the country's Ph.D.'s goes abroad, but nobody knows how many of them return. There is no information about the visitors to Britain from abroad, though it is plain that until recently Britain has attracted scientists from the Commonwealth almost as easily as the United States is now attracting academics from Britain. It is, however, known that the present migration is not confined to scientists. Of the 160 university teachers who went abroad last year, one-third were humanists, one-third pure scientists, and one-third technologists.

The less tangible questions are even more poorly understood. How serious is the loss if scientists working in pure research move to the United States to work more effectively? Given the close cultural links between Britain and the U.S., perhaps the migration should even be welcomed. Certainly there is no doubt that the migration from Britain, however serious its consequences, is a necessary part of belonging to the western world. Perhaps the real cause for regret is that Britain seems not to be attracting scholars from abroad in numbers commensurate with her wish not to become an intellectual backwater. There is much that governments, American as well as British, could do to correct the imbalance. Nobody will in the long run profit if British universities lose their self-respect and their vitality after having made so many conspicuous contributions to western culture for so many centuries.

—JOHN MADDOX, Science Correspondent, *Guardian of Manchester*, England.

Tobacco Report: Agencies Ponder Action; Congress Takes the Lead with a $5-Million Research Plan

Reaction to the *Smoking and Health* report of the Surgeon General's advisory committee so far seems most evident in the private sector, among smokers debating with themselves on whether or not to quit, while the federal response is still in the "planning" stage.

The open-ended finding by the advisory committee that "cigarette smoking is of sufficient importance in the United States to warrant remedial action" has the responsible agencies pondering what remedies are appropriate. As for a projected second and follow-up phase of the Public Health Service study, which was to provide recommendations for specific measures, the word thus far is "no action."

Clues to the likely course of official action, however, were detectable in hearings held in late January before the tobacco subcommittee of the House Agriculture Committee on a proposal to fund a major program of research on "quality and health factors" of tobacco and other cigarette ingredients. A $5-million appropriation for the first year will probably be requested.

Some saw a causal relation between the tobacco report and the hearings which followed hard upon it, especially since the chairman of the Agriculture Committee, Representative Harold D. Cooley, and the subcommittee chairman, Representative Watkins M. Abbitt, are from North Carolina and Virginia, respectively, and are naturally concerned about the economic effects of smoking.

Support for Research

One knowledgeable Capitol Hill observer said that the industry and its friends had "nowhere to go but research." But however valid the lightning-rod theory may be, the idea of research in the cause of making smoking safer appears to be an acceptable one in Congress. The proposal sailed through the subcommittee and was reported out unanimously by the committee. The resolution seems ticketed for early passage in the House and is expected to receive sympathetic treatment in the Senate.

The subcommittee hearings revealed no prohibition sentiment against tobacco, nor any sign of a movement to curtail or dismantle existing programs of crop research, price support, and control of tobacco that are operated by the federal government.

Support for the new research program came from a variety of witnesses with widely differing standpoints on tobacco. The witness whose testimony ranged most widely over the possibilities for federal action on tobacco was Senator Maurine B. Neuberger (D–Ore.), Congress's most dedicated educator of the public on the hazards of cigarette smoking and the severest critic of tobacco-industry advertising and promotion practices.

Senator Neuberger accepts the view of the Surgeon General's advisory panel that, for a large fraction of the public, cigarette smoking "appears to satisfy the total needs of the individual for a psychological crutch."

She noted the panel's conclusion that cigarette smoking reflected man's tendency to "utilize pharmacologic aids in search of contentment," and that "in the best interests of the public health, this should be accomplished with substances which carry minimal hazard to the individual and for society as a whole."

As to the propriety of the government's helping to develop safer cigarettes, Mrs. Neuberger told the subcommittee, "the Surgeon General's committee included among its disturbing findings the judgment that cigarette smoking was 'habituating.' Surely the shadow of such 'habituation' bars us from dismissing the habitual smoker as undeserving of government assistance. He is not a willful suicide. And if he cannot be helped to abandon cigarette smoking, then we must do what we can to take the sting out of habituation by making cigarette smoking as safe as possible."

Mrs. Neuberger wants the Public Health Service to take the lead in a massive plan of public education to dissuade young people from forming the smoking habit and to inform adults of the dangers of smoking, and wants it to serve as a prime mover in a major research effort to make smoking safer.

She has called on the Federal Trade Commission, as censor of deceptive and unfair advertising, to take three major steps: (i) require that each cigarette package bear a cautionary "injurious to health" label; (ii) establish standardized testing services for determing tar and nicotine yields of cigarettes and require a statement of average yields by FTC test to appear on each package; and (iii) establish guidelines similar to those imposed in Great Britain by the Independent Television Authority to eliminate advertising which might make smoking attractive to children and adolescents.

Surgeon General Luther L. Terry testified in favor of the research bill but provided a rather sobering lecture on the complexities of making smoking safer. One bloc of witnesses—industry representatives, governors, legislators, and other officials from tobacco-producing states—were heartily in favor of research but tended to stress the economic stake of their constituents in the tobacco industry, an $8-billion-a-year business which yields about $2 billion a year to the federal government in tax revenue and about $1 billion to the states, and provides, as one congressman put it, the "pastime" of 70 million people.

There was not a great deal of questioning, hostile or otherwise, during

the hearings, and no special notice was taken of the fact that enactment of the resolution would send the Agriculture Department off on a decidedly new research tack.

The proposal, in the form of a House Joint Resolution (H. J. Res. 915), says, in part, "that the Secretary of Agriculture is authorized and directed to establish and place into operation at the earliest practicable date a special program of research into the production, handling, manufacture, and use of tobacco products and eliminate therefrom factors, properties or substances which may be detrimental to health. Such special research program shall include authority to establish and operate laboratories and field stations, including the acquisition of land or interest therein, as determined by the Secretary to be necessary. . . ."

The Department of Agriculture (USDA) now spends an estimated grand total of $2.3 million a year on all types of tobacco research, but this includes sums spent for marketing and economic research and for a wide range of industry-related projects, including the development of a mechanical tobacco picker. A sum of about $1.5 million a year is usually quoted as the estimate of federal funds which go mainly into crop research to improve the yield and quality of tobacco and develop types for which there is strong market demand.

As Nyle C. Brady, director of science and education for the USDA, told the subcommittee at the hearings, "the Department's research programs on tobacco have emphasized the quality factors and have not been directly involved with the effects of smoking on human health."

Brady followed the same cautious line taken by Terry when he said, "remedial action poses a problem of great difficulty since it is by no means certain at the present time what components of the tobacco leaf and smoke are the responsible agents, although many chemical agents have been implicated. Nevertheless, it is important that extensive investigations be undertaken to solve this problem both by chemical studies aimed at eliminating suspected carcinogens from the smoke and through genetic, cultural, physiological and chemical studies designed to eliminate harmful substances from the leaf."

Brady also noted what seems to be one of the most ominous clouds on the research-for-safety horizon when he mentioned that burning of non-tobacco vegetable material produces what has been identified as a carcinogen.

The USDA, Brady testified, plans a "redirected, intensive tobacco research program." Agriculture researchers would like to see a new laboratory established to follow the new line of tobacco research.

In his remarks, Brady observed: "The problem is a complex and difficult one. A concerted effort by a team of highly trained specialists—geneticists, agronomists, chemists, physiologists, pharmacologists, physicists, fermentologists—working together in a fully adequate facility, and in cooperation with federal and state research groups, represents the best way to mount an effective assault on the many phases of this problem and to provide leadership for a meaningful supplementary contract and grant program." Brady goes on to say that the "Agricultural Research Service and the State Agricultural Experiment Stations have developed considerable information in this field and have the necessary nucleus of capable research personnel and leadership upon which an effective expanded program can be built."

There seems to be general agreement that a new, closer relationship should be developed between agricultural researchers. And because the Agriculture Committee's authority is limited to the Department of Agriculture, it is natural that the committee placed responsibility for its crash program in tobacco research under the wing of the USDA.

The resolution gives the Secretary of Agriculture considerable leeway in operating the program. He can use the services and facilities of other agencies and enter into contracts and agreements with state agencies and private interests. Brady, for example, said that "carcinogenicity studies, when required, will be carried out in cooperation with the Department of Health, Education, and Welfare [departmental parent of the National Cancer Institute] or other qualified organizations."

But the research program clearly would be administered by the research arm of the Department of Agriculture, and the obvious question, which so far has not been carefully discussed, is whether the USDA, with its experience and competence in crop research is the agency best suited to oversee a program with heavy overtones of health research.—JOHN WALSH

Subways and Science: Two N.Y. Institutions Consider Meaning of Coexistence in Crowded Manhattan

They that stand high have many blasts to shake them.—SHAKESPEARE.

New York, N.Y. This is the story of an improbable collision between two monuments to New York City's science and technology, the Rockefeller Institute and the subway system. In 1901, John D. Rockefeller gave money to some scientists to found an institution to promote medical and scientific knowledge. Three years later New York City began operating its first underground subway car. Years went by, and both organizations grew to maturity, preoccupied with their own duties, happily uninvolved in one another's existence. The Rockefeller Institute came to occupy a snug, tree-lined campus running from 65th to 68th Streets along Manhattan's York Avenue, where scientists could pursue their researches in a peaceful, sumptuous atmosphere, a part of, yet protected from, the noise and confusion of New York. The Transit Authority, managers of the subway system, accquired 6000 subway cars, 237 miles of track, and 4.7 million people riding them every day.

One day, late in 1963, the Transit Authority decided to build a new tunnel to provide another link between Manhattan and Queens. To build it, the engineers reasoned, they would need three vertical shafts connecting the tunnel with the surface. One shaft would be for construction, two would be for ventilation and emergency exits. There were to be one each at the Manhattan and Queens ends of the tunnel and one in the middle, on a small piece of land called Welfare Island. The Manhattan shaft, according to the initial blueprints, would burrow up from underground through 100 feet of solid granite at a site on York Avenue at 64th Street, nestled just south of the Rockefeller Institute. The era of peaceful, if unwitting, coexistence came to a close.

You would think that, as they walked around at 64th Street and contemplated their lengthy blasting project, at least one representative of the Transit Authority might have gazed up at the impressive line of buildings formed by the Rockefeller Institute and wondered just what went on there. He might, at least, have reported to his superiors that the imposing campus existed, and suggested that discreet inquiries might