

mosphere and sets off a big shower is actually small and could hardly be felt if it were concentrated on one's head (a hundredth of a foot-pound). It is not useful, like the energy in the explosion of the atomic bomb, because there is no known way to concentrate and control the cosmic ray energies. But Dr. Greisen explains that discovery of the fission of this single uranium atom had to precede that great chain reaction that makes possible the atomic bomb.

The big showers happen in about 40 millionths of a second, and the entering particle is probably a proton, or heart of a hydrogen atom. The particles that are produced include all the fundamental par-

ticles, known as protons, electrons, neutrons, photons, various mesons, and neutrinos—the latter never actually discovered except by mathematical inference.

A husband-wife team of Italian scientists, Drs. G. Cocconi and V. Tongiorgi (Mrs. Cocconi, now at Cornell) collaborated with Dr. Greisen in his research.

Another husband-wife pair of experimenters upon cosmic ray showers who reported their findings was Dr. and Mrs. C. G. Montgomery of Yale University. Other cosmic ray experts reporting on showers were Dr. Lloyd G. Lewis of Princeton and Drs. W. W. Brown and A. S. McKay of Cornell.

Science News Letter, July 9, 1949

CHEMISTRY

New Rat-Killing Chemical

➤ A NEW rat-killing chemical, that does rodents to death by causing internal bleeding, has proved up well in field tests conducted by the U. S. Fish and Wildlife Service at the University of Florida, reports H. J. Spencer, Survey biologist. The 100% kill obtained earlier under laboratory conditions has been practically duplicated in the larger-scale tryouts.

The new compound, at present known simply as Compound 42, is a chemical relative of dicoumarol, the substance found in spoiled sweet clover that prevents the clotting of blood. It has a similar physiological effect, and thus starts and maintains fatal bleeding in the rats' abdominal areas.

Compound 42 does not kill at a single dose, as most other rodenticides do; four or five successive feedings are required. However, the effect is cumulative, and once a rat has eaten enough of it he is a "goner." Rats do not learn to avoid it, nor do they develop any tolerance.

Most effective mixture was found to be 46 grams—slightly more than one and one-half ounces—in 100 pounds of solid food.

Four or five feedings of this mixture, over as much as a 12- to 15-day period, produced a practically total kill.

Field tests were made on both the common brown rat and the scarcer black rat. The black rat, though a smaller species, had four times the resistance of the brown rat, but the recommended mixture was sufficient to kill both species. Mr. Spencer is now testing Compound 42 on the house mouse.

Unlike the highly dangerous poison known as 1080, used in professional rat-eradication programs, Compound 42 is not harmful to larger animals or to human beings in the dosage recommended for rodents. Moreover, whereas 1080 has no antidote, the action of Compound 42, if accidentally swallowed in dangerous quantity, can be checked. This can be accomplished either by blood transfusion or by the administration of clot-promoting vitamin K.

Compound 42 was first isolated in 1943, in a search for anti-coagulant derivatives of dicoumarol. Shelved for five years, it

was again picked up in 1948 and subjected to extensive laboratory tests to determine its value as a rodenticide.

Science News Letter, July 9, 1949

● RADIO

Saturday, July 16, 3:15 p.m., EDST
"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Robert A. Millikan and Dr. Carl D. Anderson, Nobelists in physics at the California Institute of Technology, and other cosmic ray experts will talk about "The Mystery of Cosmic Rays."

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