The rest of the damage came when Webb told the Senate Space Committee that NASA plans not to include North American among the contractors to be considered for the Apollo Applications Program. This decision was made, explains deputy administrator Robert Seamans Jr., to protect the company from a "burden of diversity" that it might not be able to handle.

Among the prospects for industry that will be part of the multi-billion-dollar Apollo Applications Program are orbiting laboratories, workshops, manned and unmanned experiments, and other projects making use of hardware that has already been designed for Apollo. Leaving North American out of the bidding means that the company will be out in the cold as soon as the projects get either sophisticated or big enough not to need NASA's Apollo space capsules.

So far, according to Webb, the delay in the Apollo program has cost North American "several million dollars," but this will only be in the form of incentive payments not made since there are no penalty clauses in the space craft contract.

The space agency administrator also revealed that when the contractor was being picked to build the spacecraft, North American was second overall to the Martin Co. on the NASA technical evaluation board's rating list. NASA heads overruled the board, however, because of North American's excellent record in previous Government contracts; because of the company's experience with rocket motors in the X-15 program; and because, while Martin had a 3.5 percent technical edge, North American had a 30 to 40 percent edge in cost estimates.

Defense Money . . .

Conversion of the Navy to nuclear power has been a tooth-pulling operation from the days of the first nuclear submarine, with Congress doing most of the yanking.

The House Armed Services Committee added another pull last week by recommending that two guided-missile frigates, requested by the Department of Defense, be driven by nuclear reactors. DOD wanted them to be gas-turbine powered. The House authorization bill contained an $83 million increase to pay for the more costly atomic vessels. The change had been recommended by the House Armed Services Committee.

Over the years, DOD's reluctance to spend money on nuclear power, whether for submarines, aircraft carriers, or escort ships, has been based on the price tag.

While submarines and carriers are now built with nuclear power almost as a matter of course, other types of ships have not been so graced. The Navy now has one nuclear cruiser, the Long Beach, and one frigate, the Bainbridge. Another frigate, the Truxton, will be commissioned for service May 27.

Navy

USS Bainbridge under atomic power.

The Senate Armed Services Committee earlier approved the request for non-nuclear frigates. If the two Houses pass conflicting bills, differences will have to be worked out in conference.

. . . ABM, in Abeyance

Defense Secretary Robert McNamara's position that defensive weapons are offensively unsettling in a nuclear stalemate found little sympathy in the Committee.

But DOD's budget request for $377 million to begin deployment of a Nike-X antiballistic missile system satisfied both sides in the controversy. Committee members, joined by the Joint Chiefs of Staff, feel that amount will make a good start in building the system, which they would like to see underway at once. And the civilian chiefs of the Defense Department feel that amount will be needed if efforts to agree with Russia on limiting the construction of ABM systems fall through. Pending these negotiations, they can refuse to spend the money.

The House Committee, like the Senate Armed Services Committee earlier this year, agreed with the Joint Chiefs, and urged McNamara to spend the $377 million.

As a first step, the Committee urged, a thin defense of ABM missiles should be deployed. This level of defense, costing about $4 billion, would protect against small attacks.

. . . While Themis Rolls

Money for basic research funds, generally less than last year, was approved by the Committee to the tune of $615 million.

This military sciences budget supports the Naval Research Laboratory, the Cambridge Research Laboratory, Rand Corp., and most other in-house and external basic research operations.

Among the programs approved was Project Themis, under which centers of study will be set up in various universities to develop competent research personnel. Themis, which got $18 million last year, receives $27 million in the current bill.

The Defense Department has narrowed the possible recipients of Themis aid to 69 universities, with 107 separate projects. About 50 projects will be chosen by the end of the summer. A minimum of $200,000 per year for each center was set by the Committee.

Project Themis is part of a larger, Government-wide program to develop Centers of Excellence in all parts of the country.

The program has come under criticism recently for drawing off research money from established institutions. Dr. Jerome B. Wiesner, who helped give birth to the Centers of Excellence idea when he was the President's Science Adviser, claimed in a recent article in TECHNOLOGY REVIEW that current austerity in research budgeting makes illogical any spreading of the resources. Dr. Wiesner is now dean of science at Massachusetts Institute of Technology.

Congress, looking to its constituency, is likely to see more logic in developing university centers in other parts of the country, austerity or no.

200 BEV Full Steam

Congress is willing to let President Johnson cut corners on some non-military programs in the face of the growing cost of the war in Vietnam.

But where there is an influential Congressional Committee—like the Joint Committee on Atomic Energy—and it has a project it considers important—like the 200 billion-electron-volt accelerator being planned for Weston, Ill.,—the Congressmen dig in their heels.

And a JCAE subcommittee dug in its heels against a cut last week, insisting on full funding for the huge particle accelerator, to its full energy re-

quirements, in the face of an Administration proposal to save $67 million by reducing its intensity. (SN: 2/25) The Administration had proposed building at a lower level first, to save money, phasing up to full intensity later.

The subcommittee contends, however, that this would be more costly in the long run.

A person "does not have to be clairvoyant to predict that if a reduced intensity 200-Bev machine is built, its improvement at a later date to full intensity and scope will probably cost a great deal more than the amount presently estimated for that purpose," declares Representative Melvin Price (D-Ill.) chairman of the Subcommittee on Research of the Joint Committee.

The subcommittee also suggests that the AEC give careful study to the possibility of building the 200 Bev with the option of increasing its energy to 300 Bev or somewhat higher at a later date. It called for an AEC report to the Joint Committee on this aspect of the design by Jan. 1, 1968.

In addition, the subcommittee suggests, developments in the use of superconducting electric magnets may make it possible to easily outshine the 200 or the 300 Bev machine within the decade—creating an 800-Bev accelerator at the cost of today's 200 Bev. The subcommittee wants continued research and development conducted along this line.

Expenditures recommended by the subcommittee for the current fiscal year are $10 million in architect-engineering funds and $2.65 million for further research and development work on the facility. The AEC has named Dr. Robert R. Wilson, formerly of Cornell University, director of the 200-Bev facility.

On Ethology

After years of ignoring evolution as a force in human behavior, psychologists and psychiatrists have been gripped by the idea that some human actions and feelings may be understood in an evolutionary context.

Interest in ethology—as it is called—received a major boost last year with the publication of Konrad Lorenz's best selling book "On Aggression."

Lorenz explains human aggression as an innate evolutionary force, bred into the species from a long line of lower animals, but perverted in Homo sapiens. Man, says Lorenz, lacks the social controls of other animals, thus his incredible degree of intraspecies aggression.

Lorenz's leap from animals to man has come in for considerable criticism. Nevertheless, the interest he sparked in ethology was clearly evident at last week's American Psychiatric Association meeting in Detroit. A paper on the subject, the first of its kind at the session, drew a standing-room-only audience.

Applied to humans, ethology includes the close observation of children "in the wild"—nurseries, lying-in homes and child care institutions—says Dr. Leonard S. Zegans, professor of psychiatry at Yale University.

Dr. Zegans has tracked in detail the motor and expressive patterns children use to signal the difference between rough and tumble play and serious fighting. The cue for rough-and-tumble play, he says, appears to be an open mouthed smile with the teeth hidden, not unlike the play face used by some monkeys.

But some children cannot make these appropriate signals, says Dr. Zegans, and their behavior is misinterpreted as signaling a battle. He expects that such observations may reveal the roots of later psychopathology.

It was this kind of close observation that led Lorenz to discover the genetically determined social rites in animals like the gray-lag goose. He found stereotyped patterns for appeasement, courting, friendship and aggression that were passed down through the phyla but were changed in each species.

The goal of the child studies is to discover whether unlearned social behaviors still play a role in human development; the mock grimace might be learned, not bred.

Dr. Zegan is also chipping away at another supposedly human characteristic—the quest for territory, recently proposed as a human trait in Robert Ardrey's book, "The Territorial Imperative."

Primates are not as a rule territorial animals, says Dr. Zegans. "I just don't think we ought to make declarations about man's evolutionary behavior at this point. We must first get data on the species." But he says ethology is a tool of inestimable value.

More Cold Viruses

One handy thing about fighting the common cold: you don't have to go far to find the enemy.

Researchers at the National Institutes of Health needed only to examine nasal discharges of fellow employes to discover what appears to be a new group of viruses that cause winter sniffles.

They have added six new strains to the 100 viruses already believed to cause cold symptoms. The organisms infected 6 of 23 employes tested. All half-dozen strains showed up in December, January and February when colds are notoriously common but strangely difficult to diagnose.

To discover the strains Dr. Kenneth McIntosh and five colleagues in the National Institute of Allergy and Infectious Diseases used a research method originated in Salisbury, England.

In most common-cold research, viruses are grown on human cells in tissue culture, but the six suspect organisms resisted all attempts at such cultivation. The new method uses bits of embryonic human trachea, or windpipe, on which the viruses will grow.

The next step is to confirm the early indication that the organisms are definitely the cause of winter colds, and if they cause severe as well as mild colds in animals as well as humans.

"We need to find out if they also cause bronchitis and possibly pneumonia," Dr. McIntosh says.

MS Clue

A disease resembling multiple sclerosis has been cured in a test tube. The demonstration adds another piece of evidence that the body's own defense mechanism—its immune response—is involved in the cause of this baffling disease which afflicts anywhere from 250,000 to 500,000 Americans.

When a body is attacked by infection, according to Dr. Barry G. Arnason, a Harvard Medical School neurologist, it calls on cells known as lymphocytes to gather at the site. These cells then enlarge and divide. They engulf the bacteria and stop the disease.

Now Dr. Arnason has found that in an animal disease called experimental allergic encephalomyelitis, which is very like human multiple sclerosis, these lymphocytes destroy—instead of the enemy—the protective sheath around nerve fibers. This sheath, made of fatty tissue called myelin, surrounds the nerve fibers like insulation around an electric cable. In multiple sclerosis patients this sheath is destroyed and it is thought that this is the reason their central nervous systems are damaged.

There are three main types of lymphocyte material. They are known collectively as immuno-globulins and include the well-known gamma globulin doctors often give their patients when they have been exposed to a dangerous infection. What the Harvard scientist has found is that it seems that only one of three main types of globulin is involved in activating the lymph cells in this experimental form of multiple sclerosis. He has made an inactivator to the globulin and when he injects this into his nerve cell tissue cultures, he finds that the destructive capacity of the lymph cells is interfered with. The fatty myelin sheath remains intact. By