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.

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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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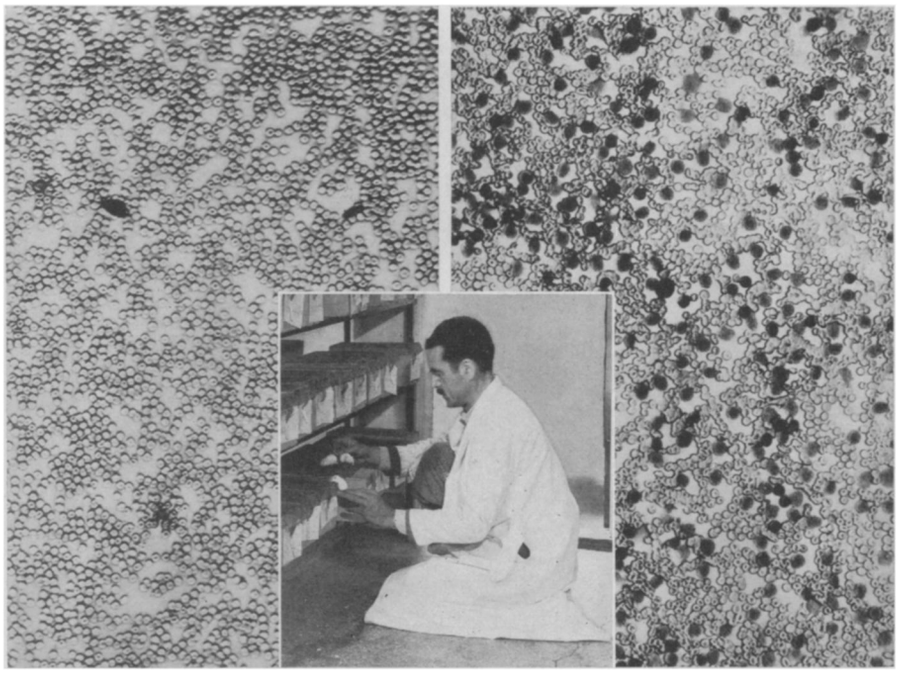

HEALTH AND DISEASE

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 corpulscles.

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.