in the configuration or pattern of the building blocks of the cell protein. With the greater knowledge of body chemistry that has accumulated in the past 32 years, scientists are in better position to test the role of enzymes in cancer.

Dr. Cleaves died in 1917, without the knowledge that over 20 years later scientists would be attacking the cancer problem from the enzyme angle on which she worked.

Science News Letter, July 29, 1939

MEDICINE—CHEMISTRY

British Fail to Confirm Cancer Cell Discovery

HARD on the heels of news that an important chemical difference between cancer cells and normal cells had been found, comes a British report that the finding could not be confirmed.

At the Imperial College and the Research Institute of the Royal Cancer Hospital (Free) in London, scientists were unable to find the difference between the cancer cells and normal cells, observed by Prof. K. Kögl and Dr. H. Erxleben, of the University of Utrecht. Reporting to *Nature* (July 8), Drs. A. C. Chibnall, M. W. Rees, G. R. Tristram, and E. F. Williams, of Imperial College, and Dr. E. Boyland, of the Royal Cancer Hospital, state:

"These preliminary results are not in agreement with those of Kögl and Erxleben, and show the need for a more extended investigation."

The Dutch discoverers, defending their findings (*Nature,* July 15), state that a difference in chemical methods accounts for the fact that Prof. Chibnall and his associates failed to confirm the Dutch work. The English scientists, they claim, used a test which, while good for detecting the natural form of the acid, is not apparently able to detect the change in this acid to the unnatural form.

Science News Letter, July 29, 1939

Airplane pilots are tested for physical fitness every 90 days.

Women in ancient Egypt carried basket loads on their heads.

The old game of jackstones has gone modern with plastic jacks in gay colors.

There are about 90,000 Diesel-powered vehicles in use, only about 3,000 of them registered in the United States.

A bicolored ground snake found recently at Grand Canyon is believed new to science and unknown elsewhere.

PHYSICS

Blood's Oxygen Carrier Studied With Spectroscope

First Studies of Hemoglobin Within Its Natural Environment of Red Blood Cells Reported to Meeting

THE FIRST studies ever made of hemoglobin, the red, oxygen-carrying material of the blood, within its natural environment of the red blood cells themselves, were reported to the Massachusetts Institute of Technology spectroscopy conference at Cambridge by Dr. David L. Drabkin of the University of Pennsylvania.

Previous spectroscopic researches in this knotty but highly significant field have been limited to investigations of concentrated solutions of the pigment, prepared by actual destruction of the red cells themselves. Thus much of our knowledge has been drawn from studies not of the substances in their natural environment but of their solutions obtained by extraction, a procedure possibly risking chemical change.

Dr. Drabkin dealt with a rather complicated turbid suspension of the red blood cells which gave a distorted picture requiring interpretation. His results constitute the first accurate deductions ever made on biological material. Preliminary studies indicate that the spectra of hemoglobin and its derivatives are the same within the blood cells as those obtained extracellularly.

The method has already found an additional application, in facilitating accurate determination of hydrogen ion concentration within the red blood cells. This is done by intracellularly converting the hemoglobin to methemoglobin, its oxidized form, and using the well known indicator properties of this latter compound.

Dr. Drabkin said that this unique method of using the main cellular constituent to determine reactions within the cell appears "most promising." Heretofore such methods as puncturing the cell with a micro-needle, which injures the cell, have been used.

Dr. Drabkin also reported progress in a spectroscopic study of protein denaturation which may throw considerable light on the structure of the complex protein molecule. Urea, he found, may play an important role in the denaturation process, for whereas hemoglobin is denatured no more rapidly in alkali than in concentrated urea solution, the presence of both reagents speeds the process some sixty-fold.

Science News Letter, July 29, 1939

Study Make-Up of Virus

THE first spectroscopic analysis ever made of viruses, ultra-microscopic disease-producing entities, and their constituent proteins and nucleic acids, has been made by Dr. George I. Lavin of the Rockefeller Institute for Medical Research.

Dr. Lavin investigated three plant viruses—the classic tobacco mosaic virus, latent mosaic virus and tobacco ringspot virus, all of them crystallized in the pioneer researches in this field by Dr. Wendell M. Stanley and Dr. Hubert S. Loring of Princeton.

Crux of his technique, as explained to the spectroscopy conference, was the use of a continuous light source, in preference to the more usual source, and fractionation or splitting of the complex biological substances with which he was dealing, a procedure which may well revolutionize accepted spectroscopic methods of attacking intricate medical and biological problems.

Nucleic acid is apparently a rather prominent constituent of some viruses at least, for Dr. Lavin found it in all three of the plant viruses with a particularly high concentration in the tobacco ringspot. The presence of indoleacetic acid was also indicated.

That the amino acids which go to make up a protein may at times be hitched together in a very peculiar way was indicated by Dr. Lavin's study of papain, a protein-splitting enzyme, in which he was unable to find the amino acid, tyrosine, until after the enzyme had been hydrolized by Dr. J. S. Fruton.

He has also used the spectrograph to analyze urine, photographic fractions prepared by Drs. K. Dobriner and C. P. Rhoads so precisely that he was able to identify a number of physiologically im-