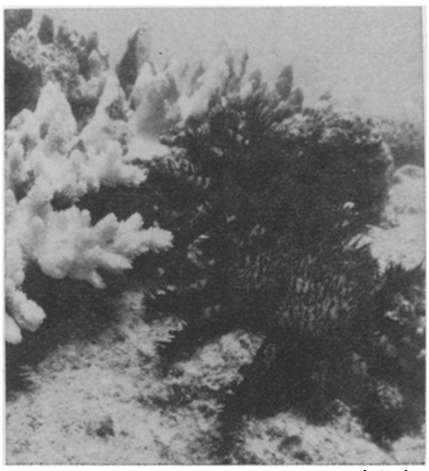
CORAL REEFS

## A question of regeneration



Interior

*Starfish: Damage may be transitory.*

The crown of thorns starfish, *Acanthaster planci*, has created just about as much furor in the world in recent years as any animal except man himself. There have been reports of vast plagues of the coral-eating starfish destroying reefs from the Red Sea to Hawaii. Australia's Great Barrier Reef, which serves as a breakwater to protect coastal towns, has been said to be in imminent danger of destruction, and the economy of Guam, a United States territory is reported endangered.

Although there is no doubt of the widespread proliferation of the crown of thorns (SN: 9/13, p. 218), there have also been increasing suggestions that a more sanguine view is in order. Shaping up is a major controversy between the scientists alarmed over the crown of thorns and those who recommend a calmer view. On the outcome may depend the fate of a bill now in Congress for a special $4.5-million-research program into the starfish problem. The bill has passed the Senate and is headed for House hearings this summer.

**Many estimates** to date have indicated that after a starfish infestation leaves a reef, after stripping off the thin layer of living coral from the skeletons of earlier coral out of which the reef is built, it could take centuries for the reef to recover. Dr. Robert Endean, zoologist at Queensland University in Australia, claims 30 to 100 years are necessary. Dr. Richard H. Chesher of the Westinghouse Ocean Research Laboratory in Miami says Guam reefs may take 100 to 200 years for regeneration.

But a report from Australia last week indicates that recovery may come sooner. Prof. R. J. Walsh of the University of New South Wales, who heads a joint Federal-Queensland committee on the problem, reports that examination of four reefs near Cairns, earlier affected by the crown of thorns, showed extensive coral regrowth. The reefs had first been infested with the starfish in 1960 and were free of infestation about 1967. The coral was regenerating over much of the small reef area by early this year.

United States scientists who have leaned toward a calmer view of the problem say that they are not surprised by the report. Maureen Downey of the Smithsonian Institution in Washington says she had received earlier, unofficial reports of rapid reef regeneration from Australia, and that the Walsh report was not unexpected. She explains that living coral, the polyps that form the limestone coral reefs, actually make up only a very thin crust on the surface of the reefs. Only this thin film is destroyed by the crown of thorns, and she sees no reason why the coral could not return relatively quickly.

Dr. William A. Newman, reef specialist with Scripps Institution of Oceanography in La Jolla, Calif., tends to agree.

"What is recovery?" he asks. He says the general ecology of coral reefs is highly dynamic and goes through many stages. There may be more or less permanent alterations as a result of starfish infestation, but he suggests this may be no more devastating than the kinds of changes that went on before the starfish came. And algae which replace the dead coral simplify the food chain and thus may result in a reef ecology which is more productive, he adds.

**Dr. Newman** also tends to doubt the starfish invasions are as unique as has been claimed by some scientists. He says there are a number of reports of crown of thorns abundance in various islands at least since 1914. Possibly, he adds, there have always been starfish invasions, but they have simply not been observed.

But Dr. Newman and Miss Downey agree the current infestations constitute important biological events whether they occurred in the past or not. The causes are little understood, and the effects on coral reef ecology need further research.

Both scientists agree the $4.5 million appropriation—which backers have justified largely on the grounds of possible great economic damage—would be a welcome contribution to biological research. □

MISSILES

## Bell Labs scaling down

For a quarter of a century, Bell Telephone Laboratories have been foremost in the research and development of missile electronics. They were responsible for the Nike and Zeus and are at present the technical director of research, design and development for the Safeguard antiballistic missile system.

Bell will soon be scaling down its advanced ballistic missile work (the systems beyond Safeguard) with an eye to getting out of missile defense work entirely.

"We intend to fulfill our contract responsibilities for the Safeguard antiballistic missile system," says H. I. Romnes, chairman of the board of American Telephone & Telegraph, which owns the Bell system and Western Electric Co. But it may have been the Safeguard experience that pulled the plug, although Bell engineers deny it publicly. But scientists in touch with the program report a secret meeting about a year ago between Defense Secretary Melvin R. Laird, Deputy Secretary David Packard, Bell research vice president W. O. Baker and others, at which Bell officials said they believed Pentagon-ordered changes in the original Sentinel system (SN: 3/29/69, p. 301) have made it unworkable.

**"This is no surprise,"** says physicist Dr. Ralph Lapp. "The whole basis for the system shifted, and one could hardly expect that you could make a Volkswagen do what a Cadillac could do."

Bell, which has consistently refused to comment on whether or not it thinks Safeguard will work, denies that this is the reason. Officials there maintain that Bell took on missile work originally because it was the only outfit with the expertise to do it, especially in the vital area of switching technology. But now that other companies have developed and are developing these skills, Bell feels it can head back toward its original purpose in life: to provide an interconnecting communications network in the United States.

Whatever the reason, the scale down will not occur overnight, and a phase out of advanced missile work would take at least two years.

Just how fast Bell leaves the field will be determined by the ability of other companies to take up the slack. A study now under way under Pentagon auspices is seeking such likely candidates. Although none has as yet been officially named, General Electric and Texas Instruments, Inc., appear to be good bets. The financial loss to Bell from the pullout would be about $30 million a year, not all of which is profit since part of it must go to subcontractors. □