Because a satellite-borne conventionally armed missile would have to make a direct hit to disable an enemy ICBM —which a ground-launched X-ray bomb could do from as far as two miles away—the satellite system would probably require many more missiles to do as efficient a job. Placing the satellites 23,000 miles up in synchronous orbits, where they would hover over one spot on the earth, would enable fewer of them to provide broad coverage, but the physical distance that would have to be covered by their missiles makes such an approach impractical. A more likely choice would be to put more satellites in circular orbits between 100 and 200 miles up, similar to those of the manned Gemini spacecraft. This would still offer relatively broad coverage while greatly reducing the antimissile's trip time.

On the other hand, in such low orbits the satellites would be sitting ducks for an enemy trying to shoot them down, even with unsophisticated ground-to-air missiles. Some kind of protection would be necessary; in fact, it was for this purpose that Dr. Kantrowitz originally proposed his atomic heat ray.

Future developments in conventional explosives could markedly enhance their abilities as missile-killers, while orbital assembly techniques could enable much bigger and heavier conventional weapons to be carried by satellites. These would be "weapons of mass destruction," and would come under the treaty, according to the State Department official. When interpreting the treaty, he says, the participating nations will have to consider its original intent, which should eliminate any purely semantic evasiveness.

On the other hand, a country trying ex post facto to justify its actions under the treaty is hardly about to let its loopholes be plugged up by any intent not actually in the document.

What then, if a country does orbit some kind of satellite-borne weapon, using some tricky interpretation of the treaty to excuse its actions? "If Russia launched a satellite that we thought violated the treaty and was a threat to the United States," says the official, "we would, if the technology permitted, attempt to eliminate the threat."

This drastic action by the U.S. would not necessarily lead to war. The situation under the space treaty, he pointed out would be similar to the Cuban missile blockade by the U.S. under the provision of the United Nations Charter for regional peace-keeping operations. Things got tense, but the Soviet Union realized that making a lot of noise over a disputed violation of international law was preferable to going to war. "Of course, shooting down one of their satellites is another matter. I suppose they could always sue for damages."

FROM SWITZERLAND

World Drug Law Sought

Drugs good enough to export often aren't good enough to sell at home—and the countries that must import their medicines are bitterly unhappy about the situation.

Drugs are manufactured, by and large, in the world's prosperous nations. The United States, United Kingdom, Switzerland, Germany, France, the Netherlands, Denmark, Japan and Italy among them share almost all of the more than $1 billion-a-year in international commerce in pharmaceuticals.

When, in any one of these nations, a drug manufacturer is found to be less than perfect, it is a subject of national concern. And there are laws in all of them to protect consumers from impure pharmaceuticals.

There is no such international law; in the commerce between the developed and developing nations, it is a case of buyer beware.

Now, a group of underdeveloped nations is calling for international law to provide protection against practices by drug exporters which none of the exporting nations would tolerate within its own borders.

In Geneva, where the World Health Organization is headquartered, the poorer countries are calling for the immediate drafting of international regulations, binding on nations that sign a treaty, to protect them against often murderously useless drugs.

After a week of negotiations recently a group of nations pushed through the World Health Assembly a resolution asking WHO to work up at least the principles of such regulations, for study by the executive board in January.

Under the regulations, nations having pharmaceutical exports would guarantee that drugs in world trade are subject to the same strict quality control procedures as medicines produced for the home market.

In the U.S., for instance, drugs don't have to meet the Food and Drug Administration rigorous requirements, if they meet the standards of the importing nation, are not marketed domestically and are clearly labeled "for export."

For the first time, complainants are citing examples, while being careful at this stage not to identify exporters. An African bloc led by Dr. M. P. Otolorin of Nigeria charges "fraud" and "malpractice" by "important pharmaceutical firms." He recalls a shipment to Nigeria of chalk labeled "sulfonamide."

Pakistan's health minister, Dr. M. A. Haque, cites a shipment of several tons of a common drug, presumably an antibiotic, that was completely valueless.

Several Western ministers report privately that they have seen bad batches of penicillin and other products in India and elsewhere.

Authoritative officials at WHO say the problem is immense, involving perhaps 50 percent of all drugs. They point out that many countries—including such developing nations as India, United Arab Republic and Brazil—now export, some through subsidiaries of important Western drug firms. Officials say reputable firms sometimes print labels, "for export only," and one observes, "This is not nice at all."

Pharmaceuticals and raw materials pass through many hands, often under poor storage and transport conditions. Apprehending irresponsible parties, including bootleggers, is admittedly very difficult.

WHO has been asked to prepare cost estimates for regional quality control laboratories, to which poor countries can send batches of drugs intended for import, for thorough tests. Each nation would like to have its own food and drug administration, but most lack the money and manpower. WHO says it will ask the U.N. Development Fund for grants.

Nigeria has threatened to organize a "union" of drug-importing nations and to boycott countries and companies that resist their demands, particularly for "international export certificates," approved by governments, if not WHO itself, guaranteeing quality control testing identical to that at home. WHO's experts had previously concluded that these are impractical. But Dr. Otolorin said, "At least we can see who opposes us."

While Western delegates resist strong immediate supranational action, there are clear signs that big nations are offering more and more assurances.

Dr. B. D. Blood of the U.S. Public Health Service Office of International Health pledges that the U.S. is ready to provide "consultative, technical assistance and training facilities to any nation in developing national codes for manufacture, packaging and quality control . . . and testing services, if some practicable international system can be developed under the aegis of WHO."

France says it has started training technicians from several developing countries and will satisfy any importer who requests proof of controls.

Italy also offers testing facilities for any importing nations regardless of the source of the drugs.

Dr. Karl Evang, Norway's health minister, has allied himself with the Africans and is pressing hard for new laws. He claims WHO has been too "defeatist" until now on this problem.

"We live in a new world, because of

the wave of synthetic pharmaceuticals, and WHO must recognize this fact," he declares.

"Great confusion is also arising among the world's doctors from the thousands of names for the same drugs and from the lack of international agreement on labeling and the declaration of side effects."

He and some others are seeking, unsuccessfully so far, to enlarge the WHO definition of "quality control" to go beyond "identity, purity, potency, sterility and stability" and "conformity with labels," to include dependence-producing tendencies, side effects and sheer efficacy. He feels that obsolete drugs should be removed from world commerce.

David Alan Ehrlich

War on Insects

Very few Americans have ever heard of filariasis or hemorrhagic fever, though many may remember the days when malaria and yellow fever were a distinct menace.

But although those diseases no longer threaten the developed nations of the world, they still kill or cripple thousands of citizens of Asian and African countries each year.

And, with the increased U.S. effort in Vietnam, malaria is once again an immediate menace to American lives.

The key to control of each of these diseases, and others of a similar nature, officials of the World Health Organization feel, is control of the insects that spread them.

Up to now, control of insect populations has meant spraying them and their breeding places with potent insecticides such as DDT and Dieldrin—chemicals to which the insects are becoming increasingly resistant. As the insects become poison-proof, the quantities of insecticide in the environment are building up to levels potentially dangerous to man.

Last week, 18 scientists met at the WHO regional office in Washington to discuss what looks like the sure path to victory: turning the insects against themselves.

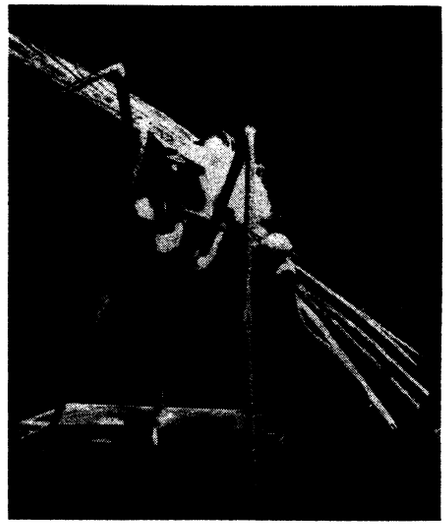
Two methods of doing this, one still untried in the field, are being considered. Both involve the release of millions of modified male insects to mate with the wild insects, producing either no offspring or almost entirely male offspring.

The best known of these techniques takes its cue from the eradication from the U.S. of the screwworm fly and uses laboratory-raised male insects—mosquitoes or flies—that have been sterilized by radiation or chemicals (SN: 3/11). These, released in numbers greater than the wild population of males in an area, mate with the wild females.

Eggs from their unions produce no young. If enough sterilized males are released, entire insect populations can be wiped out in a few weeks.

A variation on this method has just been tested with excellent results in a small town 16 miles from Rangoon, Burma, according to Dr. H. Laven of Johannes Gutenberg University, Mainz, West Germany.

There, by introducing a specially bred strain of Culex fatigans mosquitoes, the WHO scientists managed to wipe out the local population of this one mosquito species, the carrier of filariasis. The project took only 12 weeks.



WHO

The enemy; an Anopheles mosquito.

The traitor mosquitoes they bred were of a California strain of fatigans that would readily mate with the mosquitoes in Burma but were genetically incompatible enough that the eggs laid would never grow. There are enough such different strains that an incompatible strain can be bred to use anywhere in the world in elimination of the mosquito species, Dr. Laven says.

Perhaps the most promising technique for the future, if it works out in field tests, is one developed at the University of Notre Dame, Ind., by Dr. George Craig.

There, mosquitoes were selectively bred with genetic traits that insure that 95 percent of their offspring will be male. And, Dr. Craig points out, each of these male offspring is capable of transmitting the trait so that their offspring will in turn be 95 percent male.

The advantage, he observes, is that the release of a handful of such insects would soon produce an almost exclusively male, and therefore doomed, population.

Patent Treaty

The Patent Office, faced with a flood of foreign and domestic applications, is taking vigorous steps to keep from being swamped.

The latest move came last week with the disclosure of a proposed treaty calling for a standard international patent application form and elimination of duplicate searches and examinations.

The treaty was drawn up by six member nations of the United International Bureau for the Protection of Intellectual Property (BIRPI), at the suggestion of the United States.

Patent Office officials are enthusiastic about the treaty's prospects because, they say, everybody gains from it. The countries that drew up the treaty include Russia, Germany, France, Japan, Britain and the United States.

Key item in the proposed treaty would be the standard form, acceptable in all signatory countries. Presently, requirements for applications vary widely from country to country, including such details as size of illustrations and width of margins.

Once the application was received, a country qualified to carry out a search and examination of the patent would do so. The results of the investigation, along with a certificate of patentability, would be forwarded to all the countries where the inventor wished to receive a patent.

Individual countries would then decide, according to their own requirements, whether to issue a patent. This process would be unchanged from the present system. But instead of starting cold with the bare patent application, the other countries would have the benefit of the research carried out under the international application.

Patent Office representatives, stressing that the treaty is open to revision, are planning a series of talks with U.S. businessmen. Armed with the opinions and suggestions coming from these talks, the U.S. will return to Geneva in the fall to help write a final treaty.

Industry is likely to favor the treaty, though it may have reservations about some of its long range implications.

U.S. companies annually file foreign patent applications for 25,000 inventions a year in an average of five countries each. Likewise, about a quarter of the 90,000 patents applied for in this country annually are duplicates of foreign applications. Anything that will thin down the jungle of paperwork and speed up the process of getting