

destroyed by enzymes that act only on single strands, a pure lactose gene with its controlling sites was left behind.

Now the researchers will turn their attention to the mechanisms by which that gene makes ribonucleic acid. "The first step," notes Dr. Beckwith, "will be to provide a chemical environment in which the isolated gene can function. Then we can look at the steps involved in RNA synthesis." By manipulating their virus extraction method and employing phages that selectively incorporate other bacterial genes, it will also be possible to isolate and examine other types of genes as well.

NIXON ORDER

Out with CBW

The United States has repeatedly refused over the last 44 years to join the Geneva protocol designed to prohibit the "use in war of asphyxiating, poisonous or other gases and the bacteriological methods of warfare." The subject has been under intensive review by the National Security Council for some months (SN: 10/25, p. 373).

This week, along with an order to remove chemical and bacteriological weapons from the U.S. military arsenal, President Nixon brought the issue before the Senate.

The order, unequivocal in banning biological weapons, confined military biological research to "defensive measures such as immunization and safety measures." It also reaffirmed the renunciation of the first use of lethal chemical weapons and extended this disavowal to the "first use of incapacitating chemicals."

But the Nixon order did not go into detail on a question that is bound to confuse the future course of the protocol: the use of tear gas and other riot-control agents.

Most nations supporting the protocol meant the ban to include the use of tear gas. But the Senate is unlikely to ratify the protocol without stating the right to the U.S. to use crowd-control agents, or at least interpreting the document as not including them in the banned list. Such a reservation would mean that other signatories would have to re-evaluate their own position regarding the use of tear gas.

The President's order asked the Pentagon to make recommendations on disposing of existing stocks of bacteriological weapons. This could also include means for the production and delivery of such weapons, said Deputy Assistant Secretary of Defense Jerry W. Friedheim. It might also mean the closing down of some facilities and the disposal of some production equipment and materials, he said.

SEA-FLOOR TREATY

Narrow issues and large

Antarctica and outer space are the first two preserves set aside by international agreement to be forever free of bases for nuclear devastation. The floors of the deep oceans may be next, if problems with a draft treaty now being considered by the United Nations are eventually overcome.

The two superpowers, the United States and the Soviet Union, reached agreement on the draft on Oct. 8 at the Geneva conference on disarmament (SN: 10/18, p. 350). It would forbid the emplacement on the seabed and the ocean floor of any objects with nuclear weapons or of any other weapons of mass destruction. The ban would apply in all regions beyond the "maximum contiguous zone" of 12 miles from the coast as defined by the Geneva Convention of 1958.

The draft treaty has not pleased everybody.

Some members of the 25-nation conference criticized the draft for ignoring their interests on a variety of points. With the conference drawing near its close a slightly revised draft was submitted on Oct. 30, but other nations had time only to take note of it before recess.

Now the treaty is before the U.N. General Assembly. In a plea for approval, Charles W. Yost, the chief U.S. delegate, has sought to reverse a tendency he saw on the part of many nations to underestimate the importance of early approval. "Prevention before the fact is far easier than removal after the fact," he said. "Let me be clear. It is already within our capability to emplace nuclear weapons on the seabed, and such action would not be without some military advantages."

Objections to the present form of the treaty have come from Brazil, Canada, Sweden, Pakistan and Mexico. Much of the criticism has contended that only the superpowers have the technology to enforce the treaty. In fact the central substantive difficulty is over the matter of verification. The treaty gives any nation the right to verify the activities of any other nation. But the argument of the smaller countries is that they have no suitable means of verification.

Brazil has called for granting to each coastal state the right to participate in any verification activities carried out by other nations along its outer continental shelf. Canada has also urged that coastal states be given special rights. And it has sought changes in the draft to enable nations seeking to verify the absence of forbidden weapons to work through an international organization

instead of having to rely on the facilities and cooperation of the superpowers.

The continuing dispute between the nuclear and nonnuclear nations may prevent action this year.

And even when a version of the treaty is finally accepted, it will remain fuzzy in many areas, because of the lack of agreed-upon rules and definitions where the sea-floor is concerned. The draft treaty, for instance, fixes the width of the area exempt from the ban at 12 miles from the coast, but leaves unspecified whether a bay or estuary ought to be included.

Many of the difficulties with the seabed treaty, in fact, go far beyond weapons and are related to the more fundamental and still unresolved issues concerning the definition of continental shelf areas, jurisdiction over the sea-floor and the rights to exploit its resources.

The existing legal agreement governing such questions is still the 1958 Geneva Convention, which gives exclusive exploitation rights of coastal nations out to a depth of 200 meters. That was about the limit of depth that could be exploited at the time. Since then drilling and mining technology have advanced dramatically; commercial offshore oil production has gone down 340 feet, and exploratory drilling has begun in water 1,300 feet deep. The scientific research ship *Glomar Challenger* drilled in more than 20,000 feet of water (SN: 11/1, p. 394), although such an effort is nowhere near being an economically feasible technique.

The 200-meter definition shortchanges nations such as Chile and Peru, with steep and narrow continental shelves. And in the shallow North Sea, there is no area that does not belong to one of the countries. In many places there the shelf jurisdictions overlap.

In recent weeks a number of resolutions have been put before the United Nations, seeking further study, reconsideration of the 1958 agreement and a moratorium on claims to the ocean bed.

The United States does not plan to state an official position on the resolutions until they actually come up for a vote, possibly on Dec. 2. But the unofficial view on all such proposals, according to several Government officials, is that they should all be referred back to the U.N.'s Seabed Committee, a 42-nation group established last year to study and discuss the issues of sea-floor jurisdiction, exploitation and redefinition of the continental shelves.

The issues are too complex and the state of knowledge too preliminary in the U.S. view, for the entire U.N. General Assembly rationally to make any major decisions now. □