

BIOCHEMISTRY

Rats Get Ulcers Over Too Little B Vitamin

► RATS get ulcers if they get too little pantothenic acid, one of the B-complex vitamins, in their diet, Dr. Theodore F. Zucker, department of pathology, Columbia University, New York, reported to a meeting of the National Vitamin Foundation in New York.

In rats lacking enough of the vitamin, the adrenal hormones of their bodies create excess stomach acidity, followed by the formation of duodenal ulcers. But with enough of the vitamin the ulcers are not produced, even though the same amount of acid is present, he reported.

The relationship between adrenal hormones and duodenal ulcers has been suspected because of the increasing number of ulcers found in patients treated with cortisone, a hormone produced by the adrenal glands. Removing either the adrenals or the pituitary, a gland that stimulates them, prevents the ulcers from forming, Dr. Zucker explained.

Further evidence of the hormones' action was found when rats that had been protected by removal of the adrenal glands developed severe ulcers after they were given doses of cortisone or hydrocortisone, he said.

The presence or absence of the vitamin did not affect the amount of hormones produced by the adrenals. But it was found that too little of the vitamin did make another gland, the thymus, more sensitive or vulnerable to the adrenal hormone, Dr. Zucker reported.

This theory of sensitivity may explain the development of ulcers. Possibly, the stomachs of the vitamin-deficient animals are so sensitive, that an otherwise normal amount of adrenal secretion produces too much acidity, he said.

Science News Letter, May 18, 1957

ASTRONOMY

Mercury Crossed Sun's Face May 5

► A TINY, black dot, the planet Mercury, crossed the sun's face May 5. This rare astronomical event, known as a transit, occurs only 13 times a century on the average.

Accurate timing of transits leads to a more exact figure for the earth's rotation period, the standard of astronomical time, and helps to verify Einstein's relativity theory.

Because Mercury is so small, only 3,100 miles across, it could not be seen against the sun without a telescope. During the transit, it appeared to be about the same size as a penny viewed from a quarter of a mile away.

Observers over most of the country, except the extreme eastern part, were able to see the transit's start, but only those in the

Far West viewed the entire crossing, which took about two and a half hours.

In an astronomical sense, a transit is the same as an eclipse of the sun by the moon. The difference is that the moon is near the earth and, therefore, has an apparent size sufficient to block out entirely the light from the sun's disk. Because Mercury is so much smaller and so much farther away, it occupied only about one two-hundredths of the sun's visible surface.

The 20th century happens to be one in which the planet transits 14, not 13, times. The last one will take place Nov. 15, 1999.

Science News Letter, May 18, 1957

PLANT PATHOLOGY

Do Not Trim Oak Trees During Late May, June

► DELAYING the decision to trim your oak tree until June has passed could save it from disease.

J. E. Kuntz and C. R. Drake of the University of Wisconsin have warned wounded oaks are very susceptible to the oak wilt fungus during the season when new spring-wood vessels are developing. This generally extends from late May until late June.

Insects carrying the disease fungus from sick to healthy trees are attracted to the open wounds which result from trimming branches. As they feed on the sap, the insects deposit spores in the sap vessels, thus infecting the tree.

A new antibiotic, oligomycin, developed at the university, has been effective in delaying the development of oak wilt fungus disease in infected trees.

Science News Letter, May 18, 1957

ARCHAEOLOGY

Prehistoric Man Found in Iraq

► AN ADULT HUMAN skeleton has been found 14½ feet below the surface layer of the Shanidar Cave in northern Iraq.

Dr. Ralph S. Solecki, Smithsonian Institution collaborator and archeologist-leader of the Smithsonian-sponsored expedition to Iraq, made the discovery, Dr. Leonard Carmichael, secretary of the Institution announced. No exact age can be given for the skeleton, but the layer in which it was found is known to be over 34,000 years old.

Dr. Solecki first visited the Shanidar Cave in 1951. So promising were his initial excavations that he arranged to return for 10 weeks in the summer of 1953. It was during the second expedition that Dr. Solecki found a child's skeleton at a depth of 26 feet from the surface.

A recent study of the teeth of the Shanidar child indicates it belongs to a new form of Mousterian or Upper Pleistocene man. Since the newly discovered adult comes from a higher level in the cave, it may represent a still different type of man, possibly the beginning of the *Homo Sapiens* line.

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IN SCIEN

ENTOMOLOGY

Termites' House Hunting Costs Money

► TERMITES' spring house-hunting expedition this year will cost American home owners over \$100,000,000.

About the only sign given the unfortunate home owner that the expedition has begun is finding the insects' discarded wings.

Each spring some male and female members of a colony of subterranean termites quit their underground home and join other termites in a swarm. Within two days mating is completed and the insects will either start a new colony or return to their old one. And, before they go back underground, they leave behind their wings.

Chemical insecticides offer the home owner his best defense against termites. If the exterminators are called in time—when a swarm is spotted or tell-tale wings discovered—they can prevent serious damage to property.

Science News Letter, May 18, 1957

MEDICINE

Antibiotic Studied As Anti-TB Drug

► STREPTOVARICIN, a new antibiotic drug, will be tested against tuberculosis, the Veterans Administration said in Washington.

The drug, being administered to about 100 patients in 10 VA hospitals, is being studied in combination with another anti-TB drug, isoniazid. VA researchers hope to determine the effectiveness of streptovaricin and isoniazid for patients who still have lung cavities after other treatment and to find whether the new antibiotic can slow down development of resistance to isoniazid by TB germs.

When patients with TB are given isoniazid over a period of time, the VA explains, the disease germs build up resistance, or ability to tolerate the drug without being harmed so that isoniazid becomes ineffective.

The drug, isolated from a fungus found in a soil sample collected in Dallas, Texas, is similar to the fungi that produce streptomycin, Aureomycin and Terramycin. Combined with isoniazid, it will be given to those patients who still have lung cavities from TB after treatment with other drugs.

The streptovaricin study is being carried out at VA hospitals in the Bronx and Manhattan, New York City; Castle Point, N. Y.; Coral Gables, Fla.; East Orange, N. J.; Long Beach, Calif.; Memphis, Tenn.; Minneapolis, Minn.; New Orleans, La.; and Wood, Wis.

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CE FIELDS

PUBLIC HEALTH

Excessive Smoking Harms Throat Organs

► EXCESSIVE cigarette smoking appears to cause changes in the trachea and bronchi which handicap their normal clearance of substances that might be cancer-causing.

Microscopic changes that result in an interference of drainage are found in both the trachea and bronchi of excessive smokers, Drs. E. V. Cowdry, V. Suntzeff and G. Ide of the Wernse Cancer Research Laboratory, Washington University, St. Louis, Mo., reported to the First Pan American Cancer Cytology Congress meeting in Miami.

Reporting on the results of autopsies of 50 males over 40 years of age, 37 of whom were "excessive" cigarette smokers, the research team said among the smokers, 32% had signs of pneumonia, whereas the non-smokers had no signs of pneumonia. Bronchitis was also more prevalent in the smokers, the study showed. None of the 50 men had died of cancer.

Dr. Cowdry said "there is little agreement as to what constitutes excessive cigarette smoking. I think that a pack or more a day is definitely excessive."

Long continued smoking, he said, "may be taken as 20 years or more. But we do not expect cancer to appear and kill immediately after excessive smoking through 20 years."

"There is a period of delay mostly estimated at 10 to 20 years," he cautioned, "during which ex-smokers may enjoy a false sense of security."

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MEDICINE

Depth of Burn Measured By Radioactive Material

► THE DEPTH of a burn to the skin can be quickly determined by injections of radioactive phosphorus, Drs. James E. Bennett and Reed O. Dingman, University of Michigan Medical School, Ann Arbor, reported to the American Association of Plastic Surgeons meeting in Skytop, Pa.

The radioactive material is absorbed by the body and can be measured around the burned area. The amount of local radioactivity around a third degree burn differs sharply from that found around a first or second degree burn, the surgeons reported.

To know how to treat burns, the doctors explained, it is vitally important to estimate their depth. This is extremely difficult because of the misleading appearance of the skin shortly after being burned.

If the skin layers have been only partially

burned, healing may take place naturally without requiring surgery. But when the full skin thickness is destroyed in a third degree burn, early removal and skin grafting are necessary.

The radioactive technique has been tested in experiments on swine. The doctors said these have proved successful enough for human trials, which will be started shortly.

Swine were chosen because their skin is similar both in structure and function to humans'.

Science News Letter, May 18, 1957

AGRICULTURE

Virus Named as Cause Of Tomato Disease

► TOBACCO MOSAIC virus has been definitely named as the cause of "internal browning," a widespread disease of tomato plants.

There is little prospect for the early development of a remedy for the disease, however, reported Dr. J. S. Boyle, professor of plant pathology at Pennsylvania State University. Neither inoculation with a mild dose of the virus nor the development of immune strains of tomato plants appear as likely cures. There are no immune strains at present and inoculation of young plants adversely affects fruit yield.

The four-year research program which led to the discovery of the disease's cause was financed by a grant of \$14,000 by the Campbell Soup Company.

Science News Letter, May 18, 1957

MEDICINE

Inhibitor Slows Cancer-Causing Chemicals

► CANCER-CAUSING chemicals, manufactured by the human body itself, may be prevented from forming and doing their destructive job by a substance called AI found in normal cells and blood plasma, Dr. Herbert M. Hirsch, University of Minnesota Medical School, Minneapolis, has found.

AI stands for auto-oxidation inhibitor and is a chemical that prevents the formation of free radicals, highly unstable fragments of molecules. These free radicals are believed by many scientists to affect the delicate chemical machinery of the cell and cause it to mutate and become cancerous.

Cancer cells are deficient in this AI substance, Dr. Hirsch has found. Normal liver cells, for instance, contain large amounts of AI which readily combine with either free radicals or with chemicals which produce these radicals. Liver cancer cells, however, have much less of the protective AI.

Although the research indicates basic chemical mechanisms of normal and cancerous cells, it has not yet reached the stage where it can be applied to the problem of human cancer.

The research was reported by the American Cancer Society which supported the work.

Science News Letter, May 18, 1957

PSYCHOLOGY

Baby Monkeys Can Tell Black From White

► A NEWBORN MONKEY can learn to tell black from white if his receiving food depends upon it, Drs. Robert R. Zimmerman and Harry F. Harlow of the University of Wisconsin told the meeting of the Midwestern Psychological Association in Chicago.

The psychologists started training one group of baby monkeys on the day of their birth. They were taught to distinguish a black from a white feeding compartment attached to their cage and to go to the right one for food. The food they received as a reward was all the food they had during the experimental period. By the fifth day these baby monkeys were going to the right box more often than you would expect from chance. By the 13th day they were going to the right box 85% of the time.

Another group of five monkeys did not start training so young. Lessons for them started on the 11th day. This group learned much faster than did the newborns. Within two days, they had caught up with them and also had an 85% score on the 13th day of the experiment.

Science News Letter, May 18, 1957

BIOLOGY

Prison Volunteers Build Up Immunity to Cancer

► HEALTHY PRISON volunteers at the Ohio State Penitentiary who received cancer implants in earlier studies have built up immunity to a second implant of the same type of cells, Dr. Chester M. Southam, Sloan-Kettering Institute, New York, reported to the American Association for Cancer Research meeting in Chicago.

The volunteers also built up immunity to second implants of a different kind of cancer cell, although their bodies did not destroy them as rapidly as they destroyed cells of the earlier type.

These findings point to a specific immune reaction mechanism that comes into play particularly on the second implantation of the same cancer cell type, Dr. Southam said.

Blood studies of both cancer patients and well volunteers showed properdin was the only factor associated with immunity that cancer patients lacked and well volunteers had.

Properdin is a natural body-defense chemical occurring in the blood. The amount found in both cancerous and well volunteers, Dr. Southam reported, varied directly with the ability to reject the implants.

There is no direct evidence as yet that properdin is the cause of the implanted cancer destruction, but "the possibility certainly deserves consideration," he added.

Co-authors of the report with Dr. Southam were Drs. Alice E. Moore and C. P. Rhoads, also of the Sloan-Kettering Institute.

Science News Letter, May 18, 1957