

MEDICINE

Operation for Varicose Leg Ulcer 84% Successful

➤ AN operation for varicose ulcers of the legs which has been successful in 84% of the patients was reported by Dr. Gunnar Bauer of Mariestad, Sweden, at the meeting of the British Medical Association.

The operation consists in cutting the main deep vein in the back of the knee to block backflow of blood down into the leg.

"After this operation," Dr. Bauer stated, "the calf muscle contractions drive the blood through numerous fine-caliber channels into the muscle veins of the thigh, and no backflow can occur."

In normal healthy persons, the calf muscle contractions can drive the blood back through the big veins of the leg. But in some patients the valves of the big veins have been destroyed and every relaxation of the calf muscles allows the blood to flow back down the main veins, Dr. Bauer explained.

This results in permanent stoppage of blood and overloading of the veins in the lower leg. Pain and ulceration follow.

The operation devised at Mariestad Hospital has been performed 245 times with no deaths and no complications. Of 196 patients examined six months to three years later, 165 had remained healed without symptoms of blood stoppage in their legs. In 31 patients, symptoms recurred at intervals.

Science News Letter, July 29, 1950

AERONAUTICS

Jet Engine Exhaust Flame Temperature Measured

➤ THE heat of the consuming flame that shoots from the nozzle of a jet engine or rocket can now be measured with the help of infrared radiation. The flame's temperature is recorded by sending infrared rays through it into an instrument which measures radiant energy.

The method can be used to measure the temperature of flames five feet in diameter reaching 5,000 degrees Fahrenheit. It is a development of Industrial Scientific Company in New York, revealed in the Perkin-Elmer Instrument News, by Dr. W. S. Tandler, director of the scientific company.

Present and future uses of turbojet engines, ram-jets and rockets make it necessary to be able to determine the temperature of their exhaust flames. Jet engine efficiency depends largely upon the operational temperatures. Efficiency increases as the temperature rises. But the temperature used must be below the melting points of materials of which the engines are made.

The new method uses what is called an Infrared Monochromatic Radiation Pyrom-

eter. Infrared radiation from source of known emission strength is passed through the discharge flame whose temperature is to be measured and into an infrared monochromator. This is an instrument to measure and record the radiant energy of certain wavelengths.

The wavelengths used in this process are those characteristic of water or carbon dioxide in the near infrared, since these are products of combustion in any gas stream. The device is rapid and accurate, it is claimed. A major part of the program under which it was developed was carried out under contract with the Air Force Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio.

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GENERAL SCIENCE

Science Foundation Members to Be Named

➤ THE FIRST 24 members of the policy-making Board of the National Science Foundation are expected to be named by President Truman for Senate confirmation very soon. At least one woman will be among those named to the governing body.

Scientists recall the words of the President when he signed the legislation setting up the Foundation: "It can make as great and vital contributions in case of national emergency as I fully expect it to do for us in peacetime pursuits."

The Budget Bureau's request for \$475,000 to operate the Foundation for its first year is now being considered by the House Appropriations Committee. Original legislation authorized \$500,000 for the first year's operation.

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INVENTION

Recoilless Gun Has Little Kick

➤ RECOILLESS gun, a one-man military weapon which will fire a two-pound shell with no greater "kick" than an ordinary shotgun, brought an Army man a patent among the 930 issued in a recent week by the U. S. Government.

In use, it is fired like an ordinary gun with the butt against the shoulder. Its lack of kick is due to a gas "take-off" that is fixed over an opening in the side of the cartridge chamber. This is an elbow funnel affair that carries the exhaust gas back beyond the shoulder of the user. The take-off attachment tapers to the rear, and has a special nozzle on its end.

Maurice E. Barker, U. S. Army, received patent 2,515,180 for this invention. It may be made and used by the government without the payment of royalties.

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IN SCIENCE

GEOPHYSICS

Far East Typhoons Cradled By Marshall Islands

➤ THE Marshall Islands area in mid-Pacific is the "cradle" of typhoons that, as they mature, move west and north toward the Philippines, China and Japan.

Long suspected, this fact has now been definitely established by the Tropical-Pacific Project of the University of California at Los Angeles' Institute of Geophysics.

Under the direction of Dr. Clarence E. Palmer, the research is based upon weather observations taken during Operations Crossroads and represents one of the first important non-military results to come from the atom bomb tests at Bikini.

Another result of the research is this: typhoons and hurricanes are born in the same way. Previously it was thought that Caribbean hurricanes and Pacific typhoons were the result of two entirely different types of meteorological phenomenon.

The U. C. L. A. scientist points out that the research on typhoons indicates how little is known about the great tropical "weather factory" of the Pacific. Since more than one billion people are affected by weather originating in the tropics, there is urgent need for more studies in this area.

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MEDICINE

New Streptomycin From Japanese Soil

➤ DISCOVERY of a new streptomycin from an organism in Japanese soil is announced by five scientists of the Department of Agriculture's Northern Regional Research Laboratory in Peoria, Ill.

The new streptomycin has anti-germ action like streptomycin itself, test tube trials show. Its discoverers suggest that its name be hydroxystreptomycin. It was obtained from a new species of the streptomycetes organisms which produce streptomycin itself. For this organism, the scientists suggest the name *Streptomyces griseo-carneus*.

Search for streptomycin-like substances that would be as effective against disease germs but less toxic than streptomycin and to which the germs would not grow resistant led to the discovery of this new streptomycin. Details of its chemical makeup are reported in the journal, SCIENCE (July 21), by the discoverers, Dr. Robert G. Benedict, Dr. Frank H. Stodola, Dr. Odette L. Shotwell, Anne Marie Borud and Lloyd A. Lindenfelser.

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CE FIELDS

MEDICINE

Thiourea Shots Prevent Radiation Death

► SHOTS of a chemical called thiourea will protect mice against radiation death, Drs. G. Limperos and W. A. Mosher of the Biochemical Research Foundation and the University of Delaware in Newark, Del., find.

When a group of mice was given this chemical by injection before heavy doses of X-rays, over a third (35.2%) of the animals survived, compared to less than one-tenth (7%) injected after irradiation and only two percent of control animals irradiated but not given the chemical.

Thiourea has been used as a medicine to check over-active thyroid glands in some goiter patients.

The Delaware scientists believe it lowers mortality due to X-radiation because of the protection it gives to certain vital constituents of body cells, such as nucleic acid. Whether it will lessen the remedial effects of X-rays besides reducing the mortality remains to be investigated, they state in their report to the journal, *SCIENCE* (July 21).

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MILITARY SCIENCE

North Korean Supply Routes Vulnerable

► IF American bombers knock out the Japanese-developed North Korean industrial plant, problem of replacement of planes, tanks and guns for the Reds might become difficult.

North Korean factories are perfectly capable of turning out much of the heavy equipment now being used by the Communist armies, Prof. George B. Cressey, of Syracuse University and expert on the Far East, told Science Service. But, he added, there is no heavy industry for 1,500 miles between North Korea and Lake Baikal in Siberia.

"Once stockpiles are exhausted, and if our bombers destroy the North Korean industrial potential," he said, "the Russians will have to transport new supplies over Siberian and Manchurian railroads from centers of heavy industry east of Lake Baikal."

That is about 1,500 miles from the North Korean-Manchurian border.

Although there is a short stretch of Siberian-North Korean border, Prof. Cressey pointed out, there is no railroad between Soviet and North Korean territory which does not pass over Chinese Manchuria.

Russia has the choice of three rail routes

into North Korea. One is the double-tracked Trans-Siberian railroad to Vladivostok. Another is the Manchurian route through Kirin to the 20-year-old port of Rashin in northeast North Korea. The third is through Mukden to western North Korea. All three are modern roads, although the latter two are probably single-tracked into North Korea.

The Japanese, who occupied Korea from 1905, extensively developed the North Korean heavy industry and it became an important arms arsenal for the Japs during World War II. There are good deposits of iron and coal in the territory north of the 38th parallel.

Whether the Communists will begin to have supply difficulties probably depends on the estimate made of the ease with which South Korea could be conquered and, therefore, on the size of equipment stockpiles in North Korea, Manchuria and eastern Siberia.

Manchuria cannot be depended upon to supply much to the North Koreans. Russia destroyed Manchurian industry when she withdrew from there after World War II. Little heavy industry has been developed in eastern Siberia, according to Prof. Cressey.

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PHYSICS

New Battery Operates At 65 Degrees Below

► A NEW type of wet-cell battery using magnesium and cuprous chloride in place of the familiar lead plates and sulfuric acid has been developed by the Army Signal Corps.

Designed to power radiosonde instruments which weathermen send up for high-altitude meteorological research, the first models of the new battery weigh less than a pound, will operate at temperatures down to 65 degrees below zero and take up only 16 cubic inches. They can be activated by ordinary tap water, and will deliver 12 watt-hours of power.

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NUCLEAR PHYSICS

AEC to Issue Report On Atomic Weapons

► A NEW "Smyth report" on the effects of atomic weapons, understood to be "the first completely authoritative document on the over-all effects of atomic weapons," is being compiled by the Atomic Energy Commission and will be sold by the Government Printing Office about August 1.

The use of radioactive material as a weapon and "radiological warfare" will be covered. Hitherto unpublished details about the shock waves resulting from atomic bombs are promised.

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PHYSICS-BIOLOGY

Electrical Ear Studies Whispers or Shrieks

► WITH an electrical model of the human ear, scientists are studying the softest whisper and the loudest shriek you can hear. How the ear works is described in strange formulas and mathematical symbols in a new theory being worked out.

A maze of wires, inductors, capacitors and voltage meters has been designed by two Bell Telephone mathematicians, Drs. B. P. Bogert and L. C. Peterson, to reproduce the workings of the inner ear.

This inner ear, or cochlea, is a snail-like spiral tube filled with fluid. Its job is to transform sounds that strike the ear drum into electrical impulses. Thousands of tiny nerves lead these impulses to the brain. The cochlea sorts out the many frequencies which may make up a certain sound; the brain puts them back together again.

The electrical network designed at Bell Laboratories in Murray Hill, N. J., simulates this mechanical action of the inner ear. It sorts out the frequencies of sounds entering the system, causing them to appear at different points along the network.

Results from studies with the new instrument are published in the *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA* (May). The goal, says Drs. Bogert and Peterson, is a more complete understanding of the dynamics of the cochlea. In simple terms, mathematics is giving a better conception of why and how a noise is a noise.

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ARCHAEOLOGY

Mammals in Texas 100,000,000 Years Ago

► FIRST evidence of mammals living in this country in a prehistoric age which began about 100,000,000 years ago has been found in northern Texas.

Two fossil hunters from the Chicago Natural History Museum, Drs. Rainer Zangerl and Robert H. Denison, uncovered jawbones of a family of small mammals known as triconodonts. The discovery was made in a geologic deposit known as the Early Cretaceous Trinity Sands of Montague County, Texas, north of Fort Worth, and reported in the journal, *SCIENCE* (July 14).

The only other known mammalian remains of this age are five isolated teeth found in southern England. Until now, triconodonts were known from fossils tens of millions of years older than the recent finds.

Museum officials are planning intensive investigations of the Trinity Sands area, hoping to find remains of other mammals which may throw light on the development of present-day animals.

Science News Letter, July 29, 1950