

MEDICINE

ACTH Predicts Survival

The relation between this hormone, the adrenal glands and certain white blood cells helps to predict the probability of survival of surgery patients.

► ACTH, the pituitary gland hormone famous for its anti-arthritis activity, gives a good way to foretell whether a patient will survive the strain of a surgical operation.

Successful use of the hormone for this purpose is reported by Dr. M. Roche and G. W. Thorn of Peter Bent Brigham Hospital and Harvard Medical School in Boston, Mass., and Dr. A. G. Hills of the University of Pennsylvania Hospital and Medical School, Philadelphia, in the *NEW ENGLAND JOURNAL OF MEDICINE* (March 2).

Predicting the probable outcome of operations through ACTH depends on the relation between this hormone, the adrenal glands and certain white blood cells called eosinophils.

In actual practice, the number of eosinophils in the blood is counted, a standard small amount of ACTH is injected, and four hours later the eosinophils are again counted. A marked fall in number of eosinophils four hours after ACTH shows that the patient probably will come through the operation in good shape.

If there is no drop in eosinophil blood cells, the risk of operation is great because the patient probably does not have the necessary reserve power in his adrenal glands.

To survive a major surgical operation, a patient must have sound, healthy adrenal glands. The cortex, or outer part, of the glands which produces cortisone must in particular be in good condition. Patients with Addison's disease, which is a disease of adrenal gland cortex, seldom survive even a minor surgical operation unless protected by large doses of adrenal hormones in advance of the operation.

In patients with normal adrenal glands, the eosinophils disappear almost completely from the blood during the first 24 to 48 hours after a major operation. The reason for this is not yet known. Large numbers of eosinophils in the blood during the first 24 to 48 hours after operation suggests that the adrenal glands are not producing enough of their hormones to protect the patient against the stress of the operation.

ACTH, the adrenocorticotrophic hormone of the pituitary gland, is a stimulator of adrenal gland cortex activity. Consequently giving a small dose of ACTH and counting the eosinophils in the blood before and after shows how the adrenal gland cortex is functioning.

One of the patients on whom this test was used was a 47-year-old housewife who for

two years had been having increasingly severe headaches. Her right eye was bulging and her right eyelid was drooping.

X-ray examination of the skull showed she probably had a brain tumor. Location of the tumor suggested that the pituitary gland might have been destroyed or severely damaged by it.

Operation to remove the tumor was imperative to save her eyesight. But the possible damage to the pituitary gland might keep this gland from stimulating the adre-

nal gland adequately to see her through the strain of the operation.

The ACTH test was performed. There was only a "modest" fall in the eosinophils. This suggested the pituitary-adrenal reaction would not be strong enough to protect her during the operation. Doses of ACTH were given overnight in an effort to stimulate the adrenal gland cortex. This was unsuccessful as shown by the blood test, but the operation was undertaken nevertheless.

Shortly after the ether had been given and before the surgeon had started to cut, she turned blue and went into shock. The operation was postponed until six days later. By this time she had been given enough large doses of ACTH to produce the drop in eosinophils and her general condition seemed better.

The operation was then performed, the patient survived, her eyes returned to normal and the headaches disappeared.

Science News Letter, April 1, 1950

AGRICULTURE

Cheaper Coffee in Future

► U. S. scientists working in Central America may some day make high coffee prices at home a thing of the past. But not this year.

World demand for coffee has outstripped production. Department of Agriculture says world production has actually decreased since World War II. Increased consump-

tion of coffee in the United States, in addition to production decrease, is blamed for the sharp boost in coffee prices last fall.

A USDA report reveals, however, that its coffee specialists have been at work in Guatemala, El Salvador and Costa Rica for four years. Goal of their small-scale Point Four program: To double or even treble



FROM ONE-TENTH TO FIFTEEN—Measured harvests of 60 blocks of 100 trees each proved that the yield of coffee cherries varies from one-tenth of a pound (left) to 15 pounds (right) of dry coffee per tree per year. Janie Cowgill holds the baskets.

Central American coffee yields.

Dr. William H. Cowgill, 36-year-old plant scientist, heads the U. S. technical team. There is a high-altitude research station at "Finca Chocola," Guatemala.

Working with agricultural scientists in the cooperating countries, the Americans improve coffee production by applying techniques of U. S. fruit growers. Selection of superior trees, culling out of "loafer" trees, crop rotation and better culture methods are among the tricks being taught.

Improvements cannot be put into general practice overnight. But already yield increases are a reality. The U. S. experts hope to see the Guatemalan average, for example, boosted from one pound per tree to three, four or even five pounds.

In 1949 this country imported 2,917,000,000 pounds of green coffee, Department of Agriculture reports. Eighty percent of it came from Brazil and Colombia, only 11.5% from Central America.

If by scientific methods Central American growers can increase their production several-fold, the effect will be quickly felt in U. S. coffee supplies and grocers' prices, the Agriculture Department believes.

Science News Letter, April 1, 1950

METEOROLOGY

Predict Colder April than Normal for Most of U. S.

➤ IT will be colder than normal the first half of April over the eastern two-thirds of the country. In the far west and along the Gulf of Mexico coast, temperatures for the last of March and first of April were predicted to be not far from normal.

This is the second U. S. Weather Bureau extended forecast to be released to publications. The first half of March generally bore out the monthly prediction made at the beginning of March.

Heavier rainfall than normal from mid-March to mid-April was predicted for the south central, southeastern and northwestern portions of the country. More than

enough April showers, at least for the first half of the month, to bring May flowers.

In the rest of the country, rainfall will be generally normal, or slightly less than normal.

Jerome Namias, chief of the Bureau's Extended Forecast Section, warns that his predictions do not hold good for limited areas and represent averages over an entire month.

Science News Letter, April 1, 1950

GEOLOGY

Phosphate Deposits Found Off Florida Coast

➤ MAJOR deposits of phosphates may lie on the floor of the Gulf of Mexico off the Florida coast, Robert H. Stewart, a Government geologist, reports.

Within the past year the spotlight has been turned on phosphates, the fertilizer raw material that can make an acre of land feed more people. Scientists discovered phosphate rock contains low concentrations of uranium and other fissionable materials vital to atomic energy.

Little is known about underwater deposits of phosphates. A unit of the U. S. Geological Survey is in Plant City, Fla., studying land deposits which make Florida the nation's leading phosphate producer. Survey officials admitted the study is part of U. S. atomic research.

While on a fishing trip off Tampa, Mr. Stewart and another geologist with the unit found evidence of phosphates. They took samples, and found the material covered the bottom of the Gulf over a 25-mile area, Mr. Stewart told the Geological Society of Washington. Fishermen's reports indicate the deposits may extend as far south as Fort Myers, he said.

The possibility they could be exploited commercially is "remote," Mr. Stewart added. Too little is known about them. Technical processes do not exist for separating them from sea-water sands.

But more attention may be paid to such underwater phosphates. In January the

semi-annual report of the Atomic Energy Commission said the extraction of uranium from low-grade materials is of major importance to the nation's atomic energy program.

Science News Letter, April 1, 1950

RADIO

Saturday, April 8, 3:15 p.m., EST

"Adventures in Science" with Watson Davis, director of Science Service over Columbia Broadcasting System.

Dr. H. H. Schrenk, Research Director, Industrial Hygiene Foundation of America, Mellon Institute, Pittsburgh, will talk about "Pure Air for America."

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