MEDICINE

Arteries Make Chemicals

Besides piping blood, arteries have now been shown to be important in biochemical activities. Can build complex compounds out of simple ones.

➤ YOUR ARTERIES apparently are even more important to you than anybody has previously suspected, according to a series of experiments that have been completed in the University of California School of Medicine in Berkeley.

In the past most medical scientists have considered the arteries to be somewhat inert pipes through which the blood supply was channeled from one part of the body to another. They were not considered to be important in the body's biochemical activities.

But recent work has shown that the arteries in addition have many of the characteristics of vital organs like the liver. The arteries can build complex and essential compounds out of simple organic materials. And they can break down complex compounds into simple ones. This means the arteries have enzyme systems.

So far the investigators have shown, by keeping animal arteries "alive" in nutrient solutions, that these biological conduits can synthesize cholesterol and phospholipids, both of which are common, complex body chemicals. They have also shown that the arteries use significant amounts of oxygen; that is, that they "breathe."

The research touches on critically important questions that will take years to answer. To what extent are functions now assigned to other vital organs within the province of the arteries? How much biochemical influence do the arteries have on the foodstuffs, in the form of blood, that they transport? How big a role do the arteries play in body chemistry?

The work has been done in the laboratory of Dr. I. L. Chaikoff, professor of physiology. The most recent work, on the synthesis of cholesterol, was reported in SCIENCE (June 29) by Dr. M. D. Siperstein, U. S. Public Health Service Fellow, Dr. Chaikoff, and Dr. S. S. Chernick, assistant physiologist.

Cholesterol, a whitish chemical, is associated with hardening of the arteries. Deposits of the chemical are formed on the blood vessel walls, reducing flexibility and the ability of the vessels to carry blood.

The scientists pointed out that it is well known that diet is important in cholesterol synthesis. It had already been demonstrated at Berkeley and elsewhere that the liver and other organs can synthesize cholesterol from simple compounds.

The researchers wanted to know if the artery itself could perform its own synthesis. With the arterial tissue in the nutrient solution they placed acetate, a common, simple compound, labeled with radioactive carbon. In three hours they isolated cholesterol from the arterial tissue. Presence of radiocarbon in the cholesterol showed that the acetate had been incorporated into the cholesterol by the arteries. While the quantity of cholesterol was small, the synthesis being about one tenth the capacity of the liver, it was consistent.

The scientists concluded that such synthesis probably is a part of a generalized pattern that occurs throughout the body, that it can play a role in hardening of the arteries. They added that the relative roles of diet and of such synthesis in hardening of the arteries remain to be determined.

Science News Letter, August 4, 1951

● RADIO

Saturday, Aug. 11, 1951, 3:15-3:30 p. m. EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. S. Whittemore Boggs, geographer of the U. S. Department of State, discusses "The World's Need for an Atlas of Ignorance."

ARCHAEOLOGY

Mississippians 1500 B.C. Cooked in Wood Vessels

➤ MISSISSIPPI WAS inhabited in 1500 B.C. by people who had not yet learned to make clay pots for cooking, Dr. James A. Ford of the American Museum of Natural History in New York has discovered in excavations just made at Jaketown site, near Belzoni, Miss.

In the preceramic culture which continued until 300 A.D. stones were heated and used for cooking in wooden vessels. There were stone pots, weights and flake stone knives.

Science News Letter, August 4, 1951

ASTRONOMY

Old Stars Don't Fade Away

➤ OLD STARS don't fade away, they go off into a series of recurring nuclear explosions like gigantic hydrogen bombs.

Prof. G. Gamow of the George Washington University, Washington, D. C., offers the new theory that unusual stars deviating from the normal array of stellar forms are suffering from hydrogen exhaustion.

The energy that makes the stars shine is due to the thermonuclear transformation of hydrogen into helium. This is a well-accepted idea. Half of the material of normal stars is hydrogen. The life-span of a star is determined by the rate of consumption of the hydrogen, which causes its luminosity.

Brighter stars have shorter life spans. Prof. Gamow finds that stars of zero absolute magnitude, which is much brighter than our sun, will run through their hydrogen in a few thousand million years, that is, a few billion years, which is about the age of the universe. The sun has a potential life, based on the exhaustion of its hydrogen, of about fifty billion years, which means that it should last a long time in the future.

Prof. Gamow in a communication to the British science journal, NATURE (July 14), suggests that pulsating variables, red giants, very dense stars, white dwarfs, and various kinds of exploding stars or novae, which are unusual because they are either swollen-up or shrunken, have run out of their original hydrogen supply and are in an unusual final stage of life.

The aging stars that have recurring explosions are visualized as consisting of a core rich in helium surrounded by an envelope rich in hydrogen. These are thought to interact from time to time in a way that Prof. Gamow suggests is analogous to the action of the clapper of an ordinary electric bell which can stay neither at the electromagnet nor the electric contact.

Mathematical equations of what happens in the stars are very complex and Prof. Gamow and his colleagues hope to have the Los Alamos new electronic computer, Maniac, put to work on the problem.

Science News Letter, August 4, 1951

INVENTION

Patented Device Cures Butting Bull or Cow

➤ THE BUTTING bull, steer or cow, that has acquired a habit of attacking other animals, is quickly cured with a "halter weapon" on which patent 2,559,598 was issued to Homer C. Cook, Spokane, Mo.

Essentially, it consists of two triangular metal plates, separated by coil springs, that fit one over the other on the forehead of the animal. A halter holds them in place. The outer plate carries a number of inward-projecting sharp points that pass through holes in the under plate if butting is attempted.

Means are provided so that only minor "wounds" can result, but the pricking is severe enough to break a bad habit. This device might be usable with some other well-known butters not in the bovine group.

Science News Letter, August 4, 1951