The foregoing view of the nature of the photochemical absorption spectra allows a simpler interpretation of their variability, since the relative proportions of the cytochrome components vary from one kind of cell to another[1]. The contribution to the photodissociation of the cytochrome oxidase – carbon monoxide compound by other components of the cytochrome system and possibly by some other light-absorbing substances would, in these circumstances, be a variable one. On the other hand, if more than one hæmoprotein contributes to the photochemical spectrum in the Soret region, the experimental γ-band should be somewhat asymmetric with shoulders representing the smaller contributions of components other than cytochrome oxidase. Unfortunately, sufficient data to decide this matter are not available, nor could they be easily obtained, since many experimental points would be required within a very limited spectral region to provide the exact shape of the γ-band.

However, the problem whether the carbon monoxide compound of cytochrome oxidase does exhibit a multibanded spectrum in the visible region, as the photochemical spectra appear to suggest, will be finally solved either by study of the isolated and purified native cytochrome a and a_3 hæmoproteins completely free from other native or denatured hæmoproteins, or by the study of absorption spectra of carbon monoxide complexes of compounds reconstructed from hæm **a** and different proteins. Until this is accomplished, the most plausible explanation of the great complexity and variations of the photochemical absorption spectra lies in the assumption that several light-absorbing components of the catalytic system contribute to the pattern of these spectra.

Since all the components of the cytochrome system are intimately linked together to form an integral part of certain structural elements of the cell such as mitochondria or sarcosomes, it is conceivable that the spatial distribution of cytochrome oxidase in relation to the other cytochrome components and other oxido-reduction systems varies from one structural element to another, or from one region of the same element to another. According to its localization, cytochrome oxidase may be linked in different manners and in different proportions to other components of catalytic systems and therefore may not be equally saturated in each case with electron donors. It is only in places where cytochrome oxidase is fully saturated with electron donors that its activity can become the rate-determining step and that its susceptibility to carbon monoxide will be reflected in the over-all reaction in which it takes part. This may explain the differences in the susceptibility to carbon monoxide of respiration and the Pasteur reaction discovered by Laser[16]. Thus his important observation that in certain tissues it is not the respiration but the Pasteur reaction that shows light-sensitive inhibition by carbon monoxide does not necessarily imply the existence of a specific 'Pasteur enzyme' which is distinct from cytochrome oxidase.

It is therefore reasonable to assume that cytochrome oxidase is the component, showing the light-sensitive inhibition by carbon monoxide and the photochemical absorption spectrum, of the catalytic system involved in the Pasteur reaction. As to the susceptibility of this reaction to other factors[10], which do not affect cytochrome oxidase, it may well be due to their action upon some other components of the catalytic system responsible for this reaction.

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OBITUARIES

Prof. W. H. Hobbs

William Herbert Hobbs was born at Worcester, Massachusetts, on July 2, 1864, and died at Ann Arbor, Michigan, early in January 1953. He was educated at the Worcester Polytechnic Institute, where he made a special study of industrial design. Upon graduation in June 1883 he taught for a year at a country school, and then went to Johns Hopkins University at Baltimore to study first chemistry and physics and later geology, in which he took his degree in 1888. After a year's postgraduate work at Heidelberg, Hobbs returned to the United States as an instructor in the University of Wisconsin and curator of the geological museum there. In 1891 he was appointed assistant professor of mineralogy and petrology, and nine years later became full professor. Between 1885 and 1900 he was also employed from time to time by the United States Geological Survey in New England, and made a special study of methods of discovering faults by means of surface relief. Hobbs was in Italy at the time of the Calabrian earthquake in 1905 and formed the opinion that there was no epicentrum, or centre of heavy shock, but many intersecting 'seismotectonic' lines of shock with the heaviest shocks at their junctions. He published this novel conclusion in "Earthquakes: an Introduction to Seismic Geology" (New York, 1907).

As a result of these investigations, Hobbs had become more interested in dynamic and structural aspects of geology than in mineralogy and petrology, and in 1906 he accepted the post of professor of geology at the University of Michigan, where he remained until retirement in 1934. He first became interested in glaciology in 1906, when he visited Switzerland, and five years later published "Characteristics of Existing Glaciers" (New York, 1911), in which he emphasized the wide differences between valley glaciers and ice sheets.

Hobbs was a keen traveller and spent much time in Europe, North Africa and on the islands of the Pacific Ocean. In 1926, when he was more than sixty, he led the first University of Michigan Expedition to Greenland. His object was to find evidence in support of his belief that a permanent 'glacial anticyclone' over Greenland governs atmospheric circulation in the northern hemisphere. Although his hypothesis was later shown to be inconsistent both with the observed facts and the theory of the polar front, Hobbs continued to assert that the characteristic circulation of the northern and southern hemispheres depends upon the existence of the ice sheets of Greenland and Antarctica, acting as downshafts for the restoration of air to lower latitudes. Again, in 1927 and in 1928, he led parties to southwest Greenland, and later published a general account of their achievements in "Exploring about the North Pole of the Winds" (New York, 1930). During the Second World War it was Hobbs who suggested Søndre Strømfjord, where his expeditions had worked, as a site for the United States air base which came to be known as Bluie West Eight.

After his retirement Hobbs turned his attention to the historical aspects of polar exploration. As might be expected, he had entered whole-heartedly into the bitter controversy between Frederick A. Cook and Robery E. Peary, and wrote a biography entitled "Peary" (New York, 1936) in vehement support of the American admiral's attainment of the North Pole. Hobbs also devoted much attention to the discovery of the antarctic continent, and published the results of his investigations in 1937. In exceptionally harsh and acrid terms he sought to show that it was an American sealer, Nathaniel Brown Palmer, who first sighted Antarctica, although there is no doubt whatever that Edward Bransfield was, in fact, the first to do so. Hobbs's attempt to discredit men like Bransfield and James Weddell, and his ruthless misrepresentation of original documents, was a source of great embarrassment to his many friends in Britain.

Whatever doubt there may be as to the worth of Hobbs's contribution in some fields, of his vigour and enthusiasm there can be no question. He was never afraid to state his views, however controversial; but it is regrettable that he was so rarely prepared to admit, in the face of overwhelming evidence, that he had been mistaken. J. D. M. BLYTH

Prof. David Katz

THE death of Prof. David Katz on February 2 at the age of sixty-nine removes from psychology a gifted and versatile experimentalist of the first rank. Born in Cassel, Hessen-Nassau, in 1884, he studied natural science and mathematics at Göttingen and later turned to psychology, under the direction of G. E. Müller. It was characteristic of him that his interest in psychology was aroused by acting as a subject in an experiment. He pursued these early studies at Munich and Berlin, and it was during this time that he came under Husserl's influence, which remained throughout his life. On receiving his doctorate in 1906, he spent some months in military service and then proceeded to Munich, where Theodore Lipps was a focus of interest, and afterwards to Würzburg, where Kulpe's laboratory was the main attraction.

He took up his first appointment at Göttingen in 1907 as G. E. Müller's assistant, and remained there until the outbreak of the First World War, when he enlisted and served for nearly four years. In 1918 he had the opportunity of working for some time at the Engineering School in Hanover, being engaged in the study of sensory-motor reactions of Sauerbruch amputees, thus introducing psychological methods into the field of prosthesis.

In 1919 he married Rosa Heine, a psychologist in her own right, who has always been closely associated with her husband's work, particularly on child and animal behaviour.

In the same year Katz accepted the new chair of psychology and education at the University of Rostock. He stayed there until 1933 when he was forced to leave because of the Nazi regime. Fortunately, an invitation was extended to him to work in Prof. T. H. Pear's laboratory in the University of Manchester and later in Sir Cyril Burt's Department at University College, London. While in England he also carried out experiments on monkeys at the London Zoo and for two years acted as psychological adviser to the British Research Association of Flour Millers. In 1937, he was appointed to the first chair of pedagogy and psychology in the University of Stockholm, where he remained until his retirement in 1951.

The wide scope of Katz's experimental interests is indicated by his original work on sense perception (especially colour-vision, touch, taste and vibration), child development, processes of thought and learning, and animal behaviour. He preserved until the end an originality and freshness of approach in all his varied work, and his writings are characterized by simplicity, directness and lucidity.

During 1930–33 he was co-editor of the *Zeitschrift für Psychologie*. In 1950, he went to the University of California to deliver the Hitchcock Lectures, and in 1951 he was president of the Thirteenth International Congress of Psychology. His numerous publications include "Psychologie und Mathematische Unterricht", "Studien zur Kinderpsychologie", "The World of Colour", "The World of Touch", "Hunger and Appetite", "Conversations with Children" (jointly with Rosa Katz), "A Psychological Atlas", "Gestalt Psychology", and "Animals and Men".

Prof. Katz possessed great charm of personality and a sense of humour, and his unfailing kindness won him numerous friends in many countries. He leaves a widow and two sons. JOHN COHEN

Dr. Edward Hope

DR. EDWARD HOPE, who died at Caterham on February 7, was born on December 19, 1886, and received his chemical training under W. H. Perkin, jun., at the University of Manchester. His earliest researches included studies in the preparation and reactions of several interesting alicyclic and aliphatic acids, as well as some notable investigations, conducted in collaboration with Sir Robert Robinson, in the narcotine and gnoscopine group of alkaloids.

Perkin had moved to Oxford in 1913, and, during the First World War, British Dyes, Ltd., organized a team of chemists to investigate, under his direction, difficulties which had arisen in the manufacture of dyes and their intermediates. Hope went to Oxford in 1916 to join this team and worked in the newly opened Dyson Perrins Laboratory. In 1919 he accepted an appointment as lecturer and demonstrator in the new laboratory, and at the same time became a Fellow and tutor in chemistry at Magdalen College.

The immediate post-war period was one of considerable reorganization and development in the chemistry school at Oxford. The research year had just been introduced as an integral part of the honours course, and Hope applied himself wholeheartedly to the problems of the laboratory and the needs of a large body of pupils at Magdalen. He maintained his interest in research and published a number of papers jointly with his students, mostly on the