Star warriors seek new foes

Washington

IN one of the strangest plans ever put forward for the peacetime use of a sophisticated military technology, a US physicist and his Soviet counterpart last week proposed that advanced 'Star Wars' lasers might be used to help rid Africa and the Middle East of swarms of locusts. Despite its novelty, their proposal to blast locusts with airborne lasers has already found preliminary support at high levels from military and science advisers in both the United States and the Soviet Union.

Peter Franken, who works in optical sciences at the University of Arizona, says that the idea to attack locusts was hatched in discussions with his long-time Soviet colleague Vladislav S. Letokhov, a physicist at the Institute of Spectroscopy of the Soviet Academy of Sciences. Both had worked with high-power carbon-dioxide lasers and were apparently looking for possible applications for them when they hit upon the desert locusts.

OCEANOGRAPHY

Cruising for southern solidarity

New Delhi

INDIA'S oceanographic research vessel *Sagar Kanya* last week entered Caribbean waters as part of a Commonwealth research initiative described by India as one of the first examples of South-South cooperation in oceanographic research.

The Caribbean Oceanographic Resources Exploration involves a 45-day cruise by *Sagar Kanya* around 13 Caribbean countries to map the marine resources in their exclusive economic zones. The survey will provide data that will help in the exploitation of marine resources and in the control of pollution and coastal erosion.

The Indian government is providing one-third of the \$2 million cost of the project and free ship time, alongside a 40 per cent contribution from the Commonwealth Fund for Technical Cooperation. The remainder will come from the participating Caribbean countries of Antigua, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and Trinidad and Tobago.

It is the first time that India has provided leadership in oceanographic research to less developed commonwealth countries.

According to K. N. Johry, project coordinator and a scientist in the Indian Council of Scientific and Industrial Research, the Caribbean states wanted assessment of their marine resources to be a South-South affair without any involvement from the great powers.

K. S. Jayaraman

When swarming, desert locusts in Africa and the Middle East cause enormous damage. Locust swarms may contain a thousand million insects, voraciously ravaging vegetation over areas as large as 50 square miles. In bad years, locust swarms are estimated to have caused more than \$1,000 million worth of damage to crops.

Franken and Letokhov's idea, at first, was to train airborne lasers on the locusts and, in Franken's words "literally roast them". The plan sounded good to the physicists because it would use lasers, involve cooperation between the United States and the Soviet Union, and because it would avoid the need for chemical pesticides. Plus, says Franken, "the little corpses would be good fertilizer". Since Franken and Letokhov met at the University of Arizona last week, however, it seems the plan has been modified significantly. Preliminary experiments showed that the lasers could do an adequate job of killing the insects and could even be effective at lower intensity by damaging the locusts' wing membranes, thereby grounding them permanently. But the scheme quickly revealed the same logistical Achilles' heel as the Strategic Defense Initiative (SDI) itself. The team estimates that it would take a hundred laser-armed helicopters more than three months to destroy their entomological enemy — clearly not fast enough to combat the migrating swarms.

Nonetheless, the researchers are undeterred. Now, Franken says, they want to expand their scope to "explore possible uses of the modern military to search, find and destroy" locusts. The key, he believes, will be to find the locusts early, before the massive swarms develop. This, Franken says, can be best accomplished with military reconnaissance satellites. The use of lasers could be feasible in such a situation, according to Franken, but they are also entertaining alternative options, such as airborne, military flame-throwers.

The plan, in its modified and original forms, has received support from surprising quarters. Franken says that US science adviser D. Allan Bromley and SDI chief scientist O'Dean Judd have both expressed interest. Academician Yevgenii P. Velikhov has gone so far as to promise support for the project through the International Foundation for the Survival and Development of Humanity, an organization whose members include representatives from the United States and the Soviet Union (see *Nature* 336, 191; 1988).

Notably lacking in all of the work so far, however, are entomologists. George Popov, who has advised the United Nations and the US Agency for Interna-

tional Development on locust control for decades, says that the locusts are now in a recession period, and no large swarms have developed since 1988. Popov says that some remote sensing is already under way through several international efforts using civilian satellite technology.

Franken acknowledges the current deficiencies in the plan and the many "touchy socio-political questions" that remain — such as what African and Middle Eastern nations might have to say about laser-armed helicopters buzzing about. But Franken says he is optimistic because of the increased interest he perceives in the United States and the Soviet Union to "beat swords into plowshares". "This," he says of his locust-zapping proposal, "is a good place to start."

Seth Shulman

MANNED SPACE FLIGHT

West Germany to buy a ride

Munich

THE Soviet Union has succeeded in enrolling another foreign passenger on the now-routine space flights to its space stations. Following in the tradition of Bulgarian, East German, Mongolian, Cuban, Vietnamese, Syrian and French 'cosmonauts', a West German will blast off with an eight-day Soviet mission to space station Mir in March 1992. An agreement to this effect was signed in Moscow on 18 April by the West German Aerospace Establishment (DLR) and the Soviet organization Licensintorg.

Western cosmonauts do not fly on Mir for nothing. The Soviet Union set a price of DM20 million (about \$12 million), which a DLR spokesman said would be "a good investment" because of the opportunity to do human-tended scientific experiments on board. The West German-Soviet Mir mission will include at least seven experiments in protein crystallization, seed growth and other areas.

An Austrian cosmonaut is scheduled to fly to Mir in the autumn of 1991, but the price is too high for the current Austrian science minister, Erhard Busek, who has said in public that he wished his predecessor had chosen to invest more in Austrian research on the ground.

West German astronauts will also fly on the nine-day D2 spacelab mission with the United States space shuttle in 1992. Much more science will be done on D2 than on Mir, said DLR spokesman Volker Kratzenberg-Annie. The D2 astronaut-scientists will include 90 experiments in materials science, process technology, medicine and biology. Kratzenberg-Annie said that DLR is the only organization to have "concrete collaborations" with the US and Soviet space programmes as well as the European Space Agency. Steven Dickman