of the apparent advantages of such a system, we must finally recognize its correctness, at any rate when the unknown elements predicted on the basis of it, are confirmed by actual discovery. As we must admit, heretofore chemistry did not have any means of foreseeing the existence of new simple bodies and if they were discovered they were found only by means of actual observation. I think that the use of the proposed system of elements for comparison of the elements themselves as well as the compounds which they form presents, even at present, advantages which have not been given by any conception used in chemistry heretofore. But for the final proof of the correctness of the conclusions based on the use of the system, the establishment of certain additional facts is necessary, especially more accurate determination of the atomic weight of certain elements and determination of the physical properties of some of their compounds. When it becomes possible to subject the periodic function of the properties of atomic weight and "atomologic" relationship of the elements to exact laws, then we will approach a closer understanding of the real essence of the difference between the elements themselves. Then of course chemistry will be able to leave the field of hypothetical conceptions ruling it at present and then it will be possible to give it dynamic direction already so fruitfully employed in the study of many physical phenomena.

Nov. 29, 1870.

Science News Letter, November 7, 1931

MEDICINE

Cancer Only One of Nobel Prizeman's Research Lines

CANCER, biological physics, and the respiratory function of the tissues are the three chief subjects of research by Prof. Otto Warburg of the Kaiser Wilhelm Institute for Biology, Berlin, who has just been awarded the Nobel Prize in medicine for 1931. Prof. Warburg has made very important contributions in all three of these fields.

Most attention has probably been attracted by his work on cancer.

He showed that cancer cells have quite a different metabolism from ordinary tissue cells. They can get all the energy they need to live and grow and reproduce from the breaking down of sugar. Uulike other cells, they do not need oxygen but can live without it, much as some disease germs do. This does not mean that cancer is caused by germs, however. It is the suffocation of normal cells by lack of oxygen that gives the cancer cells a considerable advantage in the competition of growth, according to Prof. Warburg's views on the subject.

Prof. Warburg also investigated the photochemistry of plant cells, that mysterious process by which the cells turn carbon dioxide and water into food in the presence of light. He measured very exactly the light absorbed by these green cells and compared it with the amount of carbon dioxide they used. He was then able to show a certain quantum relation between the two. This research of Prof. Warburg's was one of the first pieces of work in which biological physics was compared with the quantum theory.

Other work of Prof. Warburg's was in the field of cell metabolism. He demonstrated the constitution and action of the ferment in the tissue cells which controls the conveyance of the oxygen of the air from the lungs to the muscles and other tissues of the body.

Science News Letter, November 7, 1931

MEDICINE

Physiologist Appraises Dr. Warburg's Work

A SCIENTIST'S estimate of the achievements of Dr. Otto Warburg in recognition of which he has been chosen for the Nobel Prize in medicine and physiology for 1931 are contained in a statement made to Science Service by Dr. W. H. Howell, chairman of the Division of Medical Sciences of the National Research Council. Dr. Howell was for many years director of the School of Hygiene

and Public Health of the Johns Hopkins University, Baltimore. He said:

"The selection of Prof. Otto Warburg for the Nobel Prize in medicine and physiology for 1931 will be cordially approved by American physiologists. He is well known and esteemed in this country for his fine work upon cell metabolism.

"His investigations upon the respiration or mechanism of oxidation in the living cell are of fundamental importance. He has shown that the cell depends upon the iron contained in it to utilize the oxygen that is brought to it by the blood. The iron exists in the cell in a special form, an iron porphyrin compound, which is present in very minute concentration, perhaps one part to a million, but it is very active and functions as a catalyst or ferment which takes up the oxygen and then gives it to oxidizable substances within the cell. In such small amounts its nature could not be detected by ordinary chemical means and Prof. Warburg devised a delicate spectrographic method depending upon the absorption bands given by its compound with carbon monoxide.

"Another significant contribution was his study of the metabolism of the cancer cell as compared with the normal cell. He was able to show that malignant growths have a small respiration but contain relatively large amounts of lactic acid. His work figures largely in all discussions upon the cause of cancer."

Science News Letter, November 7, 1931

PUBLIC HEALTH

Millions Wasted Yearly For School Ventilation

MORE THAN $2,500,000 is being wasted annually by many cities throughout the country on unnecessary and even hazardous ventilating systems for schools, Dr. C.-E. A. Winslow, professor of public health at Yale University, estimated in a report published by the New York Commission on Ventilation, of which Dr. Winslow is chairman.

Twenty states in the Union still have laws or other regulations concerning ventilating devices which are based on disproved or antiquated theories, the Commission found, although scientific knowledge concerning the proper ventilation of buildings has been in the possession of architects, hygienists and engineers for more than twenty-five years.

For example, these twenty states re-