New Biotechnology Research Program in Britain

The British government is drawing up plans with several large food manufacturers for a long-term program of jointly funded research into key areas of biotechnology, using a strategy of linking the activities of scientists in industrial companies, government laboratories, and university departments that have already been successfully adopted for microelectronics research.

Details of the new program are currently being finalized by study groups that have been set up in three areas, covering food, plant, and animal sciences, and are expected to be announced later in the summer. Total expenditure is expected to be around $100 million over a 5-year period, with half the money being provided by the government and half by private industry.

Government officials in London say that they are pleased with results obtained so far from a series of collaborative research projects in microelectronics launched 2 years ago on a similar basis, the so-called Alvey Program (*Science*, 20 May 1983, p. 799).

In the light of this experience, Geoffrey Pattie, the Minister of State responsible for technology policy in Britain's Department of Trade and Industry, told a conference in London recently that there was "scope for collaboration" other technological fields, in particular in what he called the "agri-food business area."

"Currently discussions are going on with companies and research institutes to identify longer term research requirements which will eventually lead to improved efficiency in food production and processing," Pattie said.

Those currently involved in these discussions are said to include representatives of three of Britain's five research councils, five major food and chemical-products companies (Unilever, ICI, Shell, RHM, and Cadburys Schweppes), and the Agricultural Genetics Company, set up last year to find and stimulate the commercial exploitation of agricultural research being carried out in government laboratories.

The new British program will parallel a similar scheme currently being developed by the Commission of the European Economic Community, based in Brussels, which has recently been approved by the research ministers of the ten EEC member states.

—DAVID DICKSON

House Opens Broad Science Policy Hearings

The House science committee's Task Force on Science Policy kicked off an extensive series of hearings on 17 April, beginning with testimony from the nation's major research museums. The museums, which got on the docket at their own request, are attempting to establish a political presence as their research requirements are increasingly outstripping their revenues.

In response to the problem, museums in Philadelphia, New York, San Francisco, and Chicago last fall formed a group called the Associated Natural Science Institutions. According to John W. Fitzpatrick of Chicago's Field Museum of Natural History, museums are devoting a growing portion of their resources to graduate education as collections are becoming more and more centralized. [Recent evidence of the centralization trend is Princeton University's decision to donate its large vertebrate paleontology collection to Yale University (*Science*, 5 April, p. 38)].

The congressional hearing was mainly devoted to describing the crucial role of natural collections in furnishing primary data for research on everything from evolution to environmental toxins. Describing their public exhibits as only the "tip of the iceberg," speakers stressed the need for more fieldwork, particularly in the face of the accelerating rate of species extinction, and for more laboratory and computer facilities.

Although witnesses refrained from asking for new legislation, they expressed special concern about the future of systematics. Robert McCormick Adams, director of the Smithsonian Institution, noted that "people who would have been trained in systematics are now moving into biology at cellular, molecular and genetic levels." Museums are increasingly carrying the burden of graduate student training but, said Fitzpatrick of Chicago, they cannot get money for that purpose from existing federal fellowship programs. The manpower situation promises to deteriorate, according to the witnesses, who said there are only 2000 trained systematists at the nation's 4000 major collections, which are growing by 3 percent a year.

The House task force study is a comprehensive undertaking that has been picking up new areas of interest as it rolls along. The 2-year study was launched in January. Hearings for the rest of this year are scheduled as follows:

23–24 April: Industry's view of federal science policy

25 April: Big science: High-energy physics

2 May: The future of U.S. science

14 May: The Nobel Prizes and science policy

21–22 May: Government and the research infrastructure

18–20 June: International cooperation in science

25–26 June: Science in the political process

9–11 and 23–25 July: Science and engineering education and manpower

10–12 September: Impact on science of the information age

17–19 September: The role of the social sciences

2–4 October: Science in the mission agencies

22–24 October: Science in government laboratories.

—CONSTANCE HOLDEN

Baby Doe Regs Set

The Department of Health and Human Services has published final "Baby Doe" regulations which are scheduled to go into effect 15 May.

They are designed to implement the newly reauthorized Child Abuse and Protection Act, which broadens the definition of child abuse to include the withholding of "medically indicated treatment." Treatment may be withheld when it is judged to be ineffective in "ameliorating or correcting" an infant's "life-threatening conditions," when it only prolongs dying, or when the infant is irreversibly comatose. The rules specify state and local procedures for Baby Doe cases and are

designed to eliminate grounds for federal intervention.

The American Association of Pediatrics (AAP), which spearheaded the opposition to earlier HHS-proposed guidelines, regards the final rules as a "significant victory," according to AAP lawyer Stephan Lawton. Even after the child abuse act was passed, HHS was preparing to issue guidelines with provisions engineered by the right-to-life community. These were relegated to an appendix after intercession by the six senators, including Orrin G. Hatch (R–Utah), who hammered out a legislative compromise last summer.

—CONSTANCE HOLDEN

Panel Examines Costs of Nuclear Warheads

Last year, two senior senators on the Armed Services Committee became indignant about the sharply rising cost of nuclear warhead production, now paid by the Department of Energy (DOE). Arguing that the Department of Defense (DOD) is the primary culprit, because it selects the design and sets the number of warheads to be produced, Senators John Warner (R–Va.) and Sam Nunn (D.–Ga.) proposed to shift all production costs to the Pentagon's budget.

Not surprisingly the proposal was defeated, but in its ashes rose a study group known as the Blue Ribbon Task Group on Nuclear Weapons Management, which began a series of hearings on the topic last month. Its members, appointed partly by Congress and partly by the White House, include Harold Agnew, a former director of Los Alamos National Laboratory; William Clark, President Reagan's former national security adviser; Alan Furth, president of the Southern Pacific Company; Jeane Kirkpatrick, a former U.S. representative to the U.N.; Frederick Kroesen, a retired general who commanded the U.S. Army in Europe; William Perry, a former under secretary of defense for research and engineering; and James Schlesinger, a former secretary of defense.

One of the group's first tasks is to determine exactly how much warhead production costs have risen in recent years, a topic of some dispute between Congress and the Administration. Thomas Cochran, a senior staff scientist at the National Resources Defense Council, estimates that overall the government is spending roughly six times what it did in the 1950's to produce a single modern warhead in constant dollars. But this estimate is based on unclassified data, and the panelists—who all have high-level security clearances—might reach a different conclusion.

A second goal is to determine if the DOD should indeed fund warhead design and production, or whether costs can be reduced through less sweeping reforms. Nunn and Warner have told the group that as long as DOE is paying the tab, the Pentagon has little incentive to restrain its appetite for numerous warheads of complex design. They now believe that DOE should remain in control but receive total reimbursement from DOD. Others, including the directors of the weapons laboratories at Livermore and Los Alamos, have told the group that such an arrangement would threaten their independence.

Thus far, the group has also heard from a half dozen retired weapons officials, Alton Keel of the Office of Management and Budget, Secretary of Defense Caspar Weinberger, Secretary of Energy John Herrington, and various officials at the Strategic Air Command, which supervises warhead planning and targeting. All of the meetings have been closed. The group's report is due by 15 July.

—R. JEFFREY SMITH

Utilities Look to New Coal Combustion Technology

A large number of electric utilities that face having to build new generation capacity in the 1990's are choosing to erect coal-fired units rather than nuclear power plants. But concerns about the outcome of the acid rain debate and other clean air issues that may spur stiffer emission standards have caused utilities to move cautiously. Now the industry appears to be on the verge of making a fundamental shift away from conventional coal boilers to more advanced coal combustion technology.

As many as 12 electric utilities are actively considering building integrated gasification combined-cycle (IGCC) generating plants with capacities in the 350- to 400-megawatt range between 1993 and 1995, says Dwain Spencer, vice president of advanced power systems for the Electric Power Research Institute (EPRI). Three site-specific studies already are underway by Potomac Electric Power, Cleveland Electric Illuminating, and Northeast Utilities. Nevada Power and Southern California Edison also are said to be looking at the technology, which ties a Texaco coal gasifier to a gas turbine.

The utility industry's enthusiasm for IGCC technology springs from the operating results of the Cool Water Coal Gasification Project in Daggett, California, which began operating in 1984. The 100-megawatt demonstration plant converts 1000 tons of subbituminous coal per day into synthesis gas. An oil-fired utility boiler with the same power rating would require 4300 barrels of oil per day.

"IGCC offers significant environmental advantages," says Spencer, Operating results from Cool Water indicate that sulfur dioxide removal rates of 95 percent can be easily achieved, along with major improvements in controlling emissions of nitrogen oxides. Furthermore, the IGCC process does not penalize the utility by robbing it of as much as 10 percent of its generating capacity. In contrast, most new coal-fired plants require flue-gas scrubbers that consume a significant portion of a generating station's power.

Utility-scale development of the technology has been largely carried out by EPRI and a consortium of companies: Texaco, Inc., Southern California Edison, Co., Bechtel Power Corp., General Electric Co., and Japan Cool Water Program Partnership, a Japanese consortium. The U.S. Synthetic Fuels Corporation, however, has provided $120 million in price guarantees to assure that the facility operates for 5 years or until it produces 20 trillion cubic feet of synthetic gas. The price guarantee covers the difference in the market price of the electricity produced from the synthetic gas and a base price for the Cool Water gas of $12.50 (1983 dollars) per million Btu. The rate then falls to $9.75 per million Btu following production of the first 9 trillion cubic feet of gas from the plant.—MARK CRAWFORD