

the nucleolus and upon the mechanics of the process are succinctly stated again, but with due regard to his critics, and on the physiology of the nucleus in which the somewhat divergent views upon nuclear function are balanced, and much useful information brought together regarding the influence upon the nucleus of such environmental forces as gravity, light, electricity, mechanical pressure, heat, etc. In discussing the mechanics of karyokinesis, Zimmermann uses considerable illustrative material from the field of zoocytology, but, while quoting the interesting results of Henneguy, does not seem to have known the opposite view supported by Watasi from his studies of cephalopods. Nor is his account of the center zone in plants altogether abreast of present knowledge, while the discussion of fragmentation is itself rather too fragmentary.

The second part of the work, the special part, takes up in detail researches upon the nuclei in Angiosperms, Gymnosperms, Pterodophytes, Bryophytes, Fungi, Algæ and Schizophyta. Here a large amount of special literature is indexed, and on the whole this is the most useful part of the volume. Several of the recent papers of American investigators receive proper consideration, which is a gratifying departure from the methods of too many of the European writers.

A bibliography including nearly six hundred titles and two indices, one a 'Sachregister' and the other to the names of plants, complete the volume.

In the light of modern study and his own added experience in book-making, it would be very helpful if Dr. Zimmermann could find time to revise and rewrite his older work on the plant cell. Certainly this paper is of the greatest value, but needs a better handling than was given it in the Schenk's *Handbuch*.

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*The Myths of the New World*: By DANIEL G. BRINTON, A.M., M.D., LL.D., D.Sc., Professor of American Archæology and Linguistics in the University of Pennsylvania. Third Edition revised. David McKay, Philadelphia. 1896.

The appearance, in 1868, of Dr. D. G. Brinton's 'Treatise on the Symbolism and Mythology of the Red Race of America' marked an epoch in the study of the 'Myths of the New World.' Although prior to this date able scholars had made valuable researches among various groups of American aborigines, in this volume the first attempt was made to mass this scattered information, and to present in a clear and concise form whatever contribution might be offered by the natives of this western continent, in answer to the general inquiry as to 'man's earliest ideas of a soul and a God, and of his own origin and destiny.'

In the recent rapid growth of our knowledge of the red race, it is not easy to appreciate the difficulties encountered thirty years ago, and the courage requisite to accomplish the task undertaken by the author. A new claim was set up by him for the natives of America, a claim which was no less than the right to be heard in the general discussion of the upbuilding of the intellectual life of the human family. The issue of a revised third edition of 'The Myths of the New World,' in which much of the text has been rewritten, and some fifty pages of new material added, brings forward the arguments offered in 1868, reinforced with additional evidence gathered from the recent work of students who have opened new fields of research or gleaned in those already known.

The title might imply to those unfamiliar with former editions that the volume contained a collection of myths, whereas myths are only referred to by the author as he seeks to trace the intellectual history and to ascertain the 'laws of religious growth of the red race.' For this purpose he treats the race as a "unit, regarding its religion as the development of ideas common to all its members, and its myths as the garb thrown around these ideas by imaginations more or less fertile, but seeking everywhere to embody the same notions."

The author attacks his theme with directness and force, accepting at the opening of his first chapter the unity of the human family, and granting that the aim of man is to find out God, the cause of all. Natural religions are therefore 'the effort of the reason struggling to define the infinite.' Concerning the birth of re-

ligion we read: "The idea of God does not and cannot proceed from the external world but nevertheless it finds its *historic* origin (as art, science and government do) in the desperate struggle for life, in the satisfaction of the animal wants and passions, in those vulgar aims and notions which possessed the mind of primitive man to the exclusion of everything else." Religion, however, does not 'begin and develop under the operation of inflexible laws;' these 'potently incline; they do not coerce.' Symbols and myths originate "in dealing with matters beyond the cognizance of the senses; the mind is forced to express its meaning in terms transferred from sensuous perception, or under symbols borrowed from the material world." Therefore to understand these transfers, and to reach the 'real meaning of the myth,' we are told: "With delicate ear the faint whispers of thought must be apprehended" (by the student) "which prompt the intellect when it names the immaterial from the material; when it has to seek amid its concrete conceptions for those suited to convey its abstract intuitions."

These general statements precede a rapid but clear presentation of the physical and intellectual peculiarities of the red race, wherein their language, mnemonics and written records are reviewed, and the probable migrations of its chief families indicated, and their location given when they were first known historically.

In chapters 2 to 9, inclusive, the author treats broadly and suggestively, the Idea of God; the Origin and Application of the Sacred Number; the Symbol of the Bird and the Serpent; the Myth of Water, Fire and the Thunder-storm; the Supreme Gods of the Red Race; the Myth of the Creation, the Deluge, the Epochs of Nature and the Last Day; the Origin of Man; the Soul and its Destiny; the Native Priesthood; and the Influence of the Native Religion on the Moral and Social Life of the Race. An index in which over three hundred and fifty authorities are cited, and another of the subjects touched upon, closes the volume of 360 pages.

It is impossible within this brief notice to even outline the arguments and evidence presented by our author; he has brought wide

learning and careful thinking to bear upon his theme, and has established a thesis that it will be difficult to successfully assail.

It is true that there are students who do not fully share the insistence of the author for the complete isolation of the American race, an isolation which insured an indigenous growth of its culture. While recognizing American characteristics, some are inclined to consider contact with the Old World during the centuries as more or less probable, and point to certain similarities and parallelisms as possible evidence of the fact. 'Those analogies and identities' \* \* 'whether in myth, folklore or technical details,' our author attributes 'wholly and only to the uniform development of human culture under similar conditions,' and deprecates 'contact and transference' as affording an adequate explanation.

The points of difference between the author and other students upon this and a few minor matters are not radical and do not invalidate the gist of the argument found in the volume, namely, the psychical solidarity of mankind. There can be no question of the efficient service which has been rendered by the author in this book toward the establishment of this great truth, the far-reaching influence of the acceptance of which is being felt in a broader and deeper religious faith, and in the growth of higher international and, one might say, interracial ethics.

ALICE C. FLETCHER.

#### SCIENTIFIC JOURNALS.

THE ASTROPHYSICAL JOURNAL, OCTOBER, 1896.

*The effect of Pressure on Wave-length:* By J. F. MOHLER. A continuation of the investigations of W. J. Humphreys and J. F. Mohler on the *Effect of Pressure on the Wave-length of Lines in the Arc-spectra of Certain Elements*. The latter investigation was carried on with pressures exceeding one atmosphere. The present paper deals with pressure below one atmosphere. Special attention was given to the spectrum of cadmium, with the hope that the light might be thrown upon the matter of discrepancy between the absolute measurements of cadmium wave-lengths by Michelson, and the determinations of the same lines by Rowland upon the