

## BIOLOGY

**Smithsonian Acquires Giant, Three-Foot Worm**

➤ A GIANT "worm," more than three feet long and with a name to match, *balanoglossus*, has been acquired by the Smithsonian Institution.

Dug out of its home beneath the sandy beach of Grand Isle, La., the specimen is described as one of the largest of its kind ever extracted intact. An extremely fragile body that shatters when the animal is disturbed has frustrated many past attempts at collecting a complete worm.

Known popularly as the acorn worm, the *balanoglossus* is found throughout the sea-coasts of the world. It derives its name from the fact that it remains buried in the mud or sand, showing only a food-gathering proboscis in the water. The proboscis is acorn-shaped, and thus *balanoglossus*, which is a common name for many species of mud-worms, comes from the Greek *balanos* meaning acorn and *glossa* meaning tongue.

Just where the *balanoglossus* fits into the animal world is debatable. Some think that it is a link between worms, members of the starfish family and the vertebrates. Its fragility has made it difficult for biologists to study the *balanoglossus* critically. It is now hoped that the preserved Smithsonian specimen will add to the scientists' knowledge of the big creature.

The *balanoglossus* strongly smells of iodine and the flavor of iodine which is sometimes encountered in shrimps and lobsters is often because these little sea animals have been feeding on the *balanoglossus*.

As the Smithsonian biologists point out, the *balanoglossus* got stuck in the mud 200,000,000 to 300,000,000 years ago and although it might possibly be a "poor relation of the higher animals," it remains a "super-worm that never realized its potentialities of becoming something more than a worm."

Science News Letter, April 9, 1955

## STATISTICS

**Chicago's Population To Grow by 774,000**

➤ CHICAGO, AMERICA'S second largest city, may expect to add over three quarters of a million to its population in the next ten years.

An estimate made by Dr. Donald J. Bogue, associate director of the Scripps Foundation for Research in Population Problems at Oxford, Ohio, indicates that the population of Chicago's metropolitan area will reach 6,762,000 by April 1, 1965, a gain of 774,000 in the next decade. This estimate is based on the assumption that America remains at peace and that Chicago has neither boom nor disaster.

The city of Chicago itself, which already has an "old" population, may expect to have a gain of 111,000 persons over the age of 65 by 1965. This aging effect will be off-

set, however, by the results of the recent baby boom which will add some 115,000 children under the age of 14 to the population. The increase of both children and persons of or beyond retirement age will put an increasing squeeze upon those of working age. By the year 1965 there will be a shortage of persons from 25 to 35 years old, a result of the lowered birth rates during the depression years.

By the year 1965, babies born since 1944 will be reaching an age where they will want to marry and start homes of their own. This will cause an increase in the demand for additional housing units.

Science News Letter, April 9, 1955

## MEDICINE

**Kidney Stones Due to Overactivity of Glands**

➤ IN ABOUT one out of 20 cases of kidney stones the trouble is due to overactivity of some little glands located next to the thyroid gland in the neck. The glands are called parathyroid glands and the hormone they produce controls distribution of calcium and phosphorus in the body.

Their role in causing kidney stones was reported by Dr. R. G. Sprague of the Mayo Clinic, Rochester, Minn., at the meeting of the American Academy of General Practice in Los Angeles. When these glands are overactive, more calcium and phosphorus get into the urine and this condition favors the formation of kidney stones, Dr. Sprague explained.

Science News Letter, April 9, 1955

## CHEMISTRY

**Male Hormone Made From Simple Chemicals**

➤ THE MALE sex hormone has been synthesized directly from simple coal tar chemicals for the first time, the University of Wisconsin has announced.

The synthesis was accomplished by Prof. W. S. Johnson and Dr. Raphael Pappo, visiting lecturer in chemistry at Wisconsin from the Weizmann Institute, Israel, in cooperation with Drs. Brian Bannister and E. J. Pike.

Heretofore the only practical method of synthesizing testosterone, the male sex hormone, has required starting from a complex natural steroid chemical such as cholesterol.

The present synthesis starts from the simple coal tar product, 1,6-dimethoxynaphthalene. The method, the scientists emphasize, is not practical in its present form.

Unlike the commercial process, the new method produces both dextro and levo types of testosterone. This means that two different kinds of testosterone molecules are manufactured, each a mirror-image of the other.

The dextro testosterone is the natural hormone manufactured by the male glands. What physiological properties the levo type will have is not yet known.

Science News Letter, April 9, 1955

**IN SCIEN**

## MEDICINE

**Brain Stimulants Keep Tired Fliers Efficient**

➤ ONLY BRAIN stimulants such as caffeine and Dexedrine ("pep pill" ingredient), of various proposed measures, are able to keep tired aircrews working efficiently, tests at the U. S. Air Force School of Aviation Medicine, Randolph Air Force Base, Texas, show.

The tests were reported by Maj. Robert B. Payne, USAF (MSC), and Dr. George T. Hauty at the Aero Medical Association meeting in Washington.

Other measures the scientists had thought might counteract the effects of fatigue were techniques for giving the men extra motives to go on working efficiently and different designs or routines for the tasks to be performed.

A person's susceptibility to fatigue that would cut down his skill and efficiency can be predicted, the scientists found, but this part of the work is not ready, they said, for reporting.

Science News Letter, April 9, 1955

## MEDICINE

**Short Red Cell Life Cause in Some Anemias**

➤ A SHARP decline in the life span of individual red cells produces "secondary" anemia usually found in people with cancer, arthritis and certain other diseases, it is suggested by Dr. Joseph Ross, professor of medicine and of radiology and associate dean of the Medical School of the University of California at Los Angeles.

Using radioactive tracer techniques, Dr. Ross studied the red cells of patients with rheumatoid arthritis and with several types of cancer. He found that red cells of patients with active disease had a life span of only 30 to 70 days in contrast to the normal survival time of 120 days.

The rate of red cell formation in the patients was higher than those of normal people but not enough to compensate for the decreased life span.

Dr. Ross suspects that the entire red cell population in patients with these diseases ages more rapidly than normal because of changes in body chemistry brought about by the diseases.

"Secondary" anemia should never be taken lightly, the U.C.L.A. doctor warns. It is often the only objective evidence of a serious disease that may be in a remedial stage and if the cause of the anemia is looked for and discovered, the underlying disease may be cured before it is too late, he adds.

Science News Letter, April 9, 1955

# CE FIELDS

## VIROLOGY

### Million Viruses Needed For Single Infection

➤ AS MANY as a million viruses are needed to establish a single infection, research with tobacco mosaic viruses at the University of California at Los Angeles indicates.

This has been found by Drs. Albert Siegel, Irving Rappaport and Samuel Wildman in research supported by the Atomic Energy Commission.

Such a large number of viruses is apparently required because only a few of the virus particles have the power to reproduce themselves. The remaining particles seem to be inactive and play no role in reproduction. Chances are also small that an infective particle will find a susceptible site for attachment, a prerequisite for infection.

Evidently a single cell cannot be infected simultaneously with two active viruses. The infection seems to spread from cell to cell through protoplasmic strands connecting them. The reproducing units that cross over the protoplasmic bridge are probably different from the fully formed, mature viruses. If fully formed viruses are extracted from the tobacco leaf, they are incapable of starting another infection.

The process of virus reproduction ends with the death of the cell, approximately 20 hours after the virus attaches to its protoplasm. By this time, 500,000 virus rods are manufactured by the cell as a result of a code supplied by the infectious virus.

Science News Letter, April 9, 1955

## METALLURGY

### Titanium Chloride Gas By Continuous Process

➤ A CONTINUOUS fluidized process for making low-boiling titanium tetrachloride from difficult ores marks another step away from the batch process methods by which titanium, the lightweight wonder metal, was first won for industry.

A liquid at ordinary temperatures, titanium tetrachloride changes to smoky fumes of titanium oxide when air touches it. This oxide is the white pigment used in paint and porcelain. It is also used as the source of titanium metal. But extraction from the ore is most easily done with aid of chlorine, poison gas of World War I.

By bubbling chlorine gas through dry, powdered titanium-bearing ore in the new process, in a furnace heated to about 1500 degrees Fahrenheit, titanium chloride is formed as a gas and piped to a condenser, where it is liquefied. Iron contained in the ore combines with the chlorine at the same time. It is removed as a salt-like solid.

The new method is described in patents Nos. 2,701,179 and 2,701,180, recently issued to Du Pont Co., Wilmington, Del.

Ash from the exhausted ore, which would clog the bed of powdered mineral, is removed at intervals. But slag from some Canadian iron furnaces, suggested as a source of the new metal because it contains large amounts of titanium not recovered by iron-making methods, would add troublesome alkali to the ash.

Alkali in the ash would furnish low-boiling compounds of unwanted metals to contaminate the titanium won by the new process. Adaptation of the continuous process by drawing off part of the powdered mineral, washing out the alkaline compounds, drying the undissolved part and returning it to the furnace to take part in the chlorine treatment, as part of the continuous cycle, is provided for in one of the patents on the new process.

Science News Letter, April 9, 1955

## AERONAUTICS

### Jets Remote Controlled By UHF Radio Signals

➤ REMOTE CONTROLLED jet planes, such as those being used in the current Nevada nuclear test series, are now guided by an improved ultra-high frequency radio system for continuous control, including emergency procedure if directing signals cease.

The system was developed by the Air Force's Air Research and Development Command at Baltimore, Md., and the Sperry Gyroscope Co., Great Neck, N. Y.

If radio control signals shut off while the drone is in flight, a miniature electronic "brain" takes over within five seconds, directing the plane to a pre-set altitude where it circles until signals are restored.

The new system, designed as a standard production version, can be applied to piston as well as jet aircraft. It operates both ground-to-air and air-to-ground.

Science News Letter, April 9, 1955

## MEDICINE

### More Polio Deaths After First Case in Family

➤ GREATEST DANGER of poliomyelitis death is to persons 15 years and older in families where there has already been one case of the disease.

The reasons are that there are more cases of bulbar polio, affecting vital brain centers, when there are several cases in a family in persons over age 14 and bulbar polio kills a higher percentage of polio victims.

These findings, from a study of 5,563 polio cases in New York City from 1949 through 1953 inclusive, are reported in the *Journal of the American Medical Association* (March 26) by Dr. Morris Siegel of State University of New York College of Medicine, Brooklyn, and Dr. Morris Greenberg of the New York City Department of Health.

Science News Letter, April 9, 1955

## MEDICINE

### Technique Diagnoses Cancer of the Womb

➤ CANCER OF the womb can be diagnosed by a promising new technique developed at the University of California Medical Center in Los Angeles.

Studies by doctors in the department of obstetrics and gynecology have shown that a small quantity of salt solution injected into the uterine cavity will wash down bits of tissue from the womb. The tissue can then be chemically treated and examined under the microscope to determine if it is cancerous or not.

More than 100 patients complaining of abnormal uterine bleeding were examined by both the new technique and ordinary vaginal smears. It was found that the new technique was far superior to vaginal smears in obtaining samples of uterine tissue.

A number of cases were diagnosed as cancer of the womb. These were confirmed by biopsy.

The results are promising for detecting cancer in an area not accessible for ready examination, the investigators say.

Science News Letter, April 9, 1955

## ELECTRONICS

### Robot Radar Warning Stations Seen Possible

➤ A NETWORK of robot radar antennas monitored at a central station for evidence of enemy attack could be set up using a new system.

The development, reported at a meeting of the Institute of Radio Engineers in New York, is a method to squash the radar screen signal so it could be transmitted on ordinary telephone lines. At present coaxial cables or expensive microwave relay systems are needed to carry radarscope pictures.

Taking advantage of the inherent repetition of radar signals from rotating antennas, the system can code the picture to fit in the limited band width of a telephone circuit.

The original radarscope image would be automatically scanned at 1/100 the speed of the projecting beam which would produce no significant loss of information.

Suspicious "blip" pictures, radar experts point out, could be transmitted for analysis from the central station to higher authorities anywhere in the world where there are telephone lines.

The device might also find use in transmitting continuous traffic information from one civilian airport to another, or to a central traffic control bureau.

C. W. Doerr and J. L. McLucas, of Haller, Raymond and Brown, Inc., State College, Pa., said reductions in band width in the order of 100 or 1,000 to one would be possible with the system. This means that the signal would take up 1/100 or 1/1,000 as much space in communication wires as conventional radar communicating systems.

Science News Letter, April 9, 1955