

MEDICINE

Future Nuclear Medicine

► **THE AVERAGE** person thinks of nuclear medicine in terms of its use for cancer treatment, but 95% of the present use of radioisotopes is directed in other ways, especially toward diagnosis.

Dr. John McAfee, associate professor of radiology and head of the radioisotope laboratory, Johns Hopkins University, told *SCIENCE SERVICE* that in his opinion nuclear medicine had reached a plateau in cancer therapy, and that its future lay in diagnosis.

"Cobalt teletherapy, for example," he said, "is an obviously accepted and valuable treatment, but it is difficult to see how it can be further improved."

This does not mean that research should stop, but Dr. McAfee said that to be useful in treatment chemical compounds are needed that "can be tagged with radioactive material that will concentrate in tumors to a high degree."

With the exception of a few thyroid carcinomas, the radiologist said, the treatment of cancer with radioisotopes has not been very effective.

There are three diagnostic uses of nuclear medicine that probably will be improved and widened in the future, according to Dr. McAfee. These are:

1. The use of radioactive iodine for the diagnosis of thyroid disease.

2. Blood volume determination, through either the injection of serum albumin labeled with radioactive iodine or red blood cells labeled with radioactive chromium.

3. Scintillation scanning, in which radioisotopes can be photographed as they localize in certain organs difficult to X-ray, such as the liver, kidneys, spleen and chest areas.

Dr. McAfee explained that "total body counting" is a new development in the diagnostic use of nuclear medicine.

"Up to now," he said, "we have been able to take out a portion of blood or urine and determine the amount of radioactivity in certain parts of the body. Now, detectors are being built in certain laboratories that show the amount of radioactivity in a patient's whole body."

"We all have a certain amount of radioactivity in our bodies, for example, radioactive potassium. Through the new detectors we can learn the total amount of potassium, whether radioactive or non-radioactive (stable)."

At the Society of Nuclear Medicine meeting in Pittsburgh, Dr. McAfee predicted that within the next decade radioactive isotopes in medicine will be used just as much as X-rays are today.

• *Science News Letter*, 80:2 July 1, 1961

PHYSIOLOGY

Drinking in Hungry Rats

► **COMPULSIVE DRINKING** is high among hungry rats rewarded with food at irregular intervals, studies have shown.

Dr. David Lester of the Laboratory of Applied Biodynamics and the Center of Alcohol Studies, Yale University, New Haven, Conn., said hungry rats trained to press a bar for the delivery of food pellets at uncertain intervals suffer anxiety-producing stress. With the increase of stress comes increase in the desire to drink.

The factors of bar pressing, presence of fluid during training, and predictableness of the food reward were seen as elements in the development of compulsive drinking.

Intoxication in nine male rats was produced in three-hour test sessions with blood alcohol levels reaching 0.2 percent. With variable food delivery, without bar pressing, the average consumption of alcohol solution was 2.0 grams an hour.

With bar pressing but food delivered at a fixed interval, the average consumption was 2.5 grams an hour. If water was not present during training, the average alcohol consumption with bar pressing and a variable food schedule was 3.2 grams an hour.

Dr. Lester states this method opens "the way to a host of experiments. The problem of tolerance, both metabolic and functional, appears simpler to approach by means of this technique."

The rats maintained themselves at blood alcohol levels of 0.11% to 0.19% for a period of 70 hours. When intoxication was thus maintained, increased alcohol intake on the third day was shown to produce a lower blood alcohol level, indicating the development of metabolic tolerance and other effects of prolonged intoxication, such as the withdrawal syndrome, Dr. Lester reports in the *Quarterly Journal of Studies on Alcohol*, 22:223, 1961.

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BIOLOGY

Wintergreen vs. Almond In Odor Penetration Test

► **DIFFERENT CHEMICALS** produce different odors because vibrations within the molecules are different.

This is the theory of Dr. R. H. Wright of the British Columbia Research Council in Vancouver, Canada. He compared nitrobenzene, which has an almond smell, and methyl salicylate, which smells like wintergreen. Both these substances are much alike so far as vibrations are concerned, except that wintergreen has two additional frequencies that are missing in nitrobenzene.

Taking into account the differing concentrations at which each smell could barely be detected, Dr. Wright predicted

that it would be easier to detect wintergreen against a background of almond than vice versa.

In experiments with 12 volunteer sniffers, Dr. Wright showed that the wintergreen odor masked the almond smell about ten times more easily than almond masked wintergreen.

The effect is not large, he reports in *Nature*, 190:1101, 1961, but it is distinct and in the direction predicted by the vibrational theory of odor.

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PUBLIC HEALTH

Health Hazards in Uranium Mines Scored

► **SERIOUS HEALTH HAZARDS** in the nearly 1,000 active underground uranium mines in the western United States call for aggressive control measures, the U.S. Public Health Service, Washington, D. C., has urged.

Lung cancer, heart disease, accidents and radiation exposure are among the serious hazards, the Public Health Service said.

It is believed that radioactive contamination in virtually all uranium mines can be controlled. However, individual study of the mines is needed to determine what means of control are applicable to each mine. Studies of 371 underground mines with 3,619 miners were made in 1959 to evaluate the extent of the radiation hazards. Examination of 1,802 samples taken of the mine atmosphere showed that more than 66% of the samples had concentrations from one to ten times the working level (level of radiation exposure thought to be safe over a working lifetime without causing biologic damage).

Continued investigations are being made to insure compliance with control recommendations. Control is considered a primary responsibility of the states, but upon request, various Federal Government agencies will provide assistance.

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DERMATOLOGY

Cosmetics Cause 15,000 Cases of Skin Injuries

► **COSMETICS** cause thousands of cases of skin injury each year, the U.S. Food and Drug Administration has determined.

In one recent year, 1958, for which information has just been compiled, dermatologists reported 15,000 cases of dermatitis caused by four types of cosmetics: nail lacquers, hair-waving lotions, hair dyes and lipsticks. Since only one out of three dermatologists sent questionnaires replied, there are probably many more injuries.

Deputy Commissioner John J. Harvey of FDA, talking to the Association of Food and Drug Officials of the United States, said that new laws are needed to protect the public and that cosmetics, as well as food and drugs, should be tested and subjected to standards contained in the hazardous substances labeling act.

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