

## SURGERY

**Aorta Graft Technique Replaces Fabric, Plastic**

► THE HUMAN trachea, or windpipe, may be used to replace sections of the aorta, the large blood vessel that carries renewed blood from the heart.

Studies on 23 long-time surviving dogs have demonstrated the merit of the technique. Dr. Edward H. Kopf of the Allied Hospital of the Sisters of Charity, Buffalo, N. Y., reported the results of the technique he developed to the Western New York Heart Association and the Section of Cardiology of the Ontario (Canada) Medical Association meeting in Rochester.

Dr. Kopf described the successful trachea grafts he and Dr. Charles E. Wiles, also of the Buffalo hospital, performed. Dr. Kopf said he was ready to try the technique on humans.

Replacement of blood vessels such as the aorta has long been a surgical problem. It is necessary in cases of hardening of the arteries, accidental damage to a blood vessel, and in an aneurysm, a swelling and threatened rupture in a weakened blood vessel.

Until now, surgeons have used fabric tubing or sections of aorta from dead persons.

The fabric tubing method usually results in great loss of blood, sometimes as much as 27 pints, while the new tissue grows around the graft. Human aortas are difficult to obtain. This, combined with the problem of storage until needed, makes them difficult to use.

Advantages of using the trachea include little or no blood loss, storage in formaldehyde for as long as eight months, and availability. In addition, the trachea is seldom diseased, as may be the case of a "used" aorta.

Removal of the trachea does not interfere with the closed circulation system needed for embalming, and undertakers are more willing to permit the trachea to be removed than the aorta.

Science News Letter, May 10, 1958

## GENERAL SCIENCE

**Science Fiction Presents Strange Picture of Science**

► SCIENCE FICTION, which is read by 6,000,000 Americans, presents a far from accurate image of science and scientists.

This is the conclusion of Dr. Walter Hirsch, Purdue University sociologist, after analyzing the content of a representative sample of all the science fiction stories published between 1926 and 1950.

Furthermore, Dr. Hirsch found, the science fiction image of scientists has become less favorable through the years. In 1926, nearly half the "heroes" were scientists; in 1950 the figure had dropped to 24%. Meanwhile, there was no significant decrease in the proportion of scientists shown as villains.

Dr. Hirsch also found that science fiction no longer sees science as the savior of mankind. In 1926, nearly half the social problems written about in these stories were

solved by means of natural science and technology. By 1950, this figure had dropped to 26%.

Recent science fiction writing tends to "pass the buck" for the solution of problems to "aliens from other planets" in 28% of the cases.

Social scientists are not seen as problem-solvers to any significant extent, appearing in that role in only three percent of the cases in 1926 and two percent in recent writing.

Dr. Hirsch also discovered that science fiction through the years increasingly pictures research men tied up in "red tape." This fictional image may represent the real change that has taken place in the circumstances under which scientists work.

Dr. Hirsch's report on this study appears in *The American Journal of Sociology* (March).

Science News Letter, May 10, 1958

## DENTISTRY

**Tooth-Decay Inhibiting Agent Found in Saliva**

► A CHEMICAL substance in human saliva that inhibits or destroys bacteria commonly associated with tooth decay has now been isolated.

The antibacterial factor is thought to be a chemical entity found in the saliva of "caries-immune" persons. These are adult men and women with no clinical evidence, past or present, of tooth decay.

Research findings indicate the substance is a protein, Dr. Gordon E. Green of the College of Dentistry at Ohio State University reported to the Society of American Bacteriologists meeting in Chicago.

The study, headed by Dr. Hamilton B. G. Robinson, associate dean of the College of Dentistry at Ohio State and supported by the Procter and Gamble Company, was launched to determine why approximately one in every 100 persons is resistant to tooth decay regardless of age, sex, dietary habit or oral hygiene.

The dental scientists compared the bacteria in the mouths of persons susceptible with those of persons immune to tooth decay.

The most striking difference in bacterial content was earlier found to be the significantly greater number of lactobacilli, an acid-forming organism, in the saliva of those susceptible to tooth decay.

These acid producers, long considered a cause of tooth decay, were much lower in number and sometimes non-existent in the saliva of decay-immune persons.

Culture studies and laboratory tests indicated some substance or mechanism exists in the saliva of decay-immune persons that could change the decay-producing potential of the lactobacilli by reducing their number and their ability to produce acid.

The scientists will now attempt to discover the source of this chemical substance that destroys or controls bacterial growth, and to determine the amounts found in the saliva of persons with varying amounts of tooth decay, Dr. Green concluded.

Science News Letter, May 10, 1958

**IN SCIEN**

## DENTISTRY

**Strain of Modern Life Can Cause Tooth Damage**

► THE TENSIONS of modern living can lead to severe damage to teeth, dental tissues and the jaw bone.

Since the beginning of time, the mouth has been closely linked to the emotional state, even in the animal world. Tacit recognition of this has been given for many years by such expressions as "grit his teeth in anger," "snarled at his adversary," "setting his teeth on edge," and similar idioms, Dr. Ernest R. Granger of Mount Vernon, N. Y., reports in the *Journal of the American Dental Association* (May).

Grinding and clenching of the teeth is associated with malocclusion or failure of the upper and lower teeth to meet properly. In addition, uneven pressures on the teeth cause irritation and breakdown of gum tissues. Eventually this leads to the loss of teeth.

Severe pain in the hinge-like joint called temporomandibular which connects the upper and lower jaws, is associated with the mechanics of upper and lower tooth contact, Dr. Granger says. The abnormal pressure applied to this joint by the person who is directly affected by daily stress results in damaged teeth, gums and jaw joints, he pointed out.

If the damage is severe and long standing, recovery may be a tedious and slow process unless the patient receives psychological help to relieve the troublesome stress.

Science News Letter, May 10, 1958

## PEDIATRICS

**Mother Carries Diarrhea To Newborn Infant**

► ONE of the dread diseases of infants, diarrhea of the newborn, may be finding its way into the hospital environment by way of mothers of newborn infants.

A study of 300 mothers and their infants revealed that 44 mothers were harboring in their intestinal tracts one of the 11 types of organisms known to cause diarrhea in newborn babies. Three other mothers were carrying these organisms in their vaginal tracts.

Twenty babies of these mothers who were carriers acquired the same types of organisms in either their intestinal tracts or in their noses and throats.

Dr. Merlin L. Cooper of Children's Hospital Research Foundation and the Department of Pediatrics, College of Medicine, University of Cincinnati, presented the results of his study at a Chicago meeting of the Society of American Bacteriologists.

Science News Letter, May 10, 1958

# CE FIELDS

## GENERAL SCIENCE

### Nobelists Ask Calling of Science Parliament

► BECAUSE THE political structure of the world needs to be adjusted to the progress of science, the National Academy of Sciences meeting in Washington, D. C., was asked to invite the Royal Society of London and the Academia Nauk of the USSR, equivalent British and Russian bodies, to establish a scientific world parliament.

Presented by two Nobelists, Dr. Albert Szent-Gyorgyi of Woods Hole, Mass., and Dr. Linus Pauling of Pasadena, Calif., the proposal recited that scientific discoveries have changed the nature of the world and contributed greatly to the use of natural resources for the benefit of man, but that these have resulted in forces of destruction that hold the world in terror.

The hope was expressed that a scientific world parliament would lead to recommendations that would assist nations in attacking and solving the great problems that must now be faced.

Science News Letter, May 10, 1958

## PSYCHOLOGY

### Additive Helps Aged, Mental Patients

► DAILY FEEDINGS of a special form of the food element, glutamic acid, has enabled elderly, deteriorated psychotic persons to emerge from the "back wards."

Some were actually discharged and went for care to ordinary nursing homes; others were so greatly improved that they began to dress themselves, feed themselves and even to clean their quarters.

The form of glutamic acid used was L-Glutavite which is a chemical relative of the flavor-sharpening monosodium glutamate, familiar in the kitchen under various trade names. It was tried in an experiment at the Veterans Administration Hospital, Bedford, Mass., by Drs. Louis P. Finkle and L. J. Reyna.

The patients treated in the experiment were a group who were unresponsive to the modern tranquilizing drugs and for whom the tranquilizers were dangerous due to their serious side effects.

"In marked contrast to the frequently seen undesirable tranquilizer effects such as apathy, diminished psychomotor activity, drowsiness, and sluggish, aimless, stiff-like appearance and gait, often characterized as 'acting like zombies,' the L-Glutavite group were alert, active, more interested in their environment and social activities," the experimenters report.

The elderly patients were given tomato juice three times a day, seven days a week

for one year. During the first and third quarters all the patients got plain tomato juice. During the second and fourth quarters, some were given L-Glutavite in their tomato juice. Neither the patients, nor the doctors, nurses or aides, knew which patients were treated and which had plain juice.

Of the treated patients, 73% showed improvement while only 20% of the untreated controls seemed better.

Results of the experiment are reported in the *Journal of Clinical and Experimental Psychopathology*.

Science News Letter, May 10, 1958

## ENGINEERING

### Sputnik Launchings Based on Sound Methods

► THE LAUNCHINGS of Russian sputniks were based on a sound and expanding program of precision measurement, Dr. Allen V. Astin, director of the National Bureau of Standards, Washington, has concluded.

In comparing the relative progress of the United States and Russia in making accurate measurements of everything from electricity to nuclear radiation, Dr. Astin found one field where the Soviet's achievement level is "quite startling." Scientists at the Russian equivalent of the Bureau of Standards could make calibrations of temperature-measuring devices up to 6,000 degrees centigrade, about 10,800 degrees Fahrenheit.

In comparison, Dr. Astin said, his Bureau provided temperature calibrations up to about 5,000 degrees Fahrenheit.

Few persons realize the "dependence of technological progress upon advances in measurement techniques," Dr. Astin said. The Russians have a tremendous "crash" program underway to pull ahead of the U. S. in this field.

By 1960, for instance, they are planning to triple production of all types of electrical, mechanical, optical and radiation measuring instruments, as well as devices for automation.

This is part of their program to reach a competitive industrial position with the U. S.

Soviet instrument development is under a Committee on Standards, Measures and Measurement Apparatus of the Council of Ministers of the U.S.S.R. Five research institutions work directly for this Committee on new and improved techniques for making measurements and on developing basic standards.

A network of regional calibration centers is supervised by the five institutions. The centers have the responsibility of taking the latest findings in measurement research and imposing precision production on machine-producing plants.

Dr. Astin urged that research activities at the National Bureau of Standards be "substantially strengthened" in order to meet the Soviet challenge.

Science News Letter, May 10, 1958

## ORNITHOLOGY

### Penguin's Nose Helps Eliminate Excess Salt

► THE PENGUIN and other marine birds seem to have an excellent built-in de-salting device, two scientists report in *Nature* (April 26).

Sea birds, in contrast to land birds, have particularly well-developed nasal glands. These had been thought to protect the sensitive lining of the nasal cavity from the irritating effects of sea water. Now evidence points to the glands as very efficient removers of excess salt.

Dr. Knut Schmidt-Nielsen, department of zoology, Duke University, and Dr. W. J. L. Sladen, department of pathobiology, Johns Hopkins School of Hygiene and Public Health, experimented with a Humboldt penguin given five grams, about one-fifth of an ounce, of salt embedded in some fish.

Ten minutes after feeding, the scientists report, a salty nasal secretion began that lasted for more than 11 hours. By collecting the clear, colorless liquid and measuring its salt concentration, they found approximately two-thirds of the salt fed to the bird had been eliminated through the nose in only four hours.

In contrast, the kidney accounted for "perhaps one-tenth" the amount of sodium and chloride excreted by the nasal salt glands.

Since the penguin can eliminate salts from its nose at a concentration well above that of sea water, it achieves a net gain in "drinkable" water. This, Drs. Schmidt-Nielsen and Sladen speculate, may be the significance of marine birds' special extrarenal salt excretion.

Science News Letter, May 10, 1958

## PHYSIOLOGY

### Ten Pounds Overweight Shortens Life 50 Days

► BEING TEN pounds overweight will decrease life expectancy by 50 days, Dr. Linus Pauling, California Institute of Technology Nobelist in chemistry, has found after statistical studies inspired by the controversy over the effect of atomic bomb fallout.

To the National Academy of Sciences, Dr. Pauling, protagonist for the stopping of atomic bomb tests, commented that Drs. Edward Teller and Albert L. Latter, atomic scientists who favor continuation of the tests, had estimated that radiation from fallout was shortening human life as much as one ounce of overweight.

This started Dr. Pauling making a statistical analysis of the relation between longevity and body weight, and he found that longevity decrease in relation to obesity can be expressed by a single term involving the square of the amount of obesity.

He concluded the Teller-estimate was, incidentally, wrong by a factor of more than a thousand, and that previous estimates that ten pounds overweight cost a year of life expectancy are too pessimistic.

Science News Letter, May 10, 1958