

CHEMISTRY

New Tablets Replace Army's "Canned Heat"

► NEW trioxane heat tablets for soldiers will be tested this winter in operations in Alaska and the Aleutians. Quartermaster Corps tests have shown the new tablet burns without odors or poisonous gases and produces a steady blue flame which is not easily blown out by wind.

During World War II both paraffin and alcohol heating tablets were used, but both proved unsatisfactory. The paraffin burned with a bright flame visible for some distance and deposited soot on the container. Alcohol heating, the Army simply states, "has been eliminated as not possessing the necessary characteristics for military use."

Hexamine tablets, also used in the war, will be tested further in Alaska, but these units are more sensitive to moisture, burn brightly and produce some poisonous gases.

The new trioxane tablets are approximately three inches long, one and one-quarter inches wide and five-sixteenths of an inch thick, producing enough heat to raise the temperature of a pound of water 100 degrees Fahrenheit.

Science News Letter, November 2, 1946

GEOGRAPHY

North Magnetic Pole Believed Moved 200 Miles

► THE NORTH magnetic pole isn't where it used to be, but just where it is now is a question scientists aren't agreed on. Since 1904, the imaginary point on the earth where the north-seeking compasses of the world's navigators point has moved at least 200 miles north and a little east or west.

Latest charts of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, based on magnetic observations and the flight of the RAF Lancaster "Aries" in 1945, put the earth's north magnetic pole north and west in McClintock Sound or in Melville Sound, north of the Hudson Bay. Your geography book shows the classic location on the western side of Boothia Peninsula.

But other observations made on joint U. S. and Canadian Army maneuvers and by Canadian observers as far north as Fort Ross indicate the pole may actually have moved a little east and north. R. G. Madill of the Dominion Observatory in Ottawa told Science Service that

he believes the pole is now on North Somerset Island, which is north and east of Boothia peninsula in Canada's far north.

Mr. Madill expects the best answer to come when observations now being made from a U. S. Army B-29 are tabulated. Frequent flights in the area by this plane will give the latest and most accurate picture of the pole's location, Mr. Madill indicated.

Wherever the imaginary pole is, all observers are sure that it will prove to be at least 200 miles from the older location in a northerly direction.

And scientists believe there can be only one north magnetic pole. Russian scientists, a few weeks ago, claimed to have discovered another pole in Siberia, but that report is believed to have been due to mineral deposits that may create local magnetic "poles."

Science News Letter, November 2, 1946

MEDICINE

Is There Anything to Rainbow Wave Drug?

► AMERICAN scientists are wondering whether there really is anything in the "rainbow wave" drug developed by Japanese scientists and said to be effective in speeding healing of severe burns, ulcers, frostbite, tubercular leprosy and other diseases.

The drug, also known as Koha, is derived from neocyanine. Cyanine is a dye. Some scientists, inclined to be skeptical when they first read the report on Koha issued by the Office of Technical Services, U. S. Department of Commerce, recalled that other dyes have germ-killing or stopping power. The sulfa drugs came from a dye house. So these scientists think Koha should be investigated further.

This rainbow wave drug is a light-sensitive substance which Japanese scientists produced in an effort to find a chemical resembling chlorophyll, the green coloring matter of plants. They hoped to use chlorophyll's ability to convert sunlight into energy for treatment of various diseases. They were unable to obtain active chlorophyll, and experimented with neocyanine instead.

Koha, the rainbow wave drug, is given by injection into the veins. It is said to increase the number of white blood cells, stimulate formation of new tissue and increase the survival rate of damaged tissue cells.

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IN SCIENCE

MEDICINE

Caffeine Does Not Stunt Growth

► THE OLD fear that drinking coffee, tea or other beverages containing caffeine stunted the growth and reduced the ability to have children is banished by experiments by Drs. George Bachmann, John Haldi, Winfrey Wynn and Charles Ensor at Emory University.

It is banished, that is, if humans react like the white rats in the experiments.

The rats, from the time they were weaned, drank a sweetened beverage containing caffeine as their only source of fluid. A control group of rats drank tap water only. The amount of caffeine the rats consumed daily would be equivalent to about 34 cups of strong coffee or tea.

The rats on the caffeine beverage grew at the same rate as those on tap water. Their reproductive capacity, judged by the number of litters and number of offspring, was not impaired. The sex glands of the males showed no changes except for those natural to the aging process.

Details of the experiments are reported in the *Journal of Nutrition*, (Sept. 10).

Science News Letter, November 2, 1946

MEDICINE

Streptomycin Cures Baby Of Tuberculous Meningitis

► A 15-MONTH-OLD baby boy, his parents' only child, has been saved by streptomycin from the almost always deadly tuberculous meningitis, Dr. Louis L. Krafchik of New Brunswick, N. J., reports in the *Journal of the American Medical Association* (Oct. 19).

The baby is one of only about 60 patients who have been cured of this disease, so far as medical records show. Even the 60 others who recovered may not all have had tuberculous meningitis. The authenticity of the diagnosis is questionable in many of the 60 cases, Dr. Krafchik states.

Five months after the start of this usually fatal disease, the baby was "clinically well," or, as the layman would put it, cured.

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E FIELDS

AERONAUTICS

Navy Has New Safety Primary Training Plane

► A SAFETY cockpit design, with the cockpit enclosed by an unobstructed one-piece bubble canopy, features a new Navy primary training plane that has just made its initial test flight.

The cockpit design is a type which the Naval Bureau of Aeronautics sponsored in order to provide a standard for all its carrier-based aircraft. The one-piece canopy gives an all-around view to both instructor and student, a factor which aids in preventing collisions.

The new training plane will be known as the XNQ-1. It was constructed by Fairchild Engine and Airplane Corporation. It is an all-metal, two-place, low-wing monoplane with tandem seating arrangement. It is powered by a Lycoming nine-cylinder radial engine rated at 320 horsepower.

The gross weight of the XNQ-1 is 3,700 pounds, and its maximum speed is estimated at 170 miles an hour. It has a wing-span of approximately 41 feet and an over-all length of nearly 28 feet. Stability and control are emphasized in its design.

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PHYSICS

Smoke Affects Electric Conductivity of Air

► "SMOKER'S BREATH" can have a measurable effect on the electrical conductivity of the air. The difference can be measured by suitable instruments in an extremely delicate state of electrical balance—even if the smoker has thrown away his cigarette or knocked out his pipe before entering the laboratory building.

This is one of the more spectacular aspects in a study of air conductivity reported by Dr. G. R. Wait of the Department of Terrestrial Magnetism, Carnegie Institution of Washington, in the *Journal of the Washington Academy of Sciences*.

Air is ordinarily considered almost a perfect non-conductor of electricity, but it is able to conduct very small amounts, due to the presence of ultramicroscopically small charged particles, or ions. Larger particles, such as are found in

smoke, have little direct effect because of their low mobility, Dr. Wait explains. However, they absorb the small ions, thereby lowering the net conductivity.

All kinds of smoke particles are effective in this way. The air over large cities is less conductive than that over the open country—factory smoke is the answer. Even in the country, there is likely to be a zone of changed conductivity along the highway—gasoline fumes responsible in this case. A slow over-all decline in the conductivity of ocean air through a period of years is suspected to be due to slowly increasing smokiness of the atmosphere, even far off shore.

Science News Letter, November 2, 1946

MEDICINE

Atomic Diagnosis of Breast Cancer Is Hope

► HOPE OF diagnosing some types of breast cancer through atomic medicine, thereby avoiding much unnecessary surgery, is reported in the journal, *Science* (Oct. 25), by Dr. Bertram Low-Beer, University of California Medical School physician.

The diagnosis is made with radioactive phosphorus which has been found to concentrate in malignant (cancerous) tissue. After diagnosis of cancer by ordinary clinical means, an injection containing a tiny amount of radio phosphorus is given the patient.

The Geiger counter count on the skin surface over a malignant, fast-growing tumor is at least 25% higher than over the same spot on a normal breast. Benign tumors which may not call for surgery do not show this high concentration.

There has been no previous method for determining whether a tumor is benign or malignant in many cases. Therefore operations are performed in many cases of benign tumors on the possibility that they are malignant.

Dr. Low-Beer's report is preliminary and he says more research is necessary before the method can be applied in general practice. It cannot be used for deep-seated tumors because the beta rays' penetration is too short, nor can it be used for slow-growing malignancies because the differential concentration is not large enough.

The method has been used on 25 patients just before surgery. Microscopic examination of the cancer tissue after operation bore out the atomic diagnosis in all cases except one slow-growing malignancy.

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PHYSIOLOGY

Severe Physical Training Can Make Chest Smaller

► PULL-UPS, push-ups and all the exercises that go into a vigorous physical-training program will increase the chest measure of a thin man with a small chest, but if you already have a large chest, it may measure less after a severe training period.

That's what Dr. Carl C. Seltzer of Harvard University discovered from measuring the chests of 272 aviation cadets before and after an eight-week schedule of physical training.

Dr. Seltzer also tested the physical fitness of the cadets and found that the big fellows whose chest measurements had dropped showed the greatest improvement in fitness. They had been overweight, and their condition improved as they lost weight. At the same time their chests measured less.

In the men with small chests, Dr. Seltzer points out in the *American Journal of Physical Anthropology*, the increase in measurement was due to improvement in the chest muscles and better posture, not to movement of the ribs.

Science News Letter, November 2, 1946

INVENTION

New Blood Transfusion Apparatus Uses Rubber Bag

► BLOOD transfusion apparatus quite different from the type generally employed in this country has just been patented by a Swiss inventor, Rudolf Bucher of Basel.

Instead of the familiar inverted bottle, Mr. Bucher uses a flexible rubber bag to contain the whole blood or plasma to be placed in the patient's vein. This permits the force of gravity, ordinarily the sole reliance for producing flow of the transfused blood, to be supplemented if desired by pressure. Pressure may be applied in several ways directly to the outside of the bag, or it may be produced by inflating a small balloon inside the bag by an ordinary syringe bulb.

Between the bag and the outlet nipple to which the customary needle-bearing rubber tube is attached is a flat filter, to insure that no bubbles or solid foreign particles get into the patient's circulation. This filter is easily removable for cleaning and sterilization.

Rights in the patent, No. 2,409,734, have been assigned to the Swiss firm of G. Laubscher and Co. of Basel.

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