MEDICINE

Steps to MS Solution

One of the latest clues for solving the problem of multiple sclerosis patients is the finding that their blood contains more cyanide than that of normal persons.

➤ SCIENTISTS ARE making progress in attempts to solve the problem of multiple sclerosis. This disease, known as MS for short, afflicts more than a quarter of a million Americans. Most victims are between the ages of 20 and 45.

New ways of bringing temporary relief, at least, new knowledge of body chemical differences between MS patients and others, and a potential new early diagnostic test are brightening the dreary MS situation. Best of all, perhaps, doctors and medical researchers have fresh interest in the patients and the disease.

At the National Institutes of Health of the U. S. Public Health Service, scientists heard about one of the latest clues for solving the MS problem. This is the discovery that the blood of patients with MS and certain similar nerve diseases contains more cyanide than that of normal persons. The amount of this poison in MS blood is about one-tenth the quantity which is sometimes fatal. It is about the same as that which causes symptoms like those of MS in healthy people who, in one way or another, absorb unusually large quantities of cyanide.

Along with this discovery came the finding that the chemical, thiosulfate, causes the cyanide to disappear from MS patients' blood within about two minutes. In about 48 hours the cyanide could again be detected.

Whether this harmless chemical, a known detoxifying substance for cyanide, can be used in treatment of MS patients is for future study to determine.

Meanwhile, some patients are getting temporary relief of symptoms, particularly in the acute stage of the disease, from chemicals that dilate blood vessels. Among these are tetraethylammonium chloride, amyl nitrite, nicotinic acid and carbon dioxide. None of these is considered in any sense a cure, however.

Because multiple sclerosis attacks at an early age and almost totally disables many of its victims before it kills, usually by age 45, it is an economic problem as well as a personal tragedy.

The disabilities come through seeing double, tremor, weakness, difficulty in walking and balancing, difficulty in talking, bladder trouble and emotional disturbances.

All these result because the fatty sheath of various nerves is gradually damaged and scarred. The scarred nerves cannot function efficiently and eventually may fail completely to transmit impulses. The patient's troubles depend on which nerves are affected and how severely.

Symptoms may come and go, especially in the early stages. During the intervals, or remissions, the patient may feel quite well, and these remissions may be fairly long. They make it hard to tell whether a new medicine is helping.

Although the disease is a nerve disease, many scientists are studying the blood of MS patients in the hope of getting clues to the disorder. Such studies led to the cyanide discovery described by Dr. Richard C. Fowler of the University of Rochester, N. Y., School of Medicine. They have also shown other scientists that the blood of MS patients clots more slowly than normal in most cases, that it contains more of the fatty chemical, cholesterol, and that it sludges. This sludging, or packing of red cells in the blood vessels, might play a part in causing the disease, Drs. L. Roizin, R. Abel and F. Winn of New York believe, because it might deprive nerve cells of oxygen.

Science News Letter, December 6, 1952

TECHNOLOGY

Floating Truck Lands Combat-Ready Tank

➤ WATER, beach sands and rough terrain behind the beaches are all navigated with equal ease by a new 60-ton, amphibious cargo vehicle of the U. S. Army. (See SNL, Nov. 22, p. 327.)

Resembling a scow in general appearances, it is equipped with rubber-tired wheels, measuring ten feet in diameter, for traveling on land and twin screw propellers for propulsion in water.

In a demonstration at Fort Lawton, Wash., the huge cargo carrier was loaded at shipside with a medium tank. It transported the tank ashore through the water, over a soft beach and unloaded it inland ready for immediate combat action. The new amphibian has a specially designed landing-craft type of ramp that permits a loaded tank to leave the vehicle under its own power and fully ready for combat.

This amphibious vehicle, called the "Barc," is 61 feet in length, 27.5 feet in width and has a height of 16 feet. It is powered with four 165-horsepower diesel engines, one to drive each wheel. The same engines are used to drive the propellers when the craft is afloat. Two engines power each of the two propellers. Easy maneuvering, on land or water, is emphasized as a characteristic of the new amphibian.

Science News Letter, December 6, 1952

DR. EDWIN G. CONKLIN—Henry Fairfield Osborn Professor Emeritus at Princeton University and world-famous biologist, Dr. Conklin died at his home in Princeton Nov. 21.

NECROLOGY

Dr. Conklin Asked Science To Fight for Peace

➤ THE SCIENCE of biology lost one of its "grand old men" with the death of Dr. Edwin Grant Conklin, 88, professor emeritus of biology at Princeton University and world-famous for his studies on animal development. Dr. Conklin died Friday, Nov. 21, at his Princeton home, three days before he would have reached the age of 89.

Dr. Conklin had been a member of the board of trustees of SCIENCE SERVICE since 1937 and was its third president over a span of years.

His death marked the end of 61 years of teaching and research. Although he retired from active teaching in 1933, at the age of 70, Dr. Conklin continued working, lecturing and writing until the last. During his 19 years of "retirement," Dr. Conkkin turned out 95 articles and three books on biology and the light it sheds on the problems of the human race. Until his last illness, Dr. Conklin worked with a microscope nearly every day on his research.

His most famous contribution to biological knowledge was the demonstration that the future organs of a body could be located in definite sections of a fertilized one-celled egg and in the earliest embryos.

Dr. Conklin could never be accused of being an "ivory tower" scientist. He wrote and spoke constantly about the great problems of the day and the application of science, particularly biology, to them. Before the outbreak of World War II, Dr.

Conklin told a group of British scientists that civilization faced a crisis brought on by the rapid advancement of science and the stagnation of society. He warned that society would react to this situation by the violence of revolution if scientists and the world's leaders did not act to bring about social advancement by the calm, reasonable means of evolution.

When the war he prophesied appeared, Dr. Conklin turned his scientific knowledge to blasting the racist theories of Hitler. Intolerance, bigotry and prejudice are man-made, he said, appealing for the use of reason and the scientific spirit.

Concerning the world of tomorrow, Dr. Conklin wrote in his book, "Man, Real and Ideal," published during the war, that men should fight together for society in peacetime as they fight together to preserve their society in war.

"Why should not the service of society be the supreme duty in time of peace?" Dr. Conklin asked.

Theory is no good unless backed by fact, Dr. Conklin had learned from his work as a scientist. And so he warned the planners of the future:

"To be of any real effect, ideals must lead to action. Faith that will move mountains must be put to work with steam shovels."

Science News Letter, December 6, 1952

ENGINEERING

No Quick Solution Seen To Air Pollution Problem

➤ NO QUICK solution to annoying air-pollution problems was foreseen by Allen D. Brandt of the Bethlehem Steel Co. at a meeting of the American Society of Mechanical Engineers in New York.

"A certain amount of air pollution is the price that must be paid for those many conveniences which are the product of an industrial giant (the United States), and this condition requires a long time to correct," he said.

About $100,000,000 already is being poured annually into corrective measures to make the air less contaminated. Effects of the control measures are beginning to show. Despite increased employment and production, air pollution due to dust and sulfur dioxide is on the downgrade.

Industries are cutting air pollution by substituting machines that release few objectionable contaminants into the air for machines that expel many air-pollutants.

Other industries are converting their wastes into by-products. Horrible-smelling hydrogen sulfide can be converted into sulfur dioxide, and that can be made into sulfuric acid. Poisonous carbon monoxide can be burned into harmless carbon dioxide.

Still other industries are filtering the solid polluting products out of waste gases by machinery, or are building tall smokestacks that will disperse waste gases high into the atmosphere where they will not be objectionable.

Science News Letter, December 6, 1952

PHYSICS

Eventful Atomic Decade

Dec. 2, 1942, the date of first self-sustaining nuclear chain reaction, marked beginning of new era in history. In closing weeks of first decade, H-bomb presumably was exploded.

➤ TEN YEARS ago the first atomic "fire" was "kindled" in an old squash court at Stagg Field, University of Chicago. Dec. 2, 1942, was the date of the first self-sustaining nuclear chain reaction in the history of the world, an event ranking with man's first prehistoric lighting of a fire.

In this event-packed decade, the atomic bomb was developed in the most intensive and expensive research project of history.

Nearly 40 atomic bombs have been exploded, two of them to cause Japan's precipitate surrender.

Perhaps 30 nuclear reactors (atomic piles or "furnaces") of various varieties are operating, most of them in the United States, but some also in Canada, Britain, France, Norway and, presumably, Russia.

A stockpile of perhaps 500, perhaps 1,000, atomic bombs has been built up in the United States, with their plutonium more precious and more closely guarded than the gold of Fort Knox.

Soviet Russia is known to have exploded three atomic bombs. The balance of world power may rest with the size of the Soviet A-bomb stockpile.

The first "hydrogen" bomb presumably was exploded in the closing months of atomic energy's first decade. This "thermonuclear" H-bomb weapon is potentially perhaps a thousand times as powerful as the city-devastating A-bomb.

Two atomic engines for submarines, one for an aircraft carrier and two for airplanes are under development.

Study Photosynthesis Secret

Many new artificially radioactive elements have been created in nuclear reactors. Over a score of radioisotopes are in production and use in medicine and research. Cobalt 60 alone produces many times more gamma radiation for cancer treatment and other use than all the world's radium. If the secret of photosynthesis is discovered through use of radioisotopes, it will be worth more than the whole atomic energy development.

Industrial and commercial use of atomic power has been postponed by emphasis in the U. S. Atomic Energy Commission program upon weapon and military application. But there is the eventual possibility that out of a slowed down H-bomb reaction there will come power cheaper than from oil and coal, without use of scarce and expensive uranium.

So far for atomic energy the United States has spent $12,046,000,000 and the rate is now about $3,000,000,000 a year.

What happens in a nuclear reactor or an atomic bomb is that matter is converted into energy.

Einstein's special theory of relativity in 1905 showed the equivalence of mass (matter) and energy, the famous formula being E equals m (mass) times the square of c, which is the velocity of light. Long before that first reactor in 1942, scientists had thus figured out that the obtaining of energy from matter should be possible. They had proved it in various experiments.

The war-inspired supersecret atomic energy program got under way in great earnest in 1940. Its first great step was the successful operation of the historic first self-sustaining chain-reacting pile. Although the date was Dec. 2, 1942, the date line of the news about this event was Aug. 10, 1945, when the famous Smyth report (written by the same Dr. H. D. Smyth now an AEC commissioner) was released. Just a few days earlier the world had learned of the use of the first two atomic bombs in war.

First Pile Built Slowly

It was a dramatic time when that first reactor "went critical," that is, achieved a chain reaction that kept producing energy without outside aid. About six tons of uranium and uranium oxide were used, all that could be scraped together. There was purified graphite to moderate, or slow down, the reaction. The pile was built as a lattice, with the lumps of metal or oxide regularly spaced through the graphite. Movable strips of absorbing materials served as controls. Slowly the pile was built, with many instruments monitoring what happened. Earlier than anticipated, the reaction started. Controlled atom-fissioning or splitting was a reality.

Leaders of this 1942 experiment, Dr. Enrico Fermi, scientific refugee from Mussolini's Italy in charge of the experiment, Dr. A. H. Compton, now chancellor of Washington University, Dr. E. P. Wigner of Princeton University, and Dr. W. H. Zinn of Argonne National Laboratory, are all still associated in some way with the atomic energy program. They had a reunion meeting at the St. Louis meeting of the American Physical Society on Friday, Nov. 28.

The story of the release of atomic energy really begins with many discoveries, experiments and theories in nuclear physics in the 1930's. But the immediate start of the researches which resulted so spectacularly was in December, 1938, when two Germans, O. Hahn (awarded the Nobel