PUBLIC HEALTH

Meningitis Outbreak Sparks New Research

➤ MENINGITIS, the disease that has killed at least 14 persons and hit many others at Fort Ord near Monterey, Calif., takes many unexpected turns in its course.

Experts generally agree that the course of this disease is greatly influenced by its treatment. When it is left untreated, body temperature becomes so erratic that no typical fever outline can be sketched.

Meningitis actually is an inflammation of the meninges, three membranes that cover the brain and spinal cord. The cause varies, but most of the Fort Ord epidemic is believed to be caused by Type B strain of meningococcus.

Symptoms associated with meningitis also vary widely. Rash, irritation of the meninges, pain in the back and neck when the head is moved forward, muscular spasms, headaches, nausea, irregular slow pulse and fever are examples of the more common symptoms.

Dr. T. Eickhoff of the Communicable Disease Center, Atlanta, told SCIENCE SERVICE that until last year sulfa drugs were effective against all meningococcal strains. However, the present Type B strain and some Type C strains that are involved in Fort Ord's outbreak are resistant to such drugs.

Scientists are working on a vaccine to stop carriers from passing on the present germ to healthy persons, he said. Some carriers, in fact, can transmit the disease without showing any outward signs of being infected themselves.

In one case, Pvt. William Garehime, 21, Hillsborough, Calif., passed on the Type B germ to his fiancee, Miss Patricia Arsenault, 20, of Millbrae, Calif., causing her death. Reports indicate that he is in good health.

Army camp meningitis has long been a problem in this country. During World War I, for instance, meningitis was considered to be a big threat in army training areas, although during World War II it was not a grave problem.

• Science News Letter, **86:264** October 24, 1964

MEDICINE

'Red' Face Can Mean Disease, Blood Too Rich

➤ A FLUSHED or "red" face can mean something besides embarrassment. It can indicate a disease called polycythemia vera that is actually helped by blood-letting.

After blood-letting, which is the standard treatment for polycythemia vera, some drugs help keep overproduction of new blood cells in check for varying periods. Radioactive phosphorus 32 is a drug that achieves long-term relief in many cases, scientists say.

New findings on polycythemia vera were reported by two University of Chicago physicians in Archives of Internal Medicine, Sept., 1964.

Polycythemia vera is not common, but it has a variety of ill effects and can be fatal if it is not controlled. Formerly, it had been thought that unchecked hormone production caused the disease, but the Chicago researchers suggest instead that it may be caused by a wandering, or aberrant, primitive cell that matures in blood cells without the hormone stimulation this process normally requires.

Overproduction of red blood cells is particularly marked in polycythemia vera, but in unusual instances any one of the three types of blood cells can be excessively produced, the researchers point out. The three types are oxygen-transporting red cells, germ-fighting white cells, and platelets, which promote clotting.

Blood cells are made primarily in the bone marrow, but when the demand for them is great they can be formed in the spleen, an organ that also disposes of old red blood cells. The process begins with stem cells, so called because they are primitive types.

Normally these primitive cells mature and change into whichever of the three types of cells may be in short supply. Ultimate cure of polycythemia vera, if a cure is possible, depends on finding out why the stem cells change into blood cells without hormone stimulation.

Leukemia, which is cancer of the blood-forming organs, may be understood better in the next few years after further research on the little-understood process of cell change.

Drs. Richard L. DeGowin and Clifford W. Gurney reported the study, which included observations of four patients with polycythemia vera as well as continual care of more than 100 chronic polycythemia vera sufferers who are treated periodically at the University of Chicago hospitals and clinics.

• Science News Letter, **86:264** October 24, 1964

MEDICINE

26-Pound Tumor Found In 69-Year Old Patient

➤ A 26-POUND TUMOR has been removed from the upper abdominal region of a 69-year-old woman in the Aultman Hospital, Canton, Ohio, Dr. William G. Wasson told a meeting of the American College of Surgeons in Chicago.

The benign tumor had been present for 50 years and was growing steadily without previous pain. The woman was able to walk around with the help of a wide, tight cloth binder, and wore custom-made dresses to conceal the growth.

Finally she came to the physician because the tumor had started to drain and was becoming slightly painful. X-rays showed it to be shaped like a watermelon and with many areas of calcification. Dr. Wasson had to support the mass by a pulley arrangement while he operated, but the surgery was a success, with no malignancy found.

In another report, Dr. Robert L. Berger of the Boston City Hospital demonstrated how he had treated a patient with 18 stab wounds that injured both lungs, the heart, spleen, liver and segments of the large intestines. The patient survived.

• Science News Letter, **86:264** October 24, 1964

IN SCIEN

TECHNOLOGY

Impurities, Not TCP, Prevent Engine Wear

➤ FOR THE PAST 20 years, tricresyl phosphate, better known as TCP, has been taking all the credit as a wear-preventing additive for engines.

Two Pennsylvania State University, University Park, chemical engineers reported, however, that not TCP, but impurities in it, have been doing most of the work.

TCP, an already infamous chemical compound, caused countless deaths and many cases of permanent paralysis during Prohibition, and paralysis four years ago to thousands of Moroccans who used cooking oil contaminated with it.

Researchers E. Erwin Klaus and Henry E. Bieber reported their findings at the International Lubrication Conference in Washington, D. C.

• Science News Letter, **86:264** October 24, 1964

ORTHOPEDICS

New Temporary Limbs Developed for Amputees

➤ TEMPORARY artificial limbs called pylons, developed at the Duke University Orthopedic Amputee Clinic, Durham, N. C., are helping injured people back on their feet in a matter of weeks instead of months after amputation.

Permanent artificial limbs cannot be used immediately after operation because the tissue around the stump swells as a natural part of healing. The temporary limbs are made of plaster pylon, a plastic material, and are much lighter than the old fashioned wooden peg legs now seldom used.

Dr. J. Leonard Goldner, professor of orthopedic surgery at Duke, said many elderly amputees who formerly would have been consigned to wheel chairs have been helped. A three-year $54,000 research grant from the U. S. Office of Vocational Rehabilitation will be used for further research on artificial limbs.

• Science News Letter, **86:264** October 24, 1964

MILITARY SCIENCE

British Hovercraft To Fight Jungle Guerrillas

➤ THE BRITISH Ministry of Defense is evaluating two Westland SRN-5 Hovercraft for use by army units in action against Indonesian guerrillas in the jungles of Borneo and other parts of Malaysia. These cushion-craft are expected to be able to penetrate the jungle swamps to areas outside the range of aircraft, even helicopters, and land vehicles.

The SRN-5 is the first hovercraft in the world to go into quantity production. It is capable of carrying 20 fully-armed men, in addition to its crew.

• Science News Letter, **86:264** October 24, 1964

CE FIELDS

BIOCHEMISTRY

Fatty Acids on Meteorites Need Not Mean Life

➤ LIFE IN OUTER SPACE is not necessarily the only reason for the straight-chain hydrocarbon material and long-chain fatty acids that have been found on certain meteorites.

Some scientists believe that the fatty acids and straight-chain hydrocarbons on certain meteorites indicate life, since living processes are the only observed sources in nature of linear hydrocarbons.

However, C. B. Johnson and A. T. Wilson of Victoria University, Wellington, New Zealand, who have produced in a laboratory just the same sort of straight-chain hydrocarbons, believe there exists in free space a non-biological way of producing these hydrocarbons.

Their method involves crowding the chains of hydrocarbon molecules onto a surface so that only the ends are exposed to chemical reactions. Methyl radicals attach themselves to the ends of the chains. This way there can be no "branching-off," and only straight molecular chains develop.

The researchers reported their findings in Nature, 204:181, 1964.

• Science News Letter, 86:265 October 24, 1964

OCEANOGRAPHY

Mesoscaph Sub Seeks Gulf Stream Mysteries

➤ THE ROLLS ROYCE of the sea, the smooth-lined mesoscaph submarine designed by Dr. Jacques Piccard, may soon be scanning the Gulf Stream in an effort to fathom its mysteries.

With improved methods for keeping the 93.5-foot ship steady at constant depths and with greater maneuverability than conventional submarines or deep-diving bathyscaphs, the mesoscaph has been proving its capabilities this summer at the Swiss National Fair at Lausanne, Switzerland.

Working around the sea, "like a Greyhound bus works on the highway," the steel-hulled mesoscaph has been taking more than 10,000 persons on scenic underwater dives this summer through the murky waters of Lake Geneva, Dr. Piccard told scientists at the National Science Foundation, Washington, D.C.

Manned by a crew of four, the ship can carry 40 passengers, each with an individual plexiglass window and searchlight.

Named the "Auguste Piccard" in memory of his father, the mesoscaph is designed to withstand a depth pressure as low as 5,000 feet, Dr. Piccard said.

The mesoscaph, named from Greek words meaning a ship that goes to medium depths, could be used to collect valuable data on temperatures, sea life, currents and light rays in the Gulf Stream. A group of about six scientists could direct the ship to about a few hundred feet below the surface, then "stop everything" and just drift with the current, explained the Swiss scientist.

"We could stay in this underwater laboratory without having to come to the surface for six to eight weeks," he said. The ship could drift with the great sea river known as the Gulf Stream and come up maybe across the Atlantic, maybe opposite New York, maybe only off Florida, he surmised.

Dr. Piccard explained that oceanographers generally categorize the seas into about six different depth layers, the deepest of which is about 35,000 feet, constituting about two percent of the ocean.

Dr. Piccard, with his father, helped design the bathyscaph Trieste which in 1960 made the record-breaking descent to 35,800 feet in the Marianas Trench in the Pacific Ocean.

The ocean at depths of 8,000 feet is of interest to the Navy, Dr. Piccard said, and a depth of 2,500 feet is the beginning of daylight penetration. The level of 1,000 feet is the deepest for the continental shelves.

• Science News Letter, 86:265 October 24, 1964

MEDICINE

Curb Cystic Fibrosis If Carriers Not Marry

➤ THE ONLY KNOWN WAY to prevent cystic fibrosis in children is for carriers to avoid marriage, Dr. Guido Fanconi, the Swiss pediatrician who discovered and named the disorder, told SCIENCE SERVICE.

First, a test must be perfected for carriers, Dr. Franconi said in Bethesda, Md., and several researchers are at work on such a test. A sweat test is used for cystic fibrosis patients, but this does not work on carriers, who themselves do not have the disease.

One in 20 persons is now believed to be a carrier, and about one in 1,000 children, especially in civilized countries, is born with the disorder.

Dr. Franconi described cystic fibrosis in 1935 as a disease causing cysts on the pancreas, a gland behind the stomach that secretes insulin and is concerned with digestion. However, the disease affects a number of organs.

Another name for the disease, mucoviscoidosis, covers the mucus-and-sweat-producing, as well as the salivary glands which are exocrine glands. These glands secrete outwardly, as opposed to the endocrine glands, which secrete inwardly.

Abnormal composition and action of secretions from the exocrine glands create serious complications that affect chiefly the respiratory and intestinal tracts, and the ducts of the liver as well as the pancreas.

The fact that the sweat of cystic fibrosis patients is excessively salty makes it possible for physicians to differentiate the disease from such other conditions as chronic bronchitis, which it may resemble.

As a killer of children under 15 years of age, cystic fibrosis outranks polio, rheumatic fever and diabetes. Early diagnosis and treatment have extended the lives of some patients into the 20s, however, and a number of marriages have occurred between them and normal, healthy persons.

• Science News Letter, 86:265 October 24, 1964

SPACE

Satellite Tracker Keeps Sky Vigil

➤ A 15-STORY-HIGH white dome located just off the New Jersey Turnpike contains an 84-foot radar "dish" that is the heart of the only full-time satellite tracking station in the United States.

Originally, it was part of BMEWS, the Ballistic Missile Early Warning System, with similar installations at Thule, Greenland, and Yorkshire, England.

Now, however, the dome is part of SPADATS, the Space Detection and Tracking System. As part of SPADATS, the antenna keeps a close watch on all the man-made objects in the sky, both Western and Russian, 24 hours a day. Data on the more than 470 satellites, working and otherwise, currently in the skies, are automatically sent to SPADATS at Air Defense Command headquarters in Colorado Springs, Colo.

An electronic computer knows what objects are supposed to be in orbit and where. Should a satellite's orbit change, this would be duly recorded in the SPADATS catalog. If a new object—unrecorded at the Space Track Center—is observed, the information would be flashed to Colorado Springs for further intelligence checking.

The antenna, sensitive enough to track a front door 3,000 miles away, has also been used for a number of tasks outside of BMEWS and SPADATS. It has investigated eclipses, determined the precise location of Venus, studied the ionosphere for future communications systems, and probed the location of the "gravity-free" points known to exist between planets. These areas could be collection points for the space debris left over from the world's satellites.

• Science News Letter, 86:265 October 24, 1964

PHYSICS

World Adopts New Standard of Time

➤ AN ATOMIC DEFINITION of the second, replacing the astronomical definition, was authorized at 1725 Paris time, October 8, by the 12th General Conference of Weights and Measures meeting in Paris.

The International Committee on Weights and Measures, acting for the conference, temporarily based the definition of the international unit of time, the second, on an invariant transition of the cesium atom in expectation of a more exact definition in the future.

The new definition replaces the definition of a second based on the annual orbit of the earth around the sun.

The action taken increases the accuracy of time measurements to a part in one hundred billion, an accuracy two hundred times greater than that formerly achieved by astronomical means.

These measurements, moreover, can be accurately determined in a few minutes, as compared to the many years required to achieve an accuracy only one-hundredth as good by astronomical means.

• Science News Letter, 86:265 October 24, 1964