PHYSIOLOGY

# Cholesterol Level Hit

➤ THE AMOUNT of cholesterol the human blood stream can safely absorb and dispose of each day is only one-tenth that presently considered safe, Northwestern University researchers warned.

Instead of two grams a day, the level should be no more than two-tenths of a gram in our daily diets, they said. Most of the non-utilized cholesterol is deposited in the liver, blood vessels and other body cells. Cholesterol is a fatty substance linked with hardening of the arteries.

Drs. Bruce Taylor and George E. Cox presented their findings separately to the Federation of American Societies for Experimental Biology meeting in Atlantic City, N. J.

They found the human apparently lacks a compensatory mechanism some animals have which reduces the cholesterol produced normally within the body when large amounts of cholesterol are consumed.

The confusion over safe levels of cholesterol in the diet probably results from the type of human studies previously done, Dr. Taylor suggested. During most common tests a patient is put on a cholesterol-free diet for several days, and then fed a precisely-measured meal of cholesterol. The rise in cholesterol level in the blood is then measured.

This, Dr. Cox reported, is like putting a few drops of water onto a dry blotter. "It does not match normal conditions under which cholesterol is fed steadily into the system over the years."

A group of volunteers ranging from 18 to 30 years of age, were chosen for the Northwestern study. They were fed a measured amount of cholesterol-rich, radioactively-tagged egg yolk every day for periods up to 18 months. And each person kept up his daily routine.

Some animals are apparently able to reduce the amount of natural cholesterol when put on a high-cholesterol diet, Dr. Taylor said. The Northwestern study revealed that man seems unable to do this.

"I do not think a human should eat more than a quarter of a gram of cholesterol per day," he said. This is the amount found in a half-pound of beefsteak, or in one egg yolk. It is apparently the maximum the body can cope with before depositing the excess in vital organs and tissues.

• Science News Letter, 81:278 May 5, 1962

BIOLOGY

# Snake Bite Treatment

➤ STUDIES ON RATTLESNAKE venom at the School of Aerospace Medicine, Brooks Air Force Base, Texas, indicate that antivenom serums and old-fashioned suction methods for extracting venom from snake bites do not work.

Dr. William G. Glenn, immunochemist at the school, reported that extracts of blood from a snake bite contain no trace of the deadly poison immediately after injection. In fact, he said, it could not be found anywhere in the victim's body.

Death from snake bite is caused by the disruption of the enzymatic balance in a mammal which starts a series of events causing nerve disorders, shortness of breath or heart failure, Dr. Glenn explained. It is not from the venom itself.

The same effects are caused by the venoms of many poisonous plants and animals, he said.

At the Federation of American Societies for Experimental Biology meeting in Atlantic City, N. J., the immunochemist reported his discovery of a minimum of 14 families of Texas rattlesnake (*Crotalus atrox*) venom components, each of which acts as enzymes to destroy mammalian tissues and cells and upset essential cell mechanisms. Each venom family has active poisons and inhibitors which obviously are in balance with those in other families to protect the rattlesnake from its own venom.

Acting in a human or animal, each component is more potent than the whole venom, he explained.

While studying this phenomenon, Dr. Glenn found that the substances present in the venom, although similar to those occurring naturally in humans (except stronger), acted both as coagulants and anticoagulants to offset the victim's attempts to neutralize any portion of the venom.

He attempted to find why some animals are not affected or only slightly affected by bites while others die.

Many factors enter into the complex problem, he said. Snake venom is stronger in some snakes than others. It is stronger in the same snake at different times. Some animals are naturally immune to snake venom, and even within the same species or individual the susceptibility to the poison varies.

Dr. Glenn believes that in cases where the victim was cured, it was either that the bite was not potent enough, that the individual was immune or partially immune, or that treatments other than antivenom injections or suction treatments have helped.

The treatments presently used are seemingly logical, Dr. Glenn explained. Anything injected in the blood stream should be extractable. However, this hypothesis breaks down in the light of his and other recent discoveries, he said.

Snake venom cannot be found even a few seconds after injection. Swelling does occur, he said, but it is the body reaction, the formation of fluids and attempt to counteract the poison, that causes swelling.

The logical approach to the problem, he said, would be to study the reasons for natural immunity in the Florida king snake, the European hedgehog (porcupine) and several other animals. Only the same sort of immunity substance or reaction would be valid protection against snake venom.

• Science News Letter, 81:278 May 5, 1962

## Gangrene Prevented

➤ GANGRENE resulting from circulation defects during surgery can be prevented by a direct injection of oxygen, the Federation of American Societies for Experimental Biology learned in Atlantic City, N. J.

Direct intra-intestinal oxygen infusion has prevented destruction of tissue by circulation defects in both rats and humans in experiments at the Waldemar Medical Research Foundation in Port Washington, N. Y. These disruptions in circulation through abdominal organs often result in gangrene.

The new procedure, explained by Drs. Bernard Gottfried and Norman Molomut, will permit the administration of oxygen to areas of the body which cannot presently be aided by oxygen therapy.

More efficient liver function in detoxifying anesthetics was also noted in the oxygenated animals. This effect may extend the effectiveness of chemotherapy in cancer treatment, since it increases the liver capacity to detoxify the agents.

The scientists said it might be possible to deliver larger doses or prolong the treatment of cancer tumors using this process. The method might also be used in chronic liver diseases (cirrhosis), radiation therapy, or during abdominal surgery.

• Science News Letter, 81:278 May 5, 1962

PHYSIOLOGY

## Split-Brained Monkey Learns Conflicting Tasks

➤ A MONKEY with his brain split in two can learn one visual task with his right eye while he simultaneously learns a contradictory task with his left eye.

This is reported in Science, 136:258, 1962, by Dr. C. B. Trevarthen of the California Institute of Technology, Pasadena.

In Dr. Trevarthen's experiment, the split-brained monkey learned simultaneously two contradictory tasks. A pair of patterns, a circle and a cross, were illuminated by polarized light and were displayed to each eye separately through filters. The animal was always rewarded when one of these patterns was shown to the right eye. For the left eye, the reward came when the opposite pattern was displayed.

The split-brained monkey learned the two contradictory discriminations simultaneously and there appeared to be no interference between the two. Normal animals with intact brains, however, showed signs of extreme frustration in this situation.

The experiment was a follow-up of previous research on split-brained cats and monkeys, Dr. Trevarthen said.

• Science News Letter, 81:278 May 5, 1962