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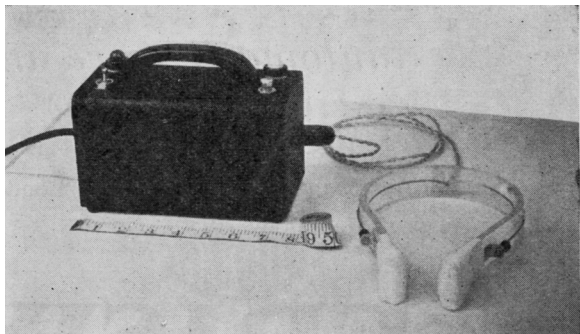
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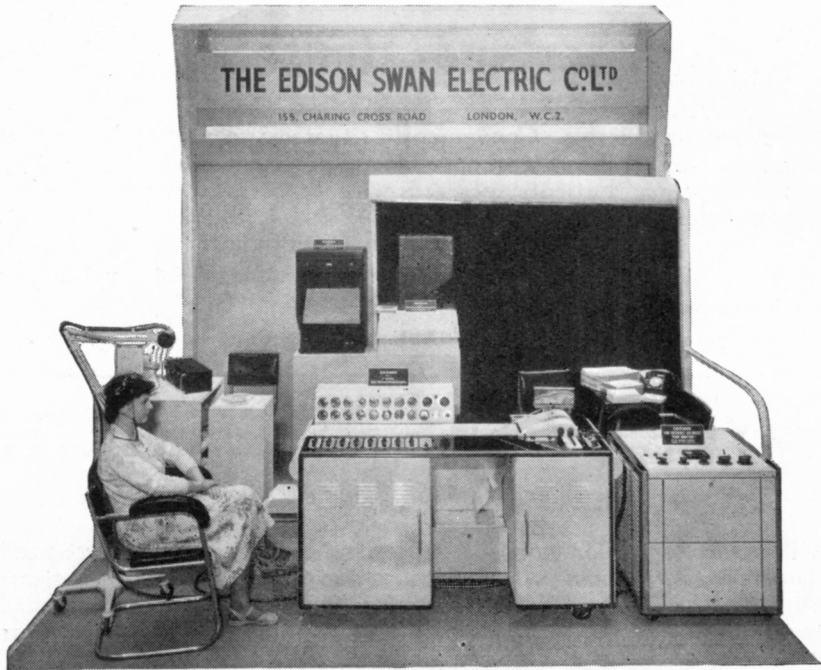
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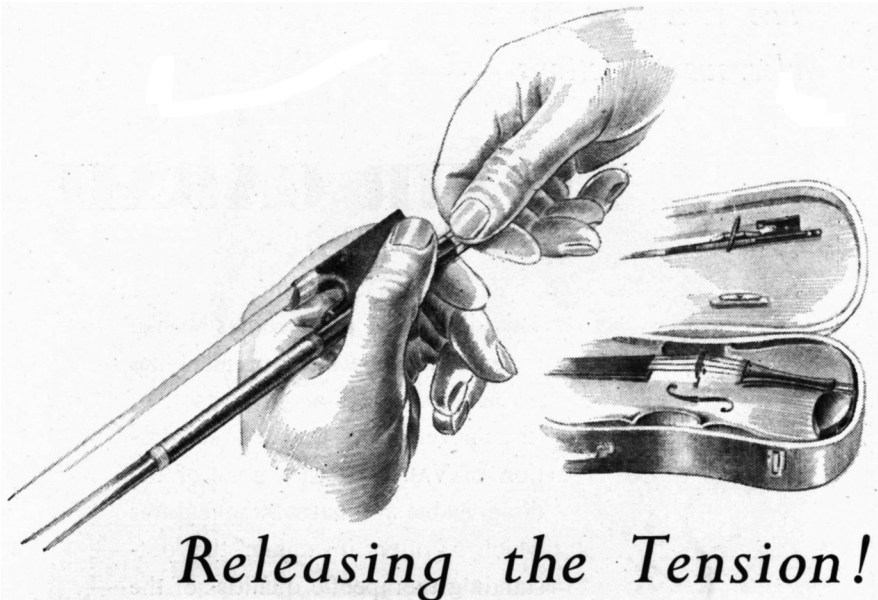
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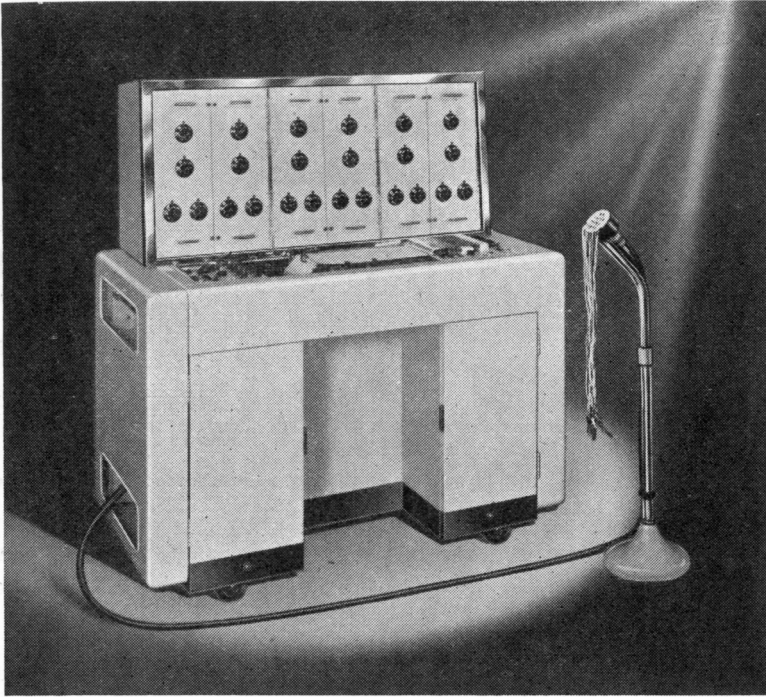
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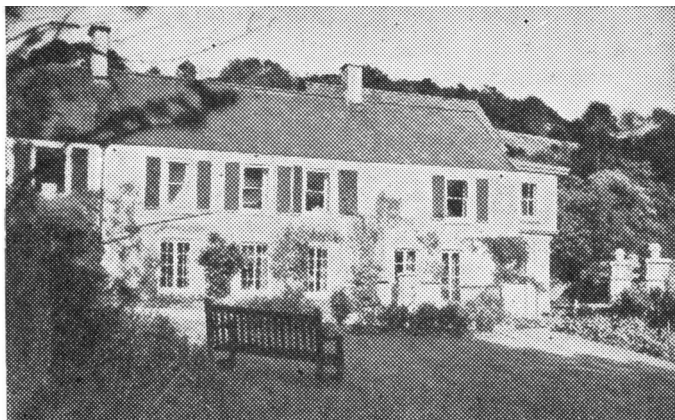
*See "Non-convulsive Electric Stimulation Therapy," by Leo Alexander, M.D., *Am J. Psychiatry*, Vol. 107, No. 4, Oct. 1950.

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VOL. XCVII

Part I.—Original Articles

ACTIVATORS AND INHIBITORS OF HEXOKINASE IN HUMAN
BLOOD.

By H. WEIL-MALHERBE, M.D., D.Sc., and A. D. BONE,
Runwell Hospital, Wickford, Essex.

THE endocrine system is one of the foremost links in the psychosomatic relationship, and its special significance in the study of mental disease needs no emphasis. Compared with our knowledge of the chemistry and basic functions of the hormones very little is known about their more intimate mechanisms of action. It has been possible to assign to some hormones the function of controlling the rate of specific metabolic processes, but whether they do so by a direct reaction with a component of one or more enzyme systems or indirectly by influencing the mutual accessibility of enzyme and substrate is still a matter of discussion. The latter mechanism would depend on a spatial organization involving membrane barriers, phase boundaries or similar discontinuities and, in fact, many hormonal effects which can be demonstrated *in vitro* with the aid of intact or sliced tissues disappear when the structural organization of the cell is destroyed. It is, however, well to remember that synthetic and other energy-consuming reactions were believed until recently to depend on the integrity of the cellular organization, but when some insight was gained into the mechanism of biological energy transformation and the function of labile phosphate bonds in these processes, it was possible to demonstrate many such reactions in homogeneous systems. Similarly, the interactions of hormones and enzymes may require the intervention of unstable mediators, and control of these factors might allow their reconstruction in cell-free extracts. In any case, it is more satisfying to account for the great specificity of hormonal action on the basis of a chemical reaction with specific enzymes than by a mechanism leading to predominantly physical changes.

A hormonal system, many actions of which can be explained by its control of a single metabolic process, is that of insulin and its antagonists. The reaction in question is the phosphorylation of glucose (cf. Bouckaert and De