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COVER: Spores of a fungus are germinating—making infectious units called conidia. If the conidia get inside insects, they put out roots, or mycelia, that kill the insects. The mycelias then produce more spores, and the process starts over again. The spores are being used to control potato plant aphids. See p. 40. (Photo: Frederick Holbrook, USDA, Orono, Me.)

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Health and the White House

A White House conference on health for the nation's medical writers last week offered a tantalizing peek into Administration thinking about its upcoming medical legislation, but left uncertain the future of several existing programs. Specific projects for improving distribution of blood and treatment of lymphocytic cancers were also announced.

Secretary of Health, Education and Welfare Caspar Weinberger told the reporters that an "impressively comprehensive" national cancer program would be unveiled shortly and that the Administration would submit its National Health Insurance (NHI) program to Congress in late September. Weinberger said the new NHI proposals would go substantially beyond those submitted last year and would probably involve one of two options: a combination of employer-mandated coverage plus federally financed catastrophic protection, or a national plan modeled after the Federal Employees Health Benefits Program. Whichever option is chosen, he said, "we will assure that all Americans have access to basic comprehensive health insurance."

Henry E. Simmons, deputy assistant secretary of HEW, announced formation of a national blood policy, the details of which will be worked out in conferences this summer with various private and public groups involved in the blood supply system. "There is no overall shortage of blood," he said, "just widespread mismanagement of this vital national resource." Under the present system some 20 percent of donated blood is subject to no government regulation at all, leading in some cases to skid-row bums supporting themselves by selling their blood, which is often contaminated with hepatitis. Some 17,000 overt, transfusion-spread hepatitis cases occur each year, with 850 fatalities, Simmons said. And the present system is inefficient enough to cause 25 percent of the collected blood to become outdated and unfit for transfusion. The new program would eliminate the selling of blood, provide for strict screening of donors, and utilize new techniques such as freezing blood to cut down on hepatitis.

A similar program for providing better treatment of lymphocytic cancer by making better use of existing facili-

Much of the editorial content of this issue is devoted to reports on biological research related to human problems. It is one of several issues of SCIENCE NEWS in the coming year that will emphasize a single subject.—Ed.

ties and technology was announced by Frank Rauscher Jr., director of the National Cancer Program at the National Cancer Institute. Seven primary hospitals spread throughout the country would work with over a hundred regional hospitals to ensure that persons suffering from acute lymphocytic leukemia, Hodgkin's disease and non-Hodgkin's lymphomas would have prompt referral to the country's best experts in the field and receive the best available treatment. At present, Rauscher said, 90 percent of patients with acute lymphocytic leukemia have long-term remission of the disease after receiving the best available treatment. Half of them are alive and apparently disease-free after five years. But only 25 to 30 percent of those who have the disease receive optimum treatment, resulting in many needless deaths.



John H. Douglas

Rauscher: Best available treatment.

Other speakers, including special Presidential adviser Melvin Laird, promised the Administration would actively push programs guaranteeing adequate medical care to all Americans, without worsening inflation. The writers wanted to know about the fate of existing "Great Society" projects such as the Regional Medical Programs (RMP), pediatric pulmonary care centers and mental health care centers. They are "under review," came the reply. Would the Administration push for quality control of the medical profession through peer review boards, despite violent opposition from the

A new step toward controlled fusion

Physicists at Princeton University have demonstrated a new technique for heating a plasma, the hot, fluid-like, conductive mass of ions from which scientists hope someday to obtain useful amounts of fusion energy. The development makes possible a new round of experiments in the long process of creating a thermonuclear reactor.

The new heating technique involves accelerating deuterium ions to high energies before injecting them into Princeton's Adiabatic Toroidal Compressor (ATC), a doughnut-shaped plasma machine of the tokamak variety. Raising the temperature of the magnetically suspended plasma has been one of the three main problems facing fusion researchers. To get more energy out of a plasma than is put into it, a mixture of deuterium and tritium ions must be heated to roughly 100 million degrees C., and a high density must be achieved without letting the plasma spread. The ATC last year became the first tokamak device to achieve the minimum density believed necessary for an operating fusion reactor (SN: 11/25/72, p. 341), allowing scientists to concentrate on improving temperature and confinement time.

The latest achievement was announced last week by the Atomic Energy Commission.

H. P. Furth, who originated the ATC experiment, says the importance of hot-ion injection is that it can immediately be applied to much larger machines. In the ATC, plasma is first heated to 2 million degrees by running electrons through it. Next it is compressed magnetically until a temperature of 6 million degrees is reached. Then, in the new technique, positively charged deuterium ions are accelerated to high energy, passed through a gas to pick up electrons that neutralize their charge, and shot into the waiting plasma, heating it to 7 million degrees C. (Neutral particles cannot be accelerated; charged particles cannot pass directly through a magnetic field.) "The charming part," Furth told SCIENCE NEWS, is that very little acceleration was necessary to demonstrate the heating effect, which can now be very greatly increased for larger machines.

The first large fusion device to use neutral-beam heating will probably be the Princeton Large Torus (PLT), scheduled for completion in 1975. By increasing the size of the plasma ring from ATC's 21-centimeter radius to one meter, and adding the accelerated deuterium beam, the new machine may reach the half-way mark toward the 100-million-degree goal.

AMA? "I think that we are slowly bringing these people into the real world," replied Assistant Secretary Charles Edwards, "which recognizes that we all . . . have a hell of a lot of people looking over our shoulder and providing a certain amount of quality control."

Still, many of the medical writers remained openly skeptical, noting that many of the HEW proposals had yet to run the gauntlet of White House staffers, including the Office of Management and Budget, which trimmed so many of last year's medical programs. "I'll believe it when I see it," sighed one veteran reporter. □

The 4 choices in EPA's 'other great debate'

The Environmental Protection Agency last week announced a series of public hearings on four new pollution-control proposals, drafted in response to recent court decisions (SN: 6/16/73, p. 384) and designed to protect pristine areas of the country from "significant deterioration" of air quality.

The hearings to help determine which of the four proposals should finally be

adopted will form part of what acting EPA Administrator Robert W. Fri calls the "two great debates" over environmental quality: the transportation debate to decide the limits of personal vehicle traffic and the land-use debate to decide the limits of economic growth in the nation's cleanest regions.

The four proposals offer different methods of minimizing emissions from new sources of air pollutants and for

determining where to build them.

- The first proposal would classify all affected regions as zone II (see chart) by limiting the increase of ambient pollutant concentrations to the specified values. The effect, Fri said, would be to discourage new development so much as to force industries to concentrate even further in urban areas.

- The second proposal would limit emission increases rather than ambient air pollution increases. Sulfur dioxide emissions could increase by only 20 percent per year above 1972 levels in a region, or by 10 tons per year per square mile, whichever was greater. Particulate emissions would be similarly limited to 20 percent or 3 tons. This plan would provide greater flexibility in locating new industrial plants, but might lead to clustering of plants, resulting in higher local pollution.

- The third proposal would turn the whole matter over to the states, giving local authorities the power to decide, within limits, what to do about new development in "clean" areas, but raising the possibility of widely varying standards and the application of high-pressure salesmanship.

- The fourth proposal would allow states to divide their territory into zones I or II (see chart). Almost no new development could take place under the restrictions of zone I; limited development could proceed in zone II regions.

The effect of zone II standards would be to limit such regions to development at the level of "light industrial and residential complexes." A large, well-controlled coal burning electrical power plant could be built in such areas, for example, if wind and terrain would allow sufficient dissipation of its emissions.

The Sierra Club, which initiated the original suit to forbid any significant deterioration of already clean air, called the proposals "flagrant violation" of the law and of the court decision. It announced plans to begin new litigation in the matter immediately. □

4 STATES SELECT AMONG ZONES OF MAXIMUM ALLOWABLE INCREASES IN AIR POLLUTION CONCENTRATIONS

	PARTICULATES		SULFUR DIOXIDE	
	ANNUAL	24 HOUR	ANNUAL	24 HR. 3-MO.
ZONE I	5	15	2	5 25
ZONE II	10	30	15	100 300

NOTE: The secondary ambient air quality standards are:

PARTICULATES		SULFUR DIOXIDE	
ANNUAL	24 HOUR	ANNUAL	24 HR. 3-MO.
60	150	60	200 1000

John H. Douglas

Fri explains proposed standards for clean areas (micrograms/cubic meter).