

MEDICINE

Researchers Report New Blood Disorder

► MEDICAL RESEARCHERS at the University of California at Los Angeles reported a new blood disorder, apparently an inborn weak link in the chain of events by which blood cells are maintained.

Drs. William N. Valentine, Arthur S. Schneider, and Masao Hattori of the department of medicine, and Dr. Henry L. Heins, Jr., of the pediatrics department, identified the blood disease which causes anemia and may weaken the body defenses against infections.

Like all tissues, blood cells depend on enzymes, which facilitate chemical reactions and thus help the cell to utilize nutrients and preserve its integrity in the body.

In this newly discovered blood condition, the patient is born with a specific deficiency of an enzyme called TPI (triosephosphate isomerase) in the red cells, white cells and possibly in other body tissues.

The marked deficiency of this enzyme results in a rapid destruction of red blood cells, causing anemia. White cells, which combat infections, are present in normal numbers but are deficient in the enzyme. There is a suggestion, thus far not proved, that this may result in an increased susceptibility to infection by these patients.

Patients with the new blood disease also appear to have an associated disorder of the nervous system. The relationship of the two conditions is not clear.

A study of one patient's family revealed that the parents and several other family members also had a partial deficiency of the enzyme, but it was not as marked nor did they have anemia. The patient had a sister that died of anemia in infancy and two cousins that had the disorder. All of this suggests the hereditary nature of the disease.

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AERONAUTICS

Radio Controlled Models Getting Interference

► THE PLANE climbed into a steep stall, faltered, plunged into a tailspin and crashed to earth as the crowd watched.

Tragedy? Fortunately not, because this was a radio-controlled model. But the primary cause for such accidents has model airplane enthusiasts deeply involved with the Federal Communications Commission.

The problem is that the radio frequency assigned for use of the model airplane pilots is shared by others with different radio objectives. As a result, a man pushing a switch to operate his automatic garage door or cutting in his two-way car radio may interrupt the radio beam to the model plane and send it out of control.

As pointed out by Dr. Walter A. Good of Bethesda, Md., a spokesman for the Academy of Model Aeronautics, "this is no joke when you consider that some of these models are very complicated, have a five-foot wing span and cost up to \$500 or more."

Radio-controlled model airplaning has an

estimated 10,000 members across the country who engage in several hundred competitions each year under the auspices of the academy. The big meet is the national championship, this year to be held July 26 through 31 at the Willow Grove (Pa.) Naval Air Station.

The interference is raising such havoc with the sport that Dr. Good and his associates have before the FCC a petition for a new frequency.

Presently the models are classed as C-type users on a 27 megacycle band. Also in class C are such radio devices as automatic garage door openers and individual, pocket-size radio paging devices. Class C operators use five spot frequencies.

Also on the 27 megacycle band are class D users with 23 frequencies, among which the five from C are sandwiched. The class D users include walkie-talkies and two-way car radios.

Dr. Good says that class D users are growing rapidly with over one million stations now in the U.S.

Unfortunately for the model airplanes, the planes' lightweight radio equipment is unable to discriminate properly because of lack of sensitivity, so that more and more D signals are jamming the planes.

The solution being urged on the FCC is to assign the model plane fliers another frequency far enough removed from the other uses to eliminate interference.

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PHYSIOLOGY

Male Hormone Produces Hair on Bald Heads

► A MILD SOLUTION of the male hormone, testosterone, applied to bald heads, has produced hair.

The hair is scraggly, but it is growing on bald spots of about three out of four of 21 men tested.

Drs. Christopher M. Papa and Albert M. Kligman of the University of Pennsylvania School of Medicine, who reported the hair growth in the *Journal of the American Medical Association*, 191:594, 1965, are quick to deny that they have found a cure for baldness, however.

"This is a potent hormone," the investigators warn, "and its long-term use in an unsupervised population is to be condemned." They say the real significance of their research lies in its opening the door for the discovery of other compounds that might have almost purely local effects. Testosterone can be absorbed through the skin, which makes it unsuitable for general use. There are also known side effects from testosterone.

The investigators said they presented their findings "with trepidation" in view of the futility of past experience in growing hair.

The major emphasis in any application must be in prevention of baldness rather than its cure. Treatment in early stages is best.

Loss of hair is due to shrinkage of the hair follicles. Some follicles shrink into extinction and once gone, a follicle cannot be restored.

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IN SCIEN

ARCHAEOLOGY

20,000-Year-Old Cave Painting Found

► SOME OF THE FINEST rock paintings of the paleolithic era in Europe have been discovered in a cave near Escoural, about 60 miles southeast of Lisbon, Portugal. They were found by workmen blasting a quarry.

The discovery has been inspected by Abbe A. Glory, one of the leading archaeologists in Europe, who declared, "They are authentic paleolithic paintings and are between 15,000 and 20,000 years old, probably nearer the 20,000 mark."

The paintings include a witch doctor and various animals.

Abbe Glory's assessment makes the sketches about 7,000 years older than the famous bulls in the cave at Altamira, in Spain.

Abbe Glory and Dr. Maxime Vaultier, vice-president of the Portuguese Archaeological Association, estimated the age by the shape of the horns of the cattle in the pictures.

Dr. Vaultier said, "The Escoural cave was used as a pagan shrine in the paleolithic period. Thousands of years later, in the neolithic era, it was turned into a sort of catacombs or cemetery."

"This is the first cave with wall paintings dating back to about 20,000 years ago to be discovered in Portugal," Abbe Glory said. "It can be included in the Franco-Catabric line and it shows that Portugal was the westernmost point attained by European prehistoric art."

"There is every likelihood," he added, "that other caves of a similar type will be found in the district."

The first caves were discovered at the end of 1963. They are now being explored by Dr. Farinha dos Santos, University of Lisbon, who holds a grant from the Gulbenkian Foundation.

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GEOLOGY

Mysterious Canadian Magnetic Rocks Located

► A BELT of magnetic rocks 160 miles long has been discovered stretching south from James Bay, which leads south from Hudson Bay.

The magnetic belt runs about parallel to the Moose and Abitibi Rivers, reported the Geological Survey of Canada and the Ontario Department of Mines, Ottawa, which made the survey by air.

The kind of rocks causing this magnetic pull is not yet known since most of the area is covered by swamps and a layer of sedimentary rocks.

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CE FIELDS

ARCHAEOLOGY

Ancient Jordan Secrets To Be Probed Again

► SECRET TUNNELS leading to water, clay tablets that may have been written by a yet unknown people, and five acres of ancient tombs—these are some of the exciting objects, partly disclosed last year, that are leading scientists back to Jordan to dig some more this spring.

Excavation will start again at Tell es-Sa'idiyeh, an eighth century B. C. city in Jordan, by members of the Museum of the University of Pennsylvania and the American School of Oriental Research at Jerusalem.

The city is believed to be the Biblical city of Zarethan, mentioned in the Bible in connection with the making of the bronzework in King Solomon's temple.

It may be the earliest example of city planning to be discovered in Palestine, states Dr. James B. Pritchard of the University Museum, director of the expedition. In this second season of excavation, scientists expect to uncover the remains of the entire city built according to a master plan.

Members also hope to find the water source at the bottom of an ancient stairway which was partly cleared last year. Scientists believe this secret tunnel led to a water supply which sustained the inhabitants when the city was under siege.

Other objectives of the two-month expedition ending April 24 will be to uncover more tombs of a huge cemetery, and to decipher and gain more knowledge of certain clay tablets which may be evidence of a new and as yet unknown ethnic group inhabiting this area in ancient times.

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EVOLUTION

Animal Proteins Provide A Study of Evolution

► PROTEIN MOLECULES in the blood of monkeys and other near relatives of man could be used to shed light on molecular evolution and evolution of apes and man, if studies by scientists develop.

By studying the structure and changes in protein molecules of various living animals that represent eons of evolution on earth, scientists can understand the way the molecule evolved, reported Dr. John Buettner-Janusch of Yale University, New Haven, Conn., and Dr. Robert L. Hill of Duke University, Durham, N.C.

Animals found today in the primate order represent a living laboratory of evolutionary steps that started in the Paleocene epoch, about 70 million years ago, the scientists reported in *Science*, 147:836, 1965.

Research on such animals as tree shrews, bush babies, lemurs, squirrel monkeys,

baboons, orangutans, gibbons and men can indicate how this primate order evolved from the Paleocene epoch, through the Eocene, Oligocene and other epochs, the scientists pointed out. Each animal is the product of many genetic, adaptive, selective and mutational events that occurred through the ages.

Comparative studies of the evolution of the protein hemoglobin in these animals, however, show complex and difficult results. For instance, the hemoglobin of a gorilla differs from that of man by only one amino acid residue. While hemoglobins of one primate group, including squirrel monkeys and baboons, are quite similar, those of another group, including tree shrews and lemurs, appear to vary among themselves.

Conclusions on the evolution of primate hemoglobin can be made when the sequence of polypeptide chains of hemoglobin from many animals are clear, the scientists stated.

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SPACE

Upcoming Gemini Shot Almost Ready for Launch

► ASTRONAUTS GUS GRISSOM and John Young, along with a few thousand scientists and technicians at Cape Kennedy, are holding their breaths as the launching date for the first manned U.S. space shot in 22 months draws near.

Problems with fuel leaks and parachutes, while minor, have been cause for more than usual concern, now that the long-delayed Gemini program is about to get into high gear. With the date finally set, each delay creates widespread nail biting as testing and checkouts continue.

The upcoming shot, scheduled for March 23, will be only three orbits long. As many as three more manned shots may take place this year, however, the last of which, GT-6, may mark the first rendezvous of two objects in orbit.

The "voice of Gemini," the running narration that will keep Cape Kennedy personnel and millions of Americans in touch with the progress of the flight, will be that of Paul Haney, public relations chief of NASA's manned spacecraft center in Houston.

Gemini will be launched aboard a huge, two-stage Titan rocket towering 90 feet above the launching pad. If it is necessary to abort (cut short) the mission, the astronauts will fire themselves free from the Gemini capsule using ejection seats similar to those in fighter planes. A more elaborate system will be used for the Apollo manned moon shot, which will be equipped with a Launch Escape Tower to blast the entire capsule away from the booster rocket.

In preparation for the end of the flight and the recovery of the astronauts, three specially equipped ships will be stationed at carefully computed points along the track of Gemini's journey. If it is necessary to end the flight after either the first or second orbits, the impact area will be different. One ship is assigned to each predicted landing spot.

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MEDICINE

Vital Bone Marrow Replaced After Radiation

► DESTRUCTION of vital bone marrow by massive doses of X-ray treatment for Hodgkin's disease and some other types of cancer has been offset by replacement of the patient's own marrow removed prior to treatment.

Dr. Ernest J. Braun, associate professor of radiology at Loma Linda University School of Medicine, Los Angeles, told the Postgraduate Convention how he had reinjected patients' marrow cells into the bloodstream after X-ray treatments had killed both the disease cells and the marrow cells in the treated area.

Destruction of bone marrow, in which blood cells essential to life are manufactured by the body, ordinarily would bring on the patient's death. By removing a cupful of the marrow fluid from a patient's bone before irradiation, and preserving it at extremely low temperature—148 degrees below zero Fahrenheit—the problem can be overcome.

At the conclusion of treatment, the re-injected cells quickly find their proper location, multiply to their former number and perform their life-giving function.

Cures for Hodgkin's disease and other types of cancer involving the lymph nodes have been extremely rare, Dr. Braun said. The chief obstacle to successful radiological therapy has been the problem of bone marrow destruction.

Marrow preserved at the sub-zero temperature would theoretically be usable after 20 years, he said.

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MILITARY SCIENCE

Anti-Sub System Shows, Fights Enemy

► ANTI-SUBMARINE warfare of the future may center around a single, 21-inch picture tube that shows surface ships, submarines, aircraft and the paths of weapons. The device can even do some fighting.

"The Monster," as it is known, is officially called the Graphic Plotter, Mark XXII. A central computer keeps track of the positions of the combatants and uses a different kind of symbol to identify each type of object on the screen.

Operated by two men, the Monster replaces a crew of six as well as numerous mechanical plotting devices and banks of dials. The computer analyzes the speed and direction of the enemy and of any approaching weapons. It can then be set to fire automatically at the targets while signaling the proper course for evasive action.

The Monster is being developed for the U.S. Navy by the American Bosch Arma Corp., Garden City, N.Y. The first unit will probably be installed in a destroyer for tests late this year. If the Navy is pleased with the results, as many as 100 Monsters could be installed in U.S. warships.

The Monster should provide increased range and accuracy, although specific figures are classified.

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