

ductive scientist isn't helping his own career if he takes time out for a year or two of congressional experience. Furthermore, with all respect to the flourishing stilto art in campus and laboratory, the mores of Congress, the atmosphere of politics and the addiction to power—regardless of what it is used for—are frequently offensive or at least puzzling to the scientifically trained mind. (Recently I was in the company of a young scientist when an aide to a liberal Republican Senator commented that, if Goldwater were nominated for President, the Senator would probably endorse him politely and then disappear to Europe for the duration of the campaign. This seemed eminently sensible to the politically employed persons in the group, and it stirred no comment. But the scientist was understandably astonished.)

Elliott, in his quest for a staff director, is starting with the hope that he can hire a "top-notch man" who has had no direct connections with federally supported research. This, like the whooping crane, is a rare bird, not quite extinct but close to it, and it is likely that he will change his standards as the quest goes on. In addition, Elliott hopes to engage the services of "panels of experts" to serve 2 or 3 months on particular phases of the investigation. Aides to Elliott say that the National Academy of Sciences will eventually have to be approached for advice, but Elliott himself isn't too keen on this, at least at this point. Like many members of Congress, he doesn't have too clear an idea of just what the Academy is—a testimonial to the Academy's success in acquainting the Congress with its functions. But if he is as devoted to a straight investigation as he appears to be, it is hard to see how he can avoid seeking the Academy's close cooperation.

In any case, despite the mixed bag of motives that inspired and shaped the investigation, Elliott is approaching the task with a sense of responsibility that commands respect and cooperation. The same, however, cannot be said of all his committee colleagues. It is possible, though not likely, that the committee will, in the end, perform a long overdue and much needed service, one that will benefit both Congress and science. But it is also possible, and quite likely, that its final report will justify the observation that a camel is a horse designed by a committee.

—D. S. GREENBERG

### Civil Defense: Housing Reverses Direction and Approves Fallout Shelter Program, Sequel Pending

The House of Representatives last week voted to authorize \$190.6 million for fallout shelters in public buildings and nonprofit institutions, an action which only a rash prophet would have prophesied when this session of Congress began.

During the 15 years of the cold war, Congress has never enacted a major shelter construction program, and in taking a substantial step toward such a program the House appeared to be changing course sharply. For only last spring, following the lead of some skeptical and influential members, the House forced a reduction to \$15 million of a \$61-million supplemental appropriation request for a survey and stocking program for shelter space in existing buildings [*Science* **141**, 340 (26 July 1963)].

The bill (H.R. 8200) voted last week would provide \$15.6 million for shelters in existing or new federal buildings and \$175 million in grants to incorporate shelter space in buildings owned or to be built by state and local governments or by nonprofit institutions such as hospitals. Proponents of the bill say that it will finance 11 million shelter spaces in addition to the 70 million spaces already identified and expected to be made ready for use as protection against radioactive fallout.

The new civil defense bill conspicuously lacked most of the familiar spurs and incentives to legislative action.

There was certainly no upsurge of grassroots sentiment in support of the bill. Legislators' polls of their constituents, as a matter of fact, have consistently shown majorities against a major shelter program.

The lawmakers were hardly enticed into approving the measure by the prospects of pork-barrel premiums for their districts, since the measure provides essentially for minor reconstruction in existing buildings and adaptations in construction of planned new buildings in order to provide fallout protection.

The administration, on the record, backs the program, but the President made no special appeal and the White House's outriders made no forays on Capitol Hill in the cause of the civil defense bill, and it was assumed the administration is husbanding its in-

fluence and energies for the bigger trials over tax and civil rights legislation.

House acquiescence in voting the shelter measure seems even more out of conformity with past behavior on civil defense legislation because no international crisis looms and the legislators are much less uneasy these days about Damoclean warheads than they were during the Berlin or Cuban crises.

Furthermore, it is rather surprising that a new measure costing \$190.6 million was passed on a voice vote—by an estimated 2- or 3-to-1 majority—in a big budget year when economy is a word to conjure with in Congress.

Passage by the House, of course, only takes the bill to a way station on the legislative road to enactment. The Senate has not even held hearings on the measure, and the parallel appropriations process in the two houses still lies ahead. The House Independent Offices Appropriations subcommittee, headed by Representative Albert Thomas (D-Tex.), has completed its hearings but has not yet acted on the bill, and it is this subcommittee which has been the Little Big Horn for shelter proposals in recent years.

The Office of Civil Defense this year is asking, in addition to the funds for the new shelter program, some \$151 million to carry on its shelter survey and stocking program and other federal-state-local civil defense activities. No authorizing legislation is necessary for these other civil defense programs, and funds for them will be recommended by House and Senate appropriations committees. If one can judge from past performances, however, the Thomas subcommittee and the House appropriations committee are unlikely to give their blessings to the whole \$342.5 civil defense package for fiscal 1964.

Nevertheless, this vote of the House and the altered attitude it represents is worth remarking. The House's action provides a relatively uncomplicated instance of the functioning of the committee system. The House seems to have changed its mind about fallout shelters because an influential Armed Services subcommittee, headed by Representative F. Edward Hébert (D-La.), had its mind changed by testimony presented during hearings. And the new position was endorsed by Armed Services Committee chairman Carl Vinson (D-Ga.),

actively supported by the House Democratic leadership, and consented to by the leaders of the Republican minority. (It may or may not be significant that Thomas in the past has cited lack of authorizing legislation for shelters in stating his own opposition to them.)

Hébert probably helped things along by putting the choice in portentous terms when he told the House, "Today you keep a rendezvous with your conscience. Today you sit in judgment not on the life of one individual. Today you sit in judgment on a matter of life or death to upwards of 65 or 70 million of your countrymen."

Hébert, in supporting the bill, went on to say, "This will save, or we hope it will save—and I am not standing here telling you whether it will or will not because I do not know whether it will save a single life, but I am not going to play God and make a determination upon the future life or death of any American or any human being if I can help it. If there is a chance to save one life I am for that chance, because that one life might be in the being of the leader that will be needed to take us out of a chaotic world if a nuclear attack ever comes."

House Speaker John McCormack (D-Mass.) sounded this same doomsday note when he said, "The people of America owe thanks to the chairman and members of the subcommittee and the chairman and members of the full committee for reporting this bill. In good conscience I could not vote against this bill. I do not see how anyone having regard for the fact that it may mean the saving of millions of American lives in the future can vote against this bill. Certainly if a bomb is dropped we cannot consider a program of this kind then. We have to consider it now."

The program passed by the House, as its proponents made plain, would not help anyone in the vicinity of ground zero if a nuclear attack occurred. The program provides fallout shelters which would not protect persons in them from blast or fire storm, or, in some cases, from very heavy fallout. It is a program designed to save those beyond the immediate zone of attack.

The bill comprises two amendments to the Civil Defense Act. The section affecting federal buildings requires that shelters be provided for all old and new government buildings, civilian and military. Up to \$2.50 per square foot

will be made available to convert space into shelter area.

In the other new section, \$175 million in grants is provided to enable states, local governments, and nonprofit institutions to put shelters in their buildings.

Building owners receiving aid under the act would be required to agree to the use of the shelter space by the public in case of attack or the expectation of attack or in case of natural disaster.

The clause making federally subsidized shelter space available to the public "without limitation" was cited in floor debate as removing any problem of civil rights at the shelter door.

A limit of \$2.50 per square foot is put on federal grants for single-facility shelters, but up to \$4 per square foot could be authorized for "combined applications" in which, for example, a local government submits plans for several shelters. Allocation of funds is to be made among the states on the basis of population and the need for shelter space.

Recipients of federal aid for shelters would agree to permit stocking and equipping of the shelters under the current federal program.

While the House bill would provide an estimated 1 million new shelter spaces in federal buildings and 10 million elsewhere, it is regarded as only a first step by civil defense officials. What they envision is a 5-year fallout shelter program, with the \$190.6-million expenditure in this fiscal year followed by the spending of \$460 million in each of the following four fiscal years for a total of \$2.3 billion. The goal would be to create 240 million shelter spaces.

Although it has endorsed the first installment, the Hébert subcommittee has pointedly reserved judgment on what shall be done next year and in the years following. At this point, perhaps, little more can be said than that civil defense seems to have been rescued by its present managers from what Hébert called an "era of inefficiency, boondoggling, political maneuvering, and manipulation."

Assistant Secretary of Defense for civilian defense Stuart Pittman and his aides are credited with doing a remarkable job in converting the Hébert committee to fallout shelters in hearings that involved 108 witnesses over a period of 8 weeks and produced some 2200 pages of printed testi-

mony on the military, political, scientific, moral, and psychological aspects of the shelter program.

The heart of Pittman's case was an ambitious cost-effectiveness study in the new McNamara style, designed to show the life-saving potential of various kinds of shelter in a variety of circumstances. Cost-effectiveness under a wide range of attack conditions was determined by dividing the cost of shelters by the number of lives presumptively saved by the shelters.

Shelters giving protection from nuclear blast were also considered in the Department of Defense studies. However, a system of blast shelters (costing as much as \$20 billion) has been regarded generally as politically unacceptable under present conditions. And the subcommittee and committee seem to have been convinced that the fallout shelters provided a feasible alternative.

The complex cost-effectiveness argument was only sketchily made during the debate, but most congressmen appeared to accept the assertions that a system of fallout shelters is an integral part of a balanced defense and that the advent of an antimissile system—being discussed in the Senate debate on the partial test ban treaty—would not at all reduce the need for fallout shelters.

#### Protection Factors

What sort of protection would be provided in the proposed shelters was discussed hardly at all. Office of Civil Defense regulations set a minimum "protection factor" of 40 against gamma rays (a factor of 40 means that radiation outside the shelter would be 40 times that inside). During the Cuban crisis the protection-factor minimum was lowered from 100 to 40 to make more space certifiable for fallout shelters. About a third of the shelter spaces originally located in the civil defense survey have a protection-factor range of 40 to 99, and another third, a range of 100 to 249. The bigger and closer an attack is, the worse off, obviously, people would be in a shelter with a low protection factor.

Opposition to the new shelter program came mainly from a group of legislators who felt that the \$175 million for nonfederal buildings should be cut, in the interests of economy in a high-deficit year and also because it was undesirable to start a new federal program to do a job which should be done, and to some extent is already

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being done, by local governments and through private initiative.

The debate, therefore, was largely carried on between two groups of shelter advocates, with the federal-buildings-only group losing out. Only in the closing stages of the debate, when permission to speak is doled out in 2-minute tots and the members are thinking about the final vote and dinner, was anything much heard from those who oppose any shelter program at all.

In his 2 minutes, Representative George E. Brown, Jr. (D-Calif.) put forward strategic and psychological arguments for opposing the shelter program. "By the time a shelter program could be completed," said Brown, "new weapons development could completely negate the purported saving of 25 million lives and in fact could increase the casualties beyond the 100 million figure.

... If the U.S.S.R., or possibly other enemies, in the years to come, were to decide that their goal in an attack was to cause casualties to 100 million or 150 million, in all probability they will have the weapons to do it with."

Brown went on to say that a shelter program "creates a climate in which nuclear war becomes more credible, more reasonable, more acceptable to the American people." Brown said that, in his opinion, "the net result of a massive civilian defense program will be to increase chances of nuclear war by helping to establish a climate in which such war becomes acceptable."

One or two other members opposed to shelters asked to revise and extend their remarks in the *Congressional Record*, but there was no real debate on what might be termed larger issues of the shelter controversy.

Congress seems to have felt uneasy and uncertain about civil defense in general and shelters in particular in recent years, and it has been willing, perhaps even grateful, to take the advice of its own experts in the matter. Until last week, the House had looked mainly to the Thomas subcommittee of the Appropriations Committee for its leads. Last week the House was persuaded by what appeared to be conflicting advice from the Hébert subcommittee. Unless these apparent differences are reconciled, rank and file congressmen this year may find themselves faced with more difficult decisions on civil defense than they have been accustomed to.—JOHN WALSH

## Announcements

Seven U.S. institutions and the University of Costa Rica have incorporated the **Organization for Tropical Studies (OTS)**, to develop "a sound program of education and research... available to the entire academic community of the Americas." Initial plans call for a cooperative program in the biological sciences, with later efforts in the other scientific disciplines. Instruction will be in Spanish and English. The U.S. members are the universities of Miami, Florida, Kansas, Southern California, Washington, Michigan, and Harvard. Norman Hartweg, professor of zoology at the University of Michigan, is the first president. Further information on OTS is available from its executive secretary, Jay Savage, Apartado 16, Ciudad Universitario, Costa Rica.

The National Aeronautics and Space Administration is inviting proposals for **space experiments** to be performed on the two-man Gemini spacecraft. The experiments should require manned observation or manipulation, or recovery of the experimental package. The Gemini project will consist of a series of two-man missions to orbit the earth. Scientists should submit both technical, and management and cost proposals. Thirty copies should be sent to the Office of Grants and Research Contracts, Code SC (Gemini project), NASA Headquarters, Washington, D.C. Deadline: *15 October*. (Further information is available from J. R. Gill, Code SM, NASA Headquarters)

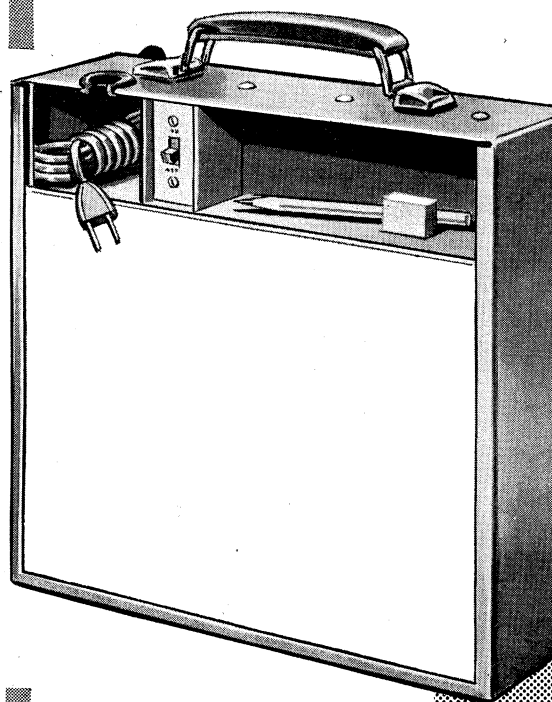
The ability of birds and mammals to adapt to cold will be studied at the University of Alaska's newly established **laboratory of zoophysiology**. The facility, supported by a grant from the National Institutes of Health, is the first unit of a planned Institute of Arctic Biology at the university. Its purpose is to analyze the processes by which animals, including man, become acclimated to the extremes of arctic winters and to the rapidly changing seasons. Laurence Irving, zoophysiology professor at the university, is head of the laboratory.

The University of Bridgeport, Conn., has begun a graduate program in **mechanical engineering**, leading to the master of science degree. Major work will be offered in solid mechanics, fluid

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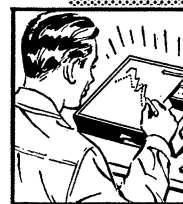
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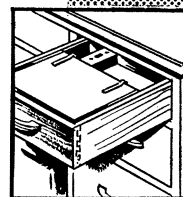
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