

the loss of timber and wildlife, the erosion of exposed soil, and the air pollution resulting from major wildfires. They pointed to such conflagrations as the 1871 Wisconsin and Michigan fires that killed over 1500 people and burned 3 million acres as proof of forest fires' intrinsic evil. But in recent decades, ecological evidence has caused foresters to modify their blanket condemnation. "The average forester is taught that all fire is bad," said Edwin V. Komarek, head of the privately owned Tall Timbers Research Station in Tallahassee, Florida. "We've always overlooked lightning and lightning fire as a part of the climate." Komarek and other forest ecologists say that the artificial exclusion of fire has produced major changes in many forest plant communities that were dependent on fire as the chief regulator of vegetation types.

In California and the Southwest, tree-ring studies of ponderosa pine forests have indicated that ground fires—small blazes that spread through the turf and underbrush but not the treetops—swept through these areas at least once in a decade during prehistoric times. By preventing even these moderate ground fires from periodically clearing accumulations of litter from the forest floor, the policy of total fire suppression has made some woods easy targets for disastrous fires. In primitive times, periodic fires also prevented an understory of competing shade-resistant trees from developing, and thus gave the ponderosa forests an open, park-like appearance. But, in the absence of fire, understory trees have crowded the forest and weakened the taller pines through competition, Harold H. Biswell, professor of forestry at the University of California, Berkeley, told *Science*. Crown fires—the huge conflagrations that spread through the forest canopy—rarely occurred in primitive California forests, Biswell added, but this understory of trees has formed a new intermediate level of fuel between the canopy and the forest floor that encourages crown fires.

One biologist has advanced the theory that fire-exclusion policies may be a factor in the near-extinction of the California condor. Raymond B. Cowles of the University of California at Santa Barbara has suggested that the condor needs relatively long runways for take-offs, and clearings on ridgetops for feeding. With the prevention of fires, Cowles said, dense

plant growth has reclaimed these clearings and thus has narrowed the condor's ecological niche.

In Alaska, the permafrost layer complicates the relationship of fire to wildlife populations. "Fire has been an important part of the ecology of interior Alaska," said David R. Klein, leader of the Cooperative Wildlife Research Unit at the University of Alaska. When fire is excluded from many lowland sites, an insulating car-

pet of moss tends to accumulate and raise the permafrost level, he said, and permafrost close to the surface encourages the growth of black spruce, a low-growing species with little timber or food value. "These areas are veritable deserts," Klein said. Bear, deer, moose, and other animals depend on lightning fires to maintain a constant cycle of vegetation types for food and cover.

Other biologists at the University of

## Anti-Smoking Forces Gain Ground

Anti-smoking forces have put the tobacco industry increasingly on the defensive in recent weeks through a strong health report and congressional pressure that has forced the industry to announce plans to give up cigarette advertising on radio and television.

Last week HEW Secretary Robert Finch released a Public Health Service report that provides new evidence linking cigarette smoking with coronary heart disease, chronic bronchitis, pulmonary emphysema, throat and respiratory cancer, and—for the first time—with noncancerous diseases of the mouth. In addition, the 135-page report cites data suggesting that women who smoke during pregnancy may increase the risk of spontaneous abortion, endanger the lives of their unborn babies, and stimulate premature births. The report, entitled "Health Consequences of Smoking—1969 Supplement," may be obtained from the National Clearinghouse for Smoking and Health, PHS, 4040 Fairfax Drive, Arlington, Virginia.

Meanwhile, the tobacco industry, acting under pressure from Congress, has offered to drop all television and radio commercials by September 1970 or earlier. Tobacco industry spokesman Joseph F. Cullman III made the offer before a Senate Commerce subcommittee hearing, chaired by anti-smoking advocate Senator Frank E. Moss (D-Utah). Government officials say the industry's move is an attempt to avert strong federal regulation of cigarette advertising in all media by two government regulatory agencies, the Federal Communications Commission and the Federal Trade Commission, or by congressional legislation. In response to the tobacco industry's offer to halt advertising, Vincent T. Wasilewski, president of the National Association of Broadcasters, said the move would be "no great sacrifice" to the tobacco industry because it would save \$200 million in annual TV and radio advertising costs while it continued to advertise in the print media with "full knowledge" that the consumption of cigarettes "will not decrease."

Whether the ban on cigarette advertising will achieve the desired goal of reducing U.S. consumption of cigarettes certainly is not clear. An Associated Press survey released last week shows that, in Britain, Holland, Italy, Switzerland, and Poland, cigarette consumption has risen despite bans on radio and television ads for cigarettes in these countries.

Congress is continuing to wrestle with the question of whether or not the federal government should clamp down on cigarette advertising in all media. At the present, the federal government requires that the manufacturer place a mild health warning on the cigarette package. The House in June passed a bill sponsored by tobacco state congressmen that would place a harsher health label on the cigarette package but would bar the government for 6 years from requiring that cigarette advertising contain a harsh mandatory health warning. Moss, whose subcommittee is handling the bill, threatened to use a filibuster, if necessary, to keep such a bill from passing the Senate.—MARTI MUELLER