

## MEDICINE

## High Blood Pressure Thought Related to Rage

IS THERE a direct relationship between rage and high blood pressure—as expressed in the common saying “Calm down or you’ll burst a blood vessel”?

Dr. Charles W. Wahl, psychiatrist at the University of California Medical School, Los Angeles, thinks such a relationship may be more truth than folklore and could offer a clue to more effective treatment of high blood pressure in some cases.

The cause of a certain type of high blood pressure known as essential hypertension is unknown. However, psychotherapeutic studies have demonstrated evidence of massive repression of unacceptable feelings in these patients, Dr. Wahl said.

These feelings include hostility or repressed rage, generally equated with a “murderous loss of self control.” They also include an inordinate fear of death.

Just how repressed rage and resultant prolonged tension may contribute to this type of high blood pressure is also unknown, he said. Perhaps certain constricting effects of emotional stress on blood vessels over long periods of time may contribute to organic changes in the vessels.

Dr. Wahl’s experiences with such patients have led him to believe that intensive insight psychotherapy begun in a well-motivated patient before such irreversible organic changes have occurred goes a long way toward alleviating or vastly modifying the disease.

Such patients should continue medical treatment by their general physician, or internist, he emphasized.

Science News Letter, July 2, 1960

## MEDICINE

## Animal Tumors Produce “Disease Compounds”

A BEWILDERING assortment of “disease compounds” associated not only with cancer but with other serious illnesses as well are being produced by experimental animal tumors.

Drs. William G. Clark and William J. Hartman of the University of California Medical School, Los Angeles, and the Sepulveda Veterans Administration Hospital are conducting research with mast cell tumors, which are transplantable in animals.

Normal mast cells are tiny depots of interesting compounds. Clusters of them are found in the body, particularly in the connective tissue sheathing of organs and tissues. They are also found in association with inflammation and cancer growths.

The cancerous mast cells produce in large quantities not only the compounds of normal mast cells but several others that may not be present in the normal mast cells or present in too small amounts to be recognized.

Chemicals so far identified in mast cell tumors have been implicated in mental disease, shock and allergy, inflammation, circulatory and heart diseases, high blood pressure, rheumatic heart disease, excessive

stomach secretion and irregularities of nerve transmission.

These include histamine, which is released in high concentration during allergies and acute infections; serotonin, which may be involved in brain function; adrenalin and noradrenalin, the stress hormones; and heparin, blood clotting agent.

Drs. Clark and Hartman are attempting to learn how all these compounds in mast cells are produced and stored and enter into body chemistry. They are also seeking natural or artificial chemicals which would block the production of these substances. These might lead to more effective control of diseases in which these substances are implicated.

The research is supported by the National Science Foundation, California Institute for Cancer Research, U. S. Public Health Service and American Cancer Society.

Science News Letter, July 2, 1960

## PUBLIC HEALTH

## Health Insurance Booms; Covers Most Americans

HEALTH INSURANCE coverage, as well as the amount of benefits paid, reached a new high in the United States last year.

Voluntary health insurance protected more than 127,896,000 Americans—72% of the civilian population—by the end of 1959, according to the 14th annual survey by the Health Insurance Council. About 4,800,000 more persons were covered by health insurance than in 1958.

Benefit payments for hospital, surgical and medical care amounted to more than \$4.3 billion in 1959, up \$400,000,000 over 1958. In addition, persons with loss-of-income policies received \$838,000,000 in benefits from insurance companies to replace income lost through disability.

More than 90% of those with health insurance have both hospital and surgical expense insurance. Five years ago, the figure was 85%.

Science News Letter, July 2, 1960

## SEISMOLOGY

## Nuclear Explosions Cause Earth Waves Far Away

LARGE NUCLEAR explosions cause the earth to vibrate far from the detonation site, three Columbia University scientists have reported.

Drs. Maurice Ewing, director, and Paul Pomeroy and Jack Oliver, all of the Lamont Geological Observatory, Palisades, N. Y., said that there was a great contrast between the earth waves resulting from nuclear explosions and from natural earthquakes. Most of those generated by nuclear blasts can be easily identified, they reported in *Science*, 131:1804, 1960.

The seismic waves caused by explosions of atomic or hydrogen bombs have periods longer than five seconds, and can be detected at great distances from the source. All the waves so generated can be identified and explained in terms of known earthquake information, they said.

Science News Letter, July 2, 1960

# IN SCIEN

## ASTRONOMY

## Modified Interferometer Measures Stars' Passage

A SIMPLE instrument that can measure the diameter of stars and record the time they pass overhead has been developed by the National Bureau of Standards, Washington, D. C.

This type of instrument, called an interferometer, also provides a means of checking aberrations of telescopes. The instrument, developed by J. B. Saunders of the Bureau staff, consists of a double-image prism and a telescopic lens system. It is more practical and efficient than interferometers previously made.

The instrument is a wavefront-inverting interferometer. The prism used is a modified Koesters prism consisting of two identical prisms cemented together with a partially reflecting film on the inner face.

Science News Letter, July 2, 1960

## TECHNOLOGY

## Nuclear Plant to Produce Fresh Water From Ocean

FRESH WATER from the sea soon may be available at low cost by means of nuclear energy, as a result of a joint effort of the Saline Water Division of the Department of the Interior and the Atomic Energy Commission.

The signed contract for the nuclear portion of this program is \$4,500,000. Five years ago, estimates for the type of nuclear reactor necessary for de-salting water ranged as high as \$4 to \$5 billion.

Experts predict that the use of nuclear power for the desalination program will make available fresh water from the ocean at no more than the present cost of drinking water in the 400 largest cities in the United States. The site chosen tentatively for the nuclear desalination plant is San Diego, Calif.

Science News Letter, July 2, 1960

## PUBLIC SAFETY

## Toy Car Axles Wound Children's Heads

THREE CASES in which children's skulls were punctured by the metal axles of rubber or plastic toy cars have been reported by Drs. William H. Mosberg Jr. and John O. Sharrett of the University of Maryland School of Medicine. They reported in the *Journal of the American Medical Association*, 173:804, 1960, that when a child strikes his head against these flexible cars, the axles remain rigid and puncture. They advised manufacturers to mount wheels on small pins instead of on axles traveling the width of the car.

Science News Letter, July 2, 1960

# CE FIELDS

## ROCKETS AND MISSILES

### Fast Engine Planned for Interplanetary Travel

AN EXPERIMENTAL ion engine far different from conventional rocket engines will be built in a year-long \$500,000 program sponsored by the National Aeronautics and Space Administration.

As now conceived, the cylindrical ion engine measures only about eight inches long and four inches in diameter but produces an ion stream developing speeds of more than 100,000 miles an hour.

The small laboratory engine will, however, develop only about a hundredth of a pound of thrust. When bigger engines are developed, NASA hopes to use them to propel spacecraft on interplanetary missions.

Their power source would be a nuclear reactor such as the SNAP-8 now being developed.

In the proposed NASA ion engine, an alkali metal atom (cesium) stream passes through an electrode. The hot electrode pulls an electron from the cesium atom, thus creating a positively charged ion that can be accelerated by other electrodes.

Other electrons are mixed with the ion stream so a neutrally charged beam finally leaves the engine.

Hughes Aircraft Company of Culver City, Calif., will design, develop and test the engine under NASA contract.

Science News Letter, July 2, 1960

## CONSERVATION

### New Group to Study Effects of Pest Control

THE EFFECTS on America's wildlife of chemicals used to control agricultural pests will be investigated by a special committee appointed by the National Academy of Sciences-National Research Council.

The new Committee on Pest Control-Wildlife Relationships is a response to a growing concern among conservationists that some of the more recent chemical controls, while advancing both agriculture production and public health, may be harmful to desirable wildlife.

The Committee seeks to establish a sound program for effective plant protection without causing permanent damage to useful animals.

Among its functions will be to provide guidance and technical advice toward that goal; to evaluate both the direct and indirect effects of various pest control operations on both plants and animals; to stimulate new research and encourage current research now in progress to get the necessary information for sound guiding principles; and to foster cooperation among the various agencies and institutions with a legitimate concern in the areas of pest control and wildlife conservation.

In the past, persons responsible for pest-control programs have tended to minimize the harmful effects of chemicals used for this purpose on animal life. In some instances, conservationists have exaggerated the damage to wildlife and ignored the benefits they have contributed to both farmer and consumer.

Dr. Detlev W. Bronk, president of the National Academy of Sciences, expressed the hope that the Committee might achieve harmony and understanding between the two groups in "this increasingly important and somewhat controversial field of agriculture."

Science News Letter, July 2, 1960

## PHYSIOLOGY

### Light Work May Demand As Much Energy as Heavy

MEN WHO WORK in light industries, such as a sewing machine plant, may expend as much energy as men working in heavy industries like steel, a study of elderly working men shows.

Dr. J. V. G. A. Durnin of the department of physiology at Glasgow University in Scotland studied the energy output of men between 60 and 65. He found:

In the steel industry, where men do strenuous work but do it infrequently, the average elderly worker expends 3,300 calories a day.

In a truck assembly plant, the daily average was 2,700 calories.

In the sewing machine plant, where many of the men sat all day at an assembly line, the average was 3,300 calories a day. These figures took into account the rest of the day, but most of the men were extremely idle in the evenings.

"We may have been very wrong in what we think elderly people can do in industry," Dr. Durnin said.

"Elderly people may require to take in more energy in the form of food than young people," he said, "even when both may be doing precisely the same job, as well as taking the same amount of exercise. Elderly people are, on the whole, bulkier and therefore use up more energy in doing the same work."

A factor that caused heavier demands to be made by so-called "light" jobs was that a light task was more likely to be a continuous one all day long except for meal breaks, whereas the man with a strenuous task to do relaxed in between the demands of the job.

Science News Letter, July 2, 1960

## CHEMISTRY

### Bleaching Strengthens Cotton Fabrics

WET FINISHING processes such as desizing, scouring and bleaching make outdoor cotton fabrics stronger and less likely to mildew, the U. S. Department of Agriculture's Southern Utilization Research and Development Division in New Orleans, La., has found. The processes tend to purify cotton cellulose and reduce foreign substances that encourage the growth of microorganisms.

Science News Letter, July 2, 1960

## PUBLIC HEALTH

### No Added Radioactivity From Disposed Wastes

A SURVEY of a site off Boston Harbor once used for the disposal of limited quantities of packaged radioactive wastes has failed to reveal any unusual radioactivity.

In samples of water, sediments and marine organisms, the radioactivity detected was found to be in the same range as that of background activity at other ocean locations where no radioactive wastes have been dumped.

The site was used under Atomic Energy Commission authorization and license from 1952 to August, 1959, for the disposal of low-activity packaged radioactive wastes which had a total of 2,434 curies at the time of disposal.

No further use of the area off Boston Harbor for disposal purposes is contemplated. The Commission's present policy is to require that wastes be disposed of in water at least 1,000 fathoms deep and the Commission is not contemplating any change in that policy.

The Massachusetts Bay site is one of four off the New England coast studied during the past year by scientists from the University of Connecticut, the U. S. Coast & Geodetic Survey and the U. S. Public Health Service, working in conjunction with the Bureau of Commercial Fisheries of the U. S. Fish & Wildlife Service.

Science News Letter, July 2, 1960

## MEDICINE

### Body Hormone Found Most Powerful Stimulant

A BODY HORMONE, aldosterone, has been found to be 250 times as powerful a heart stimulant as the most effective drugs known.

Drs. Ralph D. Tanz and George Sayers of Western Reserve University in Cleveland, Ohio, reported at the American Chemical Society's Medicinal Chemistry Symposium in Kingston, R. I., that the chemical structure of this hormone could serve as a model for more efficient drugs to treat heart disease.

In the treatment of heart disease, the most important drugs available are the cardiac glycosides. Unfortunately they are rather toxic when administered in large doses.

The Cleveland doctors found that aldosterone caused muscle contraction in the same way that digitalis and other heart drugs do, but that the amount needed was only 1/250th as much as ouabain, one of the most powerful heart stimulants.

In experiments with isolated heart tissue, the doctors found that aldosterone has "apparently provided us with a cardiac glycoside (heart-stimulating drug) of our own." Ordinarily, the adrenal glands produce small quantities of aldosterone but in victims of heart attacks the level is markedly elevated.

The doctors said this indicates a protective mechanism to improve the function of the failing heart.

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