



Bell Telephone Laboratories

BETA TANTALUM—X-ray diffraction patterns helped in the discovery of beta tantalum, a new phase in tantalum films. X-ray reflections from the crystal planes of beta tantalum (top), shown as white lines, are in different positions from those of normal tantalum (bottom).

PUBLIC HEALTH

Drug Addiction Studied

Subhuman primates have been given doses of morphine sulphate and subsequently nalorphine in an effort to determine the causes of drug addiction in humans.

➤ A CLUE to the cause of drug addiction in humans has been found by scientists working with monkeys.

Rhesus monkeys under no stress became addicted to drugs spontaneously in the first of a series of experiments in Cleveland that include stressful conditions.

There are two views about why people get "hooked" on drugs. One explanation is that they simply want "kicks." The other is that anyone under stress can become addicted when he turns to drugs to relieve his tensions.

"We can't test humans to find out why they are susceptible to drugs," Dr. J. Mark Ordy of the Cleveland Psychiatric Institute and Western Reserve University School of Medicine told SCIENCE SERVICE. In using subhuman primates, which resemble humans, we believe that light can be thrown on the behavior of human addicts."

The first test, detailed in Science 149:440, 1965, was carried out in the individual home cages of four *Macaca mulatta* monkeys that were given unrestricted access to water and to morphine sulfate.

When the morphine intake reached a maximum, and the animals were dependent on the drugs, they were injected with nalor-

phine, which antagonizes morphine action and rapidly brings on withdrawal symptoms. The animals showed various reactions, including runny noses, vomiting and lying on their sides with their eyes closed.

"The relation between physical and psychological factors in addiction are complex," the researchers said. "It is contended on the one hand that addiction or physical dependence begins with the first dose. Other investigators insist that habituation is distinguished from addiction by the presence of abstinence symptoms."

In most previous reports of studies with animals, prior addiction of the test animals effectively prevented investigation of the question as to what factors may lead to drug addiction in humans, the researchers explained. The present research demonstrating spontaneous drug addiction in monkeys can provide an experimental approach in studying the role of individual differences.

Collaborating with Dr. Ordy in the study were Dr. Andre Nagy of the Institute, and Dr. James L. Claghorn, now on the staff of the Houston Psychiatric Institute, Houston, Tex.

• Science News Letter, 88:87 August 7, 1965

TECHNOLOGY

New Form of Tantalum Discovered by Scientists

➤ AN IMPROVED FORM of tantalum has been discovered.

Named beta tantalum, the new material has electrical properties significantly different from those of normal tantalum, a refractory metal widely used in electronic circuitry. Beta tantalum differs from the normal material in that it has a higher resistivity, a lower temperature coefficient resistance, and it becomes a superconductor at a much lower temperature. It could be used to make capacitors for electronic thin-film circuits because it readily forms oxides and can be anodized by usual techniques.

Beta tantalum was announced by Bell Telephone Laboratories, New York City, as the joint discovery of researchers at the laboratory and at the Western Electric Engineering Research Center.

• Science News Letter, 88:87 August 7, 1965

PUBLIC HEALTH

Moldy Peanut Poison Breaks Chromosomes

➤ AFLATOXIN, a substance produced by moldy peanuts, not only causes liver cancer in animals, it can also cause abnormalities, or breaks, in human chromosomes, the substance containing hereditary genes.

This discovery in human blood cells is reported along with research that showed a break in chromosomes in the roots of seedlings. The report, in *Nature*, 207:433, 1965, said it is believed that "no previous attempts have been made to investigate the action of aflatoxin on chromosomes."

Dr. Lorna J. Lilly of the Middlesex Hospital Medical School in London, who revealed the break in human chromosomes, referred to the discovery as "preliminary results" in an investigation being carried out in the department of biology as applied to medicine.

The British call peanuts groundnuts, and Dr. Lilly refers to a 1960 outbreak of so-called Turkey X disease that killed 100,000 turkeys in Britain which was traced to the toxic effects of groundnut meal that formed a part of the birds' food.

The toxic substances, called aflatoxin collectively, are found in the mold, or fungus, *Aspergillus flavus*, which is a common contaminant of groundnuts, groundnut cake and meal, and sometimes of maize and other food-stuffs.

In another report, an Ohio State University scientist said that cancer of the liver in rainbow trout caused by aflatoxin is similar to the cancer found in some African populations.

Dr. Dante G. Scarpelli, professor of pathology, has begun a study with researchers at Massachusetts Institute of Technology and the Eastern Division Laboratory for Fish Diseases, to determine if moldy peanuts and grains are a cause of human liver cancer. Some Nigerian scientists also are beginning studies comparing the stages of liver tumor development in fish and man.

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