Book Reviews

The Chemical Origin of Life. By Alexander I. Oparin. Translated from the Russian by Ann Synge. (Pp. xxvii + 124; 22 figures. $6·75.) Springfield, Illinois: Charles C. Thomas. 1964.

This book is a very condensed version of the author's ideas of the origin of life. In its essential content it differs little from his earlier publications, but he has been meticulous in incorporating up-to-date discoveries in astrophysics and biochemistry into the fabric of his theory.

Oparin provides evidence for the existence of water and carbon compounds in the early Earth. He holds that, to begin with, oxygen was present in only infinitesimal amounts. Slowly there was brewed up what he calls a primaeval broth, largely under the influence of ultraviolet radiation (a matter which is very debatable in view of the instability of what are, and must have been, the chemical works of reference, namely the nucleic acids). In any case, forces of construction at that early period overcame forces of destruction: the large molecules that were formed were relatively stable, chiefly due to the absence of oxygen.

The author pictures these large molecules coming together to form coacervates, isolated from the broth. Smaller molecules came to pass into these chemically open systems; they were incorporated, or changed, and these transmutations contributed in some instances to the stabilization of the coacervate. The reader is left to decide what constituted the coacervate, and what could have been its needs. The problem of the early relationship between proteins and nucleic acids is passed over tantalizingly without much consideration.

Some coacervates survived and the process of selection weeded out ineligible patterns of organic materials. While in the earlier of the author's accounts of the origin of life he had accepted an evolution of the components of the universe as a whole, his later works stress the part played by natural selection: once the primaeval broth had become packaged into units which differed from one another these would participate in a competition for survival.

The present pattern of metabolism is compatible with the idea that anaerobic existence (predictable also on geophysical grounds) is the more primitive, the accomplishments of photosynthesis and aerobic existence following later.

It is a pity that the book is so short. Given a free hand, the author can persuasively convey his ideas, but the subject-matter of this volume is so condensed and his evidence so isolated from contingent theories as to prove hard at times to follow. The book thus lays itself open to criticism in as much as it is one of a series intended to introduce the advances taking place in chemical medicine to those in clinical practice. For this introductory purpose the author has written more suitable expositions of his theories. Nevertheless, this account does provide a valuable abstract and an up-to-date revision of the author's now classical reconstruction of the origin of life.

PETER BRUNET

Down's Syndrome. A Clinical and Cytogenetical Investigation. By Karl-Henrik Gustavson. (Pp. 196; 34 figures + 5 tables. Sw. Kr. 28.) Uppsala: The Institute of Medical Genetics of the University. Distributors: Stockholm: Almqvist & Wiksell. 1964.

After a good historical introduction, this monograph describes the clinical and cytogenetic findings of 119 children with Down's syndrome or suspected Down's syndrome. Of these, 57 were referred for diagnosis, 9 because a relative had Down's syndrome, 18 because the mother was young, and 35 for other miscellaneous reasons; the series is, therefore, somewhat heterogeneous. A considerable amount of clinical information is given on all the index patients.

Of the 119 referrals, 18 did not have any form of trisomy-21, 16 had a normal karyotype, one had a probable deletion of chromosome 16, and one had trisomy-21/normal mosaicism. None of these children was considered to have Down's syndrome by the clinical examination. Of the 103 with the clinical features of Down's syndrome, 94 had regular trisomy-21, 5 had translocations, of which 4 were of the G/G type and one of the D/G type, one had a triple mosaicism involving normal, trisomy-21, and trisomy-21 plus a probable isochromosome 21 cells, and one had a regular trisomy-21 with the addition of a small satellited chromosome.

In only a few instances were relatives examined, but it is noteworthy that both parents of the D/G patient were normal, as were the 7 examined of the 8 parents of the G/G translocation patients. Of the 5 patients with Down's syndrome who had a similarly affected sib, 4 had regular trisomy-21 and the fifth was the triple mosaic.

This study is a useful contribution to the cytogenetics of Down's syndrome, and the chromosome studies are obviously of a high standard.

CEDRIC CARTER