Book Reviews

SCIENTISTS ARE HUMAN

Scientific Types

By J. G. Crowther. Pp. 408 + 12 plates. (Barrie and Rockliff (Cresset Press): London, March 1969.) 70*s*.

HERE are short biographies of twelve British scientists, ranging in time from Thomas Young, who was born in 1773, to C. T. R. Wilson, who died in 1959. This may not sound an inspiring plan for a book: it could be dull or embarrassing. But Mr Crowther is a master of his craft, as readers of his many previous scientific biographies will know: his book is sparkling and continuously interesting, as well as being a valuable addition to the rather inadequate existing biographies of most of the scientists.

Crowther divides his subjects into four trios, to bring out those traits of talent and personality that governed their careers. The first group, of "individual investigators", comprises C. T. R. Wilson, Lord Rayleigh and Thomas Young. Wilson is a fine example of a "narrow" specialist, while Young "probably had a wider range of deep creative learning than any other Englishman in history". In the next group, "teachers", we find three worthy Victorians, T. H. Huxley, John Tyndall and Augustus de Morgan. All were high principled, but de Morgan was the most intransigent. He deeply distrusted the establishment and refused an honorary degree because "he did not feel like it"; he also detested the countryside, or "the viridity of extra-urban scenery" as he put it. Crowther's third trio is made up of "scientist-inventors", James Dewar, Osborne Reynolds and Charles Babbage. The story of the government grants for Babbage's computer, with the escalation in cost and the cancellation of the project, might almost belong to the 1960s rather than the 1830s. The final group, "organizers", consists of Morley Fletcher, Arthur Schuster and finally Sir George Airy, whose misadventures with the planet Neptune have tended to obscure his services to his home planet.

These twelve scientists, so different in temperament, nicely illustrate Crowther's thesis that scientists are human. Indeed, they seem to have little in common, except a talent for science and perhaps perseverance or obstinacy. An early accident or illness, which protects a gifted child from the numbing effects of a formal education, is often the prelude to great achievement in science, literature or art, and there are several examples here. Rayleigh "because of his delicate health was given only spasmodic instruction"; T. H. Huxley "had virtually no systematic instruction"; de Morgan had a serious eye disease as a baby, which left him half-blind; Dewar was on crutches for two years after rheumatic fever at the age of ten; Babbage was a sickly infant. But the pattern is not consistent: others, including Young, retained their originality in spite of formal education.

Some critical readers may think Crowther occasionally overrates the importance of the scientists he discusses. But if you read a literary or political biography, you expect the author to boost both his subject and the supporting cast. A little of the same treatment for scientists seems legitimate: how else can we create an educational climate in which past and present scientists receive as much attention as past and present politicians? It is more than time that "what every schoolboy knows" should be just as likely to include the works of Thomas Young as those of Thomas Macaulay, and Crowther has with his many books done perhaps more than anyone else to help create this climate. D. G. KING-HELE

HOW LIFE BEGAN

Genesis and Evolutionary Development of Life

By A. I. Oparin. Translated from the Russian by Eleanor Maass. Pp. vii + 203. (Academic Press: New York and London, February 1969.) 88*s* 8*d*.

DURING the first quarter of this century, there was little discussion on the nature and origins of life. An article by Haldane aroused a flicker of interest in 1929 and interest was greatly increased by Oparin's *Origin of Life* published in 1937. There are now regular symposia on the subject and a steady stream of books. Essentially this is the 1937 book brought up to date. It is cast in the same form, but the passage of time has made radical revision necessary.

The historical section includes interesting material on the ideology of some early Russian theologians, but, as in 1937, no attention is paid to the writings of T. H. Huxley, Tyndall and Errera, all of whom had a point of view similar to that usually adopted today. There are various other omissions. An author dealing with this vast subject is entitled to be selective, but should beware of perpetuating error. It was not Harvey, but the designer of the title page to "*De generatione animalium*", who wrote "*Omne vivum ex ovo*"; the suggestion that Leeuwenhoek believed in spontaneous generation hardly does justice to one who wrote (1680): ". . . no animals, however small they may be, take their origin in putrefaction, but exclusively in procreation"; and Pasteur did not claim the impossibility of spontaneous generation. He demonstrated the flaws in the technique of others, but wrote: "La génération spontanée, je la cherche sans le découvrir depuis vingt ans. Non, je ne la juge pas impossible". This section of the book would have been improved by more precise references. Paracelsus, for example, is quoted as having experimented on the generation of mice, frogs, toads and turtles. With so verbose an author, mere reference to the "works" is hardly sufficient.

During the past 30 years our ideas about the origin and early history of the solar system have changed radically. One chapter of the book attempts to keep pace with the changes. On the whole, the current idea that the planets were formed by the accretion of cold material suggests a more hospitable environment for nascent life than the older idea of a cooling wisp of hot nebula. If recent evidence for ammonia and formaldehyde in space is substantiated, we seem to have the makings of quite a rich proto-pabulum. This was, and remains, central to Oparin's argument. He contends, as Haldane did, that the saprophytic habit preceded the autotrophic, and that there would, in the probiotic phase, have been no lack of organic substrates for a nascent organism to exploit. The picture is plausible and widely accepted: astronautics should produce evidence very soon.