MEDICINE

Temporary Leukemic Relief

➤ ALMOST ALL the children who have acute leukemia, malignant disease of the blood and blood-forming organs, can now be given some kind of remission during which they will for a time be restored to health, Dr. C. P. Rhoads, director of the Sloan-Kettering Institute for Cancer Research, New York, declared.

This is possible through the use of three groups of modern chemicals: antifolic acid chemicals; cortisone and ACTH, famous first as arthritis remedies; and 6-mercaptopurine.

This last, 6-mercaptopurine, has been distributed to more than 200 groups of cancer fighters since last January. It is not a cure but it has brought remissions to about half the patients treated. It helps both children and grown-ups with acute leukemia, and is active in some children who are refractory to antifolic acid chemicals. The remissions have lasted in some patients "for a good many months," but others have relapsed within weeks.

Reports of the patients who have gotten the chemical are now being analyzed, Dr. Rhoads told the American Pharmaceutical Manufacturers' Association meeting in New York.

The drug was developed through a joint research program with Wellcome Research Laboratories, Tuckahoe, N. Y., the Southern Research Institute of Birmingham, Ala., and the Sloan-Kettering Institute.

This new chemical is one of many specifically designed to interfere with utilization by cancer cells of materials needed for manufacture of the nucleic acids vital to cell life. It could be made on this rational and specific basis because scientists have discovered in recent years that the nucleic acid, DNA, of cells is not the same for every cell. They can therefore hope to tailor drugs to interfere with DNA production in each of the eight main death-dealing kinds of cancers: lung, breast, uterus, intestines, prostate, bladder, mouth and the leukemias.

Since 6-mercaptopurine is not a cure for leukemia, scientists are now working to design a more specific anti-leukemic cell chemical. Dr. Rhoads feels sure they will succeed, though when and with what change in the 6-mercaptopurine molecule cannot be predicted at the present time, he said.

But following these principles it will be surprising, he said, if scientists do not find "new and better means for cancer control in man within the foreseeable future."

Science News Letter, January 2, 1954

MEDICINE

Cancer Theory Overthrown

➤ A 25-YEAR-OLD cancer theory first proposed by the famous German biochemist and Nobel prize winner, Otto Warburg, has been overthrown by atomic age research reported at the meeting of the American Association for the Advancement of Science in Boston.

The old theory came from Warburg's findings that cancer cells convert sugar to the milk-souring chemical, lactic acid, in much greater amounts than normal cells do. This gave Warburg the idea that cancer cells may have a primitive type of metabolism in which energy is produced by fermentation. Subsequent studies by other workers promoted this theory.

However, the fermentation process is a relatively inefficient energy producer. It yields only three-tenths of a calorie per gram of sugar as compared to six calories per gram when sugar is completely burned to carbon dioxide, or nine calories when fats are burned to carbon dioxide. This would not seem to be enough to supply the energy needed by rapidly growing cancer cells.

In this atomic age, a critical test could be made of the old theory. Fats and sugars could be labelled with radioactive carbon from the U. S. Atomic Energy Commission and fed to cancer cells. This was done in the laboratories of Lankenau Hospital Research Institute, Philadelphia, under the supervision of Dr. Sidney Weinhouse who reported the studies.

The test showed conclusively that cancer cells are able to carry out the complete combustion of sugars and fats to carbon dioxide and that they use the same mechanism as normal cells.

The high lactic acid production of cancer cells compared to normal cells, it is now believed, is due to a difference in amount or distribution within the cancer cell of a potent catalyst known as DPN, short for diphosphopyridine nucleotide.

This substance, which contains as one of its components the vitamin, niacinamide, is present in animal cells in amounts of the order of 50 to 500 millionths of a gram per gram of tissue. It was found that its content in cancer cells is very low as compared with normal tissues.

This work was done by Charles E. Wenner, Ruth H. Millington, Grace Medes, Morris A. Spirtes, Arthur Allen, Alice A. Thomas and Lillian Jedeiken.

Science News Letter, January 2, 1954

Some water-filled glass vases and globe-like fish bowls can start *fires* in the home by focusing the sun's rays on inflammable materials.

ROBERT ANDREWS MILLIKAN —Pioneer in the physics of atomic particles, Dr. Millikan died Dec. 19.

NECROLOGY

Millikan Last of Original Science Service Trustees

➤ IN ADDITION to his fundamental researches in physics and his leadership in the organization of research and education, Dr. Robert Andrews Millikan, who died Dec. 19, 1953, at the age of 85, was a pioneer in the effort to inform the public about science.

He was one of the original trustees and incorporators of SCIENCE SERVICE, and he served actively on the board of trustees since its organization in 1921.

A statement issued on behalf of the staff of SCIENCE SERVICE stated:

"Dr. Millikan was one of the world's great scientific immortals. He will also be remembered for his vision and interest in bringing public and science together. One facet of this was his service as a SCIENCE SERVICE trustee since that institution's founding in 1921."

Science News Letter, January 2, 1954

BIOCHEMISTRY

Milk's Protein Has Anti-Goiter Agent

➤ DISCOVERY THAT a purified form of milk's protein, casein, has a "thyroid-like property of goiter prevention" is announced by Drs. L. Van Middlesworth, A. H. Tuttle and Ann Threlkeld of the University of Tennessee in *Science* (Dec. 18, 1953).

Dr. Middlesworth had previously found that rats on a synthetic low iodine diet containing purified casein did not develop goiter. The new experiments, confirming the presence of a goiter preventive in purified casein, were made with nursing dog mothers injected with radioactive iodine.

Science News Letter, January 2, 1954