

## MEDICINE

## New Type of Operation For High Blood Pressure

► **HIGH BLOOD PRESSURE** resulting from insufficient flow of blood to the kidneys has been treated by a new operation performed experimentally on dogs. A short segment of ileum, or small intestine, near the kidney was used to bring about transfer of blood supply.

Drs. James F. Glenn, B. Marvin Harvard and Clyde L. Deming of Yale University reported the operation to the Clinical Congress of the American College of Surgeons meeting in San Francisco.

Although surgery has previously restored normal blood pressure in a limited number of patients who have had major defects in the kidney artery, the operation has not helped the majority of patients with high blood pressure who have kidney damage. Such patients suffer from diffused insufficiency of blood supply in the general kidney structure rather than an insufficiency because of a localized clot or hardening of the kidney artery.

The surgeons stripped the segment of ileum of its lining and joined the denuded muscular layer to the kidney from which the capsule or membranous envelope was removed.

They said the most successful transfer of blood supply occurred when they established a need for blood in the animals through constricting their arteries either partially or completely.

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## ASTRONAUTICS

## Scientists Plan Rockets Free of Earthly Germs

► **UNLESS EXTREME CARE** is taken, rockets into outer space will spread to the moon and planets contaminating dirt of the earth, including both harmless and disease-producing bacteria.

If unclean rockets are fired, then scientists will never be able to tell whether life and other manifestations of the earth exist in other parts of the solar system.

Experts are hard at work on the prevention of space contamination, and even the Russians say they are working on the problem.

Drs. Charles R. Phillips and Robert K. Hoffman, U.S. Army Chemical Corps scientists, report in the journal, *Science*, 132:991, 1960, that preliminary experiments at the germ warfare center, Fort Detrick, Md., show sterilization is needed in all stages of design and construction of the space vehicle, including the tiniest electronic parts. Some parts are sterile when received from the manufacturer, but more are not.

A crash landing on a hard surface might completely shatter not only the vehicle but its entire contents. Organisms present even in hermetically sealed components would be released. Bacteria might survive a crash landing far better than metal or plastic objects.

The scientists see no difficult problems in

sterilizing the outside and interior of the space vehicle itself and the third stage rocket and suggest ethylene oxide gas contained by a huge plastic bag would do the job.

Scientists are in general agreement that any chance of biological contamination should be avoided most carefully until the moon and planets have been carefully studied. An international Committee on Contamination by Extraterrestrial Exploration has formally recommended that all efforts be made to prevent any biological pollution of space.

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## ARCHAEOLOGY

## Danish Collection Shows Rare Stone Age Objects

► **AN HISTORIC** exhibition of the largest collection of Danish art ever to cross the ocean, including the oldest known examples of Danish archaeological objects, was opened by King Frederik IX and Queen Ingrid of Denmark at the Metropolitan Museum in New York.

Presented under the patronage of King Frederik and President Eisenhower, the exhibition covers 10,000 years of art, beginning with the tiny amber figures of a bear and a bird, carved between 8,000 and 5,000 B.C., and Stone Age battle-axes, harpoons and pottery from the same period.

From the Bronze Age are a pair of spiraling, S-shaped lurs that represent two of the world's earliest wind instruments. They are more than six feet long and 2,500 years old. Other Bronze Age objects include swords, axes and belt plates as well as crafted gold jewelry.

The Iron and Viking ages are represented by gold and silver jewelry showing highly developed skills and by iron swords and battle-axes.

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## NUTRITION

## Easier to Carry Lead Than Excess Body Weight

► **IT TAKES MORE** energy to carry 50 pounds of excess fat than to carry 50 pounds of lead, researchers reported at the American Dietetic Association meeting in Cleveland.

Drs. E. R. Buskirk, R. H. Thompson, R. Moore and G. D. Whedon of the National Institute of Arthritis and Metabolic Diseases, Bethesda, Md., studied the metabolism of four obese women maintained on 650 to 1,000 calories per day. They found that it was easier for them to walk on a treadmill while wearing lead vests than to walk while carrying the same weight in excess fat.

During the walking period, the energy exerted and the calories burned up are increased. But for the remainder of the day, in heavy persons, less energy than usual is used. Thus the total calories used by the body during the whole day is less than if no walking is done.

Studies of one obese individual subjected to cold also showed that about 50% less energy is used by the fat than the thin in responding to cold.

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# IN SCIEN

## GENERAL SCIENCE

## International Standard Of Length Adopted

► **A NEW INTERNATIONAL** standard of length was officially adopted in Paris by the international General Conference on Weights and Measures.

The new standard defines the meter as 1,650,763.73 times the wavelength of the orange-red spectral line of light emitted from atoms of krypton 86.

With the krypton standard now designated as the primary standard, the platinum-iridium meter bar housed at the International Bureau of Weights and Measures in Sevres, France, drops to the position of a secondary standard. The chief advantages of the change are that the primary standard is now non-destructible and that the meter can be measured more precisely.

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## SEISMOLOGY

## Creeping Rock Damages California Winery

► **ONE SIDE** of the San Andreas fault, a crack in the earth's surface responsible for the devastating San Francisco earthquake of 1906, is "creeping" away from the other at a rate of about one-half an inch per year.

This movement was measured by noting changes in the positions of rocks under a winery near Hollister, Calif., that have caused damage to buildings and other property there.

Karl V. Steinbrugge and Edwin G. Zacher of the Pacific Fire Rating Bureau, San Francisco, measured the separation of pairs of marks along the line where the creeping of the rock occurred.

The measurements and the damage to buildings suggested that movement of the underlying rock, which is part of the San Andreas fault, has continued for 50 years or more.

Many earthquakes occur along the San Andreas fault, but the creep measurement does not necessarily mean that another devastating one is imminent.

Don Tocher of the University of California's Seismographic Station at Berkeley reported that the creep recorders, designed to measure continuously the movement of adjacent sections of the concrete floor, were installed in the main buildings of the winery.

He said that creeping occurs largely in spasms of rather short duration, mostly on the order of a week, separated by intervals of weeks or even months where little or no creeping takes place. The scientists reported their findings in the *Bulletin of the Seismological Society of America*, 50:389, 1960.

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# CE FIELDS

## MEDICINE

### Tiny Bundles of Glass Give Doctors New Tool

► TINY BUNDLES of glass fibers that will conduct light are being tested as new tools for doctors to use in medical examinations.

Drs. J. H. Hett and L. E. Curtiss of the American Cystoscope Makers Inc., Pelham, N. Y., reported to the American Optical Society meeting in Boston that flexible fibers have been used to carry images in a duodenoscope and a ureterscope.

The duodenoscope is 34 inches long, with a diameter a little less than half an inch. The ureterscope is 30 inches long, with a diameter of one-seventh of an inch.

A flexible bronchoscope and coloscope using fibers are in design stages, they reported. Use of glass fiber "ropes" gives instruments for medical examinations that eliminate "blind regions" caused by curves in body organs.

Fiber optics can also be used to transmit images in the invisible infrared, Drs. N. S. Kapany and D. A. Pontarelli of Armour Research Foundation, Chicago, reported to the meeting. Among the materials that have proved most suitable are arsenic trisulfide, silver chloride and crown glass.

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## MEDICINE

### Nine Medical Scientists Win 1960 Lasker Awards

► NINE MEDICAL scientists from the United States, England and West Germany, along with two U. S. groups, have won the 1960 Albert Lasker Awards for breakthroughs in medical research and advances in public health.

Outstanding in the field of biology is demonstration that the chemical of heredity in human cells, deoxyribonucleic acid (DNA), is made up of two long intertwining molecular chains, a double helix.

Honored for this discovery, which may enable scientists to alter the heredity of plants, animals and man, are Drs. Francis H. C. Crick of Cambridge University, Cambridge, Eng., James D. Watson of Harvard University and Maurice H. F. Wilkins of King's College, London.

Eight of the individual recipients will receive \$2,500 each, gold statuettes of the Winged Victory of Samothrace, symbolizing victory over death and disease, and individual citations. A ninth scientist, Dr. Abel Wolman, an engineer at Johns Hopkins University, Baltimore, will receive a special \$5,000 award for contributions to public health and safety in sanitary engineering, water supply development and control of radiation hazards.

The two groups honored in the field of public health are the Crippled Children's

Program, Children's Bureau, U. S. Department of Health, Education and Welfare, and the Chronic Disease Program, California Department of Public Health, Berkeley.

The other individual recipients in medical research are:

Dr. James V. Neel, University of Michigan, Ann Arbor, and Lionel S. Penrose, University of London, for contributions to the development of modern human genetics and significant findings about the effect of nuclear and other radiation on human beings and their offspring.

Drs. Ernst Ruska, Berlin Institute of Technology, West Germany, and James Hillier, RCA Research Laboratories, Princeton, N. J., for the design, construction and perfection of the electron microscope as an essential tool of modern medical research.

In public health, Dr. John B. Grant, University of Puerto Rico, San Juan, for more than 40 years of promoting the health and well-being of the peoples of pre-communist China, post-war India and present-day Puerto Rico.

Albert Lasker Awards are given annually by the Albert and Mary Lasker Foundation through the American Public Health Association.

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## MEDICINE

### Blood Volume Measured By Atomic Device

► RAPID MEASUREMENT of blood volume in patients by an automatic device called the Volemetron was reported at the Clinical Congress of the American College of Surgeons in San Francisco.

Drs. John A. Williams and Jacob Fine of the Harvard Medical School and Beth Israel Hospital, Boston, described the machine, which requires less than 15 minutes for accurate measurement.

The Volemetron applies a new approach to an old principle of injecting into the blood stream a measured amount of "labeled" material such as human blood protein tagged with a small amount of radioactive iodine.

About ten minutes later, after the injected material has been thoroughly mixed in the circulation, a blood sample is taken and its radioactivity measured.

Knowing the amount injected and the extent to which it has been diluted, the investigators said one can readily calculate the volume of blood by which the material must have been diluted.

The laboratory procedures usually required to carry out this isotope dilution principle have been so time-consuming and relatively inaccurate that they have been limited mainly to research.

There are only two Volemetrons in existence now, but future manufacturing and marketing will be done by Perkin-Elmer Corporation, Norwalk, Conn.

Not only can blood measurement be rapidly and accurately computed by the new device, the syringes, needles and sample tubes can be thrown away, thus avoiding breakage and cleaning of special glassware.

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## PSYCHOLOGY

### Human "Guinea Pigs" Need Special Protection

► HUMAN "GUINEA PIGS," particularly those in psychological research, need special protection.

Dr. Dael Wolfe, executive officer of the American Association for the Advancement of Science, says that increasing research on human behavior will surely involve some danger to the subjects. He urges the idea of "liability without fault" to protect human guinea pigs.

To learn the kinds of behavior that can be expected of an astronaut in the super-solitary confinement of space, volunteers must experience actual stressful conditions. Those who do so run some risk of personal damage, Dr. Wolfe reports in *Science*, 132:990, 1960.

He points out that there are differences between medical and psychological research. One difference is that the human volunteer in psychological research cannot always be told the prospective results. If the experiment cannot be fully explained, Dr. Wolfe asks, to what has the volunteer consented?

Another difference is that normal, healthy subjects are not themselves apt to benefit directly from the experiments. New medicines or operations are usually tested on ill patients who may directly benefit.

Because of these and other differences, the guides set by past medical experience are inadequate to protect human guinea pigs in psychological research.

Dr. Wolfe says that the idea of "liability without fault," proposed in the *Duke Law Journal*, offers a partial solution. Under this concept, a subject damaged as a result of a psychological experiment would be entitled to treatment and rehabilitation, or to receive compensation for damages.

Both the subject and the experimenter would be protected under this plan, Dr. Wolfe concludes. The experimenter would not be considered at fault but would have been acting in the interest of society. Thus society, acting through appropriate government channels, would assume the costs of rehabilitation or compensation, just as society, also through the government, supports much psychological research.

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### "Thermal Barrier" Tests For Heat Resistance

#### See Front Cover

► INFRARED, PENCIL-THIN quartz lamps have been developed into a simulated thermal barrier for testing heat resistance of materials to be used in space vehicles.

This device, used at the National Aeronautical and Space Administration's Research Center at Langley, Va., produces heat about a third the intensity of the surface of the sun.

The nose cone tested in the cylindrical radiator on the cover of this week's *SCIENCE NEWS LETTER* is heated by 225 tubular 2,500-watt General Electric lamps. These lamps reach 3,100 degrees Fahrenheit.

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