

## Flu vaccines: Double protection

Flu vaccines were first made in the late 1930's. Since then, the Public Health Service, the Food and Drug Administration and pharmaceutical companies have worked to make them increasingly safe and efficacious. The potency of the 1972-73 vaccines was doubled over the previous year because, as Robert J. Rubin of the PHS' Center for Disease Control in Atlanta explains, "We were able to make a more potent vaccine while at the same time reducing the number of side effects." Yet investigators are only now grasping how flu vaccines protect the body immunologically.

Flu vaccines are recommended for older persons and the chronically ill. So Richard P. Wenzel and his team at the University of Virginia School of Medicine examined the impact of a 1972-73 vaccine on middle-aged and elderly volunteers. As they report in the Oct. 22 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, they found an ample rise in antibodies in the bloodstreams of the volunteers. So they believe that the effort to increase the potency of flu vaccines was wise.

They also found a rise in nasal antibodies in their volunteers. This is the first time that flu vaccines have been shown to act on nasal antibodies. With nasal antibodies, says Wenzel, "maybe you'll have not only better protection for yourself, but for your family or whomever you come in contact with, since the virus might be neutralized then and there."

The Virginia physicians also found a direct correlation between flu-vaccine-triggered antibody responses in the bloodstream and in the nose. The higher the one, the higher the other. "In the past, investigators said nasal antibodies were important, or blood antibodies were important. But we've been able to correlate the two," says Wenzel. "When you get the one, you get the other from injectable vaccines."

Besides antibodies, cell-mediated immunity is the body's other major defense against infections. But hardly anything is known about the impact of flu vaccines on this kind of immunity. "It needs a lot more work," Wenzel admits. "It may be the crucial thing." □

## Phosphate ban revives a New York lake

Recent legislation restricting phosphate content of detergents in Syracuse, N.Y., has significantly improved the ecology of nearby Onondaga Lake, according to a study conducted by Cor-

## Lessons in the leaves of Appalachian autumn

## OFF the BEAT

*After writing this week's cover story on land use (p. 266), Science and Society editor John H. Douglas went hiking and backpacking in the Appalachian mountains, where he wrote these comments.*

Again the leaves redden across Appalachia. After several years absence, in the unchanging jungle of tropical Asia and the evergreen forests of northern California, this writer is rediscovering the sudden yellow flash of elm against a woods still green with summer, and the slow mottling of maple leaves that finally crowns with scarlet the autumn splendor. To those of us raised among these ancient and individually unspectacular mountains (mere "hills" Californians call them), autumn almost anywhere else in the world is usually a little disappointing.

A gentle land, impoverished by its wealth and by its beauty. Rich in coal, many parts of Appalachia have been devastated by strip mining. A land of secluded beauty, the rugged terrain can support only a few farms. Their scattered lights gleam at night, the lonely sentinels of a proud and independent people; and solitary church bells still make the valleys ring on Sunday morning.

These mountains are still as much a frontier as when Daniel Boone and most of those who followed him passed them by to push farther westward. This and other forgotten frontiers will surely be re-explored if the prediction made in this week's cover story by Sen. Henry Jackson comes to pass—that American "development," its buildings, its roads, its cities, will double before the turn of the century. How then can America rediscover and develop this land without destroying it?

If the march of "progress" during this next great period of development is to be less destructive than was the last, some forgotten frontiers of the American spirit must also be rediscovered. Before all must come what a hymn of the early, pious settlers here called "the gift to be simple."

That means respecting our cities and treating them as deeply private, as well as public, places—protecting them from destruction in the same spirit we preserve our national parks. It means breaking the profligate cycle of consume more, waste more, dispose more. One who appreciates simplicity does not have to drive a motorized living room into the woods to enjoy nature, or roar along peaceful trails with motorbikes and snowmobiles, or treat a campground as only a secure place to smoke dope and turn a transistor up as loud as he wants.

Other cultures have faced the trauma of crowding and urbanization far longer than we and their example has much to offer. Tiny Japan is literally covered with national parks and even downtown Tokyo has numerous gardens where one can escape both sight and sound of bustling life. Throughout Europe, simple hostels and rough mountain huts make nature accessible to young and old, while largely reducing a mechanized rape of the land.

By providing a little development of some natural areas, and encouraging better public transportation to them, recreation planners can do much to prevent the spontaneous introduction of development that is much worse. By concentrating on making cities fit to live in and assuring the simple right of life with dignity to every citizen, urban planners could similarly do much to stop the random spread of restless suburbs.

But the gift to be simple is a state of mind and can only be learned through direct experience. More than doing without, it means finding joy in *all* that one has. Simplicity is not incompatible with urbanization or modernization; rather, it is the only way to survive them. That is the lesson of the changing leaves in Appalachia.

nelius B. Murphy, a chemist with O'Brien and Gere Engineering, Inc. The study showed that a year and a half after the ban went into effect, phosphate content of the lake had dropped 57.4 percent. This resulted in virtual disappearance of objectionable scum algae from the lake, for which the phosphate provided nutrients.

The scum-forming, blue-green algae

not only had made the surface of the lake a mess, but also had robbed oxygen from the water, killing off the lake's fish population. Since Federal funds to build sewage treatment plants are currently being held up, Murphy suggests in the Oct. 27 *SCIENCE* that phosphate-banning legislation could be one relatively inexpensive way to clean up lakes like Onondaga. □