

monia with carbon dioxide. It occurs in human tissues and also is of common occurrence in plants. Its rather distasteful name comes from the fact that it was first discovered in one of the body's

waste products. If, as Dr. Robinson points out, it had first been discovered in spinach, where it also occurs, it would probably have a better-sounding name.

Science News Letter, August 15, 1936

GENETICS

Cancer-Like Disease of Blood Follows Mendelian Law

Leukemia, Highly Fatal Disease, Is Due to Wild Growth of White Blood Cells and Determined by Heredity

CANCER-LIKE behavior on the part of the white blood corpuscles, a wild uncontrolled growth that turns them from their normal role of "cops" to the malignant one of "robbers," follows a definite hereditary pattern, Dr. E. C. MacDowell of the Carnegie Institution of Washington has discovered, in the course of researches conducted at the Institution's Department of Genetics.

Leukemia, the disease is called in medical circles. The name is Greek for "white blood," because of the terrific excess of white blood corpuscles that

crowd the circulatory system and congest the vital organs. Because the white blood corpuscles are free to move about the body, leukemia is not susceptible to the kinds of treatment that can eradicate or check malignant tumors occurring in the "stationary" tissues. Hence leukemia is a highly fatal disease.

In his efforts to learn the causes of leukemia, Dr. MacDowell has worked with mice instead of men, for a number of obvious reasons. By the closest kind of inbreeding, he has produced a leukemic strain of black mice, of which

it can be confidently predicted that only one individual in ten will escape the disease. By similarly close inbreeding, he has produced another strain, light-colored, of which only one in a hundred develops it. He has carried this breeding of leukemic and non-leukemic mice through 36 mouse generations—equivalent to over a thousand years, in terms of human generations.

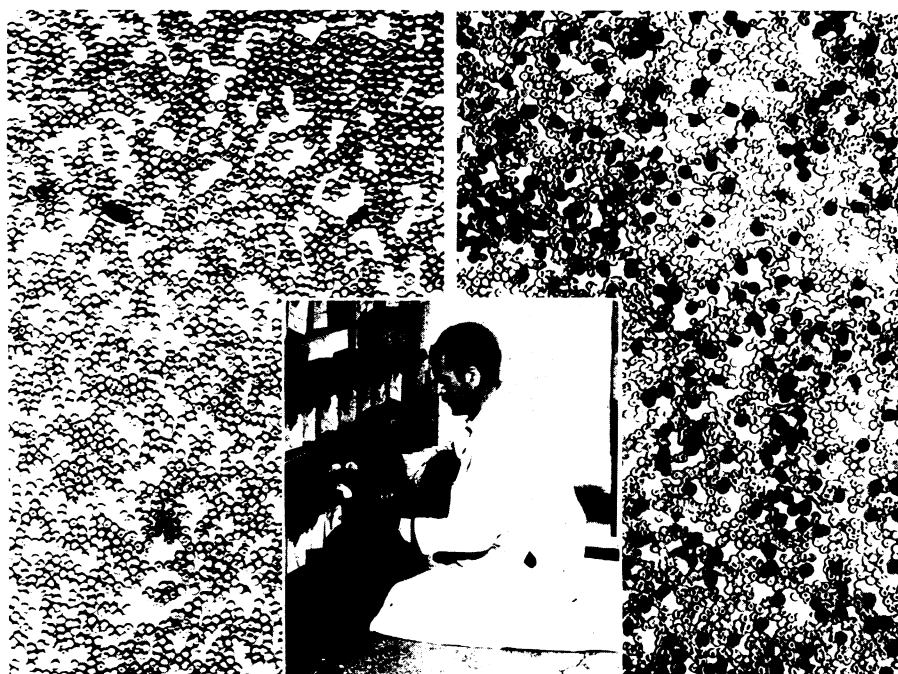
When mice of the two strains are crossed, about half the offspring become leukemic, and the other half do not, although all the hybrids have the hereditary factor that makes for the development of the disease.

Dr. MacDowell interprets these results as meaning that in the "pure-line" leukemic mice heredity is so strong a factor that environmental influences cannot avail to check it; as if fated, the mouse develops the disease regardless. But in the hybrids, the hereditary dose of doom is not so large, so that some of the individuals respond to ameliorating factors in the environment and the malady does not develop.

As Dr. MacDowell phrases it: "Putting all this together, we find evidence that wild growth does not depend merely upon a change in the cells, but also upon the relation of this change to the growth-controlling forces of the particular individual. . . . Heredity sets limits, environment decides the exact position within these limits."

Dr. MacDowell's researches were conducted in cooperation with the Department of Pathology at Columbia University, supported by funds supplied by the Carnegie Corporation of New York.

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HEALTH AND DISEASE

Dr. E. C. MacDowell in his leukemia laboratory at Cold Spring Harbor, N. Y. Left background: Highly magnified photograph of normal blood. Right background: Blood of leukemic mice on the same scale. Note the large number of cells that show black in the leukemic blood. These are white blood cells that were stained dark to make them prominent in the photomicrograph. The small cells are red blood corpuscles.

CHEMISTRY

Six "Synthetic Rubbers" Now on the Market

OUTSIDE of the technical industries concerned, most people may yet feel that "synthetic rubber," or rubber-like material, is still a laboratory curiosity and still in the Sunday science supplement stage of the newspapers. How many know, for example, that six products now on the American market are rivals of rubber? Some are true synthetics, built in the laboratory, while others are derived from natural rubber but have special and desirable properties. They are described in the *Bulletin of American Society for Testing Materials* (July).

Pioneer of the rubber-like substances is Thiokol, which is available in sheets, as a liquid, or as a powder for molding.

Like rubber it can be vulcanized but has the additional valuable property of being impervious to gasoline and does not swell and quickly disintegrate.

Koroseal is the rubber-like plastic with properties that make it desirable where natural rubber fails. It can be obtained in hardness that runs all the way from a soft jelly to hard rubber. You can mold it, make sheets out of it or extrude it from openings. Remarkable resistance to light, water, air and certain corrosive chemicals and oils are its merits. Chief use is in the impregnation or coating of fabrics, paper and metals.

AXF is another rubber-like synthetic organic compound which makes hard rubber flexible and aids in overcoming the deterioration due to ozone.

DuPrene is one of the newest and most widely known synthetic products having rubber-like properties, which has greater resistance to oil, grease, gasoline and air and heat than natural rubber. Tires have already been built with it and performed satisfactorily. Leather, fabrics, asbestos and cork have already

been coated with it for special service.

Plioform is a rubber derivative made from pale crepe rubber. It resists the attack of water, all alkalis and most acids. It has excellent electrical insulation properties. This plastic has wide usefulness in the field of sound production. When used as a sounding board, it approaches violin wood in producing pleasing tones.

Sixth of the rubber-like materials is Tornesite, a rubber derivative, whose present function is primarily in the coating of metals. It shows resistance to acids, alkalis, smoke and fumes and can be applied with a brush or as a spray.

In the commercial sense there is little reason why the synthetic rubber-like plastics should exactly duplicate the natural products. While the search for synthetic rubber originally had that goal, the present products have excelled rubber in many ways and lack only the price angle to be highly competitive on a wide scale.

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PUBLIC HEALTH

Campaign to Save Lives Of Premature Infants

A CAMPAIGN to save the lives of premature infants is being waged by the Chicago Board of Health. Dr. Herman N. Bundesen, president, regards this as the most promising field of effort for the further reduction of the infant death rate.

The first measure taken by the city was a careful survey of all the hospitals. These institutions are now rated on their facilities such as "premature" nurseries, heated beds and equipment for the administration of oxygen.

Next the board of health passed a regulation making premature births reportable at once by telephone. As soon as such a birth is reported, a nurse is dispatched to help the doctor.

The board of health provides an incubator ambulance to transport these infants, without charge, from homes to good hospitals. Heated beds are sent to homes when hospital care is not given.

Chicago's next step was to establish a mother's milk station where breast milk is collected and made available for premature and other infants who need it and whose parents are unable to pay for it.

Finally, a simply worded booklet on the care of the premature baby is sent to the mother.

A survey, conducted during 1935 of the death of every Chicago infant under 30 days old, is reported on in the *Journal of the American Medical Association* (July 25).

This survey shows that most of the mothers of these infants did not have proper care before the child's birth. Unrecognized and untreated disease conditions in the mother endangered the life of the infant.

Dr. Bundesen and his associates also found that in more than half of the cases the drugs given the mother preceding and during childbirth were questionably administered. The peril is especially grave, they contend, when large doses of analgesics are given to abolish the pains of labor.

Almost 70 per cent of the deaths of premature infants in Chicago during 1935 occurred within the first twenty-four hours. This is almost double the percentage of full-term infants who died during the first twenty-four hours.

Science News Letter, August 15, 1936

ARCHAEOLOGY

Palaces of King Darius Yield Magnificent Art

See Front Cover

MAGNIFICENT sculptures portraying King Darius the Great on his throne have been unearthed from the ruins of his famous palaces at Persepolis.

Word of the discovery has just been received at the Oriental Institute of the University of Chicago. The Institute's expedition to Persepolis reports that the sculptures are among the finest examples of ancient art yet found.

The sculptured scenes adorned two porticos of a courtyard and represented King Darius giving audience to some petitioner, says Dr. Erich F. Schmidt, field director of the expedition. King Darius and his son and heir, Xerxes, are shown giant-size, seven feet tall, to increase their majesty. The petitioner and the courtiers are ordinary life-size. Attendants include the carrier of the royal bow and mace, two lance carriers, and a man believed to be the Food Taster, who is holding a napkin.

Important clues to the burning of the Persian palaces by the conqueror Alexander the Great, in 330 B.C., have been discovered, Dr. Schmidt reports. Telltale silver coins bearing Alexander's head prove that the palace was occupied or



LIKE LEATHER

This sword and scabbard are not of leather and metal but carved in stone upon the panel shown in the view on the facing page. They are worn by a guard standing behind the king and his son.