory in 1967, he quickly found ways to reduce the project's cost from $350 to $250 million while more than doubling the energy of the original design (200 GeV). Wilson pushed for magnets and ancillary equipment capable of 500 GeV, sensing that large price reductions were about to occur in solid-state magnet power supplies. The price reductions he predicted subsequently occurred and the gamble paid off. The 500-GeV accelerator was completed on schedule and slightly under the pared-down $250 million price. Some of the leftover money was used for early work on the doubler and several million dollars were returned to the government. Because of his feats at Fermilab and previously at Cornell (where the 12-GeV electron accelerator is named after him), Wilson is known among his peers as a builder. One prominent physicist speculates that the slow pace of Fermilab's second-generation building project finally "broke his heart."

The circumstances of the resignation were puzzling because efforts were made to get more money for Fermilab, as John Deutch, the research chief of the Department of Energy recently told that department's high-energy physics advisory committee. Furthermore, the fiscal 1979 budget did give the doubler/saver status as a construction line item for the first time. (Authorization of the full $38 million has been recommended to Congress, to be spent over 3 years.) In the same budget, the operating funds for all of high-energy physics rose 7.5 percent and Fermilab's increase was 8 percent. This year's budget is considered particularly favorable to high-energy physics because it recommends two new accelerators to Congress (the $275 million ISABELLE storage rings at Brookhaven and the Fermilab doubler) after a period when new accelerator starts were spaced at least 5 years apart.



Robert R. Wilson

What reasons other than budgetary Wilson may have had for tendering his resignation just as the Fermilab doubler's future seemed assured are the subject of much speculation in the community of physicists. One associate attributes it to Wilson's flair for dramatic moves to solve persistent problems. Dramatic actions were a part of his style at Fermilab, and according to one report he threatened to resign during the construction of the laboratory in order to obtain certain management concessions from the head of the Atomic Energy Commission. Another anaylsis is that Fermilab has prospered but not yet reached its full flower, and that Wilson's hope for the future rests heavily on the access the doubler will provide to a new regime of physics. By normal administrative procedures, Wilson would have retired in July 1979, about 2 years before the scheduled completion of the first phase of the doubler. The rush funding Wilson was seeking would, of course, have facilitated earlier completion. Nevertheless, last November the Fermilab board, according to Norman Ramsey, offered Wilson an extension of tenure until 1980 and he declined it. A final speculation is that he simply wanted to unburden himself of the heavy administrative responsibility of the directorship (which includes such things as labor negotiations and power reductions during coal strikes) so that he could devote full time to the new project. If that is the case, then perhaps the resignation was what one physicist called "the ultimate sacrifice" for the project.—WILLIAM D. METZ

Bird Lovers and Bureaucrats at Loggerheads over Peregrine Falcon

A popular and scientifically respected program to restore the DDT-stricken peregrine falcon to the eastern United States has been thrown into uncertainty by the U.S. Fish and Wildlife Service.

For the last year Service officials have been raising legal objections to certain aspects of the program, such as whether foreign falcons can be released in the United States and whether all parts of the program can be supported under the Endangered Species Act.

The Service's attitude has provoked a torrent of protest from ornithologists who consider its objections to be legal technicalities inspired by misunderstanding of peregrine biology. In the last few weeks the Service has been showered by critical letters from universities, ornithological societies, and conservancy agencies both in the United States and abroad. A typical protest letter, from Smithsonian Institution director S. Dillon Ripley, condemns the Service's objections as ridiculous and compares them to medieval theological wrangles about the number of angels that could dance on the head of a pin. Keith Schreiner, associate director of the Fish and Wildlife Service, says that a new policy now being formulated will answer the ornithologists' objections.

The peregrine falcon is a bird of particular interest to ornithologists. It is beautifully marked, has a spectacular flight, and falls like a thunderbolt to catch its prey in midair. In its position at the head of a long food chain, the peregrine was particularly vulnerable to DDT. The pesticide interfered with its eggshell formation and rapidly decimated the populations which once flourished in the continental United States. A few dozen pairs of peregrines survive west of the Rockies, but the eastern peregrine has been extinct for two decades.

The idea of restoring the peregrine to its eastern ranges has been made feasible by Tom Cade, a Cornell University ornithologist who has learned how to breed the falcons in captivity, a feat achieved

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only once before. The proposal attracted wide support among bird lovers and conservationists. Cade's Peregrine Fund now has a budget of $175,000, about half of which comes from private sources.

The biological basis of the restoration plan has been widely discussed. At a conference convened in February 1974 by the National Audubon Society and attended by federal officials, the strategy decided upon was to introduce peregrines of as diverse a genetic background as possible, allowing nature to select out the most suitable in place of the lost population.

In line with this policy of maximum genetic heterogeneity, Cade obtained peregrines from Scotland and Spain as well as Canada to serve as breeding stock.

By the end of last year the Peregrine Fund had raised 229 falcons, of which 133 have been released. A breeding population in the wild has not yet been established, but the goal seems within reach.

Old Boy System Produces Geologic Survey Chief

Some 5 months after the Carter Administration requested the resignation of the previous Director of the U.S. Geologic Survey (USGS)—a move that prompted a hue and cry among geologists that the survey was being "politicized"—the Administration has finally picked a new chief. He is Henry William Menard, a veteran Scripps Institution of Oceanography geology professor who was prominent in gathering data about the Pacific Ocean floor in the 1950's that, together with similar data for the Atlantic, led to the theory of sea-floor spreading. Menard is also known for having published some spicy views both on oil drilling policy and science-government relations.

However, the outstanding thing about the choice of Menard, whom other senior geologists describe as an extremely respected colleague, is that he is "one of the boys" and will doubtless be considered fully credentialed as a scientist to run one of the country's oldest and most "apolitical" federal science agencies. This is not to say that Menard is a stranger to Washington: he has served on several National Academy of Sciences (NAS) panels, including the study of the impact of the Florida everglades jetport, the committee on science and public policy, the commission on natural resources, and the committee that advises the Council on Environmental Quality on offshore oil policy. Menard has also served on a President's Science Advisory Committee (PSAC) panel that studied the impact of the Santa Barbara oil spill. Since his political activities seem to have been confined to the traditional confines of PSAC and the NAS, Menard's appointment should soothe the fears of some senior geologists that the Carter Administration would put an unqualified hack in the job.

Geologists who are studying Menard's background for auguries of the future seem most interested in the fact that Menard will be the first USGS director to be an expert in marine, rather than land, geology and resource exploration. In part, this is seen as a sign of changing trends in the field, where marine geology has exploded rapidly since the late 1950's. But it is also relevant to some of USGS's developing responsibilities.

For instance, the USGS now advises the Bureau of Land Management on the geologic and financial soundness of industry bids for offshore oil drilling leases; the USGS also regulates offshore drilling activities once licenses have been issued. While the most controversial drilling for oil, which will be off the Eastern seaboard of the United States, has been held up by the courts, it is widely believed that the volume of drilling in this area will mushroom in the near future.

Menard will also inherit a controversy now going on within the Administration over whether the USGS or some other agency—the ocean mining office in the Department of the Interior or the National Oceanic and Atmospheric Administration in the Department of Commerce—will regulate deep ocean mining of sea floor minerals—another future resource activity.

USGS could also have expanded marine responsibilities as a result of final passage of the Outer Continental Lands Act amendments now before Congress. Some versions of the amendments, which have so far only passed the Senate, have altered USGS's role by ordering it to conduct some actual offshore drilling. Finally, USGS has an important new land-based activity: responsibility for earthquake prediction, for which its budget for fiscal 1978 is a whopping 167 percent higher than that for fiscal 1977.

The Menard appointment also is a sign of how well the Carter Administration is faring in attracting top-ranked scientists to its team, and whether this has been hurt by the clumsy firing of Vincent McKelvey, a career USGS official and the first director whose appointment was terminated by an incoming President since the survey was founded in 1879 (*Science*, 23 September 1977).

As it promised, the Administration followed the traditional procedure of requesting a slate of qualified names from the NAS and selecting the survey director from among them.

However, conversations with several people involved in the NAS search say that Menard's name was not among the original five to be sent to the Administration by the NAS last September. It is not known what exactly followed, but some people who were either on that list or close runners up, such as Charles Drake of Dartmouth College and Creighton Burke of the University of Texas at Austin, apparently discouraged feelers from the Administration as to whether they were interested in accepting the post. It is not known whether Randolph W. Bromery, the black ex-USGS geologist now at the University of Massachusetts who was rumored at one time to be the lead candidate, was indeed approached about the USGS directorship.

Thus, the Carter Administration has succeeded in attracting a very reputable scientist for the USGS job, and one who, by all accounts, will handle the job in a responsible, probably low-key manner. At least Menard does not seem to be today's equivalent of John Wesley Powell, the red-bearded, one-armed veteran of the battle of Shiloh, who conquered the Colorado river and did other daring things, developing his own political following, before becoming USGS director in 1881.—DEBORAH SHAPLEY

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Several anticipated hurdles have been overcome. It was feared that birds born of Canadian Arctic parents—a population which migrates to South America and back—would also migrate and be lost to the United States. But the peregrines seem to stay in their region of release. Another concern was that the released birds would not learn to hunt: but Cade has shown how human instructors can substitute for the assiduous coaching peregrines receive from their parents.

The trouble between the program and the Fish and Wildlife Service developed abruptly last year and revolves about the somewhat esoteric issue of peregrine subspecies. Taxonomists have recognized some 20 or so subspecies of peregrine falcon around the world, but the difference between the various subspecies is often extremely slight and in one instance is mostly political. In 1968 the peregrine population of the Canadian Arctic was given the subspecies name of *tundrius* in order that the peregrines surviving west of the Rockies (subspecies *anatum*) could be put on the endangered species list. A third North American subspecies, known as *pealei*, inhabits the Queen Charlotte Islands off the coast of British Columbia. As far as biologists are concerned, the peregrine is one species with various local populations; the named subspecies, according to Robert K. Selander of the University of Rochester, "are doubtfully recognizable and biologically inconsequential taxonomic categories."

Cade's breeding stock of peregrines is drawn from the three North American subspecies *tundrius*, *pealei*, and *anatum*, as well as from two European subspecies, *peregrinus* from Scotland and *brookei* from Spain. The exact taxonomic type that inhabited the eastern United States cannot be recreated: the goal of Cade's program has always been to develop the ecological type best adapted to present-day conditions. The European birds, already well adapted to living in populated areas, may well have useful genes to contribute.

The scientific rationale of Cade's plan was thrown into sudden confusion on 30 June last year when a cable arrived from the Fish and Wildlife Service with the message "Effective immediately, you are not to release peregrine falcon subspecies *brookei* or *peregrinus*. Executive Order 11987 signed by President Carter on May 24 prohibits the release of exotic species." The cable was signed by Howard Larsen, the Service's regional director in Massachusetts.

Meanwhile, back in Washington, Service officials had discovered a quite different snag, one which affected the

Peregrine Falcon

pealei subspecies. Most of Cade's government-derived funds are disbursed under the Endangered Species Act of 1973. The peregrine falcon might seem eminently qualified as an endangered species, but the Service had chosen to list it under the headings of its two endangered subspecies, *anatum* and *tundrius*. Apparently at the prompting of the Forest Service, which was seeking to deal with a quite different problem, Service officials told Cade that Endangered Species funds could probably not be used to support his work witth the *pealei* subspecies because it was not endangered.

To ornithologists, the Service's new found interpretations of both the Executive Order on Exotic Species and the Endangered Species Act defied both science and the commonsense purpose of the two laws. In their view, the Endangered Species Act was written with enough flexibility to give the Fish and Wildlife Service room to support the peregrine falcon program if it wished to do so. As for the order on exotic species, its intent was clearly to keep out noxious pests, not the subspecies of species already established in the United States. Gerard Bertrand, who drafted the order, confirms that it was meant to apply to species, not to subspecies, for the purpose of excluding possible pests.

By July of last year Cade found that his federal sponsor, far from encouraging his program, was raising legal doubts that struck at its whole rationale, as well as in practical terms threatening to bar the use of three of the five subspecies in his breeding stock. The new interpretations, Cade wrote to the director of Fish and Wildlife, represented a change in position which he found "incredible and terribly discouraging."

Six months later the Fish and Wildlife Service had still not clarified the situation. Cade sought support from his fellow ornithologists in a letter of 5 January setting out the historical and scientific basis of the falcon restoration program. The response to Cade's appeal has been a vigorous endorsement of his program, peppered with stringent criticisms of the Fish and Wildlife Service. S. Dillon Ripley described Cade's effort as "a triumph of ornithological management in the very best sense." Thomas L. Kimball of the National Wildlife Federation wrote that it be "unfortunate and arbitrary" for the Service to reverse its support of the program, adding that he had visited one of the release sites and "cannot begin to describe the beauty of seeing a flying peregrine again." Senior officials of the International Association of Fish and Wildlife Agencies, the New York State Division of Fish and Wildlife, the National Audubon Society, and the World Wildlife Fund-U.S. wrote with similar reproofs to the Fish and Wildlife Service. And Derek Ratcliffe, chief scientist of the Nature Conservancy Council in England, wrote that Cade's program "is one of the most far-sighted and commendable nature conservation enterprises yet attempted anywhere in the World." As to the Scottish falcons given to Cade, it would be "discouraging if the practical assistance which my colleagues and myself have given to Peregrine conservation in the U.S. were to come to nothing, especially as a result of an invalid application of the sub-species concept."

Discussions with officials in the Fish and Wildlife Service suggest that their policy toward the peregrine falcon program remains in a state of flux. The Service does not seem to have receded from either of the two legal interpretations which have thrown the eastern restoration program into doubt. At a meeting last month in Annapolis, associate director Keith Schreiner distributed a draft policy statement which indicated that exceptions could be made on a case-by-case basis for release of *pealei* and European subspecies. But Schreiner still doubts both the means and the goal of Cade's program: "The question is whether I should be involved in establishing a new species in an area where the native species has become extinct."

The Service has every right to reassess the program. But instead of conducting a methodical review, it has avoided decision by a policy of long delays, punctuated by abrupt cables and rulings that appear obstructive to most interested parties. An alternative approach would be for the Service to make up its mind whether or not it supports the rationale of Cade's program and to shape its rulings accordingly.

—NICHOLAS WADE