utilizing the resources of his science in every way possible for the benefit of mankind. Both the animal and plant are productive in their growth of active principles which exert a pronounced physiological action when liberated in the living organism, and their separation and utilization by man has contributed greatly to the advancement of almost every field of medicine. We have adopted the materials that nature provides for us, and we have also gone further and modified these materials, purified them, and have been extremely successful in making many new combinations of great medical value. We are now advancing to the third stage of this program in the development of drugs for the use of man, and it is the organic chemist who now seeks to duplicate further the natural products to produce new organic derivatives from them and to prepare in his laboratory entirely new compounds related structurally to the natural substances and finally to create artificial materials which may serve as practical substitutes for nature's products. Among the many substances formed in the animal metabolism are the glandular secretions which our physiologists have designated by the general term, "hormones." These interesting products are secreted in animal economy in extremely small quantities, but they are very powerful in their physiological action, and it is known that an animal can not live and grow without their aid. These active substances serve in animal metabolism as chemical messengers, so to speak, and they exercise a very fundamental part in regulating all the normal life processes. In other words, without the proper functioning of these glandular organisms which produce these secretions, man can not live. Thyroxine and adrenaline are two important representative organic substances which are found in the secretions of special glands, and they represent two of the most important substances which we classify under the term "hormones." It is an interesting fact that the structures of both of these substances have been established, and the chemist has been able to prepare both of them artificially. We are, therefore, now able to produce two of these important hormone principles in our laboratories, and are therefore not dependent for their supply on natural materials. It is an interesting fact that, as a result of advanced research by the organic chemist, absolutely new organic constructions can be synthesized which show almost the same physiological activity of many of these hormone principles which nature provides for her service. When substances of this type are obtained by the organic chemist, their structure established and their physiological activity shown to duplicate the materials found in nature, they are spoken of as artificial hormones. The substances discussed in this paper belong to this class of compounds. They represent new compounds which have never been prepared before and have been found to show a physiological activity which duplicates that of natural hormones of certain types, and therefore are of extreme interest to the chemist and call for an exhaustive study. There is a great probability that some of these organic combinations will be found to be perfect substitutes for natural hormone compounds and lead to products which are far superior in their physiological activity to those already produced by nature. The field of investigation is a most inviting one to the chemist, and the thiazol compounds which have been chosen as a group of compounds deserving of chemical attention offer possibilities of synthesis which are not common to many classes which the chemist can select for his work. It is possible to prepare, in the series under investigation, compounds, for example, that are far less toxic than the natural hormone—adrenaline—and still retain a physiological activity that promises a possibility of very practical application in medicine. This work has been in operation in the Sterling Laboratory for the past four years, and a program of work has been mapped out which will keep certain members of the staff occupied in this field for a long time.

The influence of complex salt formation on the electronic structure of iron oxides: OSKAR BAUDISCH (introduced by T. B. Johnson).

Further studies of rate of growth of albino rats: ARTHUR H. SMITH and W. E. ANDERSON (introduced by L. B. Mendel).

The Arizona expedition for the study of meteors: HARLOW SHAPLEY, E. J. OPIK and S. L. BOOTHROYD.

The adequacy of ocular compensation to bodily rotation: G. R. WENDT (introduced by Raymond Dodge). Graphs will be shown (by lantern slides) which show the relationship between the velocity of the slow phase of vestibular nystagmus and the velocity of bodily rotation. Using normal college students as subjects, and photographically recording eye-movements through closed eyes by the Dodge mirror recorders it has been found that in the simple conditions of rotation used in this experiment ((1) translation through 65 degrees in two seconds, (2) harmonic oscillation through 15 degrees) the velocity of compensatory eye-movements bears a constant relation to the angular velocity of rotation. The velocity of the eyes at any moment is found to vary directly with the velocity of the head. Related to earlier work by Dodge, his collaborators and others, it will be pointed out that these results make definitively untenable the notion that vestibular stimulation operates on the reflexes by acceleration alone. In these experiments the response of the eyes is not related to acceleration but to velocity.

(*To be concluded*)

BOOKS RECEIVED

BENTLEY, WILSON A. and W. J. HUMPHREYS. *Snow Crystals.* Pp. ix + 227. Illustrated. McGraw-Hill. $10.00.

FRASER, RONALD G. J. *Molecular Rays.* Pp. vii + 204. Illustrated. Cambridge University Press, Macmillan. $3.75.

MCCLENDON, J. F. *Handbook of Chemistry in Biology and Medicine.* Part One: 206 pp. Part Two: Pp. 207–397. Part Three: Pp. 398–462. J. F. McClendon, University of Minnesota.

MCMATH, FRANCIS and others. *Some New Methods in Astronomical Photography, with Applications to Moving Pictures of Celestial Objects.* Pp. 53–73. Illustrated. The Observatory, University of Michigan.

RUDWIN, MAXIMILIAN. *The Devil in Legend and Literature.* Pp. xi + 354. Illustrated. Open Court. $3.00.