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

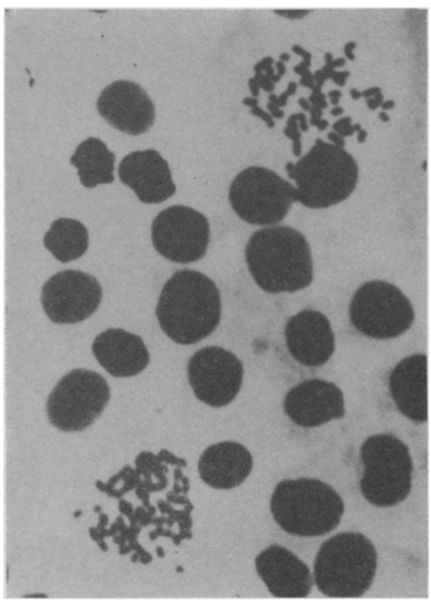
The chemical, Captan, has been used for more than 17 years to protect seeds against fungus which rots them.

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

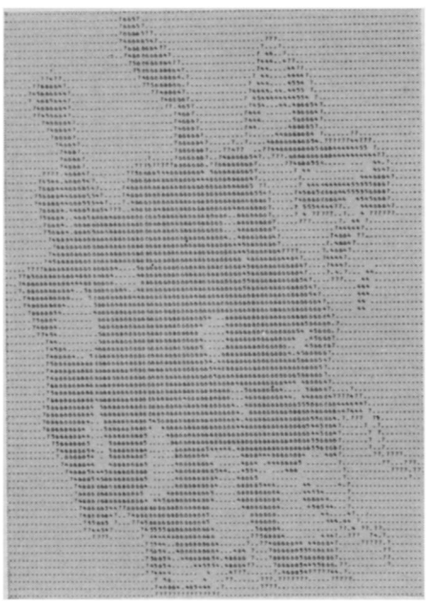


FDA

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.