

**THE BIRTH OF
WORLDS
AND SYSTEMS**

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The Birth of Worlds and Systems by A. W. Bickerton

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FIG. 1.—PAIR OF STARS DISTORTED AND COMING INTO IMPACT.



FIG. 2.—PAIR OF STARS IN IMPACT.



FIG. 3.—STARS PASSING OUT OF IMPACT, AND FORMATION OF THIRD BODY.



FIG. 4.—SHOWING ENTANGLEMENT OF MATTER IN EACH BODY.



FIG. 5.—TWO VARIABLES AND A TEMPORARY STAR.

Frontispiece.

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PROFESSOR A. W. BICKERTON

AUTHOR OF
"A NEW STORY OF THE STARS"
"THE ROMANCE OF THE EARTH"
"THE ROMANCE OF THE HEAVENS"
ETC.

WITH A PREFACE BY
PROFESSOR ERNEST RUTHERFORD, F.R.S.

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TO VINU
AMPHILIAO

PREFACE

I HAVE been asked to write a few words of introduction to this volume by my former teacher, A. W. Bickerton, for many years Professor of Physics and Chemistry in Canterbury College, University of New Zealand. I do so from the personal rather than the scientific standpoint, for I can lay no claim to be regarded in any way as an authority on astronomical matters, although, I trust, I take that intelligent interest in the subject which is possible for one who is a specialist in another branch of science.

More than thirty years ago Professor Bickerton published in the New Zealand Philosophical Institute a theory to account for the origin and life history of new stars. These stars suddenly appear in the heavens, increase in brilliancy for some time, and then in the course of a few months or years disappear from view. It is now thought by many that the birth of new stars must be due to some kind of impact between two celestial bodies. This point of view was taken thirty years ago by Professor Bickerton. He concluded that when such impacts took place, the majority

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of them would be grazing or partial. The central point of his theory lies in the deduction that in many cases a third and intensely heated body will be formed as the result of such partial impacts. No doubt, it is difficult to predict with certainty the exact consequences of such collisions, but the formation of a third body has always appeared to me as highly probable. Accepting this view, many of the conclusions put forward by the author follow as natural deductions. In many cases, the third body is at such a high temperature that the light elements are able to escape from it, and a spherical shell of intensely heated gaseous matter travels outward at great speed.

Professor Bickerton develops with much force and originality the consequences of this theory, and considers that it offers a reasonable and satisfactory explanation, not only of the origin, but also of the variations in brilliancy, and in the type of spectra given by new stars.

Before any theory can be accepted, it is necessary to examine in great detail how far it offers a reasonable explanation of experimental facts. As far as I know, this has not so far been done except in a general way, with regard to the theory of Professor Bickerton. A large amount of spectroscopic data has now been accumulated in connection with new stars, and it would be of interest to examine carefully how far the theory is able

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to explain the facts. In any case, the theory should serve as a valuable working hypothesis to those who are engaged in interpreting the spectroscopic evidence afforded by new stars.

In later chapters Professor Bickerton applies the general theory in an attempt to explain the origin and character not only of our solar system, but of the universe as a whole. His theories are highly ingenious and interesting, but, as he expressly states, they are to be regarded as speculations rather than logical deductions of his theory. No doubt there will be much difference of opinion in regard to the validity of such speculations.

Professor Bickerton writes in a clear and vigorous style, and I am sure that the general reader, whatever may be his scientific opinions, will find in this volume much that is interesting and stimulating.

E. RUTHERFORD.

