MEDICINE

Bone Marrow Transfusions New Attack on Leukemia

Fatal Ill in Which Blood Has Too Many White Cells And Other Rare Blood Disorders May Now Yield

A NEW kind of transfusion, using bone marrow instead of blood, is reported by Dr. Maurice Morrison and Dr. A. A. Samwick, of the Jewish Hospital of Brooklyn, N. Y. (*Journal, American Medical Association,* Nov. 16.)

Leukemia, fatal disease in which there are too many white cells in the blood, and other rare and unconquered blood disorders may yield to this new type of transfusion, the Brooklyn doctors believe.

Bone marrow transfusions have already been used by them, apparently successfully, in treating a 42-year-old salesman suffering from aplastic anemia. In this rare condition, unlike more familiar anemias, the blood contains too few white cells. The bone marrow stops producing white cells in sufficient numbers to make up for those destroyed.

Healthy bone marrow, the Brooklyn doctors reasoned, might stimulate the maturing of blood-forming constituents already present in the diseased bone marrow. So they drew a little less than a teaspoonful of bone marrow from the breastbone of the patient's brother and injected it into the patient's breast bone. Slightly larger doses were given in two subsequent transfusions. The patient recovered from symptoms of his illness and his blood condition also improved. The doctors say it is not justifiable to credit the results solely to the bone marrow transfusions until they have had time for further studies.

Two other patients with rare blood disorders are now being treated with bone marrow transfusions.

Transfusions of healthy bone marrow, they believe, will help many patients suffering from various blood disorders, in the way that liver or liver extract helps patients with pernicious anemia. The latter patients lack a factor essential to the formation of red blood. This factor is supplied by liver. Leukemia patients and others with blood disorders may lack some other blood-forming factor which might be supplied by healthy bone marrow.

Science News Letter, November 23, 1940

SIC TRANSIT MERCURY

Though cloudy and rainy weather on Armistice Day interfered with ground observations of the transit of Mercury over a large part of the country, a successful motion picture record of the rare phenomenon, last until 1953, was made by Edison R. Hoge at Mt. Wilson Observatory. This picture, reproduced from a frame of the film, shows the tiny planet just after it had entered the solar disk. Pointer seen in the upper right is a timing device. Accurate determination of the time of the transit, by measuring this film, will lead to a more precise figure for the earth's rotation, as well as for the movement of Mercury itself.

PHYSIOLOGY

Vitamin B_1 Protects Against Depressing Effects of Tropics

ARMY medical officials worrying over problems of keeping American troops healthy if hemisphere defense requires them to fight in Central or South American tropics may find a useful tip in a discovery announced by Dr. C. A. Mills and Dr. J. W. Colvin, of the University of Cincinnati, at the meeting of the American Society of Tropical Medicine in Louisville.

The depressing effects of tropical heat can be overcome by doubling the daily intake of vitamin B_1, or thiamin, the Cincinnati doctors discovered in studies with rats. The laboratory findings will be tested on natives of Panama early next year, it is planned.

"Thiamin protection against the evil effects of excessive heat has further important bearings for temperate zone inhabitants during severe heat waves of summer," the Cincinnati doctors state, "and for industrial workers who are exposed to the severe heat of boiler and furnace rooms or other conditions that render body heat loss very difficult. A thiamin intake double that ordinarily considered ample seems likely to offer a large measure of protection against such heat effects and also to offer a most effective therapeutic adjunct in the treatment of heat exhaustion states.

"Energetic people going from stimulating climates into tropical warmth would probably suffer less of a physical slump if they fortified their ordinary dietary thiamin intake with 2-5 milligrams of additional thiamin each day. A large part of dietary thiamin is found in the protein foods that are unconsciously avoided in warm climates because of their specific dynamic action in increasing body heat production."

The reason why thiamin could be expected to put pep into people living in tropical climates or soldiers fighting there is because of its role in the burning of sugar and starch in the body. Without this vitamin the oxidation or burning of glucose stops midway, Dr. Mills explained.

Combustion in the body, however, is necessarily lowered when tropical warmth makes it more difficult to keep cool by dissipating heat from the body. With this lowering of tissue combustion, Dr. Mills has found, goes a fall in "all measurable indices of individual vitality —slower growth, retarded development, lessened fertility, lowered resistance to infection and ability to produce protective antibodies against pathogenic in-

vaders, and in all ways a lowered existence level.

"At the University of Kansas," he continued, "there is now in progress a study showing a lower order of cerebration in animals kept under conditions of moderate difficulty of heat loss,—greater difficulty in mastering the intricacy of a maze and in performing other feats of animal learning."

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SEISMOLOGY

Rumania Not Known As Seismically Active Region

Ruinous Earthquake Came as Surprise to Seismologists; Aftershocks May Be Expected To Do Further Damage

RUMANIA'S ruinous earthquake, first shocks of which occurred on Sunday, Nov. 10, came as a complete surprise to scientific watchers of the uneasy earth in the United States. Although the Balkans have long been known as a seismically active region, most of the earthquakes there have been reported from other countries — Bulgaria, Yugoslavia and Greece, Capt. N. H. Heck of the U. S. Coast and Geodetic Survey informed Science Service. Turkey has been an especially badly afflicted sufferer from earth shocks, last year's Anatolian quakes being among the most violent and deadly in recorded history.

Rumania's last great earthquake, that shook Bucharest on Oct. 22, 1802, was by no means an exclusively Rumanian affair, Capt. Heck explained. In a listing of great quakes drawn up about thirty years ago, and covering all recorded shocks from the beginning of the Christian era until the end of the nineteenth century, this disturbance is reported as having been strongly felt all the way from Hungary to the Dardanelles.

Since Rumania has been swept into the Nazi sphere of power, it is inevitable that this natural disaster will be looked at from the viewpoint of possible military significance. A full-dress earthquake can do more damage, both in extent and severity, than hundreds of bombing raids. It is reasonable to assume, therefore, that rail communications through the stricken area, vital artery of oil and other supplies from Russia through Constanza on the Black Sea, may have been seriously crippled—something decidedly not to Germany's liking at this particular moment.

Furthermore, the relief of thousands of injured and of homeless persons with winter just ready to begin, must inevitably make it extremely hard for Rumania to deliver to Germany all of the supplies contracted for, but now suddenly needed at home.

Half-a-dozen American and Canadian earthquake observatories, reporting by wire through Science Service to the U. S. Coast and Geodetic Survey and the Jesuit Seismological Association, have confirmed the location of the Rumanian earthquake's epicenter at or near Focsani, 100 miles north of Bucharest. Its location is given tentatively as in about 46 degrees north latitude, 26 degrees east longitude. It was a deep quake, with focus about 150 kilometers down.

Since this area of greatest earth motion is in the heart of Rumania's prized oil field, the real effects on Rumania's oil production for the Nazi war machine only begin to be felt with the reported wrecking and firing of refineries and storage tanks. Oil wells after all are mere wormholes in the earth, and the thrust of the quake may have choked a great many of them completely shut.

Furthermore, an earthquake of this violence is almost always followed by numerous aftershocks, sometimes distributed through many months. There is no guarantee that a re-drilled well will not be shut off at any time, without notice.

The blue flashes reported as occurring at the beginning of the quake were not unique to this particular event. They are recorded from other earthquakes in the past, although scientists have never been able to find a satisfactory explanation for them.

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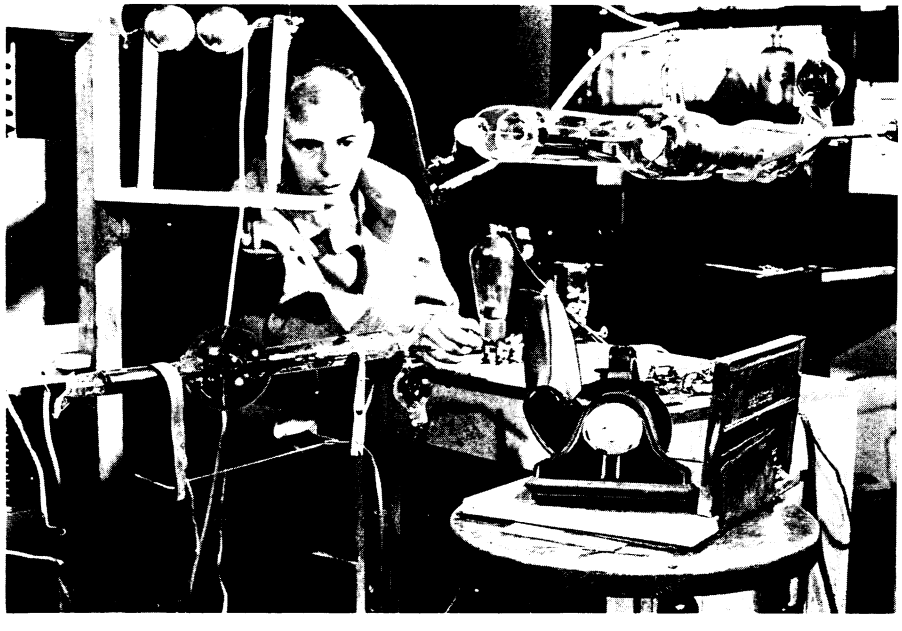
PHYSICS

High-Speed X-Ray Photos Show Working of Machines

See Front Cover

BY means of X-ray photographs taken in a millionth of a second engineers of the Westinghouse Lamp Works have been able to show what is happening inside rapidly moving machinery. One of the first applications was to study the



TAKING X-RAYS

Dr. C. M. Slack, of the Westinghouse Lamp Research Laboratories, with the apparatus for high-speed X-rays of a vacuum cleaner. One tube is above, the other to the left. With them two pictures are made at right angles to each other.