of explaining its procedures for applying for a grant." To which NSF gives an answer that can be summed up as "Nuts."

In any case, CENCO contends that the scientific community likes the offer. It hasn't supplied figures on the total mailing, but it apparently was a big one, and, according to CENCO, 39 per cent of the respondents checked the appropriate box. Incidentally, CENCO says it obtained the applications, without charge, from scientists of various disciplines, in big and small institutions, who in furnishing them understood the purpose for which they would be used.

While most segments of the scientific community can legitimately feel that developments in Washington are grounds for concern, the nation's radio astronomers have grounds for celebraing an impressive victory on a politically difficult issue—TV frequency allocation. At stake was the future of channel 37 (608–614 Mcy), which was wanted both by the radio astronomers and by a Paterson, N.J., broadcaster. The astronomers put together a forceful campaign, bombarding the Federal Communications Commission with some 150 letters and taking their case to the White House and Congress. Initially, the FCC said it was in a bind and was unable to provide Paterson with a substitute for channel 37, but it has now issued a formal order, reserving 37 for radio astronomy for 10 years, with the understanding that Paterson will be taken care of in some other way. The FCC majority opinion stated, "In view of the united interest of the scientific community in such a [frequency] reservation, and the vast potential offered by radio astronomy for adding significantly to our knowledge of the universe, we do not believe it to be in the public interest to close the door on, or even jeopardize, whatever benefits may be derived from such operations. . . ."

The channel 37 decision was adopted by a 3 to 2 vote, over a dissent which raised a variety of points. These included the curious observation that "some circles" seem to be arguing that the stuff now being produced on TV is of such poor quality that it surely cannot be preferred to the potential fruits of radio astronomy. The dissent, written by Commissioner Robert E. Lee and joined in by Commissioner Kenneth A. Cox, offered the view that "if science cares to perpetuate itself and make itself attractive to coming generations, it will see to it that the use to which television is put is not wasteful, but rather contributory to an enlightenment of the public."

Commissioner Lee, in response to a reporter's question, said it was the improvement of TV programming that he has in mind, and that he felt the scientific community should take it upon itself to help accomplish this result. Which would seem to be a very big order for a community that seems to be fully occupied taking care of itself, let alone taking care of TV.

Finally, as the dealine approaches for the administration to make a decision on the proposed MURA accelerator (*Science,* 11 October), the Ramsey Panel is being recalled, within the next few weeks, for another look at the issue. The panel, headed by Norman F. Ramsey of Harvard, left a certain amount of fuzz around the question of whether the MURA proposal should be accepted, and now that a considerable number of midwestern congressmen are ready to make MURA their Alamo, the administration wants its scientific advisers to take another look at the matter.—D. S. G.

Tobacco: Activity Masks Unrest In Industry as Government Smoking Study is Prepared for Release

"What do these statements have in common," asks a paper reprinted by the tobacco industry from the June 1963 issue of *California Medicine:* "Scrofula is cured 'by the laying on of royal hands'; . . . A good treatment for tuberculosis is horseback riding; . . . Gout is manifestly an affliction of the nervous system."

"Answer," the paper continues: "They were all believed correct by leading members of the medical profession at one time, but were later proved to be false. To this list," it goes on, "may be added the statement that cigarette smoking causes lung cancer."

Taking the riddles further on our own, one might ask: What is the difference between the cancer-tobacco link and the yellow fever-mosquito link? The main difference, it appears, is that the mosquitoes did not organize on their own behalf. The tobacco industry is making no such mistake: organization may not save tobacco from science, but it will not be for want of trying.

Since 1953 five of the six major tobacco companies have jointly supported the Tobacco Industry Research Committee, which finances independent research on tobacco-health questions and widely publicizes the results. Ten years and $5.65 million of research later, the position of the TIRC is essentially what it was in the beginning: "the causes of lung cancer are complex."

"We are not satisfied to let the problem rest with statistical reports suggesting that heavy smoking increases the risk of cancer of the lung," reported TIRC's scientific advisory board in 1960. "We are interested also in knowing why the overwhelming majority of heavy smokers do not contract the disease despite their smoking. We are also vitally interested in the meaning of the results, derived from the same data, that only a small fraction of the reported excess deaths in the heavy smoking group is attributable to cancer of the lung." Put another way, this seems like saying of the relationship between speeding and automobile accidents, that some people drive fast and never have accidents, and that fatal accidents occur in other circumstances. TIRC research, according to Michael Shimkin, a researcher formerly with the National Cancer Institute and now at Temple University, is "carefully chosen to avoid the major issues, and though it is often fruitful and interesting, and supervised by scientists of great integrity, it is almost never relevant to the immediate public health issue at stake in the tobacco controversy." The TIRC and some of its main antagonists, such as the American Cancer Society, are in basic agreement that lung cancer is a long-term response to a variety of causes; but the ACS is a good deal more convinced by the evidence that the major causative agent is tobacco.

The ACS is currently presiding over a major defection from tobacco's ranks, a new campaign called "Athletes Against Cancer," which features posters and radio spot announcement directed primarily to teenagers. "Think it over," advises Whitey Ford, Yankee pitcher who appeared in ads for Camels from 1953 to 1962. "Is smoking worth it?" "I don't smoke," says Bob Mathias, Olympic decathlon champion and chairman of the ACS campaign, beaming, the very picture of virility, from a photograph. "I don't think anyone who wants to be an athlete should smoke."

Another minor revolt occurred in October 1962 when the Air Force terminated free distribution of cigarettes in AF hospitals, clinics, and flight lunches. And earlier this fall, the industry itself announced voluntary

curtailment of its advertising in college newspapers, on the grounds that "it is not the intent of the industry to promote or encourage smoking among youth," a principle not always readily apparent in cigarette advertising.

Standing side by side with the TIRC since 1958 has been the Tobacco Institute, a lobbying and public relations outfit that, like the TIRC, is a sort of mutual defense pact among 12 tobacco companies. Essentially the Institute's job is to celebrate the role of tobacco in American life—historically, economically, politically—but it supports the work of TIRC on the scientific front by the bimonthly publication of "Research Reports on Tobacco and Health," a 4-page newsletter excerpting from primary medical sources all the evidence which points away from its titular function. A random selection of titles from two recent issues produces the following headlines: Scientists Discuss Viruses and Cancer; Lung Cancer Deaths 20% Overstated; Peptic Ulcers Found in Lung Cancer Autopsies; Heart Disease—Scientists Say Socio-Economic Stresses May Set the Stage. A loose-leaf insert in one recent issue reprinted, in addition, newspaper articles with the following headlines: Physician Says Prosperity Increases Lung Cancer; Smoking, Cancer Link Questioned; Cancer Rise Linked to TB Decline. Both the Tobacco Institute and the TIRC are guided by the New York public relations firm of Hill and Knowlton, known throughout industry generally as a good place to turn when you are in a tough spot.

The martyred and a bit desperate tone of many tobacco industry pronouncements (as well as the fact that, behind the scenes, tobacco companies are quietly purchasing interests in such diverse enterprises as fruit juice and razor blades) give the industry a good many of the overdefensive attributes of a collapsing empire. Such an interpretation, however, would be misleading, for although the industry's fortress is indeed under assault, it is not yet clear whether the attackers are toy soldiers or a genuine army. So far the army has been composed of scientists and special interest groups such as the Cancer Society, with the government failing to offer even tactical support. The government's paralysis has been penetrated only occasionally by calls for action by interested congressional parties, most notably Senator Maurine Neuberger (D-Ore.), whose new book, *Smoke Screen,* details a private war for governmental regulation of the tobacco industry. The public, by and large, although exposed in the press to accumulating evidence (and burgeoning refutations by TIRC), has not been offered any official guidelines.

The relevant government agencies—the Federal Trade Commission and the Food and Drug Administration—have been loath to step in, awaiting certified proof that tobacco is a hazardous substance whose products should be clearly labeled as such. Now, however, the curtain of inaction that was lowered in the summer of 1962 when Surgeon General Luther Terry, at a nod from President Kennedy, appointed an Advisory Committee on Smoking and Health, is about to go up.

Phase I of the Surgeon General's study, a review by ten experts previously uncommitted on the tobacco question, of evidence associating smoking with lung cancer and other diseases, is now being put into final form. The report has been "imminent" for nearly a year; it has now been definitely promised for sometime in December. Though no one is leaking the results, an impartial review of the evidence is, as one official put it, "unlikely to vindicate tobacco;" and, allowing for the discrepency between the languages of science and government and the language of newsmen, there is some reason to believe Drew Pearson's ebullient alter ego Jack Anderson who announced last week that the report would be "devastating." If all goes as planned, phase II of the study—recommendations for government action based on the findings—will follow later, giving smokers time to make their resolutions, industry time to assemble its defenses, and the agencies time to make their plans. There is, of course, no move to prohibit smoking, although the industry is quick to link critics with "do-good prohibitionists"; government action would be limited to some form of warning of tobacco's hazards.

There is still a good chance, however, that when the curtain goes up the actors will muff their lines, for there is little in the record to suggest that the government is anxious to begin a holy war on tobacco. The study itself had considerable difficulty getting under way: it was not easy to find ten scientists whose uncontested neutrality on the tobacco issue made them acceptable to industry as well as to the government and to voluntary health organizations; and when the man slated to be the staff director indiscreetly allowed, to his hometown newspaper, that the evidence "suggests that tobacco is a health hazard," he was speedily transferred. The job has not been made easier by periodic pronouncements by Anthony Celebrezze, Secretary of Health, Education, and Welfare (boss of the Surgeon General and a heavy smoker), that he did not think it "the proper role of the Federal government to tell citizens to stop smoking."

Once the study got started, however, it was bound, sooner or later, to get finished, and already there is considerable uneasiness in Washington about the release date. The FDA and the FTC are in no hurry to take on broad responsibilities for regulating tobacco advertising, even with the support of the Surgeon General. The Agriculture Department, which last year spent over $1½ million helping tobacco farmers improve techniques for production and marketing, is realistically worried, not only about the effect of a government pronouncement linking tobacco and cancer on the December crop auction but about the long-range prospects of the country's fourth largest cash crop. And although Kennedy is probably too adroit to permit the smoking report to be issued before Congress goes home, he can hardly welcome an ill-timed kick at an industry which contributes heavily to the economic well-being of North Carolina, Kentucky, Virginia, Tennessee, South Carolina, and Georgia.

On the other side of the fence is the fact that independent reputations, both political and scientific, are at stake in the tobacco report, and that the government is publicly committed to its release. It is an agonizing dilemma, for the government must promote economic as well as medical health, and it is not surprising that the whole project has been afflicted from the beginning with the disease President Lincoln once called "the slows." The ailment may get so bad, according to some cynics, that the smoking report will be delayed until after the 1964 elections. It is more likely, however, that the smoking report will be issued more or less on schedule, with more or less fanfare; that it will link tobacco more or less strongly with a variety of diseases; and that it will be followed by another tactical time gap while the administration makes up its mind what to do next.

—ELINOR LANGER