mind for so far there is no chemical cure for cancer and no successful method of treating this condition except by surgery, X-rays or radium. However, Dr. Voegtlin says that in the experimental chemical treatment of cancer, when mice, not humans, are the patients, "some suggestive results have been secured." Referring to the way one germ-caused disease after another has fallen under the attack of new chemical remedies, Dr. Voegtlin says "it may not be over-optimistic to look forward to the time when similar results can be achieved in the chemical treatment of neoplasia (cancer)."

Among the results, achieved by various researchers, which Dr. Voegtlin believes indicate cancer might yield to chemical attack are the following:

The growth of spontaneous breast cancers in mice was arrested in nearly three-fourths of the animals following injections of extract from the placenta or from the skin of embryos. In over one-fifth of the animals the tumors actually grew smaller.

An old gout remedy, colchicine, a coal-tar chemical, arrests cell growth and recent research indicates that the growth of certain mouse cancers can be checked by this drug.

Certain sulfur compounds have been found to have a definite growth-checking effect on breast cancers of mice.

When mice with another kind of cancer are given a substance obtained from one kind of bacteria, hemorrhage and regression of rapidly growing cancers occurs.

Science News Letter, August 6, 1938

GEOLOGY—AGRICULTURE

Stock-Poisoning Selenium Is Undesired Gift of Volcanoes

Spewed Into Air, It is Brought Down by Rain, Buried, Hardened into Shale, Finally Weathered into Soil.

SELENIUM, the poisonous element named for the moon, that wreaks havoc on livestock in the West and may cause "rheumatism" in human victims, is the unwelcome gift to the soil of volcanic eruptions in the remote geologic past.

This has been determined by U. S. Department of Agriculture scientists, working quietly for several years on the difficult problem presented by stock poisoning occurring in certain parts of the West. Chemical analyses of soils from all over the world indicate that there is no soil entirely free from selenium, though relatively few soils contain enough to be dangerous.

The dangerously seleniferous soils in this country are found mainly in the Great Plains region. They were formed by the weathering of shales deposited during periods of intense volcanic activity when the Rocky Mountains were a-building.

The selenium was not placed directly in the soils by the volcanoes. The poisonous element was spewed into the air and brought down to earth by rain. The clays were subsequently buried and hardened into shale. Later, the shale beds were exposed again, and weathered back into soil. Analyses of soils from Hawaii indicate this air-to-earth route of volcanic selenium.

Selenium causes mischief to livestock when the animals eat plants that have absorbed the poisonous element from the soil. Not all plants absorb it equally. Two members of the pea family, a vetch and a loco weed, are especially serious offenders. Most native grasses, on the other hand, have very low selenium contents.

Animals native or long naturalized in a given region somehow learn that seleniferous plants are not good for them and come to avoid them. Unheeding immigrant animals are as a rule the principal victims.

The first written record of selenium poisoning was made by Marco Polo in western China about 650 years ago—though of course he didn't know what it was. He only noticed "a poisonous plant growing there, which if eaten . . . has the effect of causing the hoofs of animals to drop off. Those of the country, however, being aware of its dangerous quality, take care to avoid it."

The present researches were conducted by Horace G. Byers, John T. Miller, K. T. Williams, and H. W. Lakin of the Bureau of Chemistry and Soils. It is reported in U. S. Department of Agriculture Technical Bulletin No. 601.

Science News Letter, August 6, 1938

BIOLOGY

Nerve Transmission Both Electrical and Chemical

HOW the various portions of the body communicate with one another through the nerves, how the brain tells the finger to move or a pricked finger tells its plight to the brain—this problem is a major one in physiology. There are two general theories as to the method of communication or transmission in living material, electrical and chemical.

In recent years physiologists have accepted pretty generally the view that transmission along a nerve fiber is in the main an electrical phenomenon. Local currents within the fiber from the excited to the unexcited portion provide for the transmission of that state of excitation which we call a nerve impulse. But the transmission of a state of activity from one nerve fiber to another, as happens in the brain when any of our sense organs are stimulated, or from a nerve fiber to a muscle fiber, as happens when we make a voluntary movement, means the transmission of an excitation from one cell to another.

There is much discussion as to whether the passage over the junction point between the two cells is an electrical or a chemical process. There is much evidence to show that the transition is effected by chemical transmitters, such as acetyl choline, in the case of our voluntary and involuntary movements. According to this view, every movement we make is accompanied by the production of minute amounts of acetyl choline at the ends of the nerve fibers, and it is through this chemical agent that the muscle is set into action.

Other physiologists have held that the nerve impulse when it reaches the junction point is transmitted electrically to the muscle fiber.

These two theories of transmission were the subject of a recent discussion before the Royal Society of London in which a number of European physiologists participated. It is interesting to find that a number of the participants agreed that transmission of excitation in the body from one cell or unit to another may possibly be of a dual character, involving both chemical and electrical processes.

Science News Letter, August 6, 1938

Science Service, Inc. is collaborating with JSTOR to digitize, preserve, and extend access to *The Science News-Letter.* www.jstor.org