SCIENCE & TECHNOLOGY

Yellow Fever's Comeback

"The Ghost of Yellow Jack" by Jonathan Leonard, in *Harvard Magazine* (Mar.-Apr. 1981), 7 Ware St., Cambridge, Mass. 02138.

The disease killed 4,000 Philadelphians in 1793, and it so decimated Memphis, Tenn., that the city lost its charter in 1878. Last seen on an epidemic scale in this country in 1905 (in New Orleans), yellow fever appears to be making a comeback after nearly two decades in abeyance in the Western Hemisphere. So reports Leonard, a free-lance writer.

The yellow fever virus, which attacks the liver and kidneys, was transmitted in American cities by an urban mosquito called *Aedes aegypti.* The *aegypti,* writes Leonard, is a "human camp follower"—like the cockroach. Its larvae die in moving water, and other mosquitoes' larvae eat them in swamps and ponds. But in the stagnant water of roof gutters, flower vases, and old beer cans, they thrive.

In 1947, the member states of the Pan American Health Organization launched a massive attack on *aegypti,* which cleared most of South and Central America of the mosquito by 1960. But, relying on vaccination and the availability of DDT pesticide, U.S. health officials never launched a serious campaign to clean up *aegypti's* choice breeding spots. Protests from Mexico finally sparked a belated program in 1962; but house checks met strong citizen resistance, and many breeding sites remained when the effort was dropped in 1969.

The U.S. failure to wipe out *aegypti* takes on threatening dimensions because the yellow fever virus continues to flourish in impregnable jungle refuges, living in a cycle traveling between monkey and jungle mosquito. In 1978 alone, 200 people contracted jungle yellow fever in Latin America. If one of them had arrived in a Southern U.S. city and been bitten by an *aegypti,* a yellow fever epidemic could have started here.

Urban yellow fever has not yet reappeared in Latin America, but jungle yellow fever cases are on the rise. Moreover, dengue (or "breakbone fever"), also borne by *aegypti,* has been spreading rapidly through Latin America, with 2.5 million cases reported in the Caribbean in 1977. In 1980, a Brownsville, Texas, woman contracted the first U.S. case (not imported by a tourist) since 1945. Yellow fever, Leonard suggests, may not be far behind.

Academic Overruns

"Indirect Costs of Federally-Supported Research" by Kenneth S. Brown, in *Science* (Apr. 24, 1981), 1515 Massachusetts Ave. N.W., Washington, D.C. 20005.

In 1979, the U.S. National Institutes of Health (NIH) awarded $1.58 billion in research grants to universities. But nearly 27 percent of that sum ($422 million) never reached the laboratory. It was collected to recoup "indirect costs," or overhead, by academic administrators.

Brown, a physiologist at the University of California, San Francisco,

medical school, writes that dramatic increases in the overhead share of federal research grants are depriving scientists of valuable funds for their research. In 1966, for example, just over 12 percent ($53 million) of the NIH's total research grant budget went to indirect costs—from maintaining laboratory facilities to paying university managers—while $378 million directly underwrote research. By 1979, the allotments for indirect costs had jumped eightfold, while direct funds had risen only threefold.

The erosion of the federal research dollar began with a 1966 U.S. Bureau of the Budget decision that permitted universities to renegotiate their overhead allotments yearly, instead of abiding by a fixed percentage fee (16 percent of total direct costs in 1965). Today, panels of scientists carefully judge the scientific merits and direct costs of individual grant proposals. But there is no similar system for assessing indirect costs before—or after—a grant has been awarded.

University administrators not only lack incentive to keep overhead costs low, but they find it pays to allot as many expenses as possible to the overhead category so that the proposed projects seem less costly to federal evaluators. Partly as a result, indirect cost rates vary tremendously—from an average level of about 25 percent on University of California campuses to Yeshiva (N.Y.) University's 63.8 percent.

Since World War II, universities have undertaken much research at Washington's urging, and the federal government should assume some of the resulting overhead expenses, writes Brown. Yet faculty careers and university reputations are largely built on research. Since the colleges gain, they should share the financial burden. Brown urges the government to re-establish its old practice of supporting universities for research overhead at a fixed rate.

RESOURCES & ENVIRONMENT

Sea Power

"The Shining Seas" by Abrahim Lavi and Gay Heit Lavi, in *The Sciences* (April 1981), New York Academy of Sciences, 2 East 63rd St., New York, N.Y. 10021.

Sea water on the ocean's surface heated by the sun's rays is much warmer than water thousands of feet deep. Some scientists now believe that this temperature gap represents an energy source that could provide millions of kilowatts of electric power by the 1990s.

Ocean thermal energy conversion (OTEC) works on the same principles as a conventional steam power plant, according to the authors, both researchers at Energy Research and Development, Inc., in Pittsburgh. In steam plants, water is heated in a boiler. The resulting steam