

MEDICINE

Hormone Upset in Cancer

An upset in the body's hormone balance may be one of the chief causes of cancer. The steroid hormones are the ones which are thought to affect the growth of tumors.

► AN upset in the delicate balance of the hormone system of the body may be one of the causes of cancer.

This is the opinion of a majority of the cancer experts gathered at an international meeting at the Ciba Foundation, London, to exchange views on the effects of the steroid hormones on the growth of tumors. The steroid hormones include sex hormones, as well as those of the adrenal cortex.

Tumors caused by an upset hormone balance included:

Mammoth tumors of the pituitary glands in mice injected with female sex hormone.

Lymph gland cancers in castrated mice painted with female sex hormone.

Cancerous growth of ovarian tissue implanted in the spleens of castrated mice, in which the pituitary gland churns out excessive amounts of ovary-stimulating hormone.

No tumors formed in old mice, in which hormone balance between the pituitary and ovaries was maintained despite castration because of the reduced functioning of the senile pituitary.

Sex hormones affected the growth of chemically induced prostate tissue cancers planted under the skin of mice. Addition of female sex hormone to the chemically treated prostate tissue doubled the cancer

rate. Adding male sex hormone reduced the rate by three-quarters.

Dr. R. Hertz, of the U. S. National Institutes of Health at Bethesda, Md., pointed out the vital part played by small amounts of dietary vitamins in the hormone-induced growth of tissues. By feeding female chicks and rats chemicals antagonistic to folic acid, he could inhibit the normal growth of the genital tissue in response to injections of female sex hormones.

This growth-inhibiting power of vitamin-antagonizing chemicals holds promise of a powerful anti-cancer tool, but at present the narrow safety margin of the available vitamin antagonists makes their use in the clinical control of cancer not yet feasible.

The exact mechanism by which steroid hormones influence cancer growth is still in doubt. Prof. C. W. Shoppee of University College, Swansea, Wales, cast cold water on the theory that they may be transformed in the body to cancer-causing chemicals of the "polycyclic aromatic hydrocarbon" type.

Despite the structural similarity of the steroids to these cancer-causing chemicals, drastic physical measures, which could not be duplicated in the body, are required to effect the transformation.

Science News Letter, July 29, 1950

MILITARY SCIENCE

Resources Feel Speed-up

► RUBBER, steel and oil, sinews of military might, will be among the first U. S. strategic resources to feel the national defense speed-up brought by the Korean war.

These and other raw materials of American industry were in the background as President Truman told Congress there may be need for "substantial redirection of economic resources."

Because the United States experienced a dramatic expansion of its industrial potential in World War II, however, and has continued to expand in many fields in a booming peacetime prosperity, this country stands in greater readiness for industrial mobilization now than at the beginning of the last war.

We have synthetic rubber plants to supplement imports of natural rubber. These have already felt the speed-up. Three synthetic rubber plants are already in process of being reopened.

The nation's steel mills, now operating at

100% capacity, can turn out in one year more steel than is made in the rest of the world, including Russia and her satellites.

The President pointed to the steel industry in particular, however, in warning that civilian uses may have to be curtailed to meet military demands.

Petroleum is being pumped out of the ground in record amounts to meet the greatest demand for liquid fuels in the nation's history. Science has taken huge strides in postwar years in finding ways to produce synthetic fuels from coal and oil shales. The President made no mention of oil as a possible shortage resource. But it is among the first needs of an expanded military program.

The list of strategic and critical metals and minerals is long. In World War II, it included over 100 raw materials of the more than 5,000 needed to keep U. S. industry operating in balance.

Within the past two years the Bureau of

Mines and U. S. Geological Survey released an authoritative outline of the U. S. position in minerals.

This country is virtually self-sufficient for coal, natural gas, magnesium, molybdenum, helium, magnesite, nitrates (for explosives), phosphate rock, potash, salt and sulfur.

It depends almost entirely on foreign sources for chromite, manganese, nickel, platinum, tin, industrial diamonds, quartz crystal and asbestos. It must import from abroad part of its consumption of oil, arsenic, bismuth, cadmium, copper, iron ore, lead, mercury, tantalum, tungsten, zinc, antimony, vanadium, high-grade bauxite (for aluminum) and mica.

Which of these materials of industry, both in peacetime and war, may come under allocation and controls was not revealed by the President in his message to Congress. But the outlook is now clear: military needs and production, involving nearly all of these materials, carry top priority.

Science News Letter, July 29, 1950

METEOROLOGY

Hot Weather Due Over Most of Nation

► MOST of the nation is in for hot weather for the next month—"warmer than normal" the Weather Bureau puts it in its 30-day outlook for the period from mid-July to mid-August. The area with the greatest departure from normal will be east of the Ohio and Mississippi rivers.

Only exception to the rule will be the northern Rocky Mountain states which will enjoy cooler than normal weather.

Upstate New York reservoirs on which New York City water users depend will have to get along with subnormal rainfalls from now to mid-August. The extended forecast section's prediction for the northeast, the Middle Atlantic States and Gulf states is subnormal rainfall.

This means, also, that the nation's dust-bowl areas will continue to have a less than normal amount of rain. The Rocky Mountain and northern plains states, however, will have abundant showers, equaling or exceeding normal amounts.

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ZOOLOGY

Oldest Gray Seal Known Lived Four Decades

► A RECORD age for the gray seal, which is found in the Atlantic, is believed authenticated at 41 to 42 years by Colin Matheson, zoologist of the National Museum of Wales at Cardiff. Following reports of seals that lived to be over 30 years old, a record was located in Sweden of a gray seal caught when a few months old and finally died in captivity in the Skansen Zoo over 41 or 42 years later. This was reported in NATURE (July 8).

Science News Letter, July 29, 1950