

comfortably into the archaeological framework, and archaeologists are bound to ask if simpler constructions are possible. The robustness of their interpretation, such as the possible range of values for the radii of the arcs, is not discussed.

Another example of their conclusions being in conflict with the archaeology is the supposed distant foresight at Stonehenge, called 'Peter's Mound', which was suggested as an indicator for midsummer sunrise. This looked unlikely archaeologically for several reasons, and indeed was shown by excavation in 1977 to be modern, though this fact does not appear in the book.

These criticisms are not meant to detract from the authors' work, for which I personally have considerable

admiration, but are intended to indicate the nature of the book. It is not a balanced account of megalithic astronomy and geometry, but a compilation of original work, the field reports of a team of meticulous surveyors, to which the serious student of the period will turn and which no specialist in the late Neolithic and Early Bronze Ages can ignore. Some of their interpretations may be proved incorrect in the course of time, but this is not particularly important; *Megalithic Remains in Britain and Brittany*, together with Alexander Thom's two earlier works, will be an invaluable source book for researchers for very many years. □

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Star formation

Bart J. Bok

Stellar Formation. By V. C. Reddish. Pp. 287. (Pergamon: Oxford, 1978.) Hardback £15; paperback £7.50.

THIS is an interesting volume and I learned much from reading it with care. At the same time, I express deep regret that it came out in print effectively four years after the writing was finished. It covers adequately and thoughtfully the literature available to the end of 1974 and should therefore have been published by the end of 1975. It does not include the new results reported at IAU Symposium No. 75, which was held at Geneva in September, 1976 (International Astronomical Union Symposium No. 75, *Star Formation*, D. Reidel: Dordrecht, Netherlands, 1977), nor does it include researches that were discussed and analysed at the Tucson Colloquium of January, 1978, papers that are now in print (T. Gehrels, *Protostars and Planets*, University of Arizona Press: Tucson, 1979; *The Moon And The Planets*, 19, No. 2, 1978).

There are several very good chapters in the present volume. Chapter 3 deals in a masterly fashion with the determination of the initial luminosity function and the initial mass function. The three chapters that follow it are a bit on the meagre side, but the concluding chapter of the observational

half of the book gives a well-rounded review of the necessary environment for fostering star building from interstellar clouds. Professor Reddish defends strongly the point of view that star formation results almost exclusively as a by-product of the formation of H₂ molecules on very cold solid particles in interstellar clouds. I agree that this is a major contributing process, but there are regions in the heavens, notably in the Magellanic Clouds, in which cosmic dust particles and even H₂ molecules seem to have played less of a part than neutral atomic hydrogen.

Professor Reddish's independent and honest scholarly considerations have led him to visualise ahead of his time one major process contributing to star formation, but he ignores others. If I were asked to list my favourite processes for star formation, I would list five, which seem to be at work in our galaxy within 1,500 parsecs of the Sun. These are: (1) The formation of OB stars within large dark complexes such as the Ophiuchus Complex, the Taurus Complex, the Greater Orion Complex and the southern Gum Nebula. (2) The Elmegreen-Lada process according to which a large molecular cloud acts as a feedbag for the continuous formation of OB stars in the vicinity of established H II regions and associated young OB groupings such as Messier 8 and Messier 17. (3) Supernovae and pulsars, whose high-energy charged particle emissions, along with the Lin-Shu spiral density waves, contribute materially to the condensing of interstellar clouds, thus leading to star formation. (4) Cloud-cloud collisions and interactions between passing clouds, which may further assist condensation

processes. (5) Collapsing large globules (Barnard objects), of low temperature and chockerblock-full with CO (and thus with molecular hydrogen), provide a good basis for the building of less massive stars; two Herbig-Haro Objects have been found associated with a southern globule (see *Publ. Astron. Soc. Pacific*, October, 1978). Professor Reddish alludes vaguely to most of these processes, which were, however, not generally recognised as being as basically important in 1974-75 as they are today. I wish we might persuade him to add an additional volume to his present offering and bring us up to date.

The second half of the book presents the more theoretical aspects of star formation. It is an excellent and comprehensive treatment but it too is dated. He shows nicely that the physical properties of interstellar gas and dust are such that an interstellar cloud structure is inevitable. Chapter 9 is a most readable presentation of the Lin-Shu density wave theory of spiral formation and its effect on interstellar cloud evolution. There follow very fine chapters on cloud contraction, especially on fragmentation and its effects on the distribution of protostar masses. The chapter on the rate of star formation is regrettably brief and the concluding chapter on the evolution of galaxies did not stir this reviewer.

The book is nicely produced and the medium-priced paperback edition handles well. There are a few places in which a little more care in proof-reading would have been helpful; I noted that the word "asymmetry" is consistently misspelled (pp153, 164, 165). On page 171, there is a reference to (Roberts, 1969); one finds in the bibliography two such references—one to M. S. Roberts, the other to W. W. Roberts—the second one being the one that is indicated.

Because of its underlying unified personal approach of Professor Reddish, this is a book that should be read by everyone who works in the field of star formation. Once one accepts the obvious limitations, we can all learn from his treatment of star formation. This is a good book to assign to one's students, provided it is supplemented by the other volumes mentioned in my review; it is a good treatment for the beginning graduate student, and it should also appeal to advanced undergraduate students in the physical sciences. Professional physicists will find that this book has much to offer, as will informed amateur astronomers. □

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