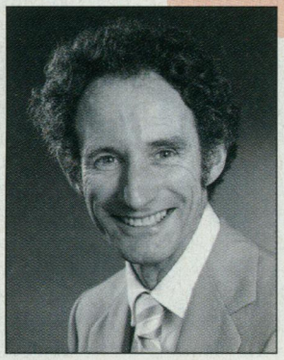
SCIENCE POLICY

# Biologist Takes Seat as U.K.'s Top Science Adviser

LONDON—The ancient Chinese curse, "May you live in interesting times," certainly seems to have been cast upon Robert May. An Australian-born physicist-turned-biologist from Oxford University, May this week becomes biologist-turned-advocate when he takes up the post of Chief Scientific Adviser to the British government. (See also Editorial, p. 1199.)

May assumes his new role at a time of great change in the political landscape of British science. Just 3 years ago, the government created the Office of Science and Technology (OST)—which May now heads—and attached it to the Cabinet Office, giving scientists a voice in the inner corridors of power for the first time in 30 years. But after May agreed to take the job, OST was abruptly transferred to the Department of Trade and Industry (DTI), a move that many British scientists regarded as banishing their concerns from the central court to the bureaucratic hinterlands. The shift was particularly worrisome because it seemed to signal that the government wants to tie publicly funded science more tightly to the needs of industry. "The great fear is that the DTI does not understand the complex, nonlinear interactions between industry and the science base," says physicist John Mulvey of the pressure group Save British Science.



May, however, believes there are opportunities in the shift: In an interview with *Science* a few days before he took office, he said the move "was likely to help us do a better job of capturing within the U.K. a bigger share of the wealth created by its strong science base." The constitution of the OST remains unchanged by the move, and May, like his predecessors, has direct access to the prime minister and will chair or attend all Cabinet Office committees dealing with science and technology. With responsibility for the research councils, which award grants to university-based researchers, handled by their director general, John Cadogan at the OST, May's job will remain principally to advise on science activities across all government departments. He says he does not come into the office with a "messianic set of new big ideas. I come with a feeling that a lot of good things have been set in train, and a large part of the responsibility is to consolidate that."

When May's appointment was first announced in June, it was greeted with a good deal of surprise. A researcher who spent 15 years at Princeton University before coming to Oxford in 1988, he has a distinguished record of fundamental research spanning topics from biodiversity to modeling the progress of HIV infection in patients. But he had relatively little experience in science policy. To May, however, his academic background stands him in good stead for the political battles that lie ahead. "I've moved from one area to the next often dealing with things that are complicated but where one believes that only a few of the many complex web of elements are really essential," he says.

**"I don't see [government service] as dramatically different from research as many people do."**

**—Robert May**

Often, when he has moved into a new area, he has found himself having to persuade his new colleagues to think in a different way—an experience he believes will come in handy when he works with politicians. Take his recent work on a mathematical model of the interaction between HIV and the immune system. "It's interesting science, but immunology does not have a tradition of mathematical models, and there are many in the discipline that do not yet see the point of it," he says. "The facts do not speak for themselves; they need to be put in eloquent and persuasive form," he adds. It's the same with politics: "What are the essential and inessential things, what are the points of leverage, and how do you present the insights one has gained ... in a way that compels assent. I don't see that as dramatically different from research as many people do."

His Oxford colleague Roy Anderson says May is "unusually able to explain complex problems in simple language." And work he has done through Britain's Joint Nature Conservation Committee to help protect biodiversity has been praised by watchdogs of government policy. "He's had a very positive impact and facilitated consultation with nongovernment organizations," says Tony Juniper, campaigns director of the pressure group Friends of the Earth. "May's work on biodiversity has influenced the Department of the Environment, but he now faces the much bigger challenge of working with some of the other departments."

In his new job, May will be aiming to protect not biodiversity but science itself. Unlike many of his scientific colleagues, however, he seems little worried by the government's enthusiasm for harnessing science to future wealth creation. In fact, he sees this linkage as essential to justify government spending on research. "Science lies at the heart of the economic future. I think the case is properly understood and cast-iron," he says. Indeed, he believes that message is already reflected in the distribution of government spending. "The fact that the budget for the science base has received a better projected future than government spending in general reflects that the case has been made analytically at the Treasury and that this is in the Treasury's interest," he says.

But that does not mean that basic science should dance to the tune of industry. Many scientists feared that's exactly what the government had in mind when it launched the national technology foresight exercise in 1993. An unprecedented effort to canvass the views of more than 10,000 researchers and industrialists in an attempt to identify promising technologies British industry could exploit in the future, the foresight exercise raised fears that fundamental research might be directed to these technological ends (*Science*, 12 May, p. 795).

May, who will now oversee the implementation of the results of this massive effort, says: "I think everyone sees the foresight exercise primarily not as picking winners and not trying to get people in universities indulging in product development." Instead, he says, the intent is to have "all the diversity of players talking to each other more." And although he staunchly defends pure science, May thinks basic researchers should not consider industry as the enemy. "Too often people in universities forget that the whole of thermodynamics came after people had built heat engines and wanted to understand them. A lot of problems in industry generate exciting questions," he says.

Implementing the foresight exercise will be May's biggest initial task, but he says he intends to put high priority on continuing an inquiry into the status of women in science, which was begun under his predecessor, William Stewart. He also plans to address problems in science careers, particularly the

growth in the use of short-term contracts for university researchers—the United Kingdom has moved toward a pattern more familiar in the United States in recent years.

May is enthusiastic about the potential for scientific cooperation at the European level. "In environmental topics there is going to be an increasing need for things on a European scale," he says. As one example he argues that a series of studies of ecological communities from the Mediterranean to the far north of Europe is needed to act as a baseline for analyzing the effect of increases in atmospheric carbon dioxide input in 20 or 30 years' time.

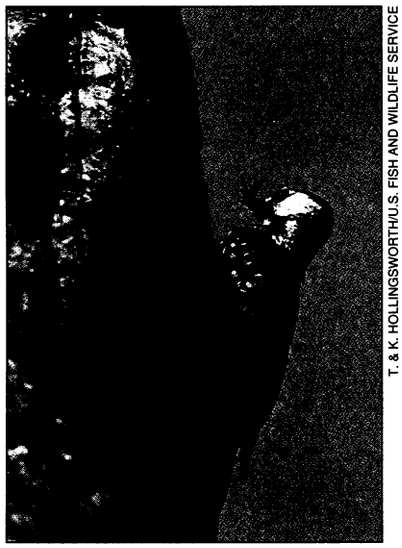
Although he's never one to languish in a particular field for too long, May strongly implies that he intends to remain in his new job, no matter which party wins the next general election. "It is worth emphasizing that this is a 5-year appointment that is independent of who is in political power," he says. And he adds: "Like all civil-service appointments, it is jealously and rigorously protected from political input." But he's not yet ready to make a complete transition from scientist to government official: He has an agreement that his new job will allow him to spend 10% of his time continuing his work on theoretical immunology and biodiversity. This, he says, will "help retain street credibility."

**–Nigel Williams**

ENDANGERED SPECIES ACT

# Incentives Offer Hope for Habitat

A quarter century after being placed on the government's first list of endangered species, the red-cockaded woodpecker remains on the brink of extinction. But this year, the federal government and major landholders in the Sandhills region of North Carolina are negotiating a novel agreement that could do more for the woodpecker's chances of survival than 25 years of federal regulation. Instead of banning all development on the woodpecker's habitat until the bird is no longer endangered, the agreement would allow landowners to develop property later if they restore tracts of land now to increase the number of potential nesting sites. The goal is to give an immediate boost to the woodpecker's chances of survival and buy time to develop alternative conservation plans if landowners eventually develop the land.



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**Lofty goal.** Plan offers tax incentives to save woodpecker's habitat.

The Sandhills agreement would be a radical change from how the federal Fish and Wildlife Service (FWS) enforces the Endangered Species Act (ESA). But it could be a prototype of a new approach to species preservation that is attracting growing political interest: Instead of threatening private property owners with fines or jail for harming endangered species—the agency's current method of enforcing the ESA—the agency would offer financial incentives, from tax breaks to future development rights, to owners who choose to protect species. While such incentives are not prohibited under the act, they have only recently been seen as a practical alternative to enforcement. Indeed, in July such an approach was endorsed by a coalition of scientists, environmentalists, and business people in a report* from the Keystone Center, a Colorado-based nonprofit organization that mediates contentious issues in the environment, biotechnology, and other fields (see Policy Forum, p. 1231). According to congressional aides, the incentives recommended in the Keystone report are likely to form the backbone of major bills to be introduced this month that would revise the act but keep it alive. "Incentives will be the main vehicle for making the act more reasonable" for private property owners, says a House aide.

Preserving the ESA would please many scientists. Last spring a report from a National Research Council panel concluded that the law's approach to protecting endangered species is scientifically sound (*Science*, 26 May, p. 1124). And the preservation of critical habitat—the main method of asserting this protection—got a ringing endorsement this summer from the Supreme Court (*Science*, 7 July, p. 23). "The great strength of the act is the close tie between species and habitat protection," says University of Tennessee ecologist Stuart Pimm.

The Keystone report represents an unlikely consensus of 32 scientists and land managers from industry, environmental organizations, and the government. "Given the diversity of people, it was remarkable that there was such unanimity in the report," says panel member John Doggett, director for governmental relations at the American Farm Bureau Federation, which has lobbied to make the act easier on small landowners.

The report suggests ways to entice private landowners into managing land in a way that benefits endangered species. To date, their reluctance to do so has been the act's Achilles heel. For instance, farmers in California's Central Valley will often plow certain plots rather than letting them lie fallow to prevent kangaroo rats from making their burrows in the fallow ground, says Environmental Defense Fund wildlife program chair Michael Bean, a Keystone panel member. The reason? Providing homes for the endangered rats would subject farmers to ESA-related restrictions on future development.

The kangaroo rat illustrates how the ESA has been "all stick and no carrot," says Bean. The Keystone report's recommendations, he notes, "add a lot of carrots to the mix of strategies for achieving the act's goals."

One tempting morsel would be tax reform. Tax codes often value land according to its "highest and best use," that is, after development. As a result, according to the Keystone report, property-tax rates "function as a deterrent to the maintenance of natural habitat on which many species depend." The report suggests a tax credit for land on which the owner has agreed to specific conservation measures, or for land harboring an endangered species that is donated to a conservation group.

The report also recommends that the act encourage landowners to take voluntary steps to maintain, enhance, or set aside habitat. One such mechanism is the Sandhills "safe harbor" agreement. That provision is an attempt to halt the continuing decline of the red-cockaded woodpecker by promising future development in return for the immediate protection of the old stands of longleaf pine that are the bird's habitat. Under the "safe harbor" proposal, about 30 pairs of birds would gain nesting sites after the removal of hardwood trees that have invaded the 6100 hectares of longleaf stands, inhibiting red-cockaded woodpecker colonization. The woodpeckers prefer open pine forests to the denser mixed hardwood and pine forests becoming more prevalent in the Sandhills region. "In the absence of this kind of assurance, private landowners are going to consider endangered species on their lands inimical to their interests," says

* "The Keystone Dialog on Incentives for Private Landowners to Protect Endangered Species," The Keystone Center, 25 July 1995.