

grösseren Zahl von Experimenten gefundenen Abweichungen des Plasmawasser-Mg von den zugehörigen Initialwerten unter den Bedingungen der intakten und der durch Kälte inhibierten Glykolyse synoptisch dargestellt.

Als Ergebnis unserer Untersuchungen ist zu konstatieren, dass der Mg-Gehalt menschlicher Erythrocyten bei *in vitro* aufrechterhaltener Glykolyse abnimmt, dass er andererseits während Glykolyseinhibierung durch Kälte nicht nur gewahrt werden kann, sondern meistens noch leicht zunimmt. Da die Glykolyse die einzige Energiequelle menschlicher Erythrocyten ist, kann hieraus zugleich geschlossen werden, dass die Aufrechterhaltung des extra-intra-erythrocytären Mg-Konzentrationsgradienten - im

Gegensatz zu dem des K - keine energetische Stoffwechselleistung zur Voraussetzung hat.

Summary. Continuation of glycolysis in human erythrocytes by incubation of heparinized whole blood at 37°C is followed by a decrease in the Mg-content of red cells. On inhibition of glycolysis by cold (4°C), the Mg-content of erythrocytes remains unaltered or, often, slightly increases. These actions are in clear contrast to the behaviour of potassium ions under the same conditions.

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DISPUTANDUM

Polycyclic Aromatic Hydrocarbons: The Relationship between their Polarographic Half-Wave Potentials and Absorption Spectra

In his note on the interpretation of the polarography of polycyclic aromatic hydrocarbons¹ WALLENBERGER mentions the author's work² and that of WAWZONEK^{3,4}. He fails, however, to mention the extensive theoretical and experimental studies of HOIJTINK's school⁵⁻¹¹ the theoretical contributions of MATSEN^{12,13}, GIVEN's review¹⁴, and the author's second paper on the subject¹⁵. His criticisms of the author's correlation between the half-wave potentials and the absorption spectra of the hydrocarbons are rather illogical. He first assumes that the *para*-bands¹⁶ in the absorption spectra are related to the excitation of electrons in the *meso* positions. Having used this premise to criticise the inclusion of certain compounds in the correlation, he then states that there is an ambiguity about the assignment of the bands.

He speaks of 1:2 and 1:4 reductions as if the mechanism were completely known, independent of method of reduction, and clearly correlated with polarographic halfwave potentials. This is, in fact, not so. Comparatively few hydrocarbons have been studied by controlled potential reduction at a mercury cathode. The results so far^{4,14,17} indicate that in many cases the relationships between the reduction product and the polarogram of a compound are rather complex. This was the main reason for the paucity of theoretical exposition in the author's papers on the subject. The fact remains that of the hundred hydrocarbons studied polarographically in cellosolve, 95 could be placed in one of six groups accord-

ing to their structure, giving within each group a straight line relationship between electron affinity (as measured by half-wave potential) and electron excitation energy (from the *para*-band in the absorption spectrum).

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48, Wostenholm Road, Sheffield (England), April 5, 1961.

¹ F. T. WALLENBERGER, *Exper.* 16, 83 (1960).

² I. BERGMAN, *Trans. Faraday Soc.* 50, 829 (1954).

³ S. WAWZONEK and H. A. LAITINEN, *J. Amer. chem. Soc.* 64, 2365 (1942).

⁴ S. WAWZONEK and D. WEARRING, *J. Amer. chem. Soc.* 81, 2067 (1959).

⁵ G. J. HOIJTINK, *Rec. Trav. chim. Pays Bas* 73, 895 (1954); 74, 1525 (1955); 76, 869, 885 (1957).

⁶ G. J. HOIJTINK and J. VAN SCHOOTEN, *Rec. Trav. chim. Pays Bas* 71, 1089 (1952); 72, 691, 903 (1953).

⁷ G. J. HOIJTINK, J. VAN SCHOOTEN, E. DE BOER, and W. Y. AALBERSBERG, *Rec. Trav. chim. Pays Bas* 73, 355 (1954).

⁸ G. J. HOIJTINK, E. DE BOER, P. H. VAN DER MEIJ, and W. P. WEIJLAND, *Rec. Trav. chim. Pays Bas* 74, 277 (1955); 75, 487 (1956).

⁹ P. BALK, G. J. HOIJTINK, and J. W. H. SCHREURS, *Rec. Trav. chim. Pays Bas* 76, 813 (1957).

¹⁰ G. J. HOIJTINK and W. P. WEIJLAND, *Rec. Trav. chim. Pays Bas* 76, 836 (1957).

¹¹ P. BALK, S. DE BRUIN, and G. J. HOIJTINK, *Rec. Trav. chim. Pays Bas* 76, 907 (1957).

¹² A. T. WATSON and F. A. MATSEN, *J. Chem. Phys.* 18, 1305 (1950).

¹³ F. A. MATSEN, *J. Chem. Phys.* 24, 602 (1956).

¹⁴ P. H. GIVEN and M. E. PEOVER, *Proc. 2nd Int. Polarography Cone* (Cambridge 1959), 3, 948 (1961).

¹⁵ I. BERGMAN, *Trans. Faraday Soc.* 52, 690 (1956).

¹⁶ E. CLAR, *Aromatische Kohlenwasserstoffe* (Springer, Berlin 1952).

¹⁷ I. BERGMAN, unpublished work.

A Reply to the Disputandum of I. BERGMAN

In a short Note¹ I suggested a simple correlation based on BROWN and WHELAND's data^{1,2} to account for the specificity of polarographic reductions. Only the most important references were used since the excellent theoretical work of MACCOLL³, WATSON⁴, MATSEN⁵, WAWZONEK⁶, and HOIJTINK⁷ is well known to those working in the field. GIVEN's review article was then unavailable. The complexity of polarographic reductions is indicated¹ in Table I by the heading *Position of Preferred Reduction*. I mentioned the extremely valuable experi-

mental contributions of BERGMAN⁸ and included as a side issue a critical remark about his evaluation of data.

¹ F. T. WALLENBERGER, *Exper.* 16, 83 (1960).

² F. T. WALLENBERGER, *Tetrahedron Letters* 9, 5 (1959).

³ A. MACCOLL, *Nature* 163, 178 (1949).

⁴ A. T. WATSON and F. A. MATSEN, *J. Chem. Phys.* 18, 1305 (1950).

⁵ F. A. MATSEN, *J. Chem. Phys.* 24, 602 (1956).

⁶ (a) S. WAWZONEK and H. A. LAITINEN, *J. Amer. chem. Soc.* 64, 2365 (1942). - (b) S. WAWZONEK and D. WEARRING, *J. Amer. chem. Soc.* 81, 2067 (1959).

⁷ G. J. HOIJTINK, *Rec. trav. chim. Pays Bas* 76, 885 (1957).

⁸ I. BERGMAN, *Trans. Faraday Soc.* 50, 829 (1954).