

MEDICINE—CHEMISTRY

Find Chemical Difference Between Cancer and Normal Cell

Discovery by German Scientists That Amino Acids In Cancer Cells May Be "Right-Handed" Is Confirmed

HAILED as a promising new lead on the cancer problem, an important chemical difference between cancer cells and normal cells, reported by two Dutch scientists publishing in German journals, has been confirmed by Dr. E. Schroeder, working under the direction of Dr. Ellice McDonald at the Biochemical Research Foundation of the Franklin Institute.

Curiously the same effect was prognosticated in 1907 by an American physician, Dr. Margaret Cleaves, who at that time was treating cancer patients with enzymes in New York City. Digging into the medical literature brought to light this interesting fact.

The discovery, expected to speed the fight against cancer, is said to give a possible chemical approach to better understanding and treatment of this dread disease.

This new cancer research that has stirred the medical world comes from the University of Utrecht's Chemical Institute in Holland. Prof. F. Kögl, director, and Dr. H. Erxleben published their results in German medical and chemical journals, whence it filtered to the rest of the world, causing experimenters to interrupt their present problems to work on this more promising possibility.

In the Protein

The difference between the cancer cells and the normal cells is in the protein building blocks they contain. These building blocks, essential constituents of living matter, are known as amino acids. In the natural form, these acids might be called left-handed, because when a beam of polarized light is passed through them, they turn it to the left. In cancer cells, it has been discovered, the protein building blocks occur both in natural and unnatural forms, some of them being the natural left-handed variety and some the unnatural, right-handed kind which turn the polarized light to the right.

This is the first qualitative chemical difference that has been found between

malignant and cancer cells, Prof. Carl Voegtlin, director of the U. S. National Cancer Institute, Washington, stated when interviewed. His laboratory is following up the discovery vigorously.

Discussing possible practical applications of the discovery, if confirmed, Prof. Voegtlin recalled that the great Michael Faraday was asked what practical results might follow his discovery of electromagnetism, now the basis of the electrical industry. At that time Faraday when asked what use was his discovery, replied: "What good is a baby?"

A possible practical result of the discovery, in the opinion of another cancer authority, would be the prevention of cancer by the use of enzymes, the substances which play a powerful role in the chemical changes going on in the body. A familiar enzyme is pepsin, the

protein-digesting enzyme of the stomach.

The day of practical application of this nature is still in the future. Following confirmation of the discovery of the chemical differences between malignant and normal cells, such as Dr. Schroeder is about to report, scientists will have to find an enzyme that can turn the unnatural forms of the cancer's amino acids back to natural forms, or better still, perhaps one which can keep all the amino acids in the body from turning into the unnatural forms. These ideas, of course, are purely speculative. There is no evidence yet that the difference just found between cancer cells and normal cells is the cause of cancer—it may be a difference that arises after something else has caused the cancer to start its uncontrolled growth.

Dr. Cleaves, the American physician, was working on this idea in 1907, actually using an enzyme, trypsin, from the pancreas, in treatment of cancer. Her idea was that in certain disease conditions such as cancer, the proteins of the tissues were susceptible to trypsin's action because of "their special configuration." While she evidently did not go any deeper into the chemical aspects, the difference just discovered between cancer and normal cells is a difference



MEASURES A WHISTLE

This surface indicator, being operated by J. A. Sams, of the General Electric Works Laboratory, who developed it, is so sensitive that it will indicate the thickness of a fingerprint on a piece of smooth glass as its minute irregularities are felt out by a sapphire-pointed stylus. The device is used to determine the smoothness of metal or painted surfaces. Mr. Sams is measuring the vibrations caused by a whistle.