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

foreign patents, will be looked on with favor.

A major advantage to the treaty proposal is that it leaves untouched the basic features of the various national patent systems. This is important in view of the opposition in this country to the Administration's bill to reform the Patent Office (SN: 5/27). The treaty would fit the present system as well as the reformed system.

One item in the proposed treaty, a requirement that all applications be published within 18 to 24 months after they were filed, is bound to come in for criticism.

The same provision is in the Patent Reform law before Congress now. U.S. patent lawyers object to the idea because they feel the inventor should retain his right to keep his invention secret unless he patents it.

Other problems involve the varying amounts of disclosure and examination which different countries presently require. Some countries, like the U.S., require a full description of the invention, while others, such as Germany, ask only the germ of the invention. Similarly, some countries require a careful examination of prior inventions before granting a patent, while others have no examination at all.

Patent Office spokesmen say this will be no problem because the requirements of the international application are likely to be more stringent than those of any individual country. An inventor in a country with lesser requirements needn't file the more stringent application unless he wants foreign patent rights.

The treaty is looked on by all sides as a first step toward an international patent, which means that the requirements of the application will probably be extended at a later date to the granting of patents. For this reason, the provisions of this first-step treaty are likely to get a rigorous investigation by all the countries concerned.

Fungicide Danger

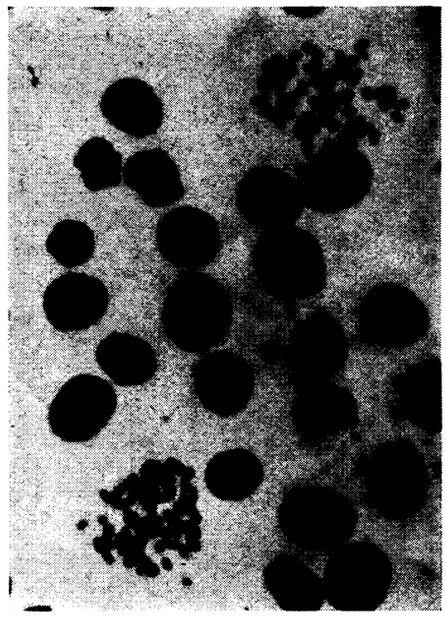
The chemical, Captan, has been used for more than 17 years to protect seeds against fungus which rots them.

Measured by ordinary toxic effects, Captan is mild. Food and Drug Administration regulations allow a residue of 100 parts per million to be left on raw agricultural products, a limit set in 1958 after experiments with dogs, cattle and poultry showed no toxic effects from much higher concentrations.

In contrast, the residue limit for an insecticide such as chlordane is only three-tenths of a part per million.

But the widely-used seed-treatment chemical, long considered to be relatively harmless, has serious genetic effects on animals, an FDA researcher reports.

Captan's effect on the reproduction of cells is disastrous, according to recent experiments by Dr. Marvin Legator of

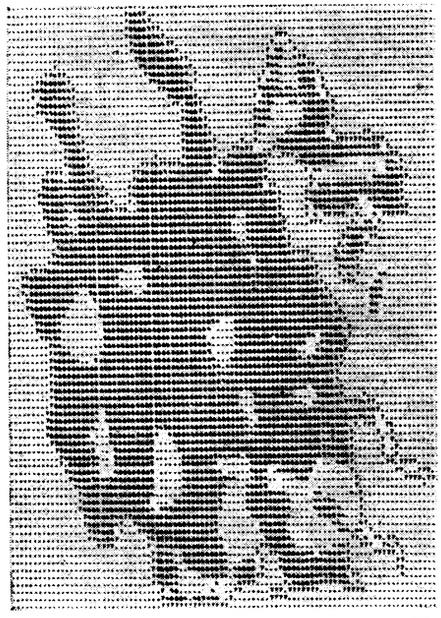


FDA

Cells dividing; optical view . . .

FDA's cell biology research branch. The chemical inhibits the production of DNA, the basic genetic stuff of life and breaks up cell chromosomes.

Dr. Legator, reporting to a symposium in Washington, said that Captan is only one of a number of chemicals formerly considered harmless that are now suspected of causing genetic damage.



FDA

. . . and what the computer sees.

Genetic effects are hard to determine because they take a long time to appear and are hard to trace to their source.

A breakthrough in genetic effect analysis, which led to the Captan discovery, came in 1962 when techniques were developed to make visual displays of cell chromosomes. These chromosomes have a regular pattern. When this pattern is broken, it is a sign that DNA has been modified.

Production of DNA is measured by a radioactive tracing. A small amount of radioactive material is introduced into the cell culture and is incorporated into the newly formed DNA molecules. Analysts measure the amount of radioactivity present and compute the amount of DNA formed.

Another indicator of genetic damage is a slowing down of the rate of cell splitting, called the mitotic index, after mitosis, the division of cells. Researchers have developed a technique of stopping the splitting process at a point where a dividing cell can easily be distinguished from one that isn't splitting. By counting the two kinds of cells, the researcher determines the mitotic index.

The Captan experiments show that chromosomes are damaged and production of DNA is inhibited. Other experiments with chick embryos, carried out by Dr. Jaqueline Verette of the FDA, show that the chemical caused abnormalities of the same type produced in human babies by thalidomide.

Because of the new results, tolerance limits on Captan may have to be revised. But since tolerances have already been issued, the burden of proof will be on the Government in any attempt to change them.

With studies of genetic damage booming, the laborious chore of counting broken chromosomes and mitotic cells are being turned over to computers. Dr. Legator and Dr. Frank Ruddle of Yale University report that computer techniques have been developed to identify mitotic cells and to trace broken chromosomes, even on displays where one chromosome overlaps another. The computer analysis is both quicker and more accurate than manual counting, report the researchers.

Delinquency: Fresh Wind

After a half-century of stagnation in the juvenile court system, the nation is gearing up for a fresh attack on delinquency and youth crime.

There is no guarantee the new approaches will work but the abysmal failure of the present system, either to dispense justice to juveniles or to offset delinquency, is evident.