

Pfizer attributes the better performance to differences in manufacturing procedures.

According to FDA Commissioner Dr. Herbert L. Ley Jr., his agency "has presented a set of standards for these products to all firms. The capsules that will remain on the market meet those standards." No new batches of oxytetracycline will be certified unless manufacturers can demonstrate ade-

quate blood levels with clinical tests.

The last major victory for brand-name producers in the equivalency battle was in 1967 when Parke, Davis & Co. in Detroit showed that its brand name antibiotic, Chloromycetin, was clinically superior to generic versions of chloramphenicol, again on grounds that the generics did not reach therapeutic levels in the patients' blood (SN: 12/9/67, p. 559). □

## HURRICANE SEEDING

### Shrinking Debbie's eye

Four months ago Hurricane Debbie was seeded with silver iodide crystals to help determine whether hurricanes can be modified (SN: 8/23, p. 153). Then the scientists went into a huddle with their data to sort out effects of their effort.

Last week the results were announced. The news was encouraging.

The scientific evidence, although circumstantial, strongly suggests that the seeding helped reduce the force of the hurricane.

Five hours after the completion Aug. 18 of the five aircraft-seeding passes, Debbie's winds had diminished 31 percent. A day later on Aug. 19, when no seeding was conducted, the winds intensified again, and five hours after the second day of seeding, on Aug. 20, the winds again decreased, this time by 15 percent.

**This does not** prove cause and effect, but it does indicate such a relationship.

Of past hurricanes studied, says Dr. R. Cecil Gentry, director of Project Stormfury, only about one in 11 has shown the rate of pressure rise in the hurricane's core that accompanied the reduction of winds in Debbie on the first day. And the drop in wind speeds on Aug. 20, though smaller, would not be expected in more than a half or possibly a third of the storms with no modification experiments, says



*Debbie: Man may have modified her.*

Dr. Gentry.

"The data suggest we did modify the hurricane," he says.

Scientists of the Commerce Department's Environmental Science Services Administration hope to be able to say within the next two to four months whether the experiment did indeed cause the weakening of the hurricane's winds. By then they will have completed study of photographs taken from the ATS-III satellite and of radar pictures taken aboard the project aircraft. And they will have completed analysis of the pressure, temperature and

moisture measurements taken by the aircraft.

If the changes in Debbie were accomplished by the seedings, an advance of considerable importance will have been achieved.

Although the death toll from hurricanes in the United States has been steadily declining in the last half century as prediction techniques improve, their toll in property damage has been rising steadily as hurricane-prone areas become more built up. Damage in the years 1965-69 totaled an estimated \$2.4 billion in the United States.

The experiments on Debbie, says Dr. Gentry, "suggest so strongly that hurricane modification was accomplished" that further confirmation should be sought as soon as practical.

He says he won't be absolutely convinced until seeding on two more hurricanes produces results comparable to those with Debbie. Then he and others feel it would be proper to think about going after hurricanes routinely.

## BREEDER REACTORS

### Three plans approved

Earlier this year, the Atomic Energy Commission invited industry to submit proposals for the construction of a prototype liquid metal fast breeder reactor (SN: 6/14, p. 572).

Last week, three semifinalists — Atomics International, General Electric and Westinghouse—had their plans approved.

Each of the three will receive \$1.3 million for the 12-month paper study to define the technical and economic risks for the total project. Based on the results, it is expected that one of the three will be selected to build a 300 to 500-megawatt demonstration plant sometime in the 1970's.

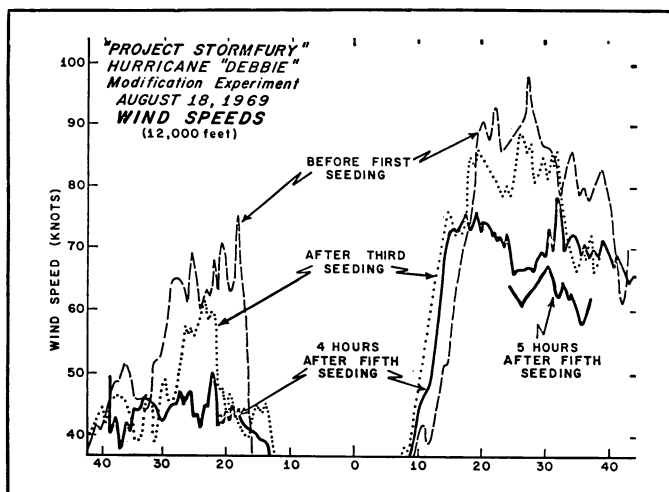
The concentrated efforts in breeder reactor development are being spurred on by the increasing concern about the size of uranium reserves, coupled to the high cost of power from natural reactors.

The total cost of the project definition phase, as it is called, is estimated at \$8.2 million. The remaining \$4.3 million the three companies will have to bear themselves, along with the more than 85 public and private electrical utilities associated with them in their efforts.

**Although the three** proposals submitted are for the same type of breeder reactor, there are significant differences in the features of the reactors proposed. For example, General Electric favors what is called a pot system, where the uranium core, the pump, the piping and heat exchanger are all in a big tank filled with sodium which

*Debbie's winds, on both sides of the eye, weakened markedly after seeding.*

ESSA



december 13, 1969

551