

## NAS suggests modifications

Deferring to recommendations by a select panel of scientists appointed by the National Academy of Sciences, the U.S. Army has decided not to dispose of 12,643 tons of mustard gas in the ocean. Instead, the gas will be burned.

As for the larger portion of the 27,000 tons of chemical munitions, deadly GB nerve gas, disposal procedures present more difficulty. Therefore, the Army has convened a group of technical specialists and charged them with the responsibility for developing a safe, feasible disposal plan. The nerve gas, stocked in two kinds of explosive weapon devices, poses the greatest apparent risk both to human populations during rail transport and to the environment of the ocean (SN: 6/28, p. 609).

The U.S. Army's original plans calling for ocean burial of toxic warfare gases will be revised according to guidelines set forth in a special report presented to the Pentagon on June 24 by the National Academy of Sciences.

Operation CHASE, as conceived by the Army, would lack sufficient controls for insuring public safety and minimizing contamination of the ocean environment, concludes an ad hoc committee appointed by the NAS on May 14.

Of five different types of chemical munitions scheduled for disposal, the Academy scientists found 21,108 leaky Air Force GB nerve gas bomb clusters to be the most problematical. Each M34 cluster contains 76 bomblets, each composed of 2.6 pounds of volatile liquid nerve gas and a half-pound explosive charge and fuse. These devices are now stored at Rocky Mountain Arsenal, Denver, Colorado, the site of their manufacture 16 years ago. Citing such unforeseeable incidents as a sniper's bullet and various hazards associated with rail transport, the NAS scientists state that they "cannot exclude the remote possibility of a catastrophic explosion" which could "cause casualties far beyond the capacity of the attendant medical staff [accompanying the shipment] to handle."

However, the greatest hazard, suggests the report, is connected with the likelihood of a "massive sympathetic detonation" of the bomb clusters as their ship hulk container impacts with the ocean bottom at a speed possibly as great as 70 miles an hour. Although the consequences are undeterminable, lethal contamination is estimated for several cubic miles of ocean, and one likely result would be that dead animals would attract live fish into the area.

An alternate disposal plan reviewed

by the scientists, which was described as "undesirable," called for a deep-cavern incineration by a small nuclear device.

The academy report recommends that the nerve gas bombs be disassembled and detoxified either on site at Rocky Mountain Arsenal or moved by rail to Tooele Army Depot for the same treatment. However, shipment to Tooele would require passage through a part of Denver.

A total of 12,643 one-ton steel containers filled with mustard liquid, to have been given the deep-six, would present no great hazard in transit across the country, even should a derailment and strong fire occur. But again, the ocean phase is the focus of scientific concern. Even if the cylinders did not rupture upon impact with the ocean floor, corrosion would take place rapidly because of an electrochemical couple effect created between the brass valves and steel of the tanks in a salt water medium. The mustard, frozen solid in the 3.5 degrees C. water, would be a persistent source of pollution for many years.

Although the total ocean volume made lethal to marine life would "in all probability be extremely small," the scientists are more concerned with possible genetic damage to the reproductive cells of fish and smaller organisms farther down the food chain. Mustard is well-known for its deleterious effect on genes.

The NAS report recommends that all 12,643 tons of the mustard gas be "burned in government establishments where storage is safe and local air pollution from the resulting hydrogen chloride and sulfur dioxide is not a serious problem." Mustard gas is stocked at the Rocky Mountain Arsenal, Anniston, Alabama, Edgewood Arsenal, Maryland, Pine Bluff Arsenal, Arkansas, and Tooele.

The scientists considered themselves inadequately qualified to give an exhaustive study of the problem of disposing of 418 concrete coffins containing M55 nerve gas rockets presently stored at the Anniston, and Blue Grass (Kentucky) Army establishments. Each coffin, weighing 6.4 tons, contains 30 rockets which individually contain over 10 pounds of GB nerve gas, 2.6 pounds of Composition B burster charge, as well as rocket propellant and fuse. The report states that during 1967 and 1968, the Army disposed of 1,706 such coffins by the Operation CHASE method in 7,200 feet of ocean east of Earl, New Jersey.

The committee recommends, in view of the fact they do not consider themselves demolition experts, that the Army re-evaluate the alternatives, including disassembly on an Army estab-

lishment where it would be safe to neighboring populations and could be completed within a predictable time. Should the alternatives prove unfeasible, the report suggests sea burial with the reconsideration of using the Naval Weapons Station at Charleston, S.C., as a point of departure, since less risk would attend rail transportation, and ordnance disposal has been carried out for years in designated areas of the Atlantic off the Carolina coast.

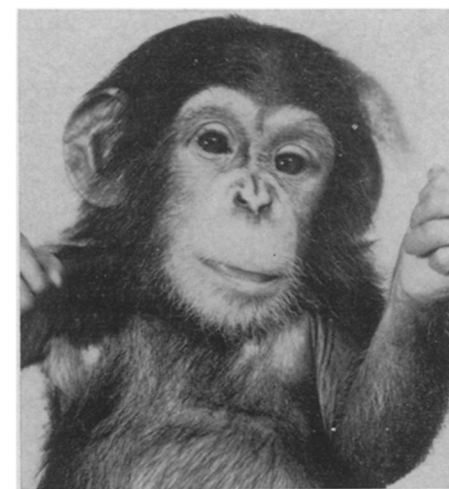
A qualified green light was given for the ocean disposal for two of the five types of chemical munitions: 2,325 one-ton steel containers once filled with an unknown contaminant and now filled with water, and 86 55-gallon drums filled with concrete in which are embedded cannisters containing 80 pounds of tear gas. Further study is urged to make sure the risks of on-site demolition outweigh the anticipation of slight ocean contamination.

In response to the NAS Advisory Committee report, Secretary of Defense Melvin R. Laird has instructed the Army to study the recommendations of the scientists and to "take appropriate action."

Final disposition of the gas stocks, according to Secretary of the Army Stanley Resor, must await a full evaluation of the academy report which will be "coordinated with other concerned governmental agencies."

## MONGOLISM

### Ape with an extra chromosome



Yerkes Primate Center

Jama: Future development hopeful.

Mental problems are not restricted to humans. In man's close relatives, the great apes, autistic behavior such as rocking and eye-poking, as well as phobic reactions, has been observed. But no investigation into congenital mental defects in the non-human primates has been done because none were known to exist.

Now the first non-human case of what seems to be mongolism has appeared in a chimpanzee.

Mongolism, or Down's syndrome, a chromosomal defect, is characterized by mental and physical retardation.

The normal person has 46 chromosomes, mongoloids have 47. The great apes—chimpanzees, gorillas, orangutans—normally have 48. A chimpanzee named Jama has been found to have 49 chromosomes, making her the first non-human primate with the characteristic sign of human mongolism.

Dr. Walter A. Pieper, psychobiologist, working with Dr. Harold McClure, veterinary pathologist at Yerkes Regional Primate Research Center of Emory University in Atlanta, Georgia, says that finding other chimps with symptoms of mongolism is possible but the process is difficult.

There is usually no cytogenetic work done on these primates because it is difficult and costly. "Animals born in the wild with this defect would not be exceptionally healthy and would probably not survive infancy," says Dr. Pieper.

Jama, born in the research center and watched over by researchers, was found to have a congenital heart defect. Her life was in jeopardy, and diagnosis of the heart ailment entailed taking blood samples. Dr. McClure and his staff discovered the extra chromosome in the course of making these tests on the chimp.

**Dr. Pieper** is careful to point out that Jama's mongoloid characteristics are not necessarily identical to the human defect.

Nevertheless, her symptoms indicate that she does indeed have mongolism.

The chimp's slow physical and mental development rate is one of the most significant symptoms. She had a low birth weight and now, at one year, weighs less than the average chimp of that age.

Although she is developing slowly, Dr. Pieper expects her to grow to the normal size of the mature chimp and to live to be 40, the average life of a chimpanzee.

The skeletal development of her face seems normal, but there are characteristic mongoloid-like epicanthal folds of skin around the eyes. There is also considerable webbing between her fourth and fifth toes. Although Jama does have a heart defect, it is somewhat different from the usual human mongoloid heart defect.

**Inconsistent with** the background of the human disease, Jama's parents were rather young; human mongoloids are most often born to mothers beyond the age of 40. The extra chromosome in the human is assigned to the 21st chromosome pair; in Jama's case the extra

chromosome could be assigned to either the 22nd or 23rd pair.

"Indications of her future development are good," says Dr. Pieper, and he and Dr. McClure want to keep her as healthy as possible. Their hope is to breed Jama to rear a group of mongoloid-like chimps for investigation.

If that can be done, research in the areas of birth defects and mental retardation could have application to human subjects, according to Dr. Geoffrey H. Bourne, director of Yerkes. ◇

HEW

## Egeberg for Knowles



UPI

*Egeberg: Many parallels to Knowles.*

After months of struggling came the Administration's decision on the person to occupy its top health post.

Dr. John H. Knowles, who had been championed by Robert H. Finch, Secretary of Health, Education and Welfare, was dropped from consideration, a victim in Finch's unsuccessful battle to overcome conservative opposition from Republican Congressional leaders and the American Medical Association (SN: 7/5, p. 5).

**In his place**, President Nixon nominated Dr. Roger O. Egeberg, 65-year-old Dean of the University of Southern California School of Medicine. Like Dr. Knowles, he has shown a strong concern for making medical care more responsive to social needs.

The nomination, technically to the post of Assistant Secretary for Health and Scientific Affairs, must be approved by the Senate. Sen. Everett M. Dirksen (R-Ill.), who led Senate opposition to Dr. Knowles, said he was reserving judgment on the Egeberg nomination. But it seemed unlikely that the forces that were victorious in blocking Dr. Knowles for five months would now launch an effort to oppose Dr. Egeberg.

Ironically, after all the political

maneuvering in an effort to secure support for Dr. Knowles, Finch said neither the AMA nor Congressional leaders had been consulted on the nomination of Dr. Egeberg.

**In Dr. Egeberg** it seemed HEW had obtained the services of a physician remarkably similar to Dr. Knowles in general attitude, viewpoint and approach. Dr. Knowles himself said the AMA hadn't won anything in the exchange. Of his friend Dr. Egeberg, he said, "For all intents and purposes his philosophy is exactly the same as mine."

Dr. Egeberg, a Democrat, characterizes himself as a moderate, but he has worked actively to try to liberalize the AMA. In 1961 he publicly dissented from its contention that all those who needed medical care were getting it.

He has a reputation for coming to grips with difficult problems, such as improving the delivery of health services and bringing about a closer relationship of medical education to social problems.

It is now recognized, he says, that quality medical care is a right, not a privilege. He has urged comprehensive health insurance for all California residents and proposed that public funds assist the poor in paying their premiums.

At his first news conference after the nomination he spoke of the need to improve the delivery of medical care as one of the nation's most important health problems. He expressed hope that the private sector of American medicine would propose and promote needed innovations. "We have to find a new way of delivering medical care to many millions of people," he said.

In Los Angeles he and the dean of the UCLA School of Medicine had been jointly working to help establish the Charles R. Drew School of Postgraduate Medicine in Watts, the area torn by riots in 1965.

**It is difficult** to assess Dr. Egeberg's potential effectiveness in the HEW post. The big question is what will be the President's attitude on health policy matters. After his final rejection, a pessimistic and somewhat bitter Dr. Knowles said Mr. Nixon's health policy boils down to "One, nothing. Two, cutting the [HEW] budget back and tentatively cutting it back next year."

At Dr. Egeberg's news conference, Finch announced a new five-point health program for HEW, which included limiting the rise of Medicaid fees, improving health services, expanding the supply of physicians, attacking environmental health problems and intensifying work in family planning. It remains to be seen, however, how effective the HEW Secretary and his new assistant will be in attaining these long-range goals. ◇