BIOCHEMISTRY

Microbe Rodent Killer

New microbe extract, tried on laboratory mice as germ-killer, killed the mice instead; now seen as possible poison for rodent pests.

➤ A TERRIFICALLY deadly poison, extracted from a microbe that lives in the soil, may presently lighten the labors of modern Pied Pipers whose job is the wholesale elimination of the rodent pests that sabotage our food supplies and carry germs of bubonic plague and other diseases.

The poison was discovered in the course of researches by Prof. Selman A. Waksman and his associates at Rutgers University, New Brunswick, N. J., and the Merck Institute of Therapeutic Research at Rahway, N. J. What the scientists were really looking for was a chemical agent produced by microbes that would be valuable as a germ-killer.

They found a germ-killing substance, which they named actinomycin because the microbe that produced it belongs to the genus *Actinomyces*. It is similar to those microbes whose infections cause certain lung diseases, lumpy jaw in cattle, scabbyness in potatoes and a number of other diseases; but this particular species grew in the soil.

When Prof. Waksman and his coworkers tried actinomycin on various bacterial cultures in glass vessels, they found it had very good germ-killing properties. However, when they tried it on laboratory mice and other animals infected with bacteria, it was not as effective against the germs. Worse still, it killed the animals within 15 or 20 hours.

Actinomycin has a fearful potency as a killer of mice, rats and other rodents, producing fatal results in doses as small as one part by weight to a million parts of the animal's body weight. It is effective both when injected into the animal and when administered in food.

The idea of using the stuff for the treatment of human and animal diseases has been given up. It looks much more promising now as a rat poison, if enough can be produced at reasonable cost.

As a step toward possible eventual synthetic manufacture, it has been prepared as crystals, and a partial chemical analysis has been made. Actinomycin separates into two parts, designated as actinomycin A and B, respectively. The "A" portion contains carbon, hydrogen, nitrogen and oxygen; one provisional formula for the molecule reads: $C_{41}H_{56}N_8O_{11}$. It will be necessary, however, to determine the molecular composition more exactly, and to learn the details of its internal structure, before any attempts at synthetic production can be made.

Associated with Prof. Waksman in these researches were Dr. Harry J. Robinson, Dr. H. J. Metzger, Dr. H. Boyd Woodruff and Dr. Max Tishler.

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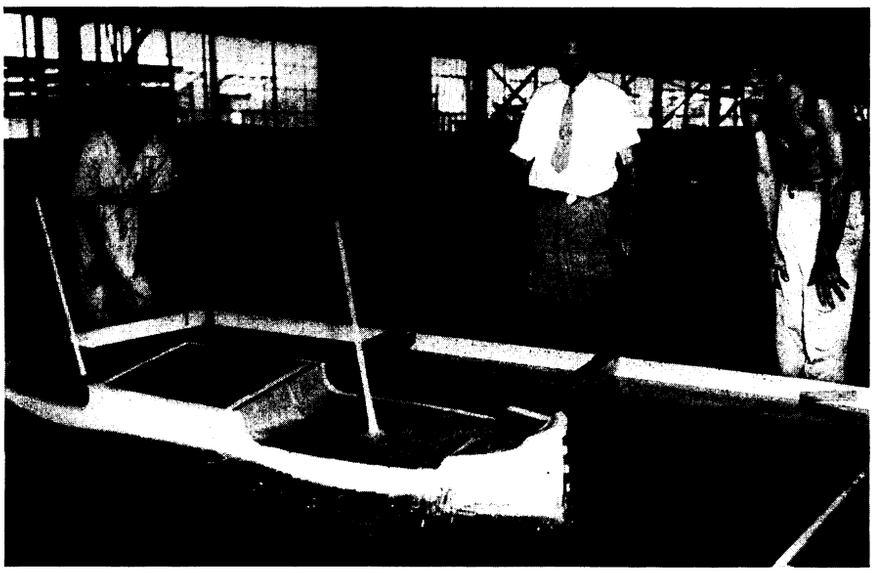

***MODEL LAUNCHING**—The narrowness of the Tennessee River at Decatur, Ala., makes it necessary for the Ingalls Shipbuilding Corp. there to resort to side launchings. While a ship is still in the blue print stage, a six-foot model is constructed and tested out in a tank which approximates, proportionately, the river's width. After it has hit the water, the model is closely observed for heel-over and the distance it floats before coming to rest.*

CHEMISTRY

Synthetic Sapphire Now in Production in U. S.

➤ SYNTHETIC sapphires for bearings in precision instruments essential in the war effort are now being produced commercially in sufficient quantities to meet the principal demands. This commercial production in America is a war development made necessary by the halting of the importation of European products.

Sapphire and ruby are both varieties of the mineral corundum, which is aluminum oxide. They are made by fusing extremely finely powdered aluminum oxide in an oxy-hydrogen flame in a special furnace. The product, unless coloring is added, is colorless.

Sapphire and ruby differ only in color. The coloring is obtained by mixing certain metallic oxides to the corundum powder before it is fused. Colorless sapphire is used usually for bearings. Coloring is added as a rule only when they are wanted for jewelry or for bearings in watches.

The value of the sapphire for bearings is its hardness. It ranks next to diamond. The average sapphire boule weighs about 200 carats. The term "rod corundum" is applied to synthetic sapphires of a long crystal form.

Spinel, another synthetic mineral, a red variety of which is called spinel ruby, is made from magnesium aluminum oxide. It is not as hard as sapphire but is harder than glass or steel. It also is used for bearings but is not yet being produced in commercial quantities.

Colorless sapphire was first formed in England about 40 years ago by means of what is called the Verneuil inverted