MEDICINE

Dye Locates Brain Tumor

This radioactive spotting method, by which abnormal growths can be detected through skull and skin, has proved diagnostically successful in a dozen cases.

➤ BRAIN tumor detection by means of a radioactive dye that becomes concentrated in these abnormal growths and can be detected through skull and skin with a Geiger-Muller counter is the newest medical development in the use of atomic-pile byproducts.

It has been tried out successfully in a dozen cases at the University of Minnesota Medical School, and is reported in *Science* (May 28) by Dr. George E. Moore, senior research fellow of the U. S. Public Health Service.

It was already known that a dye called fluorescein has an affinity for tumorous tissue. To render it radioactive, Dr. Moore chemically tacked on some radioactive iodine, converting it into diiodofluorescein. Small, calculated quantities of this were injected into the veins of patients suspected of having brain tumors, who were to undergo operations.

In a short time the blood had been carried to their heads, where the counters detected the presence of the radioactive atoms. Some of the iodine was present all over the brain, but on the patients heads there were certain spots where the counters ticked much more rapidly than they did elsewhere. This was taken as indicating the possible presence of a tumor beneath that spot on the skull.

Subsequent operations proved the radioactive spotting method to have been correct in a large proportion of the cases.

The method is not considered infallible, and is to be used only in connection with other methods of diagnosis. So used, however, it should eventually be helpful.

Science News Letter, June 5, 1948

GIANT METASEQUOIA — Dr. Ralph W. Chaney, at the foot of the "Dawn Sequoia," examines some of its twigs. With him is the commander of the armed escort provided by local Chinese authorities as protection against bandits.

DENDROLOGY

Find Ancient Tree Species

➤ A TREE species that flourished on the earth long ago, almost in the days of the dinosaurs, long supposed to be as dead as they are and known only from fossils, turned up alive a short time ago deep in China's almost inaccessible interior. Closely related to the Sequoias of California, it bears the name Metasequoia, testifying to its kinship.

Now the man who first gave the news of its discovery to the Western world, Prof. Ralph W. Chaney of the University of California, has been able to obtain specimens, seeds and photographs. His trip started by trans-Pacific airplane but wound up on foot, for the final 125 miles or so of the journey was over ancient Chinese "roads" that in reality are mere foot trails. Part of the way he was carried in a sedan chair by coolies, but a good deal of it he had to do on his own two feet.

Metasequoia grows in moist mountainous country, but never much above 4,000 feet elevation, for it seems unable to stand winter weather. Its reddish bark is much thinner than the thick, corky covering of its American cousins, so it would presumably be less resistant to fire. However, the wet habitats in which it grows minimize that danger.

Biggest Metasequoia seen and photographed by Prof. Chaney stands 98 feet high and is nearly six feet in diameter 11 feet above the ground, where its flaring buttresses end. With typical Chinese reverence for all things old, the natives of the region have erected a small temple at its base.

Unlike the American Sequoias, which are evergreen, Metasequoia loses its foliage in autumn, after the fashion of the bald cypress and the American larch or tamarack. When Prof. Chaney visited it, early this spring, it was still bare. The tree is also unlike the American species in that its spreading branches grow upwards, not at a downward slope.

In addition to the venerable "grandfather" tree, which is several centuries old, there are a considerable number of others, ranging in size from finger-thick saplings to mature trees three feet or more in diameter.

Prof. Chaney has planted the seed which he brought back with him in greenhouses, and with the cooperation of the Save-the-Redwoods League will see that the seedlings are set out in places where they will have best chances for survival. *(See SNL, May 22).*

Science News Letter, June 5, 1948

ARCHAEOLOGY

Early Natives of Britain Built Greek-Like Temples

➤ THE religion of early inhabitants of England, 2,500 years ago, was apparently influenced by the culture of far-off Greece at least in the form of its temples. Evidence of this was uncovered during the construction of London's new airport at Hounslow Heath, W. F. Grimes, director of the London Museum, reported in the American journal, *Archaeology* (Summer).

When the site of the new airport was selected, an air survey was made to spot any possible traces of prehistoric occupancy not noticeable from the ground. The photographs clearly picked out the outlines of an earthwork once popularly known as "Caesar's camp," but in recent decades all but obliterated by cultivation.

Skimming off the surface soil with earth-handling machinery, the archaeolo-

gists found the round outlines of a group of huts, of the type built by early Iron Age inhabitants of Britain about 500 B.C. At one edge of the village group they came upon postholes and a ditch marking where a rectangular building, quite unlike the huts, had once stood.

Detailed examination showed that this structure, presumed to be the town temple, had consisted of an oblong inner room, 18 by 13 feet in size surrounded by a row of pillars. This is the basic design of a Greek temple. Apparently these early natives of Britain had built in wood a fair replica though in reduced size of what the Greeks of the time were erecting in stone at the far end of the Mediterranean.

Science News Letter, June 5, 1948

ELECTRONICS-PHYSICS

Sound Detects Heat Waves

New instrument is called an acoustical interferometer and may be used to detect invisible light signals or short radio waves used in radar.

➤ INVISIBLE infra-red light, or heat waves, are detected by sound too high-pitched for the ear to hear by a new instrument revealed at the University of Illinois. It has practical as well as laboratory applications, such as the detection of invisible light signals, possibly in obtaining pictures not obtainable otherwise, and perhaps to detect the short radio waves used in radar.

The instrument is called an acoustical interferometer. It consists of two quartz crystals such as used in radio with a gas confined between them. A transmitter sets one crystal into vibration, and a receiver detects vibrations carried by the gas to the other crystal. When infra-red rays strike the gas they affect the vibration waves.

Certain types of quartz crystals have what scientists call piezo-electric properties. If a properly cut slice is pressed so as to flatten it slightly, opposite electric charges appear on the two surfaces. If the faces are pulled so as to thicken the slice, electrical charges appear in the reverse direction. In other words, vibration within the crystal sets up electrical energy. If electric charges are placed on the faces of the crystal, vibrations are set up within it which pass as sound waves into the surrounding atmosphere.

In the new instrument, developed by Prof. W. J. Fry and his associates, the inaudible sound waves, called ultrasonic waves, are produced by connecting a radio transmitter to one quartz crystal and tuning the frequency to that at which the crystal vibrates naturally. The supersound waves set up travel through carbon dioxide containing water vapor or some other gas, to the other crystal, causing a vibration within it which produces tiny electrical impulses. These are amplified in a radio receiver and measured.

If invisible infra-red radiation is passing through the gas, it has an effect on the vibrations in it. Part of the light waves may be absorbed. The light that emerges may be examined to see how it has been changed by the gas in quantity and color.

A more important effect, however, is that of the light on the gas. The gas molecules are changed so that they absorb less of the sound waves passing between the two crystals. The infra-red modifies the sound so that the second crystal sends out changed electrical impulses to the radio receiver, and these may be instantly detected.

Science News Letter, June 5, 1948

BIOCHEMISTRY

Antibiotic from Bee Killer

➤ A GERM that brings wholesale death to honeybees may provide a strong weapon for the defense of human and animal health, it has been discovered at the bee culture laboratories of the U. S. Department of Agriculture at Beltsville, Md., by Dr. Eugene C. Holst.

The germ is the one that produces the serious disease of infant bees known as American foulbrood; its scientific name is *Bacillus larvae*. From it can be produced, either by direct extraction of the "scale" which it causes or by culturing on a nutrient medium, an antibiotic, or drug of the same family as penicillin and streptomycin. The new antibiotic has not yet been formally christened.

Among the bacteria against which the new substance has been found effective, in laboratory tests, are those that cause boils, blood poisoning, septic sore throat, undulant fever, spontaneous abortion in cattle, and both human and bovine tuberculosis. It has an unusually wide range of effectiveness, although some germ species do appear to be resistant to it. Much more work on experimental animals is considered necessary before clinical use can be undertaken.

On his discovery, Dr. Holst has been granted U. S. patent 2,442,006, which he has dedicated to the free use of the people of the United States.

Science News Letter, June 5, 1948

ENGINEERING

New Thin Asbestos Paper Developed for Insulation

See Front Cover

➤ A NEW type of asbestos paper, thin as a human hair, has been developed by General Electric company of Schenectady, N. Y. It is for use as insulation in high-temperature electric equipment, and can easily withstand the flame of a blowtorch, as shown on the cover.

It is made of nearly pure asbestos and some mineral substance such as clay. It is free from any metallic matter which would lessen its value as an insulator. In an accelerated aging process equivalent to 100 years, this new insulator, which will be known as Terratex, retained its natural color and other physical properties.

Science News Letter, June 5, 1948

VETERINARY MEDICINE

Fourth U. S. Scientist Joins Foot-Mouth Group Abroad

➤ WHILE the Department of Agriculture completes final arrangements for acquiring an island off the state of Rhode Island, as a research center for foot and mouth disease, another American scientist has gone to Europe to join the war on the cattle menace.

Dr. Stewart H. Madin of the University of California is sailing for Europe to join three U.S.D.A. scientists who are already at work on the disease in European laboratories. Foot and mouth disease is prevalent in Europe, and several governments there have had laboratories working on the disease for many years.