ENDOCRINOLOGY

Pancreas Inplant Aids Diabetic Hamster

➤ GRAFTED pancreas glands temporarily "cured" diabetic hamsters, a team of scientists reports.

For the first time a pancreas, transplanted to the cheek pouch of a diabetic hamster, has been tested for its curative powers.

Not only did the transplants "take" and grow, but the pancreases of the diabetic animals returned to normal within two weeks after the transplants were made.

A group of hamsters, approximately two months old, received doses of alloxan, a compound that tends to destroy the islet cells of the pancreas, thus producing diabetes. Hamsters showing high blood glucose levels at the end of one month were used as hosts. They were implanted with pancreases taken from new-born animals four to six hours after birth. A control group of non-diabetic animals also received pancreas implants.

Among the diabetics, 90% of the transplants "took" while only 75% took in the normal animals. E. L. House, C. Burton, H. Cooper and E. Anderson of the department of anatomy, New York Medical College, also report that the implants grew 30% larger and lasted 50% longer in the diabetic hamsters.

Analysis of the blood glucose of the diabetic animals showed that it had returned to normal within two weeks after the endocrine gland graft had been made, the scientists report in *Endocrinology* (Sept.).

The most interesting finding, they conclude, is that the pancreases of all the diabetics in which the grafts lasted two weeks had returned to normal, with essentially normal islets.

The islets, or islands of Langerhans, are groups of cells in the pancreas that produce insulin.

Science News Letter, October 11, 1958

PUBLIC HEALTH

Retarded Child Programs Expand From 4 to 44

➤ EFFORTS to understand the causes of and care for the mentally retarded child have mushroomed from four state programs three years ago to 44 such programs today.

In 1955, four states were pioneering in the mental retardation problem. These states were receiving only $141,000 in special project money advanced by the Children's Bureau of the U. S. Department of Health, Education and Welfare, Mrs. Katherine B. Oettinger, chief of the bureau, said.

In 1956, the Federal Government earmarked $1,000,000 annually for state mental retardation projects. A major goal of the fund was to close the gap between early detection and treatment of mental retardation in pre-school children.

Several of the state programs that are supported by Federal funds are training future physicians in the diagnosis and treatment of various forms of mental retardation.

Some of the state projects are located in university medical centers. Some, as in Minnesota, Maine, Georgia and Idaho, are concentrated in rural counties in an effort to determine both the need for services and the available resources that can be developed. In Florida, Colorado, Alaska and Massachusetts, the emphasis is on how to integrate mental retardation programs into the services of local health departments.

Clinical services offered at some projects aid practicing physicians who can then use the services for the evaluation of young patients.

Most of the children seen in these projects are of pre-school age. Determination of the nature and degree of mental retardation, and the causes, is the first point of assistance. Consideration is given to physical conditions that, if improved, would lessen the handicap. The family situation affecting the child's condition is carefully studied and resources in the community to aid the child are sifted.

Science News Letter, October 11, 1958

METEOROLOGY

Expand Warning System Against Huge Sea Waves

➤ HUGE DEADLY sea waves, spawned by submarine earthquakes, are being spotted by an expanded warning system that now covers virtually the whole Pacific area.

The addition of the Fiji Islands, Chile and Australia as cooperating members of the system was announced by Rear Admiral H. Arnold Karo, director of U. S. Department of Commerce's Coast and Geodetic Survey.

The warning system was developed by the Survey after a seismic sea wave, or tsunami, had ripped into the Hawaiian Islands in April, 1946, killing 170 persons and causing $25,000,000 in damage.

The nine seismograph stations and 24 tide stations of the system are located on the west coast of the United States, in Alaska, the Hawaiian Islands, Peru, Japan, the Philippine Islands and some Pacific islands, as well as the three new areas. Success of the warning facilities depends on the rapidity of communications between stations. The waves travel across the open ocean at speeds up to 600 miles per hour and can strike an area 2,500 miles from their point of origin in as little as four and a half hours.

The warning system works on the following basis:

After a large earthquake, the seismograph stations rush their detection data to the Honolulu headquarters. The earthquake center is located and warnings of a possible sea wave with the expected time of arrival are transmitted. In addition, the widely scattered tide station observers check their gages for unusual sea activity.

Seismic sea waves are commonly and incorrectly called "tidal waves." They are not related to tides, nor are they single huge waves. They roll across the ocean in series up to 20 minutes apart, and the first wave is seldom the largest. Crests, six or seven feet at the highest, race unobserved past ships in deep water, then pile up in the shallow water and crash against the shore as waves as much as 100 feet high.

Science News Letter, October 11, 1958

IN SCIEN

ENGINEERING

Materials May Resist Damage by Raindrops

➤ BOTH RUBBERY and rigid materials can withstand the bullet-like onslaughts of raindrops smashing against aircraft.

This was shown by an analysis at the National Bureau of Standards of tests to determine how raindrops erode various materials. The problem of erosion damage to objects that fly at high speed into rain becomes increasingly serious as flight velocities increase.

Dr. Olive G. Engel of the Burau, in research sponsored by the Wright Air Development Center, analyzed the behavior of waterdrops, lead pellets and steel spheres when they smash against a sheet of soft aluminum and other materials.

The stresses that are produced when a liquid drop collides with a solid surface result from the impact pressure and the subsequent outward circular flow of the drop. Dr. Engel found that a rain-erosion resistant material may be either soft and rubbery, or hard and rigid.

One factor important in analyzing the damage produced by a high-speed waterdrop colliding with a plastic sheet is that it behaves like a hard sphere or pellet, forming a cup-shaped cavity in the plastic.

Dr. Engel reported the raindrop research in the *Journal of Resarch of the National Bureau of Standards* (July).

Science News Letter, October 11, 1958

EDUCATION

Cooperative Education Study to Begin

➤ THE FIRST nationwide study of cooperative education in American colleges and universities has been announced.

"The principal aim of the study," Dr. Ralph W. Tyler says, "is to take a careful look at the educational merits of the work-study plan for college students. We hope to learn something about . . . the outcome (of work-study programs) in terms of readiness for permanent employment and readiness for effective participation in civic and community affairs."

Dr. Tyler is chairman of the Study Committee on Cooperative Education and director of the Center for Advanced Study in the Behavioral Sciences, Palto Alto, Calif.

The study is supported by a $95,000 grant from the Fund for the Advancement of Education, a subsidiary of the Ford Foundation.

About 60 colleges and universities have cooperative programs, under which the students alternate periods of work in school and in industry as a regular part of their degree curriculums.

Science News Letter, October 11, 1958

SCIENCE FIELDS

AERONAUTICS

New Space Agency Takes Over

➤ THE NEW National Aeronautics and Space Administration is officially "in business."

The transfer of personnel, facilities and research activities to the space agency from its predecessor, the 43-year-old National Advisory Committee for Aeronautics, was announced by T. Keith Glennan, NASA administrator.

The action was nearly a month sooner than the statutory requirement that the transfer be made not later than 90 days after the enactment date of the Space Act. The act was signed by President Eisenhower July 29.

The present NACA staff numbers 8,000 engineers, scientists, technicians and other employees. Besides taking over the NACA Washington headquarters, NASA will assume the operations of the three main laboratories of the older organizations at Langley Field, Va.; Moffett Field, Calif.; and Cleveland (Lewis Flight Propulsion Laboratory). Other laboratories to come under NASA control will be the High Speed Flight Station, Edwards, Calif., Pilotless Aircraft Research Station, Wallops Island, Va.. and Plum Brook Research Reactor Facility, Sandusky, Ohio.

Science News Letter, October 11, 1958

CHEMISTRY

"Tattle-Tale Gray" May Be Eliminated

➤ "TATTLE-TALE gray," already greatly reduced as an obstacle to sparkling white clothes, may be eliminated completely by chemists who have been studying the hows and whys of a synthetic gum used recently as a laundering aid.

Chemists assembled for the American Chemical Society meeting in Chicago generally agree that a synthetic gum, carboxymethyl cellulose (CMC), when added to detergents greatly reduces tattle-tale gray.

Tattle-tale gray is caused by laundry water dirt that is re-deposited on clothes.

Although the gum additive helps housewives and laundries, chemists have not known why or how it operates.

James W. Hensley, manager of Wyandotte Chemicals Corporation's Nucleonics Laboratory, Wyandotte, Mich., told the meeting such information could be used to improve laundry aids, and also to end a major squabble among chemists who hold different theories on the matter.

A popular theory has been that CMC coats clothing fibers during laundering and prevents soil particles from clinging to them. Attempts to test the theory have been inconclusive, Mr. Hensley said, because the amounts of gum adsorbed, if adsorbed at all, are too small for careful measurement.

The Michigan chemist "tagged" some CMC with radioactive carbon atoms incorporated into its make-up. Routine laboratory counters enabled him and co-researcher Clyde G. Inks to make the otherwise almost impossible measurements.

They found that, although the gum was not ordinarily adsorbed on cotton fibers, it coated the fibers if detergents were present. In the case of wool and some synthetics, the gum adsorbed was less than in the case of cotton.

Careful measurements showed a definite correlation between adsorption of CMC additive and reduction of tattle-tale gray, Mr. Hensley reported.

Science News Letter, October 11, 1958

MEDICINE

Chlorophyll Compounds Show Heart-Aid Action

➤ CHLOROPHYLL, the substance that is indirectly responsible for sustaining all life, may prove to be life-saving.

Two classes of chlorophyll compounds have been shown to have a beneficial effect on laboratory animals with induced heart failure. The compounds are known as chlorins and rhodins

Their effect of heart disease, which has been demonstrated many times on the hearts of frogs, rats, rabbits and dogs, was reported to the American Chemical Society meeting in Chicago by Dr. Herbert R. Wetherell Jr. of the University of Nebraska College of Medicine.

Dr. Wetherell, in reporting the studies with the chlorophyll compounds, reminded his audience of two cautioning factors: the materials are not yet ready for testing on human beings; and eating large quantities of vegetables rich in chlorophyll is not the same as treating laboratory animals with chlorophyll derivatives.

Chlorophyll is the means by which green plants manufacture carbohydrates from carbon dioxide and water with the aid of sunlight. The activity of chlorophyll derivatives on the heart has been studied for some time. Dr. Wetherell reported, "While the experiments are still a long way from clinical trials, we are nevertheless quite enthusiastic about the results."

"Digitalis, which is the drug most frequently used in heart failure," he explained, "is very satisfactory, but it must be handled with caution because of its toxic properties. Our substances appear to be relatively nontoxic, and to have them available as supplements to digitalis would be advantageous.

"We do not wish to imply that eating large quantities of vegetables rich in chlorophyll, such as spinach and beet greens, is good for one's heart. The materials we have studied are derived from chlorophyll which has been been subjected to several complicated laboratory procedures."

The paper Dr. Wetherell presented to the Society was co-authored by his colleagues at the University of Nebraska College of Medicine, Drs. M. J. Hendrickson and A. R. McIntyre.

Science News Letter, October 11, 1958

MEDICINE

Cancer-Killing Antibodies Produced With Tumors

➤ A SUBSTANCE that kills the cancer cell from which it originated by indirectly stimulating the production of antibodies has been isolated.

The substance is extracted from mouse tumor cells and injected into rabbits. The rabbits produce the antibodies which are, in turn, injected back into the original mouse cancer cells.

These antibodies kill the cancerous growths, but not other cells, Dr. Edward C. Horn, zoologist at Duke University, reported. He has been assisted in this work by Miss Sally Grant, also of Duke, and Mrs. Mary Lee Barber, now at the University of California in Los Angeles.

"We're after the underlying principles involved in this effect, rather than the obviously clinical applications," Dr. Horn said.

The Duke University professor said that he is continuing research into the isolation of other substances in cancer cells that may give the same results.

The possibility of perfecting an anti-cancer vaccine has long stimulated research in antibody reactions of cancer cells. The first successful vaccine against cancer in mammals was the antibody produced in rabbits injected with a virus that causes a disease in mice similar to leukemia, cancer of the blood. When this antibody was mixed with the virus before injection into mice, the virus was neutralized and the disease prevented. This research was the work of Dr. Charlotte Friend of the Sloan-Kettering Institute for Cancer Research, New York.

Dr. Horn will present his findings at the American Association for the Advancement of Science meeting in Washington next December.

Science News Letter, October 11, 1958

BACTERIOLOGY

Antituberculosis Factors In Milk Studied

➤ AT LEAST three factors in cow's milk inhibit the growth of the tuberculosis bacterium, a team of Czechoslovakian scientists reports.

After making several tests and analyses in order to concentrate the antituberculosis substance or substances, the scientists report *Nature* (Sept. 27) that two "fat-loving" factors (lipophilic compounds that have a strong affinity for lipids or fats) and one "water-loving" (hydrophilic) factor inhibited growth of TB bacteria.

The anti-TB activities of the milk were effective in laboratory cultures of the bacterium, *Mycobacterium tuberculosis.* Previous research had shown milk inhibited the development of TB in mice.

Goat's milk and human milk also appear to have the inhibitory effect on TB bacteria's growth.

Zdenek Franc, Ivo M. Hais and Oldrich Horesovsky of the Research Institute for Pharmacy and Biochemistry, Prague, report the research.

Science News Letter, October 11, 1958